OXIDIZED METAL CRAFT - JASDAN

CLUSTER DEVELOPMENT PROGRAMME

SEPTEMBER 2004 - JANUARY 2005

CLIENT:

NABARD

Outreach Programme

NATIONAL INSTITUTE OF DESIGN

Paldi, Ahmedabad 380007

INTRODUCTION

THE CONTEXT AND BACKGROUND

NATIONAL INSTITUTE OF DESIGN

The **National Institute of Design** (NID) is internationally acclaimed as one of the foremost multidisciplinary institutions in the field of design education, applied research, training, design consultancy services and outreach programmes. It has been the recipient of significant national and international awards since it was established in 1961 as an autonomous institution under the Ministry of Industry, now known as Ministry of Commerce & Industry, Government of India. NID has been a pioneer in industrial design education after Bauhaus and Ulm in Germany and is known for its pursuit of design excellence to make "Designed in India, Made for the World" a reality. NID's graduates have made a mark in key sectors of commerce, industry and social development by taking role of catalysts and through thought leadership. NID has been recognized as a Science and Industrial Research Organization by the Department of Science & Technology, Government of India.

OUTREACH PROGRAMME

Outreach Programmes at NID has actively been engaged in design interventions in crafts and small-scale industrial sectors, be it government or non-government organizations or institutions. The primary aim of such intervention is to effectively understand the need, strengths and weaknesses of a particular craft sector and applying NID's expertise and knowledgebase, devise tailor-made training programmes aimed at developing/ upgrading skills of artisans and craftspersons. Spearheading a unique multi-disciplinary approach to design, and creating a congenial design environment in the country through well orchestrated design intervention strategies in keeping with the diverse culture and heritage of the country, and armed with a clear mandate to add value to 'made in India' tag for the people who constantly yearn for a better quality of living. Establishment of institutions to consolidate skills of craftsmen and creating common platform to help them identify key areas of concern and improvement through sharing of experiences, resources and expertise which would eventually lead to development of a region in the long run is one of the major mandates of this Department of the Institute.

NABARD (NATIONAL BANK FOR AGRICULTURAL AND RURAL DEVELOPMENT)

NABARD is established as a development Bank, in terms of the Preamble of the Act, "for providing and regulating Credit and other facilities for the promotion and development of agriculture, small scale industries, cottage and village

Industries, handicrafts and other rural crafts and other allied economic activities in rural areas with a view to promoting integrated rural developmentand securing prosperity of rural areas and for matters connected therewith or incidental thereto."

NABARD is a development Bank, established in 1982. Under the National Programme for Rural Industrialization, NABARD has planned to develop 50 rural clusters in a span of 5 years, from 1999 to 2004. Its objective is to strengthen existing clusters towards sustainable competitive advantage through technology upgradation/ transfer, raw material access, skill development, managerial inputs, credit and market support. Out of the 51 clusters identified so far NABARD's promotional programmes have been launched in 35 clusters in 17 States.

OBJECTIVE OF CLUSTER FORMATIONS

Clusters can be defined as sectoral and geographical concentration of enterprises, in particular small and Medium Enterprises (SME), faced with common opportunities and threats which can:

1. give rise to external economies (e.g. specialized suppliers of raw materials, components and machinery; sector specific skills etc.),
2. favour the emergence of specialized technical, administrative and financial services;
3. create a conducive ground for the development of inter-firm cooperation and specialization as well as of cooperation among public and private local institutions to promote local production, innovation and collective learning.

THE OBJECTIVE OF DIAGNOSTIC STUDY OF CLUSTERS

To undertake a comprehensive diagnostic study of the proposed cluster and prepare an exhaustive report detailing the following areas extensively: -

- National scenario of the identified sector
- History of the sector in the State and the significance as a geographical concentration for the industry.
- Analysis of the current business operations in the locality.
- Assessment of the cluster potential.
- Organizational requirements
- Recommendations and strategy for the future.
- Organization/ structures required for carrying out the implementation programme.

· Requirements in terms of interventions in technology, finance, training, marketing etc.

The diagnost0ic study will, thus, outline the interventions required by Industries Department for the Cluster Development programme

REVISITING JASDAN CLUSTERS

The objective of revisiting Jasdan cluster was to create a detailed diagnostic study of oxidized metal craft which as a proposal will be informed to NABARD to take initiatives based on the complete study of this cluster.

The outcome of this intervention and the detailed diagnostic involvement for Jasdan Oxidized metal craft on the nature of strategic intervention to be undertaken in near future. This will help to prepare a road map towards competitive and sustainable advantages including skill development and design developments.

All the information and photographs collected during this project has been analyzed to evolve a suitable strategic intervention plan for both NID and NABARD. The final analysis, insights and broad recommendations from this report will steer NABARD to take initiatives appropriately under following parameters:

1. Overview of the existing situation, linkages, product & artisan profile.

2. Identify forward & backward linkages. The existing concerns, opportunities, threats and limitations from both artisans' and experts'perspective.

3. Looking Ahead: Envisaged prospects and challenges

4. Evaluate and strategize the competency level and capabilities within their state of affairs and existing circumstances.

5. The Road Map - Stating broad recommendations and plan of action both for NID & NABARD intervention.

A preliminary visit was made on 02 September and subsequently again between 28 – 01 October to Jasdan in district Rajkot to get better understanding and an overview of the oxidized metal craft. Survey forms were also carried with the idea to establish better contacts with the local manufactures in and around Jasdan. The objective to undertake the survey was also to identify total numbers of manufacturers and understand various aspects from their perspective in terms of existing and ongoing production capacity & activities, information on procurement of raw material, product ranges, total number of human resource engaged, social & economic profile etc.

RAJKOT - DISTRICT PROFILE

Rajkot, is one of the industrial and cultural center in Gujarat and Saurashtra. It is situated in the middle of kathiyawar peninsula. Kutch is situated on its northern part, surendranagar and Bhavnagar on east and Junagadh and Amareli on west. The first industrial township of India was established in Rajkot only. It is famous for its diesel engine manufacturing industries. It is also known for its gold and silver market. It is also known for its small industries. It is also the center for cultural activities in Suarashtra. Mahatma Gandhi also lived and studied in Rajkot during his childhood. The school where Gandhiji studied, Alfred High school Jubilee garden is still famous. Lang Library and *Watts museum* are famous for their architecture and ancient collections. This region is famous for horse riders and special breed of horses known as *Kathiyawari Ghodi* (horse).

MAP OF GUJARAT

MAP OF RAJKOT DISTRICT

GEOGRAPHY

- No. of villages – 856
- No. of small towns – 13
- 1 Municipality
- 8 Nagarpalika
- 14 Taluka Panchayat
- 842 gram Panchayat
- 24 group of Gram Panchayat

- 16 rivers
- Three main rivers – Bhadar, Machhu, Aaji

TYPES OF LAND
- sault as main constituent, Maliya and Morbi
- black fertile lands, gondal, Jetpur, Dhoraji, Upleta, Jamkandorna, Kotdasangani, Padghari
- stone as main constituent – Vankaner, Jasdan, Lodhika, Rajkot

Atmosphere and Temperature

- Maximum temperature 44 degree C
- Minimum temperature 3 to 12 degree C
- Rain Fall – 500mm to 600 mm

Land used for farming – 65.42 %
Forest – 3.07 %

DEMOGRAPHICS

Area - 11203 sq. kms
Population - 1961 -12.08 lacs
- 1991 -25.14 lacs
- 12.92 lacs - male
- 12.22 lacs – female
- 1000 male / 946 female
- Literacy – male – 64.54 % / female – 49.92 % and 64.80 % in urban area
- 2, 88,407 – occupied farmers
- 1, 24,453 – farm workers
- NO. Of families – 4.33 lacs
- Residence or homes – 4.24 lacs
- No. of members in one family – 5.80
- Density – 224 person / sq. km
- 13.40 lacs – rural population
- 11.84 lacs - urban population

EDUCATION

- 14 Talukas
- 38 new primary schools have been started
- Total no. of primary schools – 1180
- No. of students – 251365
- No. of teachers – 7658
- No. of high schools – 61
- Higher secondary schools – 10
- No. of students 147366
- No. of universities – 01 Rajkot
- No. of colleges engaged with this university – 105 (Saurashtra)
- A.V.Parekh Technical Institute
- Ramakrishna Ashram

INDUSTRIAL PROFILE OF RAJKOT DISTRICT

Medium and large scale sector:

The development of small scale industries in Saurashtra region is very impressive. Among the 8 - District, Rajkot district stands first with 29630 numbers of small scales and 69 numbers of Medium and Large scale Industries. Rajkot, being situated in central place in Saurashtra Region and in addition to it Morbi, Jetpur, Wankaner, Gondal, Upleta and Dhoraji all taluka's situated on National Highway (i.e. 8-A & 8-B) have also large numbers to Industries developed there at. Moreover in the district there are nearly 69 numbers of Medium and Large scale Industries having investment Rs.287.80 crore and providing 11047 numbers of employments generated. Most of them are established in Rajkot, Gondal, Dhoraji, Upleta, Morbi, Wankaner, Kotdasangani, Lodhika and Paddhari Talukas.Particularly the units are engaged in the category of Engineering,Forging, Casting, Solvent plants, Paper , Milk Product, Electronic,Pharmaceuticals, and Ceramics etc.

Small Scale Sector:

Rajkot district stands first in Saurashtra Region in Small Scale Industrial development where as 3rd rank in Gujarat State. As per the statement it can be seen that before the formation of D.I.C., there were 3544 No. of S.S.I. units registered with the office. The numbers of Units added after the formation of District Industries Centre, (2-10-78 to 31-3-2003) is 26086 nos. which indicates growth by about 736 % within the period of 25 Years. It indicates the rapid development of Rajkot district. Rajkot district is an industrially developed District outstanding industry categories in the district are as under:-

Rajkot

These are the kind of small scale units operating:

Diesel Oil Engines and parts, Centrifugal Water Pumps, Various kind of water pumps and Electric Motors, Mono Blocks, Machine Tools i.e. Lathes, Drills, Shaping and its Parts, Automobiles Parts, Plastic Industries, Ferrous and

Non Ferrous Casting and Forgings, Steel Furniture and Fabrication, Wooden Furniture, Electronics Industries i.e. Gas Lighter, Stationery Printing and offset Printing dyeing and Printings, Chemical Industries i.e. washing shape, Detergent Powder Detergent Cake, Ball and Tapper Roller Bearing, Gold and Silver Jewelleries, Solvent Ext. Plants and Oil Mills.

Morbi
Ceramic Industries i.e. Roofing Tiles, Flooring Tiles, Glassed flooring and Wall Tiles, Refractories, Clocks and Electronics Industries.

Gondal
Solvent Ext. Industries, Oil Mills, Non EdibleOil, Mamra and Pauva, Bearing, Steel Fabrication and Furniture, Pharmaceuticals, Cement Product, Tin Factory, Aluminum Utensil.

Dhoraji
Solvent Ext. Plant, Oil Mill, Ginning Industries, Plastic Industries

Upleta
Solvent Ext. Plant, Oil Mill, De. Oil Cake, Plastic Industries, Tin Factory

Wankaner
Ceramics Industries, Glassed Flooring and Wall Tiles, Refectories (Fire bricks, SenetoryWare) Power looms, Ginning Pressing.

Jetpur
Dyeing Printing and finishing of saries andDress Materials, Dyes Chemicals, Oil Mills

Jasdan
Agricultural implements, Thressor, wooden Handicraft Articles (Peti Patara's), Diamond Cutting and Polishing. Oil Mill.

KotdaSangani
Chemicals, Plastics, Investment Casting and Forging, Corrugated Paper Ind., Ball Bearing Engineering, Automobiles Parts.

Paddhari
Ginning and Pressing Cement Prod., Glassed Tiles
Maliya
Miyana Salt Industries

Lodhika
Oil Industries, Forging, Casting.

Tankara
Electronics Industries, Cement Product.

JamKandorna
Plastics Industries, Oil Mill, Diamond cutting and Pollishing

JASDAN: AN OVERVIEW

GEOGRAPHY

Jasdan is an important place and a fast developing town of Rajkot District. It is well conected by roads with Rajkot and Ahmedabad. It is almost 767sq.kms in area. Jasdan is a blockhead quarter and an important industrial town of Rajkot district. The journey to Jasdan from Ahmedabad cuts through Bhavnagar district. The ‘Single Patti’ (single lane road) diverting from the main Ahmedabad Rajkot highway from Bagodara, takes us through Dhandhuka, Ranpar and Paliad to Jasdan. Jasdan is little more than 200 kms from Ahmedabad via village panchayat Vichia which is 20 kms from Jasdan. Jasdan to Rajkot is 60 Kms and to Gondal is 47 kms. Jasdan spreads vertically on both sides of the main road to Gondal.

TOWN AND PEOPLE

After entering, Jasdan town one can hear metal beating and hammering clatters from several units manufacturing around the town lined-up with blue colored thrashing machines of different sizes for sale. This is a major business activity of Jasdan. The major economic activities are seasonal agriculture, manufacturing of thrashing machines, diamond cutting units and Oxidized metal craft which is known as 'Rajwadi' in local dialect.The main communities in Jasdan are 'Koli Patel', 'Kanbi Patel', 'Rabari', and Bharwad'. It has both 'Nagar Panchayat' and 'Taluka Panchayat' offices. The total population of Jasdan is approximately 39,046 (Census of India 2001) Male 20,420 and females 18,626. The local public transport carrier known as 'Chhakada's, bullet motorcycles on bumpy roads is indigenous manufactured at Rajkot is quite intriguing and fascinating to observe plying with traditional 'Kathiawadi' dressed people and other loads from one corner of the town to another.

glimpses of Jasdan town and people

For entertainment there is one film theatre having four shows a day. There are two colleges and 6 schools and the language of instruction is Gujarati. The CEE (Center for Environmental Education) has its field office conducting training and awareness programs on environmental subjects. There are 3-4 restaurants for meals and two guest houses for overnight stay. It has a good network connection of cell phone and also good numbers of digital photography studios. The business communities are enterprising, hard working, practical. They normally lack the warmth and hospitality meeting a stranger for the first time and rather be bit suspicious to learn about the purpose of meeting. The level of education is low both at the owner and workers' level. The food is quite hot and spicy.

ECONOMY AND INDUSTRIES

As such in Jasdan there is hardly any government or other private jobs and services. It is a major hub of commercial activities and industrial economy - a small urban town with a large floating population and work force keep visiting for work, business and purchases from early morning 6.00 am to late evening till 8.00 pm. The town bustles with lots of activity, particularly in the morning when people from the nearby villages come here to sell their cotton. It has also lots of hardware shops and is heavily dependent on buyers and traders. Mostly outsiders visit Jasdan to place orders and trading. Goods are not sold outside Jasdan through dealers nor are they advertised. This has in a way created internal competition among the Jasdan producers and manufacturers.

Jasdan as a town seems to be torn between the city and the village having busy, competitive and stressful life like a city dwellers but usually have a laidback attitude. The stress and heavy competition is not really a healthy indicator in this context that results in narrow mindedness and suspicious attitude due to lack of awareness and entrepreneurship. It has been observed that the people here also keep changing their job and nature of occupation frequently. The workers also switch their jobs within diamond processing, handicraft and agriculture. All three require low skill level. Majority of the people who are engaged in the Craft activity for them it is a seasonal occupation after any available time left from agriculture. Therefore most of the economic activity here is on seasonal demand and thus a seasonal activity but interestingly workers from thresher manufacturing units do not switch to the other three activities - diamond processing, handicraft and agriculture.

The economy seems to be high on financial transaction, low on skills, intensive labor oriented work, high on material but low on end product value. There are hardly any marketing initiatives and the business is mostly dependent on the direct link with the external agents who come to place orders based on the market demand or choice. Therefore the producers hardly have any direct contact with the consumer or the customer user. All the small industries and fabrication units are located within the town itself rather it will be more prudent to state that the town is developed around these small units. Some of the major economic activities mostly dependent on industrial fabrication work are:

- Threshers
- Electric ‘arti’ – mechanically operated drum
- Diamond processing units
- Oxidized metal
- Jinning mills, cotton yard
- Agriculture

Jasdan is also called ‘mini Surat’, since maximum number of diamond processing units are located here after Surat. The workers employed in the handicraft and diamond processing units are mostly young, single and perhaps with minimum domestic responsibility or may be unable to feed family with the earning. The nature of work is very low on skill level, completely task or contract based activity with no security or guarantee benefits as a result these are not

so demanding and highly competitive with low end wage earning. Workers are heavily dependent on the owners and keep working hard to meet the target deadline schedule. If at some point they feel that their earnings is not adequately satisfying the proportion of labor & hard work invested they switch to some other units or even occupation. Therefore the loyalty or the belongingness to one particular unit is less observed. There are few owners and manufacturing units in the town having backup support on high financial investment. Hence there is also heavy competition among the other medium range owners just like the workers. Their primary objective of majority manufacturers is to increase the production and thus increase profit margin. They also would not hesitate to reduce the selling price for bulk orders but would hardly ensure quality finish or new product innovations keeping the profit margin higher.

OXIDIZING METAL CRAFT

AN INTRODUCTION

OXIDIZED METAL CRAFT is associated with more to Jasdan because earlier it was believed that the craft was originated from Bhavnagar but later on it was spread and developed in Jasdan. The craft came to Jasdan about 30 to 35 years back by one or two ‘mistry’ communities mainly from Dhangadra and Bhavnagar. Earlier, this craft was practiced limitedly only for the upper class people. Pataras and Petis were made for Jain mandirs and Havelis of Rajwads(Rulers) only. This craft has been gone through phases of turbulences, which has gradually altered its tradtional outlook.

However, there are no such evidence on its actual origin, but from the ancient craft pieces, a logical conclusion can be derived in terms of its evolution and transformation. Usually, sufaces, forms and functions are inspired from the nature, social, religious and cultural ethos to be identified as a distinct craft form. One can observe these changes so frequently while traveling to one state to another. Commonness and differences are weaving this whole country. So it is obvious to find same craft or a part of that in another craft with all new different material but same manufacturing process or visa versa.

Layering this phenomenon is the crux of growth and development. But some times, they also create a negative impact as well. With flourishing economic boom and fast urbanization, destiny of the craft can survive on the market utility and prospects.

The term ‘oxidized metal craft’ was quite interesting which raised some curiosity to explore further. It somehow signified that this particular craft form must be something to do with metal casting with a mould and then skillfully hand crafting the design patterns and grading different color shades through oxidizing process. Alternatively it was also felt that perhaps during the production process the casted metal must be undergoing some oxidizing process and therefore incorporating such a technique must be called ‘oxidized metal craft’. But unexpectedly after the visit to Jasdan in contrast.to It was observed that there was no such oxidizing technique at any stage of the production. It was simply an assembly line of production of making wooden or ply board boxes of different sizes and shapes and further enhancing the product look by covering the exterior with nails or adhesive with aluminum embossed sheets with design patterns. However, one needs to understand the historical evolution of this particular craft in detail and find if it had any oxidizing process earlier.

Earlier, cart makers and carpenters (Mistry) were using metal in form of stripes and casted floral designs in metal to enhance the look of the huge object like old *pataras* and *bailgadis*. They tried to cover all the reinforcements and ugly joints by applying these ornamental elements. Still in Jasdan one can see a miniature of those life-size articles. Mostly the carpenters known as ‘mistry’ community started to use it differently for commercial purpose.

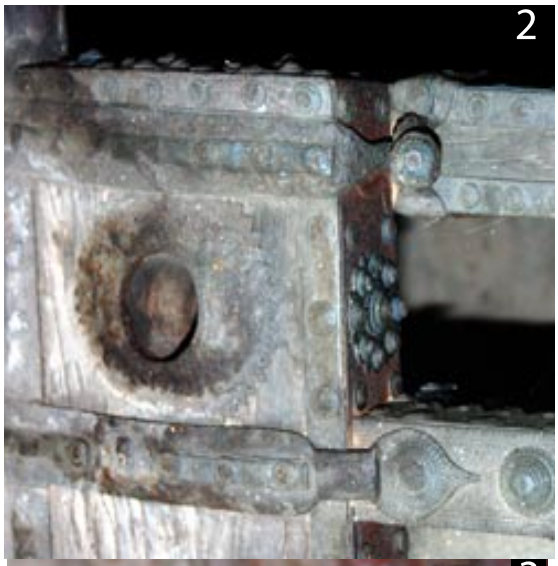
In past, during marriage, bride's parents would gift large wooden storage unit in the form of a box with a lid on top known as Peti - Patara wala' . This was mainly used to store mattresses, blankets etc. Being a gift item it was also decorated through embellishments by using other different metal plates and sheets. Because of its box format, the thickness of the wood used for the panel was less and therefore carving was limited or just not possible.

Over the years small replica of the same Peti - Patara wala' gradually emerged and in newer houses and flats there was no adequate space to store those large boxes. Secondly there were newer designs of beds with storage cabinets and the utility of those large boxes – 'Patara' were left out but the replica of the same design and form has remained in smaller miniature sizes, from which new directions and product applications have emerged. Yet even today the consumption of all the oxidized metal products largely seems to be bought as gift items range and has not developed much as a functional items.

TRENDS AND PATTERNS

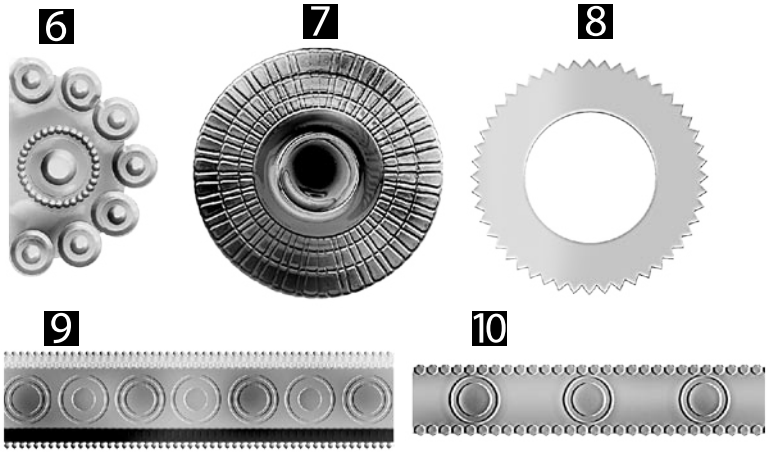
Initially the craft flourished as a traditional cottage activity and gradually as more and more people got involved it evolved into a medium scale industry with increased financial and human resources. When such a scale of proportion increases it requires managing the enterprise with more professionalism and entrepreneurship. This somehow has been observed lacking at this stage. At the same time there is still a possibility of taking this activity from an industrial set-up to again a craft based enterprise with more uniqueness, hand skilled products of high value, through appropriate inputs in production system and how the profit- margin can be increased.

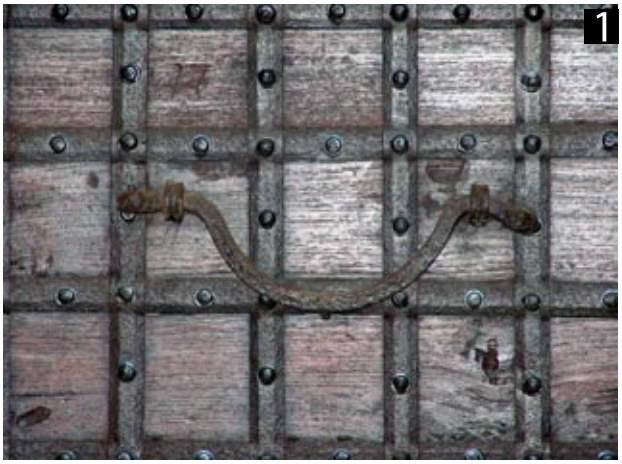
It is estimated at Jasdan there are roughly 50-80 large, medium and small oxidized metal manufacturing units producing range of regular export orders. There are about 4-6 large units owners or main players in the town registered under DIC and equipped with all essential machineries, space, adequate raw material stalk and equipments. A single unit depending on the size may have 10 to 200 workers. Earlier, before six to eight years there were about 500 to 700 workers were engaged which has increased to about 1600 – 2000 at present. These main players operate through out the year and about 250-300 workers are engaged regularly. Another 15 -25 will fall under medium size units surviving either producing for the retailers or fulfilling some proportion of orders provided by those large 4-6 units. Half of them are completely dependent on those main units and their activities are mostly seasonal for 4-6 months in a year usually starting after the monsoon. Remaining operate from their home with hand tools. They are provided all the raw materials and earn on piece rate basis. They are the major unorganized work force who do not invest anything and function from home supporting as ancillary units making either wooden boxes, wrap embossed aluminum sheets on the wooden boxes, fixing hinges, velvet etc. However, they are the vulnerable group who has little or receive no support from any source and at the same time continue surviving on the fringes or on the mercies of those better offs. Due to high competition they do not have the negotiating authority to fix up their own piece rates. It is 'do or die' situation and can't afford to annoy their bread providers.



In earlier times, in rural areas, cart makers have distinguished various decorative elements to enhance panels and parts of the cart body. To cover the ugly nails and joints they started using casted metal motif with geometrical floral designs and metal stripes. This gives a decorative look on the cart and also provides strength. This traditional craft was also used for decorating huge patara or trunks in the same manner. This was not considered as a major craft or a business but was a part of the culture. This beautiful embellishment with a minimal application has become a part of the structure of the object. These motifs are generally inspired from the local traditional designs which were derived from architecture and textiles. The work later adapted and developed in other craft or carpentry work. With the time, as the material and object gets older, gradually gives an antique look. They also used colors to cover old carts. This layering becomes quite strong and thus provide a rich and antique look. With new technology and exposure, things have become much easier and time saving. This might have changed this craft in to much simpler and less expensive in production.

1 *cart*
2, 3 *details of geometrical motifs*
4, 5 *side panel with embedded motifs, metal strips and nails*
6, 7, 8 *details of small ornamental elements*
9, 10 *metal strips with embedded mails*

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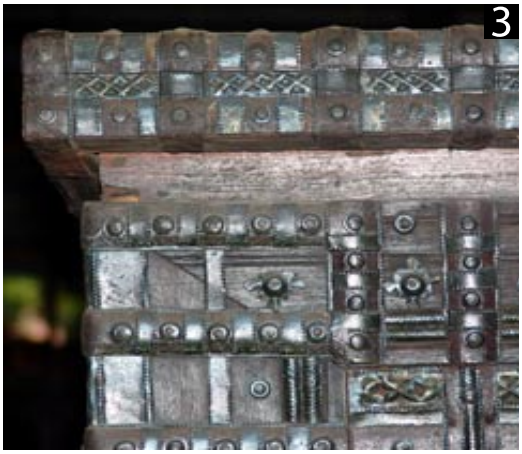
2

At present, pataras have vanished and turned in to a small miniature ornamental object. Earlier, they were more functional, for keeping valuables, clothes and other house hold items. If one take an inside view of the pataras, there are sections and small spaces to keep different kind of objects. All the sides of the pataras are covered with vertical and horizontal metal strips and are fixed with nails and decorative detailing. 'Kada' and small metal elements can be seen clearly. The entire surface seems merging and giving a complete look. They have also used metal 'jalis' or strips assembled to gather.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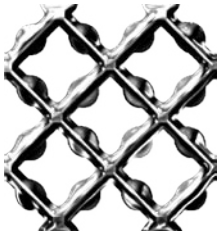
4

1 *side view of patara*
2 *inner surface of the opening panel with nails inside*
3 *details of the corner*
4 *lock*
5 *patara*
6 *geometrical motif*
7 *jali*
8 *kada*


8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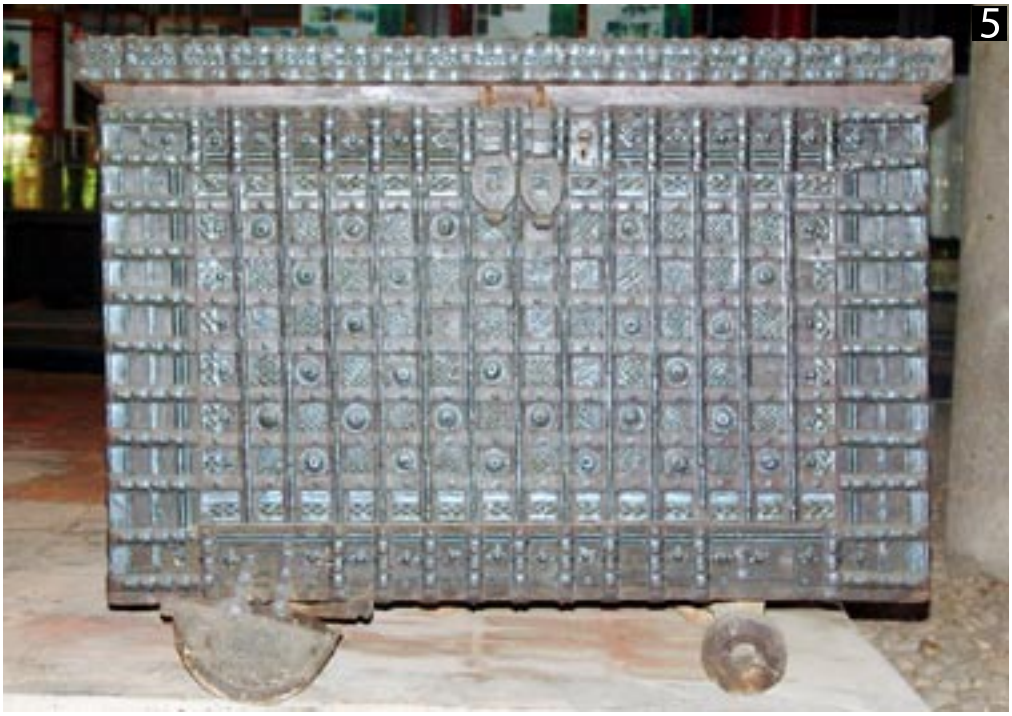
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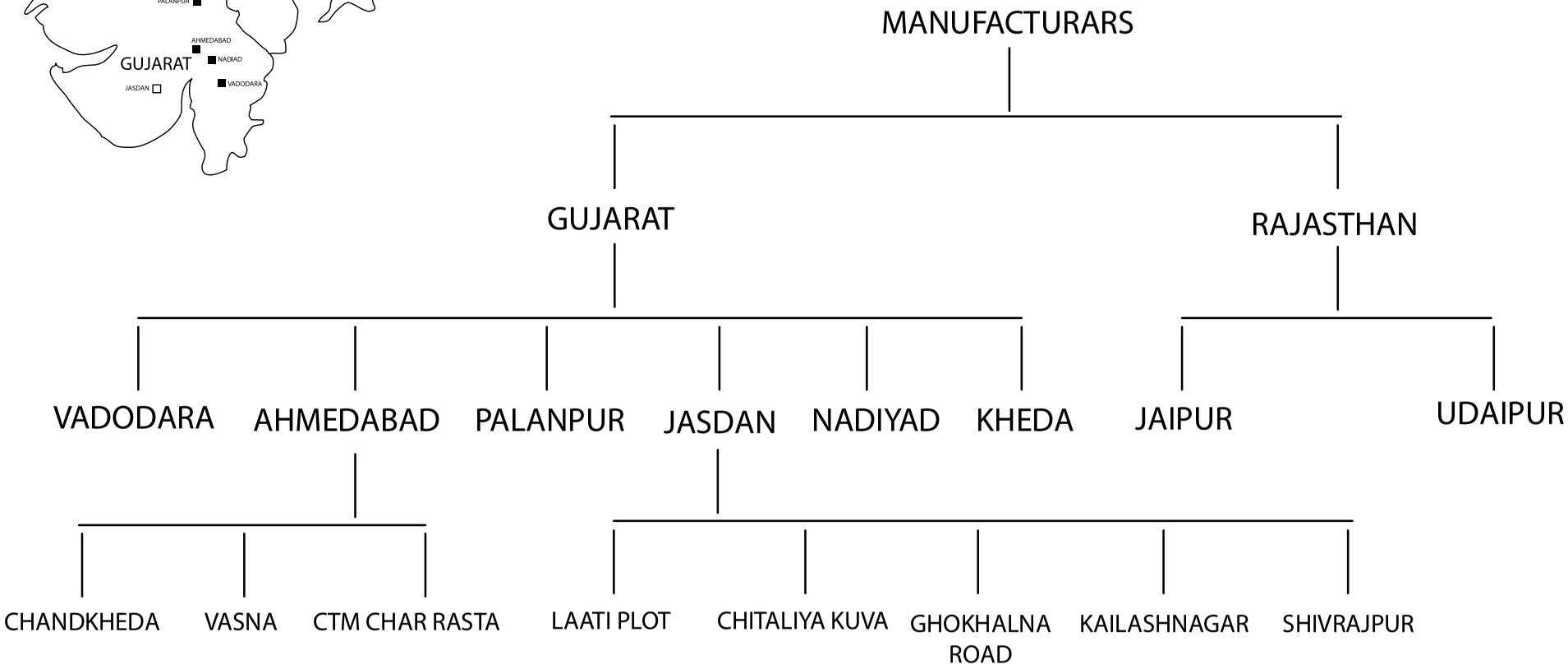
THEIR APPREHENSIONS

While trying to interact with some of them it was observed that they were quite suspicious and the existing situation was quite cold and secretive. Most of them were surprised to see strangers trying to establish contact with them. This invariably means visitors hardly meet them or they themselves prefer to keep them away due to some past ill experiences. It was very difficult to establish any dialogue in the first instance. They had apprehensions if they shared anything about their activities with outsiders then all likelihood may loose the goodwill of the large unit owners who may stop giving them work orders. And secondly they also have the fear that there might be an enquiry against them from labor or tax departments, quite often the officials harass and siphon money from them. Therefore there is a sense of guilt among them as if they are carrying out some illegitimate activity in their home.

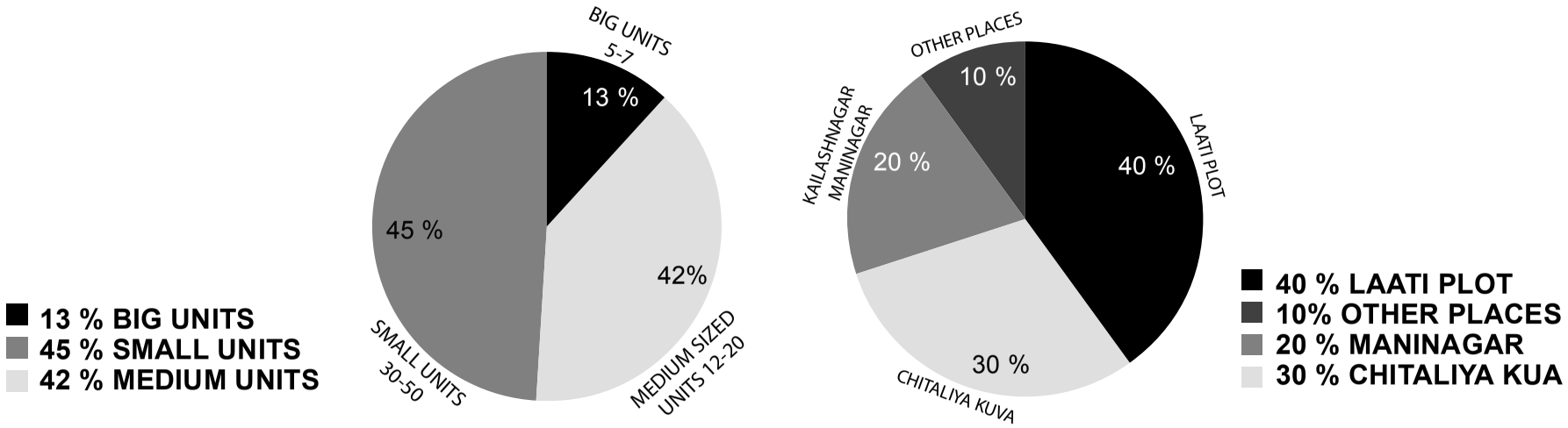
DISTRIBUTION OF MANUFACTURARS DEPENDING UPON THE GEOGRAPHICAL LOCATION



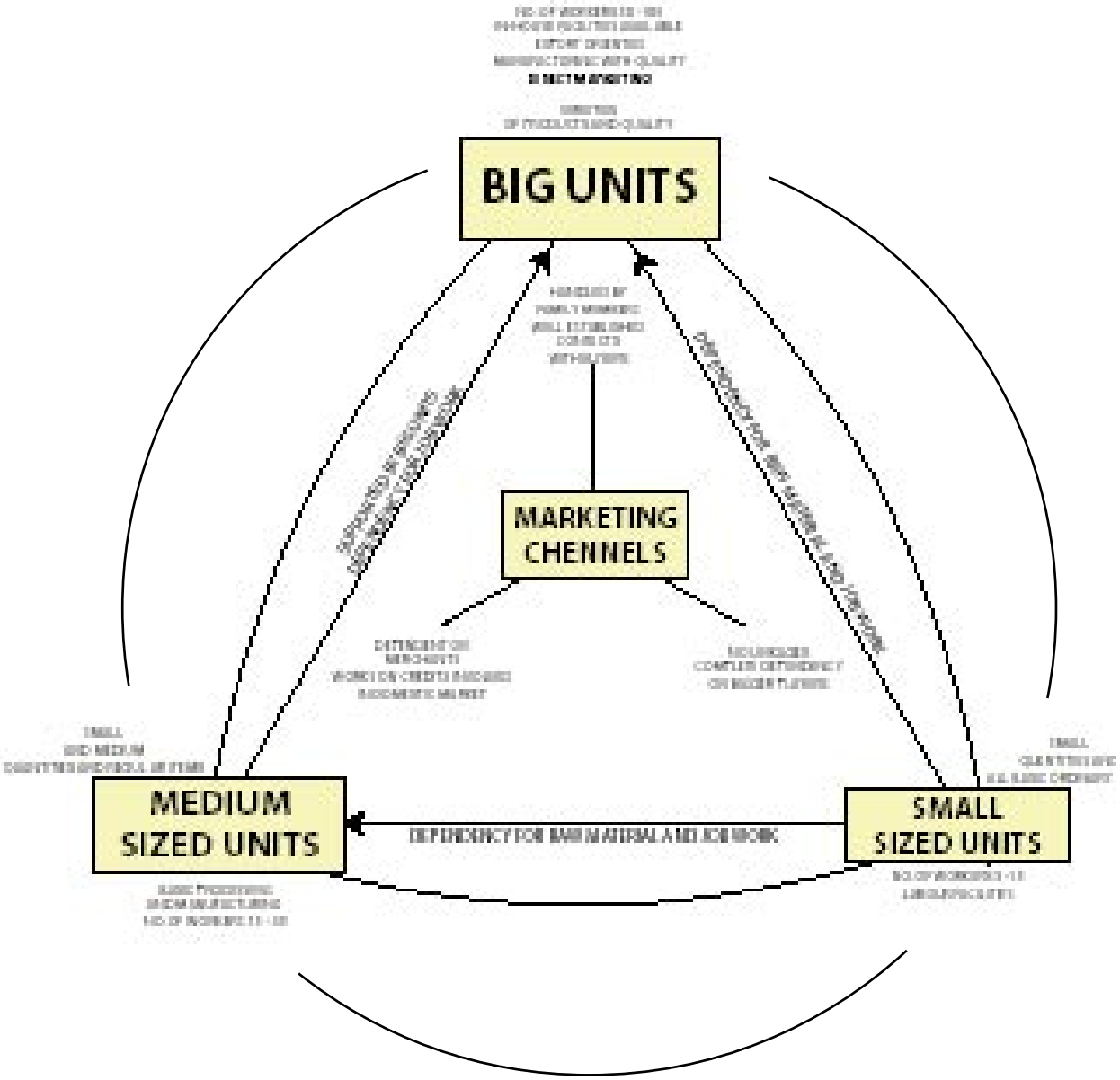
MATRIX SHOWING THE CURRENT STATUS

No	Relevent Aspects	Big Units	Medium Units	Small Units
1	Total units	5 to 7	12 to 20	30 - 50
2	Market Linkages	Direct / Buyer	Merchant / Regional Buyers	Total Dependent
3	Production Capacity, Pieces / Month	8000 to 15000	2000 to 3500	400 to 550
4	Work Force / Labour	50 to 100	15 to 30	5 to 15
5	Value Addition / Design Development	Market oriented	Nil	Nil
6	Raw Material / Purchase	In Bulk and Quality	Small Quantity	Dependent
7	Work Flow	Regular	Seasonal	Dependent
8	Facilities / Tools / Equipments	Complete In House facilities	Processing and Manufacturing	Basic Assembling
9	Credit / Finance	Self Finance	Self Finance / Dependent	Total Dependent
10	Product Range	Maximum Items	Running Items	Ordinary Items
11	Management / Enterpreurship	Progressive	Nil	Nil

DISTRIBUTION OF UNITS BASED AREA AND NUMBERS OF UNITS IN JASDAN



CATAGORIZATION OF WORKFORCE AND MANUFACTURING UNITS



METAL OXIDIZING :

WHAT IS OXIDIZING?

Tarnishing is the term given to the undesirable dulling, discoloring, luster-destroying film that forms on a metal surface during its exposure to atmospheric conditions. Taking silver tarnish as an example, this consists mainly of silver sulphide and some silver oxide which develop when the object is in a humid atmosphere, and where even a low concentration of hydrogen sulphide exists, as well as acids and dust. The rate of tarnish on silver increases with the relative increase in humidity and rise in atmospheric temperature. Under such conditions, these substances interact, the atmospheric gas diffusing inward through the developing film which causes the thickness of the layer of tarnish to grow. In time, the film develops a series of interference oxide colors before finally turning black, its normal color on silver. When it is induced by choice in a controlled manner on a metal surface to give it a color different from its normal basic state, or to create special, esthetic effects, tarnishing becomes coloring, or in the jeweler's vernacular, "oxidizing."

WHY OXIDIZING?

Coloring a metal object is done after all fabrication, machining, and heat treatments have been completed, and the metal-jewel is finished and in its final surface condition. The color or patina a jeweler may choose to give to a metal may be unusual, or may be designed to artificially duplicate a predictable patina or film that the object would normally acquire in time after a long, slow exposure to the effects of atmosphere and moisture and during use. Once formed, such patinas tend to protect the metal from further change, and require only a little maintenance, such as occasional surface rubbing with a soft cloth.

Coloring is done on a metal object to age or "antique" the appearance of a surface; to deliberately change its color; to reduce light reflection; to emphasize a part of unit by giving it a color different from another part or unit; to differentiate one metal from another; to heighten the effect of relief between uncolored and colored areas; or to emphasize a pattern or texture. The colors achieved generally possess a subdued luster that is peculiar to metal alone, and are harmonious with the character of metals as they develop from its natural, organic products.

ORIGIN OF OXIDIZED METAL

Oxidizing is basically a surface treatment or a coloring process, which can be done using heat, chemicals and anodizing. The origin of this can be related to the pottery. Earlier, people in Egypt and China were using various chemicals in form of mud or sand to color the object. During the development and advancement of civilization, people had started finding better ways of doing things, ornamenting articles, giving surface treatments and knowledge of

materials.

THE CORE CLUTSTER ACTORS

The Core Cluster Actors consists of Master craftsmen, skilled supporting craftsmen, craftsmen involved in various stages. Merchants, Exporters, Traders. Raw material suppliers.

1. TRADERS
2. MASTER CRAFTSMEN
3. SUPPORTING CRAFTSMEN (JOB WORKERS, SPECIALIZED)
4. MARKETING CHENNELS
5. NGOS INVOLVEMENT
6. THEIR ROLES AND RESPONSIBILITIES
7. RAW MATERIAL SUPPLIERS
8 EQUIPMENT TOOL, MACHINERY SUPPLIERS.

1. TRADERS

Big leading manufacturers in Jasdan are the main traders who sell their products directly to the buyer or sometimes to the agents. They travel along with the products and to the destination. Items with Mina work were originated from Rajasthan and now due to cheap labor and low prices in Jasdan, Retailer from Jaipur and Udaipur now prefer buying products from here only. Mostly, people from other states and metro cities like, Delhi, Mumbai, Jaipur, Jaisalmer, Udaipur, Nagpur, Bangalore, and Hyderabad are engaged in domestic markets. They generally require these products before diwali, they travel to Jasan and decide rates and also carry samples sometimes. This gives a reference to the manufacturer about the requirement of design.

2. MASTER CRAFTSMEN

- Originally people from Mistry community engaged in work related to carpentry were the main people who were making huge pataras 30 – 40 years back. They gradually started and adapted various elements from other crafts and made this ‘Rajwada’ or peti – patara of today.
- But as this business developed, other people in Jasdan having sound financial back ground and properties showed interest and started their own workshops.
- There are also people who work in partnerships. Each partner taking care of different aspects like, one is taking care of manufacturing process, another in to business and marketing and another in to financial matters.
- In some cases, individuals with 3 – 4 years experience as skilled craftsmen and financial back up or family members together invest in setting up

business and divide tasks.

MANSUKHBHAI MISTRY (CASE STUDY - MANUFACTURER)

Originally it was the traditional livelihood of the ‘mistry’ communities who patronaged it through generations. Some of the master craftsman like Shri Mansukhlal Gordhandas Mistry has been engaged in this since his childhood. Even his grandfather Shri Virjibhai Bhanabhai was involved in this work in village Dholera of Dhanduka. Twenty five years back Shri Mansukhlal migrated to Jasdan for business prospects. He visited Shri Damodarbhai Mistry, he guided Mansukhbhai and couple of his friends and shown and helped them to learn this craft. They stayed there in Bhavnagar for some days and learnt this technique. Mansukhbhai and his friends realized that Jasdan is the promising place to start off. Initially, he started working in a small room with his brother and 3 or 4 workers and he used to work with them also. Sometimes, he bought some of this craft pieces and tried to study them. After working hard for more than 25 years he has managed to establish himself as a successful enterprenuer. There was one more person who was working with them, it was Champaklal Mistry, but later on he started his own workshop. He had invested Rs. 25,000 initially to start his unit. He managed to borrow some money from his relative and after five years, he expanded his production activity.

Mansukhbahi Mistry in his workshop

He managed to get loan from STATE BANK FROM RAJKOT, and after ten years he got financial help from DISTRICT INDUSTRY CENTER. This had changed his business and established him as a businessman from craftsperson.Six years back, Mansukhbhai was invited and had participated in SURAJKUND CRAFT MELA as a craftsperson sponsored by BHUJ INDUTRY CENTER. Today he has established himself as a entrepreneur and still further expanding his business. He and his son is one among the major manufacturers in Jasdan. However, to establish and operate such a unit demands huge investment on work space and machinery installations. This was a distant dream for most of the other traditional ‘mistry’ community unlike Mansukhlal. Such a prospect was seen as an opportunity by other well-off business community. Many of them like wealthy Patels’ communities who took the advantage and invested to set-up units as business proposition. Hence they started engaging other skilled artisans on per piece rate. But they themselves lacked the vision

and innovativeness to develop new product range or providing the artisan workers the opportunity to expand their own products or markets and realize a fair value for the same produce. Once highly skilled activity, practiced by the carpenter 'mistry' community brought down to business level where the skill component is completely removed and has been converted into a mass production commodity. As a result the market contacts remained with the handful wealthy rich manufacturing owners. Today, Mansukhbhai Mistry has shown his extra effort and is working out a huge place for workshop where at least 100 craftsmen can be accommodated in Jasdan only. He is always updated in terms of various development schemes and other benefits. Now major part of his work is managed by his son Pareshbhai. Another son of Mansukhbhai has settled down in Ahmedabad, and is handling the marketing.

3. SUPPORTING CRAFTSMEN

- Individuals who are initially engaged in this work with 2 – 4 years of experience are those who support the Master Craftsman. Some times relatives of the owner or master craftsman are supporting craftsman.

- Many others who are having good experience but not been able to start their own set up in business. They earn more than other craftsmen. Their is not much skill intensive. But operations like stamping and placement of design and panels sometimes needs better understanding. Those who are engaged in this job can be called well skilled craftsmen.

- There are individuals involved with basic skills and experience

- Some beginners mostly children who earns lowest earnings and learn this craft for 1- 2 years.

- In mina work, patience, and intricacy is more required so most of this work is done by women.

Craftsmen can be further divided in to two categories on the basis of their area of work:

1. workers engaged in wood related work
2. workers engaged in metal related work

Due to shrinking agricultural possibilities and diamond indusry, many in and around Jasdan have involved in this activity as an alternate livelihood opportunity. Numbers of workers involvement has increased, and this has opened new possibilities for labors. There are 2000 – 2500 workers involved in this 50 – 80 units at present. Workers from all the castes are engaged in this work. Many of them have to travel 20 – 30 kms to reach Jasdan. Workers generally work at least one season or 3 -4 months with one unit. Those who are beginners get paid less and learn this work. It takes a year to learn this craft. Those who are having more experience can further work with stamping operations. It takes 6 – 18 months to learn stamping for an average worker. 20 % of workers are

well skilled and rests of the other are average. After the season ends they go to their home and 40 % of them are engaged in farming. The reason of shifting one workshop to other is mainly the money part or sometimes his comfort level with the owner. During the peak season, they work 14 – 15 hours a day in three shifts. The payment is decided on the number of pieces produced. This again depends on the size of the product and amount of work required. For larger product with details, rates are higher. Major percentage of labor work is done by Children aged between 10 – 15 years. Some of them goes to school also in the morning and work in evenings and nights. The amount of money a beginner earns is about 300 Rs per month.

4. RAW MATERIAL REQUIRED

- **WOOD**
  Saagvan (teakwood) and Plywood are the main type of wood used to make boxes. *Sundergarh* in *Surendranagar* are main place from where this wood is transported to Sawing mills in Jasdan. In some cases, to reduce the production cost, they also use Neem, Mango and babul. Plywood is also available in local markets.

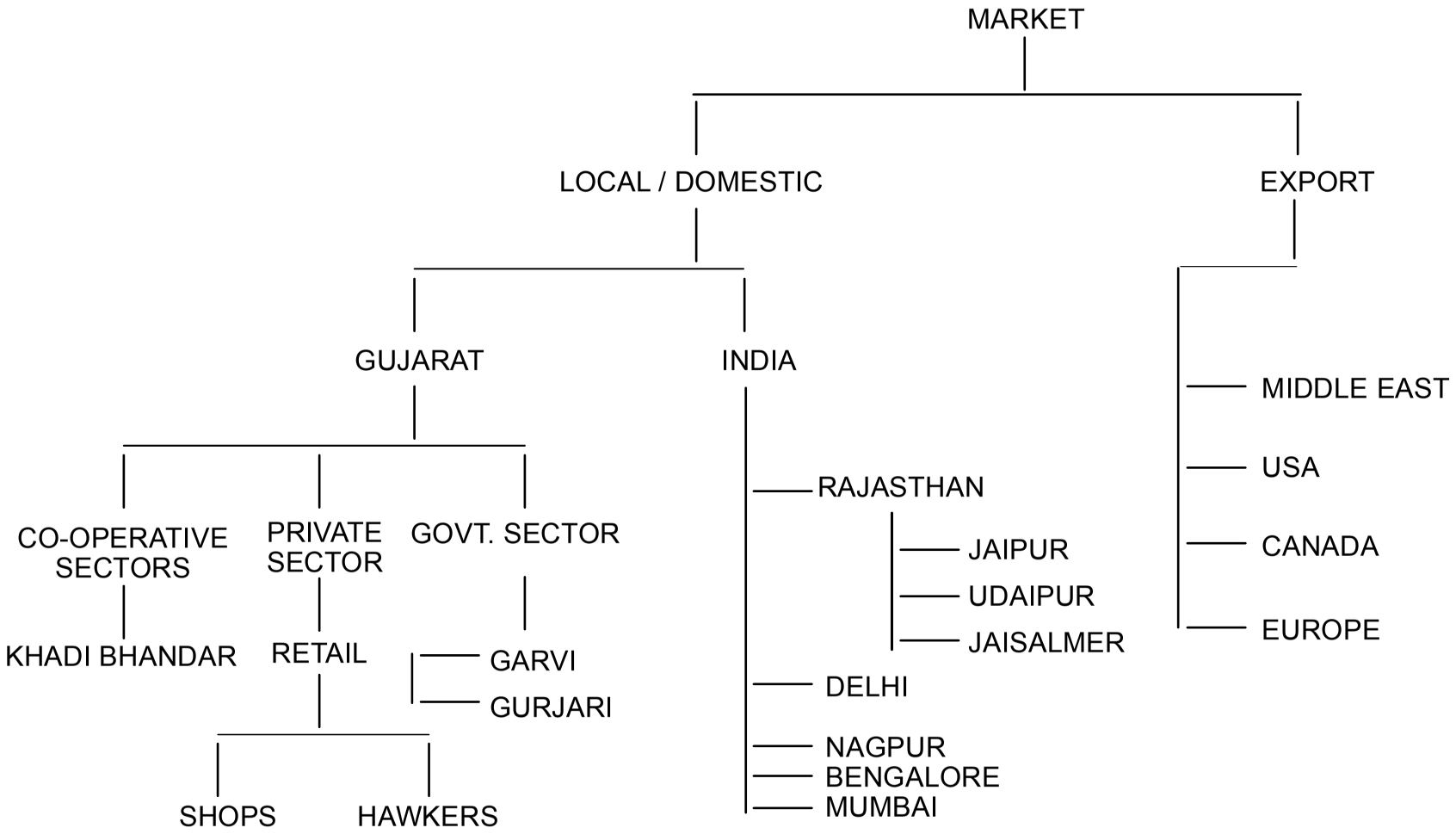
- **ALUMINUM**
  Aluminum coil or sheet metal is used to create surfaces on the wooden structures. Generally it is sourced from *Rajkot*, *Ahmedabad* markets. BALCO and HINDALCO are considered of better quality brands.

- **FIXTURES AND ADHESIVES**
  For fixing aluminum sheets on the wooden panels, high quality adhesives like SR – 501(Fevicol) is used. There are other qualities available also. *Mr*. *Bharatbhai Dawda* is the main Marketing in charge of this region for Fevicol brand. His regional office is in *Rajkot*. Nails, hinges are available in local market only. Colors for giving oxidized look are the mixture of Asian oil paints and thinner. This is available in the local market.

5. MACHINERY AND EQUIPMENTS

Stamping machine is generally is bought from *Savarkundla* and *Surendranagar*. Good quality machines are available in *Ludhiana*, *Punjab*. Other machines for wood cutting and sawing are available in the local region only. Tools are also available and manufactured in *Jasdan*.

5. MARKETING CHENNELS



6. NGOs INVOLVEMENT : ROLES AND RESPONSIBILITIES

On the basis of the informaiton collection there has been no evidences of any NGO involvement in any part of this craft.

PRODUCTION PROCESS

PROCUREMENT OF RAW MATERIALS

WOOD

wood beams in storage

cylendrical wooden bar

plywood section

cardboard section

Saagvan (teakwood) and Plywood are the main kind of wood used to make boxes. Sundergarh in Surendranagar are main place from where this wood is being transported to Sawing mills in Jasdan. In some cases, to reduce the production cost, they also use Neem, Mango and Babul also. Plywood is available in local markets. Cardboard is also used and is available in the local market.

ALUMINUM

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VLEVET

Velvet is used to cover the wooden surface and to give a rich look inside the product. It is mainly produced in Surat, and further dyeing and printing process is done in processing house in Jetpur. Fabric wrapped in rolls is supplied according to the requirements.

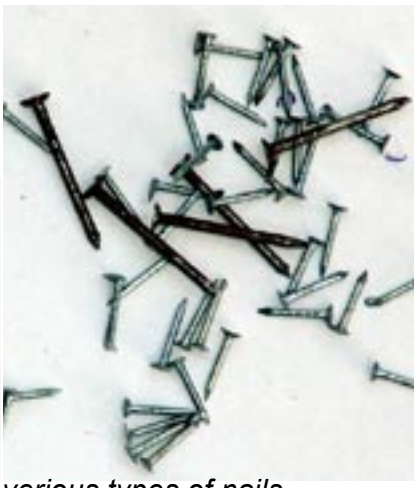
Rolled aluminum coil

velvet fabric

FIXTURES AND ADHESIVES

rubber made supports

hinges and other fixtures



verious types of nails

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stemping press

drilling machine

machine for straightening edge

various types of tools involved in the process

PRODUCTION PROCESS OF OXIDIZED METAL CRAFT

The process of making Oxidized Metal Craft is described bellow:

The process involves basic carpentry and partly use of wood cutting machines, press machine for stamping Aluminum or copper sheets. It is a mixture of manual as well as mechanical work.
The first step is to organizing space for the raw material and seating arrangements for the workers. As there is no systematic approach in the process as such, so there isn't any particular way of working patterns. Quite oftern 2 or 3 products are under parallel production line to meet the delivery deadline.

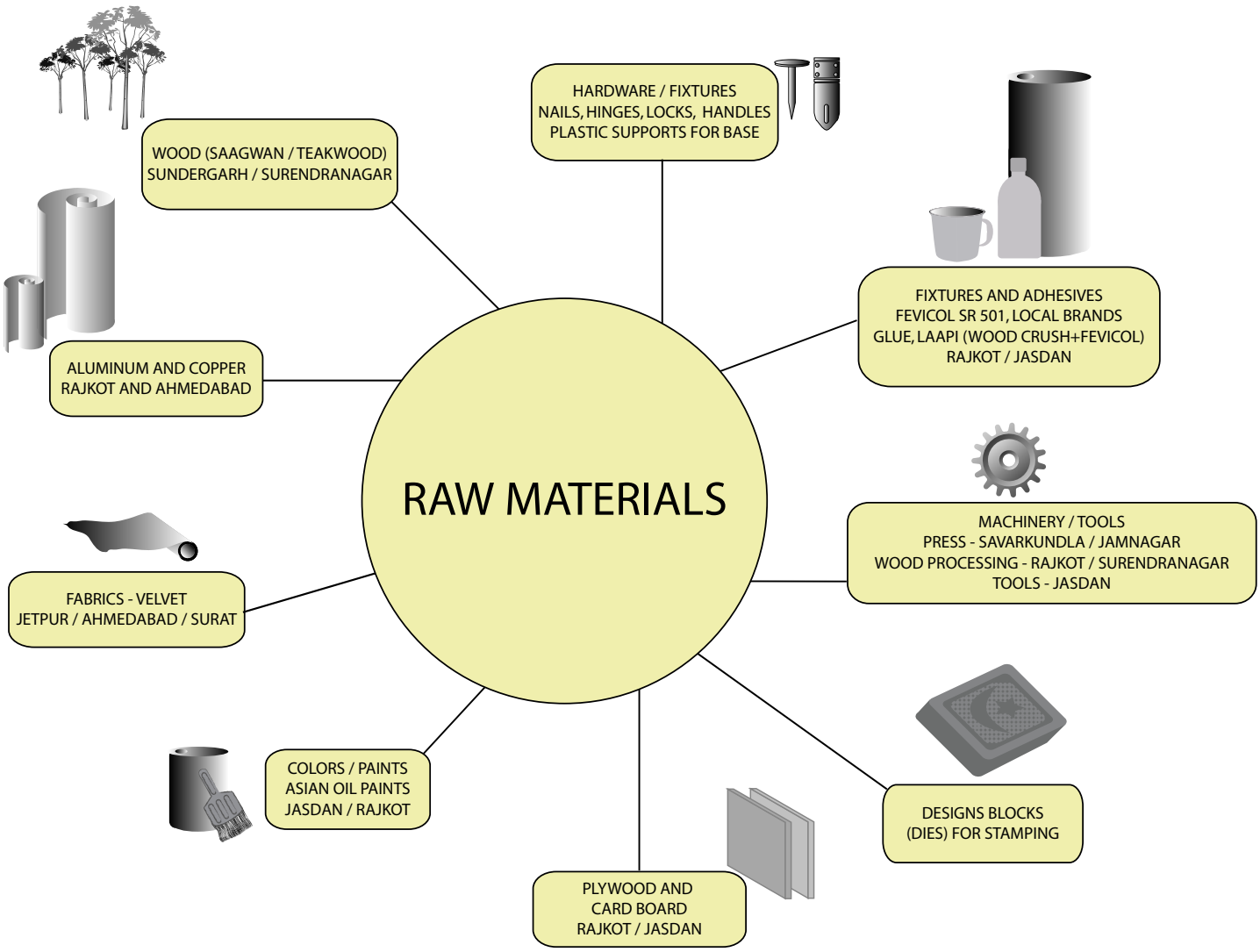
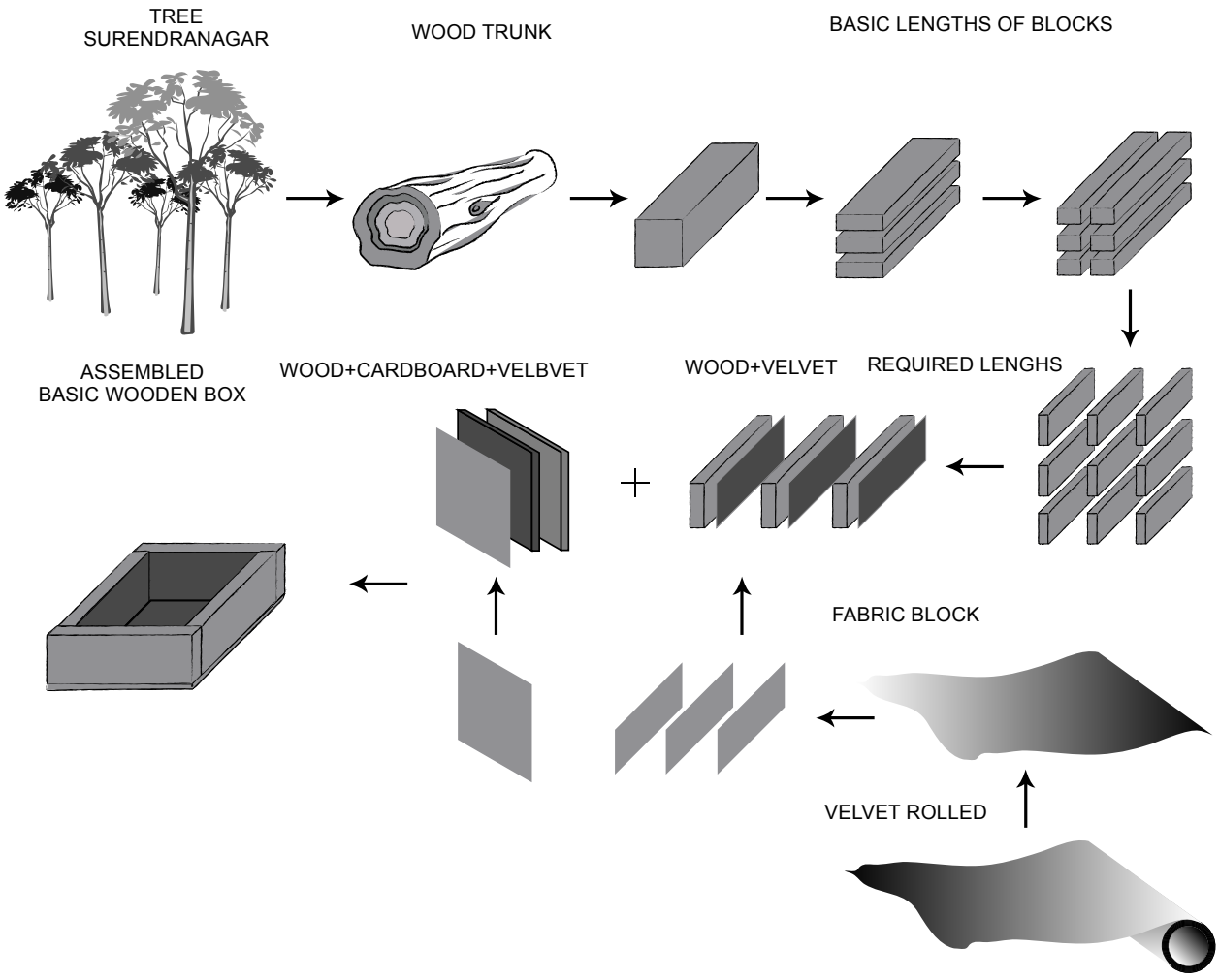


CHART SHOWING RAW MATERIAL AND SOURCING PLACES



MANUFACTURING PROCESS OF BASIC WOODEN BOX

WOOD PROCESSING

To manufacture a product it is important to select the best quality wood, saagwan is mostly used for its strength and finishing qualities. Wood panels of large sizes are brought from the local sawing mill and sent to the cutting section of the unit.

sawing machine for wood cutting

randha machine for smoothening surface

Large panels are cut in to comfortable sizes using wood cutting machines. These panels are then cut in to standard sizes from which it is further cut in to the required lengths and dimensions for making wooden box. Planner machine is used for smoothening rough edges and sides.

For complicated operations like carving, Jigsaw Machine is used to remove the undesirable wood from inside of wooden block.

a solid wooden piece for making hollow product

product after the process

Plywood cutting is also done on zJigsow Machine. A large sheet of plywood is further cut in to small desirable panel lengths. Plywood is mainly used to make the upper and lower base of the box because of the required dimensions.

To cover small cavities and smoothening rough surfaces, a mixture of wood crush and fevical called as ‘laapi’ is applied.



operations carried during the wood rerlated process

All the panels of desire sizes are than numbered accordingly, and sent for the further operations.

In case of Bengal Box, rounded small lengths of wooden bars are cut to place it inside the lower box.




clock wise from top left ; cylendrical wooden bars wrapped with velvet, cutting extra legths, pasting velvet with wooden bars

In the inner surface of the box, velvet fabric is pasted applying fevilcol (SR-501). Velvet fabric comes as a roll and is further cut in to comfortable length, small pieces of fabric is cut according to the size of the panel on which it is stick. This velvet is a low quality fabric synthetic, and is dyed in various colors like magenta, dark blue and olive green.

ALUMINUM

Rolled Aluminum Coil is unrolled to spread on the floor. Then it is cut in further rectangle sheets. Generally they use sheets with 0.13mm thickness. In order to stamp Motifs and elaborate borders requires a particular quality and thickness to withstand the impact of pressure and also the resistance and durability to fold the embossed panel sheets to be srapped around the wooden box.

Compass is used to mark the required width while the length remains the same as before. The dimension of wooden panel with margins for folding edges are added while cutting aluminum panels. A cutter with sharp edge at the top and a metal scale is used to mark on the sheet.

unwrapping aluminum coils and marking sizes

cutting and sizing of aluminum panels as required

It is easier to tear sheets after marking guideline by hand. Sometimes scissors are also used to cut the aluminum sheet.There are various qualities of aluminum available in the market, but using low quality metal creates an inferior surface which can be easily impressed by hand only.

Copper is used minimally on the decorative surface to give a combination of Aluminum and Oxidized Aluminum. Copper sheet rolled as aluminum coil also goes under the same procedure. These small aluminum sheets are embossed on design motifs and dies engraved on cast iron slabs of about one inch of thickness.

STAMPING

Stamping is done with the use of mechanical machine, using embossed dies.

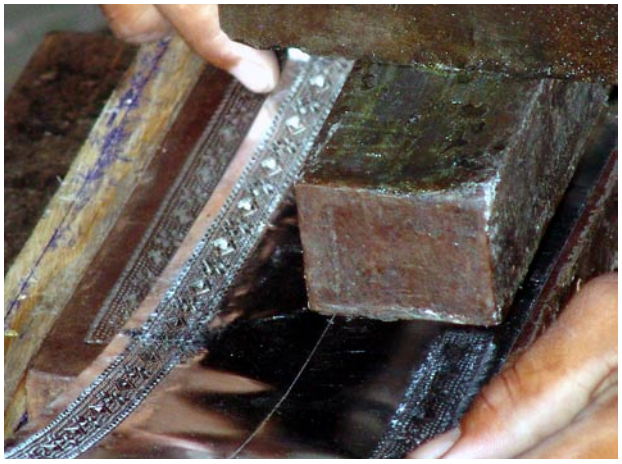
various blocks of die designs for stamping

Stamping on aluminum metal sheets is a mechanical process involving two persons. One person mounts the sheet below over the die plate carefully and the other person operates the fly wheel to carefully release the presure on the sheet. There is a soft pad below the stamp surface to minimise any damage on the embossed sheets. This is a continuous process involving minimal skill involvement but intensive labour.

stemping press during the operation of metal embossing.
adjusting placements and amount of impect required

placement of aluminum panel for stamping

moment of impact on the pannel



After stamping design pattern embossed on one side of the metal sheet, the design is in continuation of the pattern through out the length. But at certain place or at the corner of sheet it is almost impossible to match the patterns because the same design motif remains in products of various sizes. Hence, the length of the surface to be stamped also keep changing, this creates undesirable left outs and overlapping of patterns.

plain aluminum sheet before stmaping

aluminum sheet with multiple stamping operations

continueous borders made using stamping single die and multiple operation

visible and undesirable problems during maching motifs

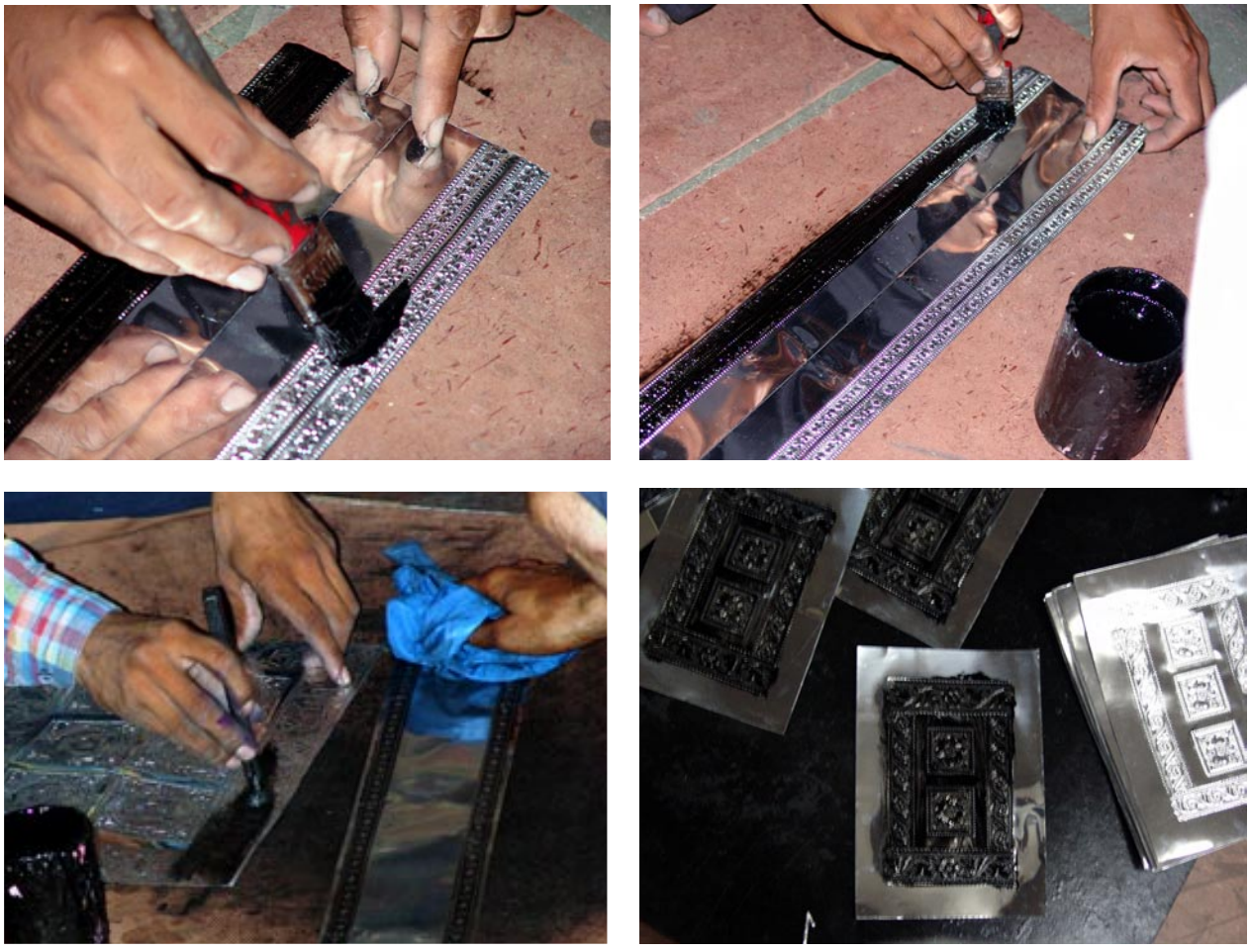
The design can be correct only if the stamping is done continuous in length. There are separate designs depending upon the placement of motifs and patterns. Since the coasting of making die is quite high, manufacturers avoids buying new dies and keep utilising old dies as far as possible, the size of dies varies from 4’X4’ to 6’X8’ and even bigger.

various types of single motifs used for various products as a seperate element

OXIDIZATION OR COLORING

The actual prcess of oxidization remains absence in the entire process, but the name somehow signifies the finish look of the process, as it has undergone some oxidizing process.

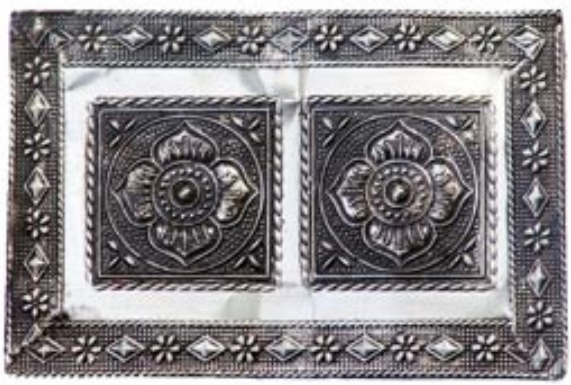
Those products in which the oxidizing is done is plain only. not kept as white only. And no further coloring is done. These are then used directly to assemble. But if the oxidizing is required then, these stamped panels are further goes through a coloring.

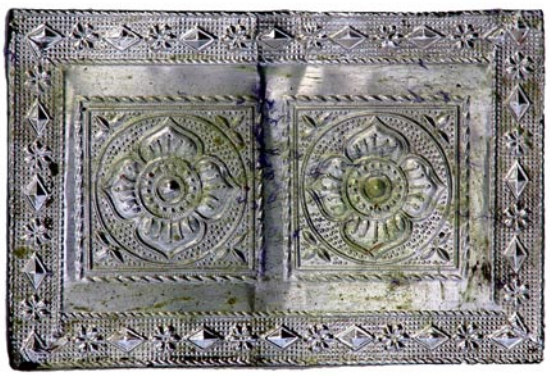


coloring or oxidizing using oil paints and applying brush on the embossed aluminum panels.
cleaning surface to remove undesired color.

In this process the upper side or the embossed panels are cleaned up with some chemical solution and a mixture of Oil Paint (black color) and Thinner (locally available) is applied using a brush or a piece of cloth. After applying it, the colored sheets are kept for drying for about 30 – 45 minutes. Which is again soaked in to water and is cleaned using piece of cloth and again kept for drying. After drying the color penetrates in small spaces around the embossed patterns and gives a rustic or antique look. Thus it is known as oxidized metal craft.

In
the





case is nothing but the borders of the pattern is embossed and the inner area is flat in the same level of the original surface level.

Panels with mina work are assembled in the same way in which the white metal product is assembled.

Previously mina work was done only in Rajasthan but at present, there are two or three units practicing this work in-house. Women are involved mainly in filling colors resemble to mina work. But in this case also, same problems of overlapping designs and left out space inbetseen are clearly visible.

Thus, there are three variations in usage of aluminum panels :

1. White metal (aluminum without coloring or mina work)
2. Oxidized metal (aluminum with coloring)
3. Metal panels with *mina* work

Considering these variations, the product categories also keep changeing.

Plywood is used for upper and lower base of the box. A cardboard panel of the same size of plywood panel is fixed with each other using adhesives.
The inner side of these panels is covered with the velvet and is also numbered accordingly.

Grooves are made on the upper and lower edges of the sides to be fixed using hinges. A small margin is also left to facilitate folding of two hinges / doors.

Now, all the components are ready to assemble for the final product.
The process of assembling is done in groups. One or two individuals are occupied in each stage of the process.

ASSEMBLING / CONSTRUCTION

After this ground work of (1) making panels, (2) coloring and (3) stamping aluminum, the next stage is to assemble all these components together to form the basic shape of a product.

This is the main process involving maximum workers in the unit.
The first step is to assemble all four sides of the box using nails and hammer. This is considered as a low skilled work. Mostly two to three individuals are occupied in this process.



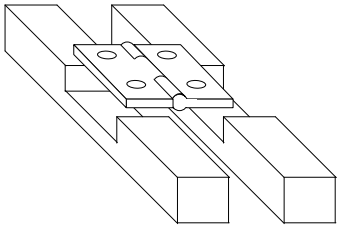



Numbering helps to identify the sizes and relevant panels to be fixed together.These four sides and the base made of plywood and cardboard panel are fixed to gather. The basic structure of the box is made.

Once, the box with base is ready, it is wrapped by the embossed aluminum panels from all sides.

The length of the aluminum panel is kept more than the width and length of the four sides of the box, so that designs can run continuous all over. This decreases the amount of work, because there is no need to make joints at corners. After this the edges of the sheet folded inside to avoid their sharpness and to flatten the top sides of the inner panels.

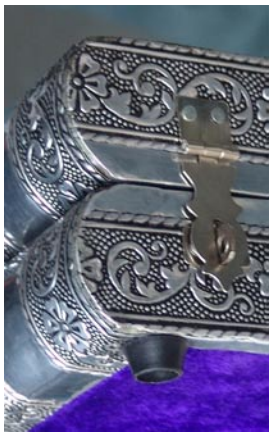
The bottom sides, cut and folded regularly and then fixed with corners nails. But before that, the wooden surface and the inner surface of the aluminum panels are also glued to reinforce the overall strength of the structure. But this process leads to low quality finish due to the cost and low labor charges.
On the base, small fastenings (made of plastic) are fixed with nails. figure (4)
On the upper edge of the panel of the lower case which is to be attached to the same edge of the upper case is attached with hinges using nails. figure (1)



1

2

3



4

The top surface of the lid is the most important part. An aluminum embossed panel is glued and fixed on it. In case of motifs to be fixed separately space is left for nailing the motifs, which is the second layer

Sometimes copper is also used with the oxidized aluminum panel to provide distinct surface and visual appeal. All the edges of the aluminum panels are fixed with nails for reinforcement. The nail are quite visible on the surface giving an unfinished look.

After completing the surface work on both upper and lower cases, the next step is to clean it with solution. Both cases are joined with two hinges and for the opening, fixtures are attached on the from side of the box. This is a common way of assembling a simple box.

There are products with more detailed work like fixing small mirrors and adding new panels inside the box for partition, celendrical bars for bangles etc. In case if Bajot, all the legs are seperately covered with aluminum panels and then assembled with the main platform.

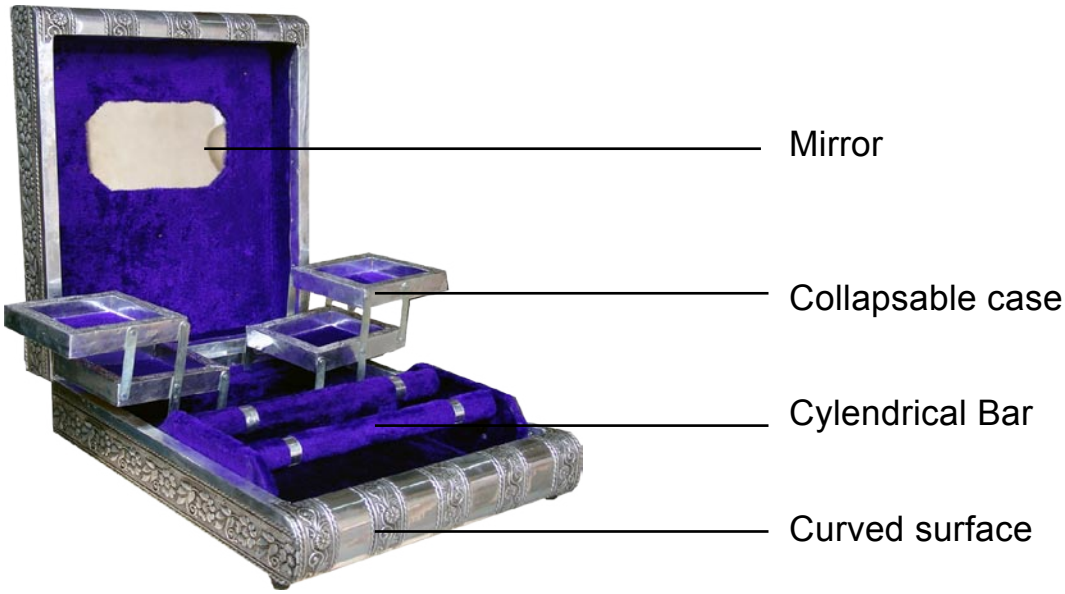







a step by step process showing srapping aluminum metal surface done with mina work for making bajot base

Bajot have curved design legs (lion legs), these surfaces are also done with the same process but the edges are cut many times to wrap the aluminum panel over the surface. Two sides are covered with the same process and the other third and forth sides are done with plain aluminum surfaces.Bengle boxes have collapsible boxes joined in row.



In other products like Bajot, Mirror frame, small patara, same kind of application or work is done according to the size and design of the product.Some products have curved surface. The major problem in this process is that the matching done at certain ends and gaps is not satisfactory and edges are not smoothened properly. In other case, to construct a mandir, there are some other material like wire mesh, plastic are also used.

FINISHING

Finishing of the product does not require much work. It invloves basically cleaning the surface of the product using oil with cloth. This product can get demaged by dust or an external impact over the surface. To avoid any external dent, it is always kept packed in plastic bags or wrapped with paper.

PACKAGING

All the finished Products are taken to be carefully packed inside carton made of corogated paper. Cartons are usually recycled and sourced from the town only.

Products of same size are kept in a single carton. First, each product is packed in a polythyline bag and then old new paper is wrapped around it. Then it is tied with platic tape. All the products are carefully placed in cartons. After the carton is fully packed, all the sides of carton is binded and tied using plastic tape.

Each packed cartons are marked with specific number of pieces carring addressed marked to the destination of the buyer. They are further transported by road to Rajkot or other places like Rajasthan and Delhi.

INFRASTRUCTURE

Equipment list
Facilities for manufacturing and processing
Area used for work
Service facilities
Services outsourced

EQUIPMENT LIST

1.	Investment on Machines (one time) Related to wood Wood cutting machine – 15,000 'Dhar' machine – 12,000 'Randha' machine – 25,000	Rs. 60,000
2.	Hand Press Machine From Ludhiana or Jamnagar	Rs. 35,000
3.	Rickso Machine Wood or Ply cutting, carving or finishing)	Rs. 8,000
4.	Drilling Machine - (half round Pana 'Chokdi') The larger size will cost Rs. 15,000	Rs. 7,000
5.	Buffing Machine –	Rs. 8,000

FACILITIES FOR MANUFACTURING AND PROCESSING

List of Required basic raw material including metal, wood and reinforcements for the starting work initially.

Recurring cost

1.	Wood (Sagwan) about 155 'ghan' foot Mainly from Surendranagar or Ahmedabad	Rs. 30,000
2.	15 Ply boards of 6mm (8mm and 10mm) Either from Jasdan or Rajkot 6mm ply board of 1 foot will cost Rs. 7	Rs. 5,000
3.	Aluminum sheets 0.15 mm (about 80 kg) From Ahmedabad or Rajkot Rs. 150 per kg – 20 square foot	Rs. 10,000
4.	Fevicol SR-505 (5 drums - 25 liters each) Five drums from Rajkot	Rs. 10,000

5.	Velvet cloth from Jetpur 50 meters (Rs. 40 -80 per meter)	Rs. 3000
6.	Fevicol about 100 kg	Rs. 4,000
7.	Metal plate dyes about 10 designs (Rs. 100 per square inch)	Rs. 10,000
8.	Nails, other hand tools and equipment	Rs. 2,000
9.	Hinges, below nuts, colors & miscellaneous	Rs. 3,000

Besides the list given above, there are other supporting elements like basic tools for carpentry and metal work.

1. Compass (To mark sizes on Aluminum and Wood units)
2. Scale (wooden and metal scale)
3. L – Square
4. Metal Cutting Scissors
5. Fabric Cutting Scissors
6. Metal Marker and Cutter
7. Inch Tape
8. Hammers
9. Wooden Bars (for fixing corners and perpendicular surfaces)
10. Brushes (painting colors, polishing and applying glue)
11. Punch (for punching design on brass)
12. Piece of cloth for cleaning surface of Aluminum
13. Circular Metal Base for the support
14. Glass Paper
15. Glass Paint
16. Sharpe Edged Pointer

WORKING SPACE AREA

Work space depends on the size of the unit. An average size of the unit is about 15 feet X 20 feet or approximately 300 sq.ft. This can accommodate one press machine, a small amount of space for keeping raw material and finished products and 5 to 7 workers. But units having all in-house facilities include wood processing require much more space. They have different rooms or sections depending upon the process of manufacturing. They are as much as 5 to 6 times bigger than the size mentioned above. Manufacturers have also started coloring or mina work on their own which requires accomodating about 50 to 60 women workers and need more working space.

a typical local shop with finished products.

wood stalked outside the unit

interior space arrangement of a large scale unit

visitors are entertained inside the workshop

But the working space is not properly divided work wise and is unorganized, so the navigating space is much less and it is difficult to walk around

There are no proper platforms or seating arrangements which becomes difficult for worker while working long hours. They sit on ground and they have to keep changing their posture frequently.

The placement of press machine is kept on the ground, so the person who holds the aluminum panel for stamping has to sit on the ground and the other worker which provides the stamping presure has to stand while operating the task.

SERVICE FACILITIES

Electricity is the main energy required for the tasks related to machine, which includes stamping and wood processing. Larger units have toilet facilities.

The working environment is much unorganized. But workers have adapted accordingly. In absence of any contract agreement betseen the unit owner and workers engaged, the workers are hired on day to day basis,

There are no specified employee / workes working code as a result the workers do not have any loyalty towards the owner. They are engaged on the basis of task assigned. The skilled workers are able to deliver more finished products compared to the semi-skilled or less skilled job workers. They are paid as per the total mumber of products. They are able to complete in the specified time. For example, in a unit if a worker is able to produce 100 finished products in a week time, earns more than who finishes the same job in 10 days time. As a rresult many of them have worked long hours continously to complete the job order. The entire production process is more labour intensive and less room for skill and creativity.

SERVICES OUTSOURCED

Earlier, mina work was sourced from out side, mainly from Udaipur, Jaipur and Jesalmer. But from last six months, manufacturers have started this task in house in Jasdan only. Those who own a reasonable small unit have to source work related to wood processing from the outside. Some small units only work for big units. They are provided all the raw materials from them only including wood, aluminum and other embellishment and reinforcement material.

PRODUCTION CAPACITY

TIME CONSUMPTION FOR PRODUCTION

Production Capacity from the Existing Raw Material Investment

From the pricing of material given in the equipment list, from the same quantity of raw materials about 150 bangle boxes of 11 by 8 inches can be made. These 150 boxes can be completed in about 5 days engaging 8 workers each making about 18-20 boxes and earning about Rs. 40 per day making 4 boxes each day or Rs. 200 in a weeks time. Alternatively if 4 workers are engaged then each worker should make about 35-38 boxes in 10 days time and earning Rs. 400 from this 10 days job. The margin of labor cost on the products is between Rs.1 to 25 depending upon the size, quality finish and intricacy of the skill involvement.

The production cost on each box will be not be more than Rs. 125 and cost on labor be between Rs. 6-10. Therefore the margin of earning on each box will be Rs. 6-10 or Rs. 1000 to 1500 inclusive of rejects and packing cost. Each bangle box is sold either to the exporter or the retailer at Rs. 140. The packaging cost is borne by the manufacturer and the transportation expense by the buyer.

To send these 150 boxes about 10-12 cartons are required and each can hold about 12-14 boxes not more than 25 kgs. Cost of each carton is Rs. 25 therefore the packing cost is approximately between Rs. 300 to 350. However it was observed that they are mostly using recycled inferior quality of cartons which increases the proportion of rejection after it reaches the destination.

FACILITIES - PROCESSING/ TOOLS AND EQUIPMENTS/ WORKPLACE

PROCESSING (WOOD AND ALUMINUM)

For wood, various machines like, Dhar machine, Drilling machine, Sawing machine are used. Mostly big units are having these in-house facilities. Hand press machine is the main machine and most of the units own one set of the machine, since the stamping is the most important task required for manufacturing of this product.

There are other small hand tools which are locally available. The list of these tools are mentioned in the main production chapter with pictures.

MANPOWER

This work is mainly dependent on manual labor. Besides a partly mechanical help, main tasks or coloring metal, stamping, assembling and others are done manually. The number of workers engaged in the unit depends on the size of the unit. Small units have generally 5 – 7 workers engaged and units of medium size can have more than 15 – 20 workers. Large units with all facilities available including mina work can accommodate 100 -125 workers under the same roof.

PRODUCTS

There are almost 108 product range available. But there are 25 – 30 specific items which dominate. Rests are the variations in terms of sizes, design placements and material.

The list of those running items is given bellow.

1. Bajot
2. Bengal Box
3. Book Case
4. Bowl
5. Cart
6. Chakda
7. Darpan – Mirror Frame
8. Flower Vase
9. Ghadi – Seat
10. Handles
11. Key (key holder)
12. Jhula
13. Letter Box
14. Mandir (Temple)
15. Meva Box
16. Mukhvasdani (Box)
17. Patara
18. Pen Holder
19. Planter
20. Riyaal
21. Sinhasan
22. Telephone Stand
23. Tray
24. Tripod – table
25. Jewellery Box
26. Wall Piece

Products can be further divided according to sizes, material used, kind of design / motifs, quality, manufacturing process, market and other influences.

- Most of the Items are made in two or three different standardized sizes. As size changes the placement of motifs and dimensions changes. This has to be figured out by the craftsman where tasks involve like using various motifs and border designs different than the previous size.

- Sometimes, same product is made using brass in place of aluminum also. There are designs in which coloring or oxidizing is not done, instead of this they keep the aluminum surface white. It comes under the white metal product category. In case of Mina work, it creates a different category of Metal work with Mina work. Colored metal craft is called Oxidized Metal craft.

- In many cases, the design has to be developed on the basis of samplebrought by the buyer. So the surface treatment and colors also changed accordingly. So this is a market driven product category.

- These products can also be done without using any mechanical help. But the precision and accuracy can not be achieved as of machine work. This changes the motifs and design of the product.

- A manufacturer also have to consider the cultural dimension also, he has to change the design completely to reach the demands of the particular geographic region with different culture. He has to create new designs and motifs and other functional aspect of the products. There are also examples of new application or this work in a totally new field like interiors and furniture.

QUALITY OF PRODUCTS

- Quality depends of the use of raw materials, time taken to finish the process and selling coast of the particular product.

- Quality Products are not easy to find in the market, since the nature of the market especially the domestic market. Export Quality is considered as Quality products. Large Manufacturers with bigger market and good selling prices are only who can really produce good work. The margin or profit is shrinking in the market which is the prime reason behidn on compromising quality and inferior designs.

- Constraining time and coast effects the quality and finishing of the products.

- A product with good quality is mainly manufactured for exports. Lower quality of products generally become the part of domestic and retailing in some cases.

TRADITIONAL / CONTEMPORARY

MATERIAL

- Originally brass was used to make huge pataras, but the amount of work required for the brass product is high and the coast factor is not satisfactory.
- Aluminum is cheaper and long lasting in quality has influence the future of the product. At present, these products are more like a miniature of the old existing functional products. Coloring or oxidization IN this work came in to existence before 30 years only. It was adapted from Kalol.

DESIGN

- At present state, the product has changed tremendously in terms of design. The miniature size of the product has added new elements. Some old elements have vanished also. Originally, pataras were decorated with casted floral metal motifs and Metal strips to cover the joins and ugly nails, at present there are no design or embellishment is fixed on the surface but the side of the surface is covered with the one single piece of embossed aluminum sheet rolled on the four sides.
- Previously motifs were more detailed and done elaborately at particular place. This was creating interesting layers and rich look. Now, they have tried to create this look by applying all the ornamentation on the single sheet and applying black oil paint to give antique look. One can also see the changing motifs and new designs. Introducing stamping has limited the design scope and designs are placed without proper matching at edges and irregular continuation of patterns.

LOCATION

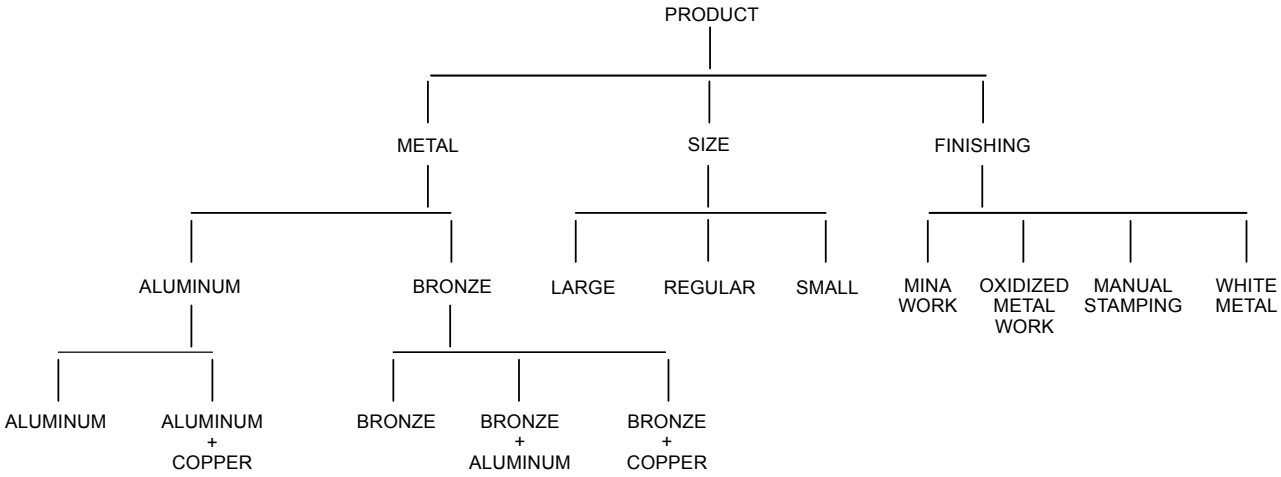
- This craft is a mixture of three different crafts, pataras making or ‘Rajwadi’ from Bhavnagar, coloring of metal from Kalol and Mina work from Rajasthan. Now, from last 30 years, Jasdan has become the main place for this craft which is known as Oxidized Metal Craft. There are also some other places in Gujarat like Palanpur, Ahmedabad, Nadiyad, Vadodara where this kind of work is done.

LIST OF PRODUCTS AND FINISHING WISE CLASSIFICATION

SR.N0	ITEMS	MINAKARI	OXIDIZED	WHITEMETAL	BRONZE	SMALL	REGULAR	LARGE
1	Bajot	✓	✓	✓	✓	✓	✓	✓
2	Bengal Box	✓	✓	✓	✓	✓	✓	✓
3	Book Case	×	✓	×	×	×	×	×
4	Bowl	×	✓	×	×	×	✓	✓
5	Cart	×	✓	✓	✓	×	×	✓
6	Chakda	✓	✓	✓	✓	×	×	✓
7	Mirror Frame	✓	✓	✓	✓	✓	✓	✓
8	Flower Vase	×	✓	×	×	✓	✓	×
9	Ghadi – Seat	✓	✓	×	×	×	✓	✓
10	Handles	×	✓	✓	✓	✓	×	×
11	key holder	×	✓	✓	×	×	×	✓
12	Jhula	×	✓	✓	×	✓	×	×
13	Letter Box	×	✓	✓	×	×	✓	✓
14	Mandir	✓	✓	✓	×	✓	✓	✓
15	Meva Box	✓	✓	✓	×	×	✓	✓
16	Mukhvasdani	✓	✓	✓	×	×	✓	×
	With 2 Dibbi							
	With 3 Dibbi	✓	✓	✓	✓	✓	✓	✓
17	Patara	✓	✓	✓	✓	×	×	✓
18	Pen Holder	×	✓	✓	×	✓	✓	✓
19	Planter	✓	✓	✓	×	×	✓	×
20	Riyaal	✓	✓	✓	✓	×	✓	×
21	Sinhasan	×	✓	✓	✓	×	×	✓
22	Telephone Stand	×	✓	✓	✓	×	✓	✓
23	Tray	✓	✓	✓	✓	×	×	✓
24	Tripod – table	✓	✓	✓	✓	✓	✓	✓
25	Jewellery Box	✓	✓	✓	✓	✓	✓	✓

TOTAL NO OF ITEMS 113

PRODUCT ANALYSIS



BAJOTH WITH MINA WORK

BRASS BENGAL BOX WITH COLLAPSABLE CASES AND CYLENDRICAL HOLDERSAS

OXIDIZED METAL BENGAL BOX WITH COLLAPSABLE CASES

BRASS BENGAL BOX WITH COLLAPSABLE CASES AND CYLENDRICAL HOLDERSAS

BOX WITH MINA WORK

MUKHWASDANI - CART

JHARONKHA - MINA WORK

OXIDIZED MUKHWAS PETI

PATARA SMALL WITH
WOODEN WORK AND BRASS

PATARA

BIG SIZE

SMALL SIZE

SMALL PATARA (JEWELERY BOX) WITH
COPPER AND BRASS

PEN HOLDER WITH MINAWORK

PEN HOLDER - OXIDIZED METAL AND WHITE METAL

OXIDIZED METAL - TRAY

MUKHWAS BOX - WITH MINA WORK - OXIDIZED METAL

MUKHWAS BOX - OXIDIZED METAL

TELEPHONE STAND

MUKHWAS BOX - OXIDIZED METAL

OXIDIZED METAL - WALL CLOCK

‘MANDIR’ (TEMPLE) - WITH OXIDIZED METAL

STEEL VESSELS WITH OXIDISED ASSEMBLED METAL

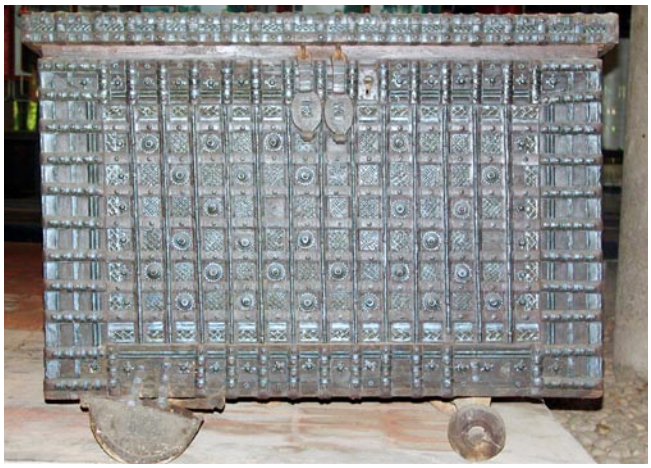
ITEMS SOURCED FROM OUT SIDE AND SOLD IN GUJARAT WITH THE SAME CATAGORY OF METAL CRAFT

1.JHULA
2. PLANTER
3. KEY HOLDER
4. BELAN PATLI
5. LAMP -DIVA
6.TRIPOD -TOP
7. COVER

DESIGN PHENOMENA

Any craft is one of the main constituent of Culture developed by Human Civilization. All the dynamic changes brought in to culture tend to reflect with in its constituents in various forms. This whole phenomenon is thus the outcome of the movement within. Evidently, craft has various phases and benchmarks. 'Oxidized Metal Craft' as a craft, is a combination of various elements of other crafts as well as the original 'Rajwadi' or Peti-Patara making.

As we have already mentioned in the history of craft in the first chapter, Oxidized Metal Craft has been going through various influences in terms of geography, inspiring from elements of other craft in different location, and also with the changing nature of Market. All the influential factors, decides the future of the craft also.



Initially this craft was more of a carpentry nature or a combination of wood and metal. Wood was the basic material or a structure. Products were functional and were used for storage and decorative purpose. Motifs were very basic and due to the available technology, it has developed within its perimeters. But after some time with changing mode of life style and its requirements this craft has taken a shape of purely ornamental and miniature size products. With the introduction

of press machine for embossing metal sheet, and market exposure, production requirements have changed. This has changed all the previous applications of material and motifs and other supportive elements. Use of plywood and aluminum sheet metal was started as a base material. All the decorative details, floral motifs and metal stripes have converted in to a single metal sheet with embossed patterns made from press machines. To commemorate production and coast, material with low coast and easy accessibility came in to picture.

With increase in market, the craft business has traveled to new places, new applications and treatments has been added to the existing craft. Manufacturers have shown interest in developing new kind of products according to the buyers' requirement. The so called 'Oxidizing Treatment" or coloring metal surface was the idea brought from Kalol (North Gujarat). Changing Motifs influenced by Rajasthan, or Export Market shows this reality. Motifs like Dolphin(Fish), Camel, elaborate architectural patterns, motifs based on surrounding objects like tea pot, Nature scenery, portraits of idol and deity, framing of miniature Mogul Paintings, moon and stars are some of the examples of these undergone changes.

Mina work has started not more than 6 -9 months back, this is a replica of work done in Rajasthan. Original work is done with actual Mina; mina work is a time consuming and delicate work to do. So here, they have started using some color which visually resembles to the mina work. Thus it is lesser in coast and less time consuming and also a new innovation. There are also examples of using this craft as a surface treatment in interiors and furniture.

In this craft, the required skill is low and the production has to be faster. The margins are also quite less and availability of labor is much more. This has converted this handicraft in to a small scaled industry.

ROAD MAP

TRAINING

- Entrepreneurship
- Professional Management
- Export
- Skill Up gradation
-
- New Machines and Materials, Technology

EXPOSURE

- Domestic and Export Market
- Handicraft Mela, Haat
- New Material and Technology
- New Development and Growth Potentials

LINKAGES

- Market
- Finance Sectors
- NGOs / Associations
- Material (Backward Linkages)

INFRASTRUCTURE

- Common Facility Center
- Material Bank
- R & D Center

NEW DEVELOPMENT

- Design Clinic
- Design awareness

NEW PRODUCT DEVELOPMENT

- Existing skills
- Improving existing process
- New range development from existing products

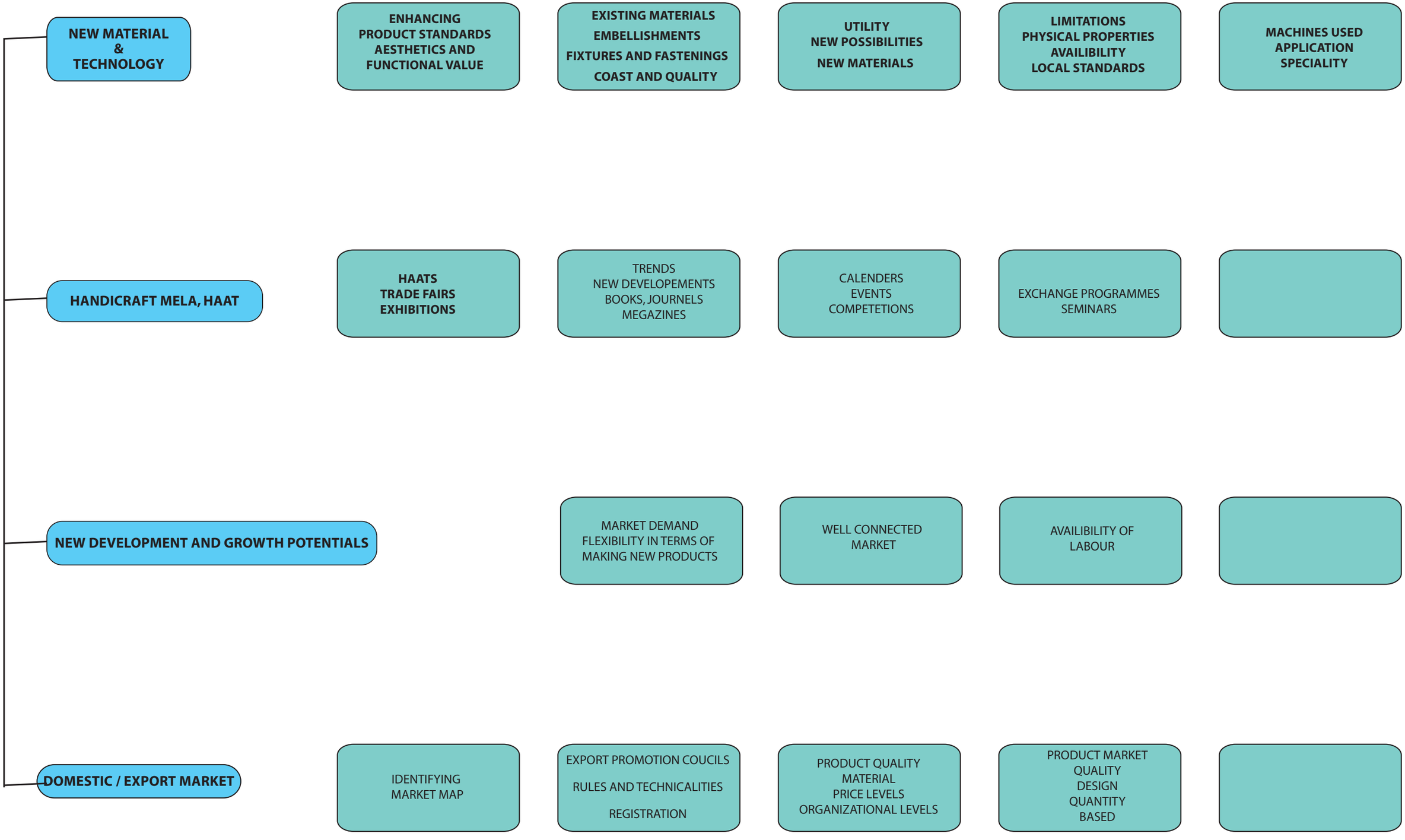
TRAINING

ENTREPRENEURSHIP
PROFESSIONAL MANAGEMENT
EXPORT
SKILL UP GRADATION
NEW MACHINES AND MATERIALS,TECHNOLOGY

ENTREPRENEURSHIP	**TRAINING** INDUSTRIAL VISITS WORKSHOPS	SELF-EMPLOYMENT	IMPROVING MANAGERIAL CAPABILITIES		
PROFESSIONAL MANAGEMENT	MANAGING ORGANIZATION HUMAN RESOURCES PLANNING MANAGEMENT	BUSINESS RELATIONS GOAL SETTING / PLANNING	DEVELOPMENT PLANS ASSESSMENT / TIME PERIOD	DEVELOPMENT PLANS	
NEW MACHINES AND MATERIALS, TECHNOLOGY		MACHINES USED APPLICATION SPECIALITY	TOOLS APPLICATIONS DIFFICULTIES AVAILIBILITY	PROCESS WISE DESIGN RELATED SKILL RELATED	
SKILL UP GRADATION	MANUFACTURING PROCESSING PACKAGING FINISHING	ASSEMBLING TOOL BASED ANALITICAL ABILITY COMBINING TASKS	UNDERSTANDING MATERIAL AND ITS PHYSICAL PROPERTIES	DESIGN PLACEMENTS / LAYOUTING MOTIF PLACEMENT AESTHETIC APPROACH	
EXPORT	TRENDS / DESIGN FAIRS / EXHIBITIONS	COMMUNICATIONS INFORMATION UPDATES	PRODUCT QUALITY MATERIAL	PRICE LEVELS ORGANIZATIONAL LEVELS	

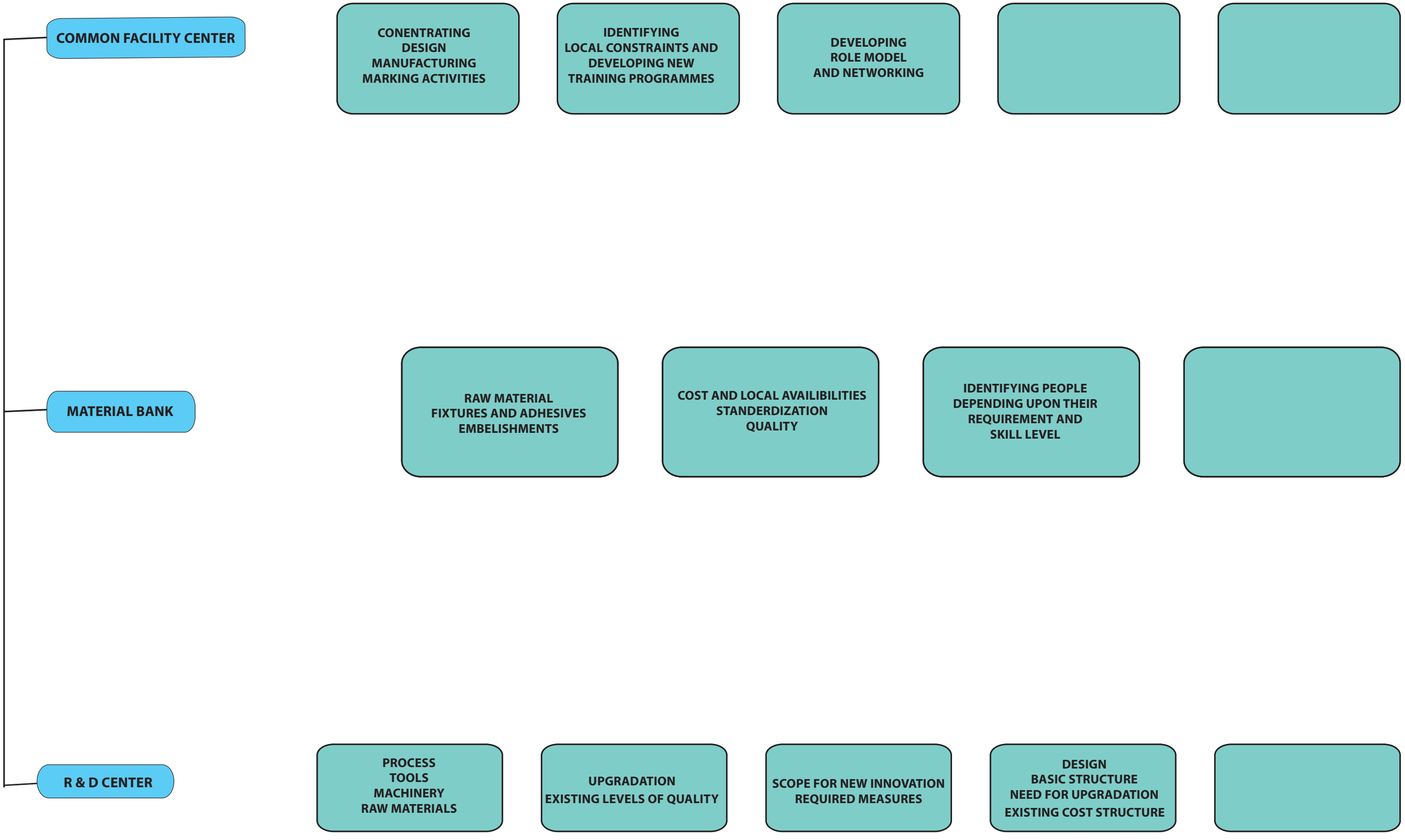
EXPOSURE

New Material and Technology
Handicraft Mela, Haat
New Development and Growth Potentials
Domestic and Export Market



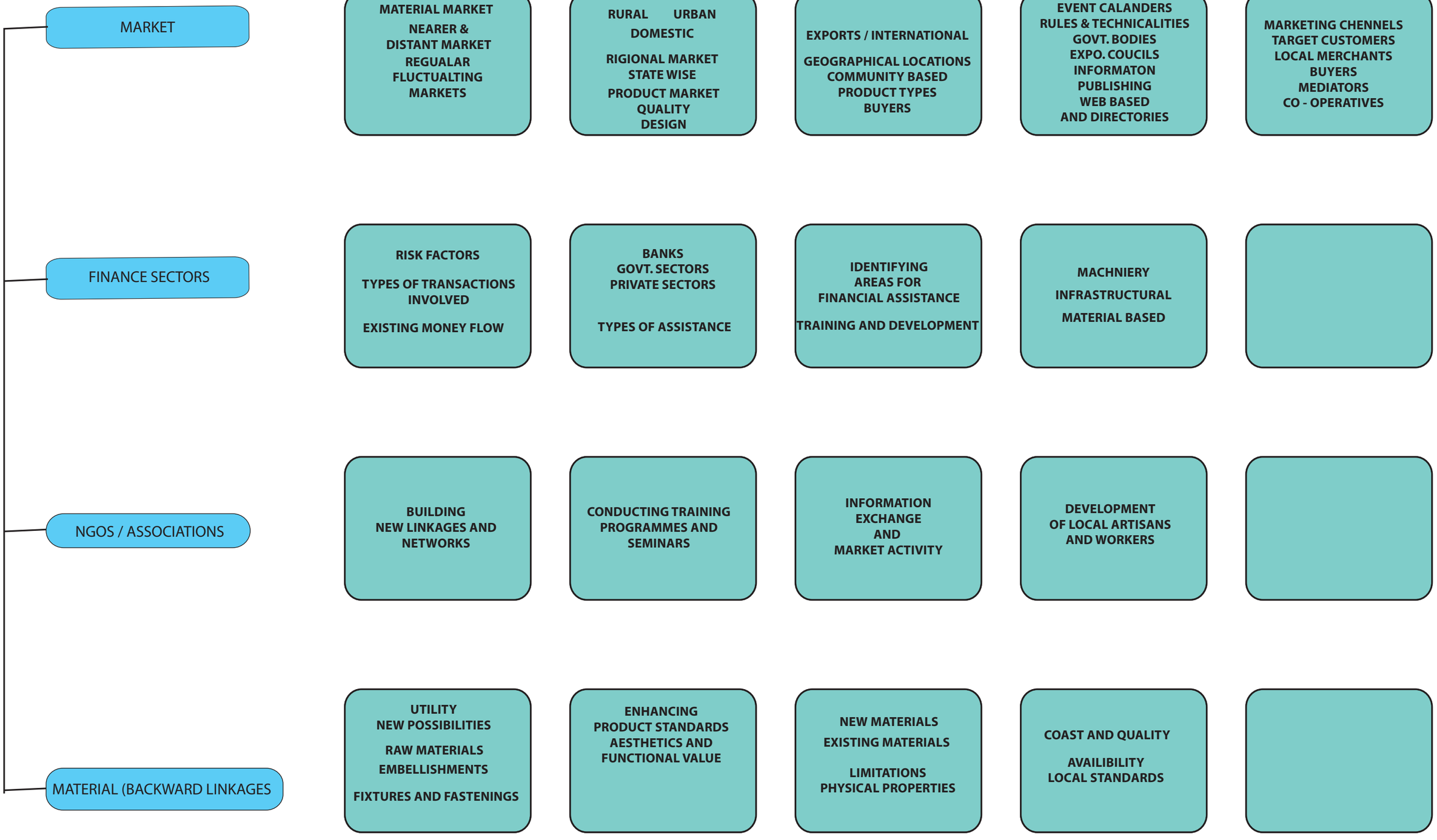
INFRASTRUCTURE

COMMON FACILITY CENTER
MATERIAL BANK
R & D CENTER



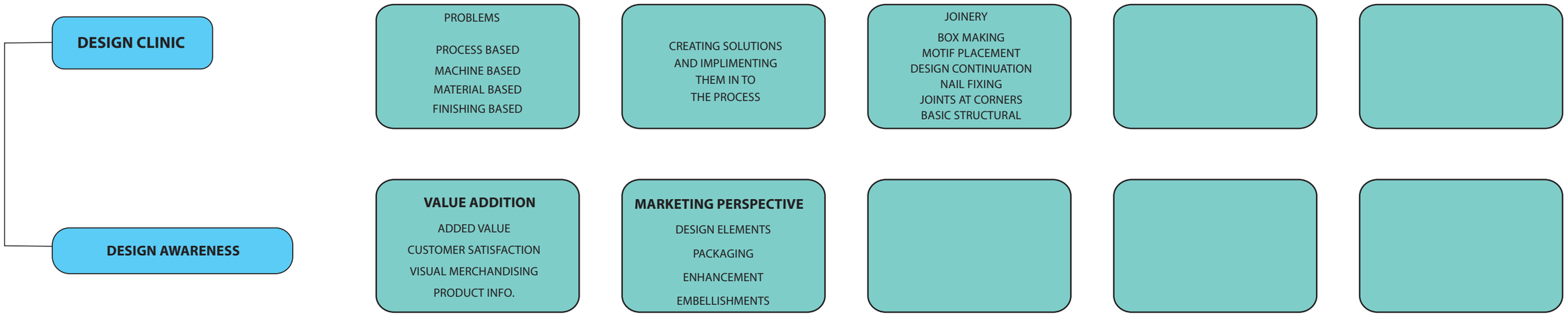
LINKAGES

MARKET
FINANCE SECTORS
NGOS / ASSOCIATIONS
MATERIAL (BACKWARD LINKAGES



NEW DEVELOPMENT

DESIGN CLINIC
DESIGN AWARENESS



NEW PRODUCT DEVELOPMENT

EXISTING SKILLS
IMPROVING EXISTING PROCESS
NEW RANGE DEVELOPMENT FROM EXISTING PRODUCTS
NEW RANGE DEVELOPMENT FROM NEW PROCESS

EXISTING SKILLS	MANUFACTURING ASSEMBLING PROCESSING	TOOL BASED ANALYTICAL ABILITY FINISHING PACKAGING COMBINING TASKS	SKILL UPGRADATION	UNDERSTANDING MATERIAL PHYSICAL PROPERTIES	DESIGN PLACEMENTS LAY OUTING MOTIF PLACEMENT AESTHETIC APPROACH
IMPROVING EXISTING PROCESS	TECHNICAL DIFFICULTIES LIMITATIONS IN HANDLING MATERIAL LIMITATIONS OF TOOLS	MATERIAL BASED MACHINE TOOL BASED MANUAL / MECHANICAL	QUALITY DIFFERENCE AND COST FINISHING PROCESS ASSEMBLING AND PASTING	CUTTING SIZING SMOOTHENING NUMBERING	
NEW RANGE DEVELOPMENT FROM EXISTING PRODUCTS	DESIGN BASIC STRUCTURE HISTORY AND PRESENT TECHNIQUES NEED FOR UPGRADATION	EXISTING COST STRUCTURE	PRODUCT DEVELOPMENT UPGRADATION EXISTING LEVELS OF QUALITY	SCOPE FOR NEW INNOVATION REQUIRED MEASURES	
NEW RANGE DEVELOPMENT FROM NEW PROCESS	PROCESS TOOLS MACHINERY RAW MATERIALS	EXISTING COST STRUCTURE	SCOPE FOR NEW INNOVATION REQUIRED MEASURES		