CLUSTER PROFILE

ELECTRIC FANS - GUJRANWALA

Turn Potential into Profit

Small & Medium Enterprise Development Authority
Ministry of Industries, Production & Special Initiatives
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1 Description of the Cluster

1.1 History & background of cluster

Today Gujranwala and Gujrat regions are prominent manufacturing hubs of household electrical appliances. This Industry initially originated from the fan industry that existed at a small scale level in Gujrat before the partition. However after the partition, the fan industry experienced growth. Since Gujranwala was already famous for the production of iron, steel and other metal products, so the electrical fan manufacturing became a major business in the regions of Gujranwala and Gujrat.

In the early 1950s, M/S Anwar Mechanical Works with Brand name of “Asia Fan” and Climax Engineering Company took initiative for fan manufacturing in Gujranwala. Some of the units initially started as the suppliers & vendors to M/S Climax and Anwar Industry and over a period of time several assembly units also sprang up. That time dealers from all over the country started purchasing fans from Gujranwala and demand for fans grew rapidly and Gujranwala become a known city in Pakistan for Fan manufacturing.

In 1970s skilled workers started manufacturing fan components on very small scale and supply to large units Many other small & medium level fan manufacturers came into existence and. Components were outsourced by most of the large units. Some of the assembling units graduated to manufacturing some components, assembling, testing and marketing under their brands. This situation resulted in the emergence of manufacturing units in the un-organized sector as well, each of them manufacturing just one or two components. Thus, the fan industry in Gujranwala got developed.

In Gujranwala the golden period of fan cluster was 1970 – 1990, when the Fan industry got a real push and the Climax and Asia Fan become the leading brand of Fan in our country. Climax Engineering Company Ltd. exhaled the range of electrical appliances production in the region by producing high quality industrial and domestic electrical appliances and apparatus e.g. Transformers, Air-Conditioners, Fan (Exhaust, Ceiling, Pedestal etc.), Electric Motors etc.

In 1990s the competition developed in fan manufacturers and profit margin also cut down, So Climax more focused on other electrical appliances manufacturing like air-conditioners and transformers etc due to high profit and leading one in theses appliance, So that the fan industry developed in Gujrat.

1.2 Description of Products

Electric Fans are broadly categorized as general purpose fans that are meant to provide human comfort for people and industrial fans which are used in factories for driving out hot or polluted air for controlling the environment. General purpose fans mainly include broad ranges of Ceiling Fan, Table Fans, Bracket & Circo Fans, Exhaust Fans and Pedestal Fans.

Ceiling fans are produced more than 60% out of total fans production. In ceiling fan various sizes manufactured are 48” and 56”. Most of the production requirement is 56” ceiling fan. A ceiling fan consists of down rod, top & bottom Covers, bearings, shaft, rotor, stator, canopies, blades and sheet metal components. In Pedestal fan sizes manufactured are 22”, 24”, 26”, but the high production and demand of size is 24” followed by 22” and 26”.

1.3 Core Cluster Actors

The manufacturers of electric fan are core cluster actors. There are approximately more than 300 units engaged in manufacturing of fan and its components. Majority of the manufacturers are unorganized and fall in small scale industries. There are about 20 prominent and organized manufacturers in the cluster, which have developed strong linkages and dealers network in all over Pakistan and market their products through outlets of these dealers. They are also exporting their products in Middle East, Africa and Central Asia countries mainly in Saudi Arabia, Afghanistan, Bangladesh, Yemen, Iraq and Sudan etc. Industrial statistics of core cluster actors are as follows:

Table 1: Fan Manufacturers Cluster, Gujranwala[1]

No. of Units	Investment (000 Rs.)	Employment	Major Products	Capacity (No's)
153	277,216	1499	Electric Fans/Coolers	4,220,975 Nos

1.4 Other Cluster Actors

1.4.1 Machinery Suppliers

There is number of manufacturers engaged in fan manufacturing machines in Gujranwala, which are expert and fulfilling the need of industry. The machinery used in fan manufacturing units are Lathes, Drilling Machines, Grinding Machines, Winding Machines, injection molding, welding machines, powder coating plants and electronic digital measuring equipment for testing. Theses machines are available locally and skilled personal for maintenance and operation are also easily available.

1.4.2 Raw Material Suppliers:

There are about more than 150 vendors in Gujranwala supplying raw material/components to Gujranwala and Gujrat Fan manufactures. The raw materials required for manufacturing electrical fans include metal sheets, aluminum, winding papers, wires, router stator, different chemicals and spare parts etc. Nomania Road, Gujranwala is also the main market of fan component traders

1.5 Geographical Location

Electric fans are manufactured in many areas of Gujranwala. However the majority of manufacturing units are located on G.T. Road from Nagar Phatak to Kangni Wala Bypass, Small Industrial Estate (SIE) and in surroundings of Gondlanwala Road and Khokherki.

1.6 Major Brands

Following are some of the major brands and exporters of Fan Cluster, Gujranwala:

- Lahore Fan

[1] Source: Directorate of Industries 2006,

- Super Asia
- Asia Fans
- Indus Fans
- Bless Fan
- Al Meraj Fans
- Pak Punjab Fan
- Toyo Fan
- Champion Fan
- Shaheen Fan

1.7 Current Cluster Scenario

The Fan Industry still mainly exists at the level of SMEs, with exception of some firms, who have gained an extraordinary growth. This sector is not an organized sector. There is no exact figure available about total no. of units, installed capacity and operational capacity. The industry is not only fulfilling the domestic needs but also exporting small quantities of fans. There is large export potential in Middle East, Africa and Cetral Asia.

The market for electric fans exists in almost every part of the country. There are a few major market players and the small units cater the remaining market. In recent times, due to setting up of a few quality units and brands, it is evident that exports can also be increased by this sector in the near future.

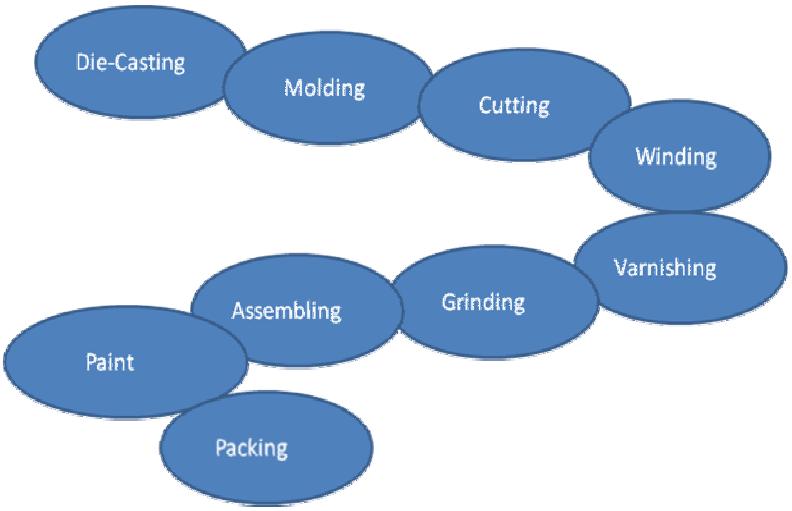
Fan sector is producing mostly inferior quality because the price sensitivity of the customer is high and the awareness level on the quality aspect of product is rather low. This has led the cluster units to manufacture low priced product and compromise on quality. Cheap fan consume more electricity and most of the consumers have been paying more on electric bills than the amount they save by buying a cheap quality electric fan. In current position growth trend of fan industry has been declining due to electricity crises because big units have facility of generators but the vendors and small manufacturers don't have Generators which ultimately effect the fan production.

2 Analysis of Business Operations

2.1 Production Operations

Production process of fan manufacturing can be explained as follows

Figure 1: Process Flow Chart of Fan Manufacturing



2.1.1 Die-Casting

The process of die-casting was used to make some parts of the electric fan. The casting was done by melting the metal in the furnace and then pouring the molten metal into a die to get the part in the shape of the die. Normally the rotary furnace was used for this purpose, which takes furnace oil and/or natural gas as fuel and the dies are made of high quality steel alloy. The die-cast in case of pig iron casting was called 'Daigi Dhallai', in the local language. It did not produce a good quality finish, i.e. the cast parts need further processing for finishing.

2.1.2 Molding

The plastic parts used in the electric fans were made by the process of molding. The plastic grains were melted and formed into the required shape. A piston was used to inject the melted plastic from the cylinder into the die through the nozzle, as it was done in the injection. So, the process was called injection molding, and the machine used for such process was called injection-molding machine.

2.1.3 Cutting

Some parts of these fans were made up from metal sheets. The different steps involved in the production of such parts involve the sizing of the metal sheet into appropriate size (shearing) and cutting the pieces of required shape and size (coining, blanking and punching), using the cutting press. This process was especially used in making the core of electrical fields, i.e. rotor and stator. The commonly used cutting press was the locally manufactured ordinary power cutting press (10 to 25 tons force). Whereas, some of the large scale manufacturers use the stepping press (force 70 tons or higher), which was more useful for large-scale production. The stepping press had certain advantages over the ordinary power press, which include time saving, material saving, less labor, etc.

2.1.4 Winding

Winding was the process of coiling the enameled copper wire in the slots of the core of the electric fields. This process was done manually, before the introduction of automatic outer slot winding machine (used in winding of ceiling fan stators). But the inner slot winding was still done manually. Some large scale manufacturers were using imported inner slot coil and wedge inserter machines, which helped them in improving the mass production, material saving, improvement in quality, and labor saving, etc.

2.1.5 Varnishing

After the enameled copper wire had been coiled on the core and the electrical field had been formed, the copper wire was varnished and then baked in the oven to dry up. This process was done to ensure that there was no chance of short circuit in the electrical field and to keep the coils intact.

2.1.6 Grinding

This process was used in finishing some components, which are either made by die-casting or cutting. For such purpose, either the cylindrical grinding machine or lathe machine was used

2.1.7 Assembling

Various parts and components were made by different vendors, so their standards and measurements may differ slightly. Hence, these parts and components may need some customization/ standardization, so that they can easily fit together to produce a product. These dynamic customizations may involve some drilling, grinding, welding, forging, etc apart from the standardized designs/ drawings.

2.1.8 Paint

After all the processes of assembling/fittings the finished product was painted. There were two types of commonly used paint technologies, which are the powder coating and enamel. The powder coating was the modern method, in which the surface to be painted was ionized first and then powdered paint was sprayed on that surface and heated in the oven to produce high class finish. It was drying process and mostly used in the painting of different appliances like fans etc. The enameling was wet process, in which the oil-based enamel was sprayed over the required surface and then dried either in the oven or in open air to produce the finish.

2.2 Raw Materials Availability

The raw materials required for manufacturing electrical fans include metal sheets, aluminum, winding papers, wires, router stator, different chemicals and spare parts etc. These raw materials are easily available in the market.

i **Blades** are made of aluminum sheets. Aluminum which is one of the main raw materials is imported from various countries in form of aluminum waste. The waste is melted and is reshaped into aluminum sheets of different gauges to be used as per the specification of the product.

ii **Top & Bottom Covers** are low grade cost iron components bought from foundry units and machined in house. Also low grade hard plastic is used for top & bottom covers manufacturing for cost cutting purpose.

iii **Capacitors** imported from China, Taiwan, Korea and also 1-2 units in Gujranwala and 2 units in Gujrat and 1 in Lahore are manufacturing locally

iv **Bearings** imported from China and sold through various suppliers

v **Rotor Stators** many small manufacturers are supplying this component

vi **Canopies** are made of plastic & cover the hanging portion of down rod and provide good appearance. Many units are involved in manufacturing of canopies and easily available in the market. Haq brother is the famous name and major supplier of canopies and other plastic accessories.

vii **Down Rod** come in many lengths, a metal pipe used to suspend the fan from the ceiling.

viii Enameled Copper Wire / Aluminum Wire

ix Copper is the best conductor but aluminum is using due to the cost cutting and lack of awareness to customer. Wires are imported from china and also manufactured locally.

x **M.S Shafts** is made of mild steel and many units are manufacturing in Gujranwala and supplying to the fan industry.

2.3 Quality Assurance

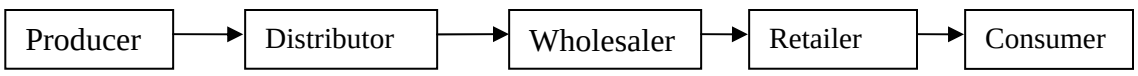
After receiving the parts from the vendor the assembler check it as per the given specification. The passed parts are issued to the process. At every level of work in process, the relevant foremen are responsible for the quality; they check the quality on behalf of their department. After completion of the product different type of in-house tests are conducted for own quality assurance purposes as well as for meeting the buyer's requirement i.e. watts, ampere, voltage test, RPM (Revolution per minute), Temperature rise test. Facility of labs is also available in this cluster for quality tests.

2.4 Technology Status

The involvement of technology in manufacturing process or for that matter in any process is minimal. Most of the units are at micro level about 10 – 12 % can qualify as proper units. There is lack of use of modern manufacturing machines and techniques. Due to these issues small units are closing down. However the large size manufacturing units are filling this gap.

2.5 Marketing & Sales

Manufacturers have developed contacts with the distributors in all over the country and place their product on the market through these outlets. The distribution channel moves goods from producer to consumer.



Small manufacturers and venders usually supply their products to the wholesalers and retailers of other cities. Small units don't have brand names. Sales agents are also working in this sector. They book orders from other cities and supply the required quantity after purchasing from small manufacturers. Some manufacturers also have their own retail stores for distribution of their products.

2.6 Financing

Almost all the registered commercial and industrial development banks of Pakistan have their branches in the cluster and providing the financing at competitive rates. But most of stakeholders depend upon their own financial equity based resources. Due to unawareness, ineffective information flow and paper work these entrepreneurs are reluctant to go to the financial institutions.

2.7 Human Resources

Human resource is present in abundance and skills are traditionally inherited. The owner usually deals with management issues and marketing related activities. Most of the labor is semi skilled and are trained on job. There is no specialized marketing or accounts department in small units. They facilitate their sales only on the basis of personal contacts and no proper accounts are maintained therefore certain problems related to tax return, monitoring and evaluation are faced.

3 Institutional Setup

3.1 Government & Semi-government Organizations

At the Government Level most of industry support organization like SMEDA, PSIC & TDAP offices are located in Gujranwala and fan industry has very low linkages with these organization.

3.1.1 Small and Medium Enterprises Development Authority (SMEDA)

The Small and medium enterprise development authority was established in October 1998 to take on the challenge of developing Small & Medium Enterprises in Pakistan. The basic function of SMEDA are focus on providing and facilitating business development services to small and medium enterprises as and individual as well as collective level. It has a Regional business center (RBCs) in Gujranwala. SMEDA provides following services to SMEs

- Training Services
- Marketing advice.
- Technical advice.
- Facilitation in arranging finance from banks.
- Legal Services
- Business plan development.

3.1.2 Trade Development Authority of Pakistan (TDAP)

TDAP is the primary agency of the Government of Pakistan engaged in promotion and boosting of country's exports. Since its inception in 1963, it continues to facilitate the exporters in overcoming difficulties faced by them, TDAP helps exporters to participate in exhibitions abroad and sends delegations to export

markets with a view to explore new markets and develop the traditional markets. TDAP also initiate projects in various export sectors to train necessary manpower that can manage the export trade and industry.

3.1.3 Punjab Small Industries Cooperation (PSIC)

PSIC is also working for the facilitation of small industries in Punjab. They offer soft loans to small entrepreneurs at subsidized rates. Their main focus is on small units. It offers helps in following areas

- Offering credit facilities to small and cottage industries (new and existing businesses).
- Establishing industrial areas for small industries.

3.2 Fan Manufacturers Association / Chamber of Commerce

Fan manufacturers Association facilitate the stakeholder in WAPDA, Income tax and Labour related issues. Gujranwala Chamber of Commerce is registered and Fan manufacturer are also registered with Gujranwala chamber of commerce & industry.

4 SWOT Analysis

4.1 Strengths

- Significantly mature and well established industry
- Existence of large number of vendor industry
- Availability of low cost labor in the cluster
- Extensive domestic retail network
- Small initial investment requirement
- Good infrastructural facilities.

4.2 Weaknesses

- Unreliable and expensive energy supply
- Weak in economies of scale
- Price sensitive customer base
- Least willingness to move towards quality inputs, that's why lack of international standards
- Weak Industry / Academia linkages

4.3 Opportunities

- Growing demand in local & export markets
- Establishment of brands in export markets
- Innovation towards emerging efficient and decor fans
- Rising domestic market potential for better quality fans

4.4 Threats

- Price variability in raw material and components
- Low entry barriers
- Inconsistent government support and incentives to promote fan sector competitiveness in competing countries (E.g. China and India)
- High end domestic demand‘s preference for imported brands
- Strict international certification standards
- Increasing price of raw material resulting in reduced margins.

5 Investment Opportunities:

Some potential projects for investment are as follows:

- Manufacturing of Energy Efficient Fans
- Brand Development
- Development of Buying Houses / Trading & Marketing facilities
- Awareness about the market and modern technology.