



THE RAWALPINDI CHAMBER OF
COMMERCE & INDUSTRY

PAKISTAN SURGICAL INDUSTRY

Structure, Issues/Problems &
Recommendations

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EXECUTIVE SUMMARY

Surgical instrument manufacturing industry originated in the early 1940s in and around the city of Sialkot. The sector manufactures a wide range of medical, surgical and veterinary instruments exporting 80-90 % of its production.

Pakistan has a history spanning over a century of skilled craftsmanship in manufacturing surgical instruments. This has over the last few decades combined with modern equipment and manufacturing technology to produce surgical instruments of the highest quality which are exported to over 140 countries around the world.

Today, this industry is suffering badly in international market. In spite of the fact that this industry has the potential to earn sizeable foreign exchange but it needs to be fully explored. The purpose of this report is to take an insight into the industry structure, identifying the major issues and problems affecting the industry, uncover the constraints of the industry and put forward some suggestions to overcome the existing problems.

The data collection followed both primary and secondary sources. Primary sources of data were telephonic interviews and a comprehensive information form to gather required information from a sample size of 50 companies. On the other hand, the sources of the secondary data were journals, research articles and internet.

This report contain the introduction to the industry, major facts and figures, Pakistan's share and world surgical exports, SWOT analysis of Pakistani surgical industry, comparison between Pakistani and German surgical instruments, major problems in exports of surgical industry of Pakistan, response to the problems and the proposed strategies along with recommendations.

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HISTORICAL BACKGROUND OF THE SECTOR

Chronologically manufacturing of surgical instruments started in the regions that were traditionally involved in forging of metals, particularly for knives and swords etc. at the end of the 19th century surgical instruments manufacturing started in this region, when the American Mission hospital in Sialkot for the first time got its scalpels and other instruments repaired from the local artisan community of blacksmiths. These craftsmen successfully replicated these imported instruments, which were being used by the hospital.

Sialkot surgical industry started exporting surgical instruments to the foreign market in 1930s. To institutionalize the local expertise of manufacturing surgical instruments and provide common facilities to the manufacturers, the British Government established the Metal Industries Development Centre (MIDC) in 1941. This helped the industry to shift from manufacturing of basic metal products to precision surgical instruments. After Independence in 1947, Pakistan inherited 17 registered surgical instruments manufacturers in Sialkot.

In 1958, the Surgical Instruments Manufacturers Association of Pakistan (SIMAP) was incorporated as a representative body of the exporters and manufacturers of surgical industry; which would secure the interests of the industry. The association since then has played an important role in addressing issues at the government level, nominating trade delegations and participants for trade fairs and exhibitions, handling inter-industry issues and representing the industry at various local and international forums.

During 1960s, a number of fiscal incentives like higher subsidies and credit incentives such as bonus voucher scheme; by the government gave a real boost to local surgical industry. Consequently the industry witnessed wide scale technological up-gradation and increase in productivity and quality.

During 1970s the changes in the labor laws resulted in industry wide layoffs which led to the development of dealer segment in the surgical industry. This segment plays a

crucial role in the industry as majority of the surgical industry depends on this segment for various manufacturing processes. The era of 1980s witnessed the high demand for surgical instruments worldwide and especially US.

However, in 1994 US imposed restrictions by US authority Food and Drug Administration (FDA) on the imports of surgical instruments from Pakistan and forced the industry to improve its manufacturing and management systems and get certifications like GMP, ISO, and CE.

On the global level, centers of surgical instrument manufacturing were found in the early 20th century in Sheffield in England, Nogent-sur-Marne in France, and Solingen & Tuttlingen in Germany. With the exception of Tuttlingen, these clusters no longer exist as important centers for surgical instruments manufacturing. However, the last quarter of the 20th century has witnessed Pakistan, emerging as a key manufacturer of conventional surgical instruments. More recently, Malaysia, Poland, Hungary, China, Korea, and India have emerged as important manufacturers of surgical instruments as well.

This sector exports 95% of its production, mostly to the USA and the EU.

MAJOR FACTS AND FIGURES OF THE SECTOR

Following are some key facts and figures concerning surgical sector of Pakistan:

The world market for Surgical Instruments is over US \$ 30 (B).

Pakistan's exports currently stands at US\$250 Million (2008-09).

(The Sector has shown growth of about 34% as compared to preceding year's exports of US\$191Million)

The total Capital Investment in the Surgical Industry is estimated at Pak Rs.18 Billion.

There are about 2000-2500 active small and medium Surgical Units with labor force ranging from (15-450) per unit.

The number of workers in the Surgical Industry is about 150,000.

The industry manufactures about 100 Million instruments annually.

We are manufacturing two types of Surgical Instruments:

- a) Disposable instruments, which constitutes 60% of our exports.
- b) Reusable instruments, which is 40% of our exports.

Following Countries are the Top Ten buyers of our instruments:

United States	24%
Germany	15%
United Kingdom	10%
France	4.82%
Italy	4.45%
UAE	3.60%
Japan	2.35%
Brazil	2.24%
Mexico	2.22%
Russian Federation	1.90% ¹

EXPORT TREND OF PAKISTAN SURGICAL INDUSTRY

YEAR	2003	2004	2005	2006	2007	2008	2009
EXPORTS					252		
USD (Million)	142	165	187	177		289	268

²

¹ Surgical instrument manufacturing association Pakistan

² Source: UN Comtrade Database

Figures are on CY basis

INDUSTRY STRUCTURE

Pakistani surgical industry comprises of about 2500 large, medium and small sized manufacturing units. Depending upon the size of the unit, there are in-house facilities and distinct process in medium and small sized units respectively. The surgical instruments industry provides employment to about 50,000 skilled and semi-skilled workers.

The production of the industry can be broadly classified into two categories, i.e. disposable instruments and the reusable instruments (OR instruments). The largest market for Pakistani disposable instruments is USA. Majority of the reusable instruments, manufactured in Sialkot, are exported to the European countries.

INDUSTRY AT A GLANCE

Total number of units	Approx. 2500
Installed Capacity	200 Million Pieces/annum
Total Capital Investment	Rs. 12.0 billion
No. of worker	100,000-150,000
No. of people involved (Direct/indirect)	350,000-450,000
Export	US \$ 156 Million
World market of surgical instrument	US \$ 30 billion
Production	100 million Nos.
Source of Machinery	Germany, UK, USA, China

PAKISTAN SURGICAL INDUSTRY STRUCTURE

LARGE: High Sales Segment	
No of Firms	30
Annual Revenues	Rs 60 - 100 million
Investment in Equipment	Rs 50 - 100 million
MEDIUM: Medium Sales Segment	
No of Firms	50
Annual Revenues	Rs 10-60 million
Investment in Equipment	Rs 10-25 million
SMALL: Low Sales Segment	
No of Firms	150
Annual Revenues	Rs 1-10 million
Investment in Equipment	Rs 1-5million
VENDOR Segment	
No of Firms	2000
Annual Revenues	Rs 1-1.5 million
TRADERS	

Besides all the above there are about 800 - 1000 traders who do not have their own production facility.

RANGE OF INSTRUMENTS BEING MANUFACTURED

The surgical industry has a flexible manufacturing processes resulting in production of wide range of products. Production can be made in accordance with British, German, American or any international standards/ specification. The advanced countries of Europe and America are the leading buyers of Pakistan's surgical instruments.

A broad range of surgical instruments are being manufactured:

- Diagnostic
- Anesthesia
- Vaccination
- General
- Instruments
- Suture
- Plaster
- Bone Surgery

- Neurology
- Tracheotomy
- Cardiovascular
- Lung Surgery
- Dermatology
- Ophthalmology
- Otology
- Rhino logy
- Oral Instruments
- Tonsil
- Sterilization
- Urology
- Gynecology
- Obstetrics
- Intestinal & Stomach
Rectum

MANUFACTURING STANDARDS

Surgical industry is the sector where quality is major issue of concern. Recently its importance has increased manifolds given the increasing global competition and new regulations being enforced by the developed countries. These regulations require the exporters of the developing countries to introduce systems focusing on the improvement of management, labor, technology, and all the other fields which in any way affect the firm.

The surgical instrument standards must be in conformance with WTO standards. Over 300 Companies have ISO-9002 Certification and about 250 have Certification of Good Manufacturing Practices.³⁴

SIALKOT MATERIAL TESTING LABORATORY (SIMTEL)

A UNIDO assisted material testing laboratory has been set up in Sialkot in the year 2000 comprising of three laboratories:

◆ Spectro Lab

³ BOI Pakistan

⁴ BOI Pakistan

- ◆ Metallographic Lab
- ◆ Chemical Testing Lab

DUTY DRAWBACK SROS/ RATES

S. N o	Surgical Products	Duty Drawback SROs/ Rates				
		786 2005 Dt. 6-8- 5	839 2006 Dt.17- 8-6	612 2007 Dt.16- 6-7	930 2007 Dt.11- 9-7	211 2009 Dt.5-3- 9
6 8	Annealed surgical and veterinary instruments of stainless steel and non-surgical scissors of stainless steel, all types	0.90%	1.08%	1.08%	0.75%	0.75%
6 9	Annealed surgical and veterinary instruments of carbon steel and non-surgical scissors of carbon steel, all types	0.96%	1.08%	1.08%	0.75%	0.75%
7 0	Nickel or chrome plated scissors, annealed surgical or non-surgical all types made out of cast iron	1.24%	1.08%	1.08%	0.75%	0.75%
7 1	Annealed surgical and veterinary instruments all sorts made of brass	1.59%	1.08%	1.08%	0.75%	0.75%
7 2	Annealed surgical and veterinary instruments of stainless steel all sorts made from duty free imported forgings	0.75%	1.08%	1.08%	0.75%	0.75%

The surgical industry of Sialkot Pakistan has urged the FBR to equalize the rate of duty drawback to 2.73% from 0.75% on surgical and manicure to flourish this industry in the larger national interest.

MAJOR MANUFACTURING UNITS

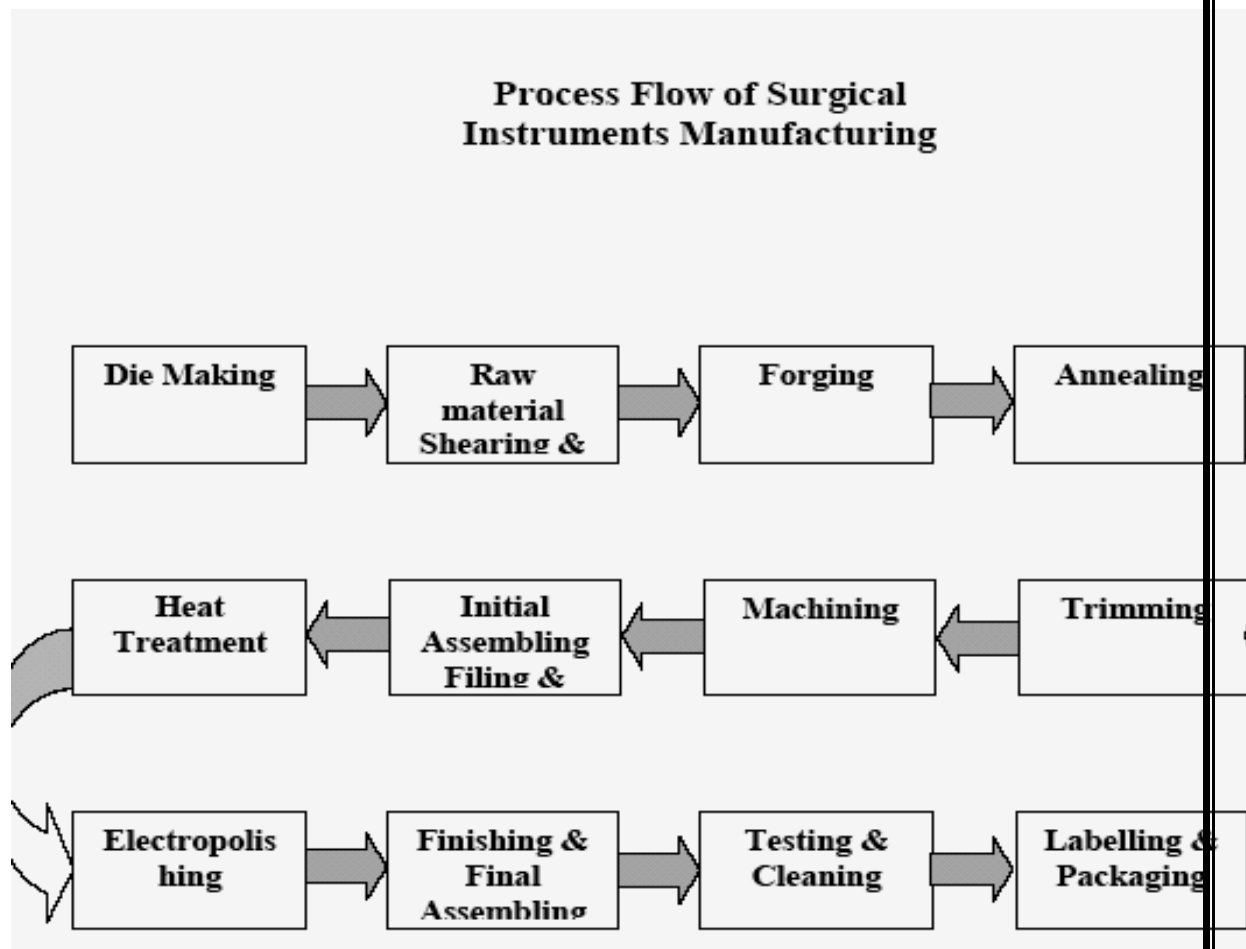
S.NO.	Name of Units	Installed Capacity (Million Nos.)
1.	M /s T. S. K. Impex, Sialkot	20.0
2.	M /s Dr. Frigz Surgical & Co. (pvt) Limited	10.0
3.	M /s Bashir Jamil & Brothers (Pvt) Limited	10.0
4.	M /s We Brother , Sialkot	8.0
5.	M /s Hilbro Instruments (Pvt) Limited	6.0
6.	M /s Technimen Gama (Pvt) Limited	5.0
7.	M /s Asim Surgical Revit Makers	5.0
8.	M /s Tinopal Surgical (Pvt) Limited	3.5
9.	M /s A.D.Surgical (Pvt) Limited	2.0
10.	M /s Garish Surgical (Pvt) Limited	2.0
11.	M /s A-One Surgico	1.7
12.	M /s Weldon Industries	1.5
13.	M /s Medisporex (Pvt) Limited	1.2
14.	M /s Ghulam Rasool Surgical	1.2
15.	M /s Tata Services	1.1

PRODUCTION PROCESS (Value Chain)

In order to develop detailed understanding of the issues and problems faced by a particular industry, it is of prime importance

that an in depth analysis of the value chain is carried out. During the process of production, value is being added at each stage of the production, from the first stage of raw material to the final stage of finished product, a product undergoes a series of processes until it attains its final shape

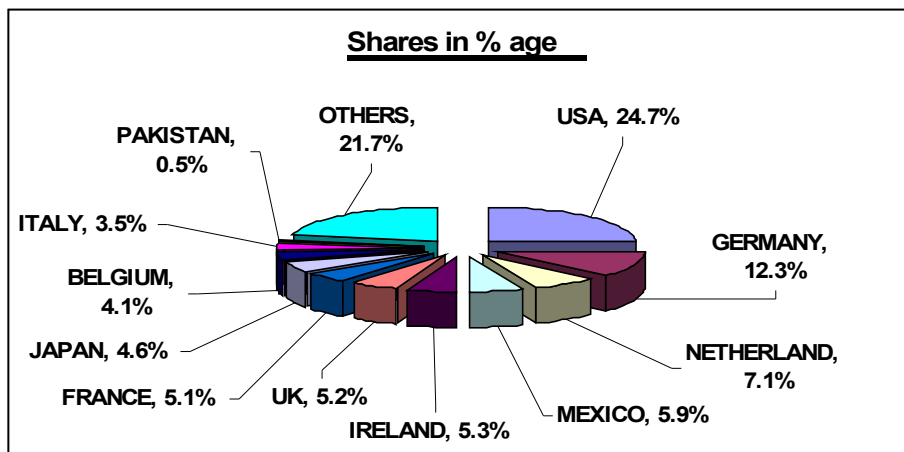
MANUFACTURING PROCESS



COUNTRIES SHARES IN WORLD EXPORT

COUNTRY	%AGE
USA	24.71

GERMANY	12.33
NETHERLAND	7.13
MEXICO	5.89
IRELAND	5.29
UK	5.23
FRANCE	5.07
JAPAN	4.57
BELGIUM	4.07
ITALY	3.45
PAKISTAN	0.49
OTHERS	21.74
<i>TOTAL</i>	<i>100</i>



5

CURRENT DEVELOPMENTAL ACTIVITIES OF SIMAP FOR PAKISTAN SURGICAL INDUSTRY

With an aim to excel more and more in surgical instrumentation exports and to take surgical exports to US\$500Million in two years and ultimately to US\$1Billion in five years time; Surgical

⁵ BOI Pakistan

Association is presently pursuing some of the following major projects / schemes with different Government Departments:

- Efforts for approval of 8% financial support for Brand Development for Surgical Sector.
- Increase of duty drawback rate for Surgical Sector.
- Establishment of a comprehensive Surgical Training Institute.
- Launch of short training courses in trades of grinding, filing, polishing & fitting at Apprentices Training Centre (ATC).
- Collaboration with NAVTEC for vocational training needs of surgical sector.
- Up-gradation and re-activation of Metal Industries Development Centre (MIDC).
- Up-gradation of Sialkot Material Testing Laboratory (SIMTEL).
- Promotion of Cluster Development, Networking concept and techniques in liaison with TDAP.
- Affiliation of Surgical Association with various International Healthcare related Organizations.

TRADE IN SURGICAL INSTRUMENTS

The global trade in traditional hand held stainless steel surgical instruments is worth at least \$650m (£352m, €507m) each year (excluding newer fibrotic instruments or surgical implants)⁶. Most of these instruments are made by firms in towns in Europe and Asia—Tuttlingen (Germany), Sialkot (Pakistan), Penang (Malaysia), Debrecen (Hungary), and Warsaw (Poland). Of these, Tuttlingen and Sialkot are the largest areas of production. Each town has over 300 manufacturing firms compared with only a handful in the other areas. 6 Companies in Tuttlingen are representative of the manufacture of surgical instruments in the developed world, which

⁶ British medical research article

relies on specialist technology to produce endoscopes and implants in addition to more traditional instruments. Tuttlingen has an estimated workforce of 6000 and supplies two thirds of the world's surgical instruments, usually through direct trade to end users.

THE MANUFACTURE AND SUPPLY PROCESS OF STAINLESS STEEL SURGICAL INSTRUMENTS FROM PAKISTAN

Companies in Sialkot are representative of the manufacture of surgical instruments in the developing world, a practice that stems from the production of swords in the Punjab during the Mughal Empire in the 17th century. Production methods are more traditional, with most instruments manufactured and finished by hand. Consequently, production is comparatively labor intensive, employing 50 000 people to supply one fifth of the world's surgical instruments.

MANUFACTURE AND SUPPLY IN SIALKOT

Manufacturers of surgical instruments in Sialkot need to minimize costs to remain competitive. To reduce overheads, most firms subcontract the initial production of instruments to workers employed in a small workshop or their own home, with finishing and quality checking of the product in house before export, quality is checked against European Union or US standards. Manufacturing firms in Pakistan, however, rarely have the infrastructure or marketing presence to allow direct trade with the end users in the destination countries. Most therefore sell to suppliers and retailers in the developed world with only a small profit margin. These “middle men” (mostly in Tuttlingen) then trade with end users, predominantly in the US or Western Europe, usually after a

considerable mark up. For example, a pair of fine surgical scissors will cost \$1.00 to produce, will be exported from Pakistan to Germany at a price of \$1.25 (personal communication), and will probably be sold to a hospital for nearer \$80.00. In 1999, instruments costing a total of \$27.5 million were exported in this way from Sialkot.

German suppliers have sourced instruments from Pakistan for some time. Historically, contractual relationships were developed whereby the German supply firms would use one Pakistani manufacturer. This achieved mutual benefit. For the Pakistani firm it guaranteed regular work and (arguably) a fairly negotiated price for its goods, whereas for the German supplier there was the security that the quality of instruments would be up to the standard stipulated by the contract. Whereas under this system there may still have been questions over the fairness or otherwise of prices that were paid to Pakistani firms, the situation was complicated by new US legislation in 1994 requiring surgical instruments that were imported to the US to comply to international quality standards (a requirement subsequently endorsed by the EU). Manufacturers complied with these standards to remain in business, but this created a shift in their relationship with suppliers in the developed world. Now that the suppliers knew that all surgical instruments would be manufactured to comply with international standards, they were free to award short term contracts based on the cheapest price without the need to stick with one manufacturer. This has driven down the profits of manufacturers in Pakistan and resulted in reductions in labor costs and safety standards. Furthermore, in such a competitive environment suppliers of instruments can stipulate unreasonable terms within their contracts. Instruments manufactured in Pakistan are regularly labeled "Made in Germany," Refusal to comply with such requirements may mean loss of the contract to

competitors, and so manufacturers feel they have no choice. Just how widespread such practice may be is difficult to ascertain, but it is certainly common.

LABOR CONDITIONS

The initial manufacture of surgical instruments involves die making, forging, filing, grinding, machining, electroplating, and heat treatment. Most of these processes are subcontracted to countless small process specific workshops, with the final finishing (chemical cleaning and polishing) and quality checking by the final producers. The use of subcontractors became common in the mid-1970s after a period of labor unrest and strikes. Subcontracting minimizes company overheads and lowers costs, but, because subcontractors are not employees of the company and competition is fierce, it drives down wages and health and safety standards. Subcontracted manual laborers are paid per instrument, and the average worker earns around \$2 a day (personal communication). They have no job security or guarantee of income and no medical insurance or provision of education for their children. Nearly all subcontractors are forced to seek wages in advance from the firms that employ them, further disadvantaging these workers' position in arguing for a fair wage.

SUBCONTRACTED LABORERS IN THE SURGICAL INSTRUMENT MANUFACTURE SECTOR, SIALKOT

Many subcontractors use child labor. Of the 50 000 laborers around 7700 are children, most starting work at the age of 9, and some as young as 7. For these children work is often a necessity; with large families and low wages the children in a family must work or the

family risks starvation. Because of the subcontracted nature of the manufacturing process, there is little regulation of these employment practices (personal communication). These children are often from illiterate families, and they remain illiterate because of lack of education.

The manufacturing processes result in exposure to machinery used in forging, grinding, drilling, and milling; poor wiring; metal dust; noise; repetitive strain injuries; and toxic and corrosive chemicals including sulphuric acid, nitric acid, and trichloroethylene. In one study into the health of child laborers in the surgical instrument sector, 95% reported poor sleep, 50% reported injuries at work, and over 80% reported pain in the lower back, neck, and shoulders, as well as an increased incidence of conjunctivitis and bronchiolitis. Again the subcontracted nature of the work affords no protection to workers and no finance or incentive for the workers themselves to give occupational health a high priority.

SWOT ANALYSIS ⁷

STRENGTHS OF SURGICAL INSTRUMENT INDUSTRY

Geographical Concentration

⁷ SMEDA

The surgical instrument industry of Pakistan is concentrated in the city of Sialkot and its periphery. With the passage of time industry grew in the region surrounding Sialkot, within the area of some twenty-five kilometers, also became an essential part of the surgical instrument industry structure. Concentration of surgical instrument manufacturers and sub contractors within a particular region is the biggest strength of the industry, which is depicted by the collective efficiency of the overall industry.

Economies of Scale

As the number of instruments manufactured each year is more than 100 million units. Such large volumes in the presence of specialized sub-contractors have given Pakistan surgical industry a unique position and competitive advantage over other countries. In the surgical instrument cluster a manufacturer executing various processes might not be able to collect the benefits of economies of scale. But wide scale process sub-contracting definitely generates economies of scale through processing of instruments in large volumes.

Availability of Inputs

Availability of raw material is an essential element for any manufacturing industry. In case of Pakistan surgical industry, besides having large number of process sub-contractors also includes the suppliers, importers and traders of inputs such as stainless steel, chemicals and other raw materials. The presence of such input suppliers guarantee the availability of raw materials therefore saving a lot of hassle for the manufacturers, which in absence of such suppliers have to import raw materials

individually. This not only provides inputs at lower costs due to competition but also saves transportation and pre-operating costs.

Skilled Labor Force

Surgical industry of Pakistan is more labor intensive due to lack technology and it needs high level of skills and precision. The total workforce of surgical instrument industry is 45,000 - 50,000 which represents third or fourth generation of skilled workers. The art of manufacturing surgical instrument is transferred from one generation through another. A concentration of labor force, having the desired skill level, is strength of the industry. It is for this reason that the industry has grown only in and around Sialkot. One manufacturing unit was set-up in Karachi, which was shut down due to high operational costs.

Wide Spread Know How

Trained engineers are available in the cluster to cater any kind of technical problem. These technicians have developed their understanding and skill to deal with any operational problems of the equipment.

Concentration on Core Competencies

Due to the industry norm of sub-contracting to process specialized vendors, the vendors carry out specific processes on large volumes of instruments therefore, developing their core competency in one or two processes. This has enabled the surgical instrument manufacturing to maintain homogenous quality of instruments to some extent along with economizing on capital as well as labor.

Wide Product Range

Despite of limited resources and advance machines and equipment, the manufacturers are able to produce a diverse range of surgical and dental instruments. Without the use of sophisticated design and product development techniques the surgical instrument cluster has developed its capability of producing quality OR instruments comprising of more than 10,000 different instruments

WEAKNESS OF SURGICAL INSTRUMENT INDUSTRY

Minimal Involvement of Brand Names

The buyers of Pakistani surgical instrument industry are international distributor or wholesalers and that is the reason brand involvement is very low. Only a few established, world-renowned brand names are among the buyers of the industry. Working with brand names not only means higher revenues but the brand names also assist the manufacturers in technological up-gradation, quality and management systems and skill development.

Branding

One of the major problems with surgical industry of Pakistan is branding. The industry has a history of more than six decades and there are still no brand names. The absence of local brand names deprives the industry of directly participating in tender business to cater to the end user in foreign markets and works adversely by giving the buyer greater bargaining power. Through development of local brand names the surgical instrument industry is likely to get access in the markets of less developed countries, which can

ultimately prove to be a stepping stone to enter the markets of developed countries, with locally branded surgical instruments.

Marketing and Distribution

Although the manufacturing quality of Pakistani surgical goods is comparable with other countries but in the absence of marketing and proper distribution industry is suffering badly in international market. Some of the instruments manufactured in Pakistan are sold at a much higher value for the single reason that they are stamped as "Made in Germany". Similarly the distribution of Pakistani instruments is carried out through international distributors and traders. No Pakistani company either has the resources or the expertise to set up a distribution network of its own. The international intermediaries involved in the distribution of surgical instruments operate on large spreads

Management

The management of surgical industry is one of the weaknesses. The surgical instrument manufacturing in Pakistan has been in the hands of two or three biradaris who are following the traditional ways of doing business. The authorities vest in the hands of owners and this has resulted in the centralization of authority and the success of the industry has further strengthened the entrepreneurs' belief that middle level management is not required to manage a business.

Technical Personnel and New Product Development

Surgical industry is technology based, but in Pakistan this industry has flourished without sophisticated technology. There is a lack of

qualified and trained engineers in factories. The process supervision and operations management is done by non-technical personnel. The process of new product development is done by using reverse engineering, without following proper procedures such as preparing technical drawings. At this stage of development, to grow further the industry needs technical assistance in process improvement, operations management and also for new product development

OPPORTUNITIES FOR THE SURGICAL INSTRUMENT INDUSTRY

Diversification

As world is changing with changing trends and technologies but Pakistani surgical industry is still stuck with the traditional gadgets. Now it is an tremendous opportunity for surgical industry to gear up itself to take the development and production of instruments through latest materials such as plastics and other synthetics and also to explore the area of electro-medical and diagnostic instruments.

Manufacturing Flexibility

The manufacturing process of surgical industry can be modified very incurring very small expenditures. This flexibility provides an opportunity for industry to manufacture wide range of products. There are still certain high value added surgical instruments which, can be easily manufactured locally.

Unexplored Markets

Initially Pakistani surgical instrument industry exported major portion of its products to USA & Europe. However, there are potential markets like Japan, Eastern Europe untapped. Japan, when observed in the broader category SITC 87229 and 87219, is the fourth largest importer of surgical, medical and dental instruments in the world.

Information technology

The use of internet technology has provided a good opportunity to the local manufacturers of surgical instruments to market their product through web pages and latest interactive computer tools such as discussion groups, news groups, etc. it is the only source of marketing that provides in depth and penetration, which an organization really need. Almost all the big brand names in the field of medical and surgical appliances have their web sites which provide information about the organization, the product range and prices and their area of specialization.

Joint Ventures

The surgical instrument cluster of Sialkot has established its reputation as a center of excellence in the South Asian region. Considering a long history of instrument manufacturing and the growth in exports, the state of technology does not seem to be consistent with the industry growth. For under-developed countries collaboration with multi-national companies in a way facilitates the transfer of technology. This is also true for the surgical instrument cluster where the joint ventures with foreign companies have enabled the local partner to considerably up-grade technology. Currently there are only a couple of joint ventures in

the industry. This is one area, which needs to be exploited to its full potential.

THREATS TO THE SURGICAL INSTRUMENT INDUSTRY

Upcoming Competition

Since beginning Pakistan has the advantage of cheap labor. But now with in past few years, China, Mexico and some other countries have also appearing as our competitor in global market having cheap labor. These countries, besides having the advantage of cheap labor, are technologically superior in innovation and use of modern materials in manufacturing as compared to Pakistan.

Quality Systems

Quality is something that is mandatory in surgical instrument sector. 95% of the production of surgical industry is being exported. But this export is affected by the quality standard issues in the international market. Although the surgical instrument industry, as a single sector, has the largest number of ISO and GMP certified companies, but still there are some companies who need to have ISO certification.

Latest Developments

Latest developments in the industry are threat to the industry as well as an excellent opportunity at the same time. It all depends on the availability or resources. The Pakistani surgical instrument industry, in order to develop on sustainable basis needs to have a strong research and development base which facilitates the introduction of new materials and latest processing techniques.

COMPARISON

PAKISTAN vs. GERMANY SURGICAL INSTRUMENTS

German instruments are produced in Tuttlingen, Germany, and considered to be the finest instruments in the world. This famous town is home to over 200 surgical equipment companies. The instruments are produced using high quality surgical stainless steel and are hand assembled by highly skilled master craftsmen. Over the years, Pakistan has perfected the manufacturing of instruments and their quality now rivals German-made instruments. Produced with German stainless steel forgings and assembled and finished in Pakistan, this high-quality, corrosion-resistant instruments are available at a fraction of the price of German-made instruments.

The potential of surgical instruments industry an earner of sizeable foreign exchange needs to be fully explored. For this purpose constant efforts are required to improve international competitiveness in terms of quality, range of products, and favorable trade agreements with foreign countries.

Pakistan and Germany are the only two major suppliers of surgical instruments in the world. Korea, France, Hungary, Poland and England are also in the field but their exports are negligible. In terms of cheap labor, 100-year old localized skills, suitable monetary and fiscal incentives, and world-wide reputation, Pakistan has all those textbook advantages which are associated with localization of industries. However, technological and managerial inadequacies, with reference to hastily changing global medical requirements and advanced countries' protectionist

policies stand in the way of Pakistani exporters capturing the entire world market.

SURGICAL GRADE vs. PAKISTAN-MADE INSTRUMENTS

Surgical Grade Instruments

Most instrument sets are comprised of high quality surgical grade instruments. These expensive instruments have many advantages over low-cost Pakistan-made instruments.

Although most surgical grade instruments are made in Germany using German stainless steel, some are now manufactured in Malaysia, Hungary, Poland, and Pakistan.

Facts about Surgical Grade Instruments

Most Surgical Grade instruments are now produced with a matte or satin finish. Instruments are marked with company name, item number, and country of origin, usually Germany Stainless. Surgical Grade instruments are almost always backed by a lifetime warranty, which covers manufacturer defects including cracks and rusting. If properly cared for, surgical grade instruments should last for many years.

Pakistan-Made Instruments

Learning to identify and control the use of Pakistan-made instruments is very critical.

Pakistan instruments are manufactured to be disposable or semi-disposable. Keeping this in mind, you will find that this is not a low cost alternative to purchasing German-made instruments.

Facts about Pakistan-Made Instruments

The majority of Pakistan-made instruments have a shiny finish. To identify, read the marking/etching on the instruments (i.e., Stainless Pakistan). One can sterilize Pakistan-made instruments along with German-made instruments; however, the Pakistan-made instrument will rust quickly, which will result in the staining of your German-made instruments. It is recommended to never sharpen or repair Pakistan-made instruments because it costs less to buy new one Pakistan-made instrument using Pakistan-made stainless steel rusts very quickly.

MAJOR CONSTRAINTS IN PAKISTAN SURGICAL INDUSTRY ⁸

Technology Constraint

In today's dynamic world technology plays vital role in the development of ant field. Keeping in view the surgical industry of Pakistan, in beginning the instruments manufactured in Pakistani surgical industry was handmade; but with the passage of time, the industry adopted to change but this change is so gradual that we are still lagging behind in the field of technology.

These days' new technologies are taking place of the old ones, for example:

⁸ "Diagnostic Study on Surgical Instruments Cluster" executed under Cluster Development Program of TDAP, SCCI & UNIDO

- CNC Machines (Computer Numeric Control)
- MIS (Medical Invasive Surgery) Instruments

These technologies are adopted by Germany but not here in Sialkot yet. Its reasons are:

- Unawareness of industrialists about these technologies.
- These are very expensive and our people are unable to adopt these technologies.
- There are no trained people to work according to these technologies.

Marketing Constraint

One of the basic elements for the growth of any business is marketing. Unfortunately, Pakistani surgical industry is far behind in this field. There is no strategy to deal with the local market. Major portion of the production is sold to the international wholesalers and distributors, who sell these products under their own brand name.

Importing from Germany or USA etc fulfils the local demand for the surgical instruments. If we talk about the exports, there is also a bad luck for the cluster that it has a deep history but it has no own “Brand” developed yet. We are working as vendors for the other exporting countries. However, some entrepreneurs are aware of this problem and they are trying to develop their own brand.

Research & Development Constraint

Research & Development is the need of today’s business for its survival. Non-adoption of research and development by manufacturers and exporters is also a major problem of surgical industry of Pakistan. No attention is given on development and

betterment of medical instruments. There is an urgent need that businesses establish research and development cells in their premises and allocate a certain percentage of their profits precisely on research and development.

Human Resources Constraint

Organizations are made up of people, who are the building block of that organization. But the human resources of our surgical industry are not properly managed because we have that Nawab system and people are not well aware of the resource management.

The entrepreneurs themselves execute every function of HR. They consider placement of a professional or business graduate as a waste of money; moreover, the professionals are misconceived as another exploitation tool that might steal their business secrets.

The industry for the last 100 years is working on the concept of “ustaad and shaagird”. Surgical industry has started to face the problem of shortage of skilled work force as new blood is not entering in this field and existing skilled workers are also leaving this business. There is an emergent need of a surgical training institute/centre, where current labor force could be trained for enhancement of their manufacturing skills and new entrants could also be trained in this institute.

Financial Constraint

Finance is another issue of the cluster, especially for small enterprises. There are 57 banks in Pakistan out of which 32 are operating in Sialkot. There are 31 leasing companies in Pakistan

and 8 of them are providing their services in Sialkot. Majority of the manufacturers consist of vendors, who have small setup. Most of them have no reach to the banks. They are unaware of how to avail the loaning facility. However, large firms have good relation with the financial institutes and leasing companies.

PROBLEMS IN EXPORTS OF SURGICAL INSTRUMENTS

The global trade in medical commodities amounts to billions of pounds each year with much trade between the developed and the developing world. The pricing and availability of pharmaceuticals, medical equipment, and biotechnologies, and the potential conflicts of interest and ethical issues, have all been questioned. Perhaps the most publicized case has been that of the provision of affordable medicines to combat the spread of HIV in the developing world, where international pressure resulted in drug companies cutting prices. Many other medical commodities (such as MRI scanners and endoscopic equipment) are too expensive for the developing world because costs of research and development are high.

Although many have argued the case for subsidizing medical and pharmaceutical supplies to aid the developing world, the developed world may in some instances be compounding the problem through its own sourcing of medical supplies. Unlike the campaign for the fair trade of goods such as bananas, coffee, and sugar, there has been no such campaign for medical commodities. No systematic investigation has been undertaken into the sourcing of healthcare goods used in the developed world. When these have come from manufacturers in the developing world then, as is the case with other goods, the trade may be open to the exploitation of power by transnational companies, driving down prices and labor standards.

The scale of any such abuse is difficult to ascertain, because we usually do not know or ask where our healthcare products are manufactured or sourced. The trade in surgical instruments is open to unethical sourcing because many such instruments are manufactured in the developing world. This is rarely brought to the attention of end purchasers and consumers.

RESPONSE TO THE PROBLEM

There has been some international and domestic response to the cause of the surgical instrument manufacturers in Pakistan, but most of this has centered on the issue of child labor. A program between the International Labor Office (ILO) and the Surgical Instruments Manufacturers Association of Pakistan (SIMAP) is currently in its second phase. Its purpose is to monitor child labor in the sector and withdraw children from work to enroll them in funded education programs. So far around 1500 children have been provided with education and reduced working hours, but few have been able to leave employment altogether.

Perhaps the more important issue is to look at the underlying cause of the problem and that is of inadequate remuneration and labor standards. Purchasers of surgical instruments in Norway and the US have in the past refused to buy instruments unless they can be certified as not having been produced with child labor; but such moves may reduce trade with the manufacturing regions, only compounding the underlying problems of poverty. The solution lies in purchasers insisting on fair and ethical trade when sourcing instruments. Pressure must be applied to suppliers in the developed world to be transparent about where their instruments have been manufactured and for them to ensure that the laborers

have been paid a fair wage for their work and that basic international labor and health and safety standards have been followed, as defined by the International Labor Office. Again this must be done with due consideration; too heavy a hand may be to the detriment of trade in the region, which will impoverish these areas further. This pressure can come only from the purchasers of these instruments; in a financially competitive sector it is only the potential loss of income that can effect realistic policy change.

Increasingly people in the developed world consider ethical issues when they purchase groceries, clothing, and various other products. Yet we know relatively little of where and under what conditions medical commodities like surgical instruments are manufactured. The UK government has declared itself a key proponent of the EU framework for corporate social responsibility, and within this context the NHS Purchasing and Supply Agency has developed a sustainable development policy. The stated aims of this policy include encouraging NHS suppliers to ensure compliance with international labor standards and to act in an ethical business manner. Yet at present the health service is not meeting such obligations; there is no systematic assessment of the origin of the products it uses or the conditions under which they were produced. It is time to insist on fair and ethical trade.

OTHER RELATED ISSUES OF PAKISTAN SURGICAL INDUSTRY

Human Resource Gap

Shortage of Skilled Technical Manpower

Lack of R&D and design facilities

Shortage of doctors and engineers belonging to the area

Production limited product range

Marketing

Industry is competing amongst itself and compromising on quality

Focused on primarily two markets; USA and Germany

Technological Gap

Absence of R&D in non-steel products and surgical implants

Lack of technical know-how for Electro-medical devices

Lack of meticulous understanding on packaging requirements and market regulations

Standardization

Limited product and process standardization

Financing

Very high Interest rates

Long term financing absent

Other Issues

Gamma Radiation facilities of PARAS not being utilized by industry

PROPOSED STRATEGY

Engineering Pakistan has proposed a strategy for surgical industry of Pakistan, which are as follows;

Two pronged strategy needed to achieve sustained growth in surgical instrument exports

- Add value to disposable instrument category that constitutes majority of the production.
- Product and market diversification

Targets

The targets set by the Government of Pakistan for the development of surgical industry of Pakistan are;

- Total Export of Medical Devices and appliances to reach \$ 500 Million in 2014 having a growth rate of 26%
- The production will grow at 6 % only implying more value per unit.
- Total Investment in the industry has to increase from Rs. 12 Billion in 2002 and reach Rs. 35 Billion in the year 2014 growing at 16% each year
- The Employment level in the industry will reach 82,000 from the current 50,000 at a growth rate of 6%.

RECOMMENDATIONS

Provision of consulting services for branding and international marketing

Pakistani surgical industry is far behind in the field of marketing in international market. The Pakistani surgical instruments are exported without brand names and if there is some quality issue arises than the whole industry suffers. However it branded products would be exported than only the particular company will suffer.

Broaden the sphere of surgical industry by renaming the cluster as Pakistan Medical Devices and Appliances Industry

Broadening the sphere of the surgical industry is current need of Pakistani surgical industry. This sphere should be renamed as Pakistan Medical Devices & Appliances Industry.

Mandatory accreditation of exporters by PQCA on FDA-GMP equivalent standards and Design Institutes for Sialkot Medical Device Industry

A few years back Food and Drug Administration (FDA), USA placed a complete embargo on Pakistani exports because of some quality issues. In order to avoid such future incidents there should be mandatory accreditation of exporters by Pakistan Quality Control Authority (PQCA) on FDA-GMP equivalent standards. This would not only ensure quality exports to USA but would also avoid such incidents in future.

Since beginning there is no designing and innovation in the surgical industry of Pakistan. Now it is required to establish Design Institutes in Sialkot with a view of providing innovative designs to industry.

Technological up-gradation scheme for the sector through involving SME Bank and PMTF

Currently Pakistani surgical industry is lagging behind in technology. In order to compete in the global market it is required by the industry to raise the technology level of the industry. This can be done with the help of SME Bank and Pakistan Machine Tool Factory (PMTF) where the former would provide funding to the industry and the later would assist in assist in machinery needed for technological enhancement. SME Bank and other banks should provide cheap financing on a long-term basis to this industry.

Fill Human Resource Gap by establishing Medical & Engineering Colleges in Sialkot

The only way to fill the human resource gap existing in the industry to be filled by establishing Medical & Engineering Colleges in the region. This would help to fill up the industry gap.

Japanese consultants to be engaged for development of electro-medical equipment and consulting services to be obtained for Japanese market development of value added OR instruments

The untapped of the industry should be explored, which would help in attracting new segments of the market. For that purpose Japanese consultants should be engaged in developing of electro-medical equipments. These consultants will also provide services to the industry for producing high value added OR instruments for exporting them to the Japanese markets.

BOI to facilitate the industry for Joint Ventures and Technical Assistance

Joint venture is very essential for Pakistan surgical industry to get assistance from the international players. Board of Investment

Pakistan (BOI) should facilitate the industry in establishing these Joint Ventures to ensure technological transfer from abroad to Pakistan accompanied with the skills required to operate the technology.

SBP to allow retention of 10% of export receipts for international marketing and for paying salaries to employees working abroad.

State Bank of Pakistan should retain 10% its exports receipts of international marketing for paying salaries to employees working abroad. This has been suggested in the light of establishment of warehouses in the international markets. The international workers and representatives would get benefit from this suggestion.