

SME CLUSTER STUDY

Fan Industry in Gujrat & Gujranwala



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VERSATILE

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Message of Director Infrastructure Housing & SME Finance Department, State Bank of Pakistan

It is my pleasure to present SME Cluster Study on “Fan Industry: Gujranwala and Gujrat”, which was conducted for SBP by Lahore University of Management Sciences (LUMS).

The dearth of credible data on SME clusters in the country is one of the reasons discouraging banks from lending to these clusters and is also a serious handicap towards conducting quality research for developing financial products to cater to their needs. It is to address this deficit that SBP has undertaken to conduct SME Cluster Profile Surveys through reputed Institutions/Consulting Firms. The Cluster Study on Fan Industry is a new addition to the cluster profiles published earlier (<http://www.sbp.org.pk/departments/ihfd-IFC.htm>). The industry was selected on the basis of its economic significance, export potential, contribution towards employment and significant industry/value chain linkages.

The report discusses in detail the historical growth trends, composition, contribution to the national economy in terms of export earnings, direct and indirect employment, supply and demand side issues, credit requirements and banking products available to the fan cluster. The report also covers dynamics of the sector including cash cycle analysis, cumulative income statement and balance sheets analysis. The report also provides necessary background information that may greatly facilitate lending institutions while devising their banking strategies by developing appropriate products and services for the Fan Industry.

I would like to acknowledge the role of DFID, UK here as the cost of the research study was funded by this organization under the Financial Inclusion Program. I would also like to thank Project Steering Committee members, particularly Mr. Muhammad Ashraf Khan, Executive Director - Development Finance Group, SBP, Dr. Muhammad Saleem, Head – Development Finance Support Department, SBP BSC (Bank), Mr. Sadeed Barlas, PBA nominee and Mr. Sultan Tiwana, General Manager, SMEDA for their continued support and useful suggestions on improving the quality of this report.

Mohammad Mansoor Ali
Director,
Infrastructure, Housing & SME Finance Department,
State Bank of Pakistan, Karachi.
October , 2011

Foreword

Pakistan's economy faces a crisis that has both immediate and structural roots. The principal agent for addressing the crisis is the private sector, because it accounts for about 90 percent of Pakistan's output of goods and services and around 90-95 percent of this activity is clustered in the SME Sector. The sector's fortunes are thus crucial for the well-being of the national economy. Hence, addressing the critical needs of the SME sector to drive the process of industrialization and economic growth is absolutely critical. This report is just a part of this overall growth framework and covers fan industry as an example.

The report performance is selective, and focuses chiefly on issues that impact the main drivers of growth in the fan industry. It helps to identify and prioritize the key elements of change that are required and also relate them to their responsible agencies. It supports an ongoing dialogue between key entities such as SMEDA, State Bank, PBA, PEFMA, TEVTA, NPO and TUSDEC to jointly take the responsibility of implementation and monitoring of strategic recommendations.

Moreover, in order to be useful without being inordinately lengthy, the report takes as read the Pakistan Industrial Policy 2010-11 that was issued by the Ministry of Industries earlier this year, and concentrates on the industry private sector's role in furthering the strategy. Also in the interests of brevity, it focuses on what needs to be done—the deficiencies in the performance of the fan sector and constraining policies that need to be remedied. However, the rather substantial agenda for reform that is laid out with detailed recommendations in the report should not be taken to imply that very little has been done in the past.

If one is critical of the fan industries performance, the regret is for opportunities missed and for not performing to its potential, rather than for a failed outcome. The reproach is that the industry could do much better. If, say, India and China could achieve so much so quickly in fan industry, then it should not be impossible for Pakistan with its greater abundance of skill and a long mercantile history of the fan industry, to achieve something comparable. However, this will not happen by itself; it will require a serious change in attitude and strategy. And the first requirement for such a change is to recognize that a change is necessary.

Professor Kamal Munir
Muhammad Usman Khan
Lahore University of Management Sciences (LUMS)
September, 2011

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Finally, we would like to thank commercial banks including Standard Chartered Bank, MCB Bank, Faysal Bank, National Bank of Pakistan, United Bank, Bank Alfalah and Habib Bank for their support and active participation in the focus group interactive sessions held at PEFMA Gujrat. In particular we would like to thank Mr. Shahid Malik (Standard Chartered Bank) to proof read the report and provide specific feedback.

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He has also delivered executive training to senior management from numerous blue-chip firms, including McKinsey & Co; Shell Exploration and Production, NTT DoCoMo, Rolls Royce, ARM Microprocessors, Thai Ministry of Finance, British Telecommunication (BT), and Phillips Electronics. He has been involved in setting up new collaborations between universities (Cambridge-MIT) as well as between universities and industry.

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List of Abbreviations

BOI	Board of Investment
BOP	Bank of Punjab
FDI	Fan Development Institute
GIFT	GIFT University
LUMS	Lahore University of Management Sciences
MAU	Maximum Absolute Utilization
NPO	National Productivity Organization
OEE	Overall Effective Efficiency
PEFMA	Pakistan Electric Fan Manufacturing Association
PSIC	Punjab Small Industries Corporation
SBP	State Bank of Pakistan
SMEDA	Small & Medium Enterprise Development Authority
TDAP	Trade Development Authority Of Pakistan
TEVTA	Technical Education & Vocational Training Authority
TUSDEC	Technology Upgradation and Skill Development Company
UET	University of Engineering & Technology

Executive Summary

Introduction

The Pakistani fan industry is primarily located in and around Gujrat (around 70-75%) and Gujranwala (around 30-25%).¹ Its location in these two districts appears to have been a rather arbitrary affair born out of historical path dependencies. There were no location advantages to benefit the pioneers. However, with the industry's development and expansion, Gujrat and Gujranwala have blossomed into attractive locations for future fan manufacturers. Indeed, the overwhelming concentration of vendors in these two clusters has resulted in the failure of several entrepreneurs' attempts to locate in Lahore and other areas.

The fan industry comprises roughly 450 medium, small and micro enterprises producing pedestal fans (32%), ceiling fans (63%) and bracket fans (5%). Most of the businesses are sole proprietorships and have been managed by the same family for several decades. Around 85% of the total fan production is sold domestically and the remainder is exported mainly to Bangladesh, Iraq, Yemen, UAE and Saudi Arabia. The sector is currently producing approximately 10 million fans a year.² The structure of the industry is sharply fragmented with the six largest companies responsible for around 70% of the total annual production. The same six companies dominate sales in the local market and have established powerful local brand names.

The source of this dominance can be traced back to better quality technology and management systems employed by the large firms, which results in higher efficiency and production. The vast majority of the industry, in contrast, uses mostly outdated technology or more labour intensive techniques, with lower production rates and capacities.

The total direct employment within the industry is to the tune of around 35,000 workers, mostly semi-skilled in light engineering works. This workforce combines to produce fans worth Rs. 18 billion per year.³ Exports have shown a highly impressive growth rate (around 120% over the past five years) and have reached US\$ 40 million. The industry is also impressive in that it seems to have successfully warded off competitive threats from foreign manufacturers, and meets almost all the local demand. Industry survey suggests that the growth in local demand has slowed down, however, the industry is brimming with potential to export - the global demand for domestic fans is well in excess of US\$ 3 billion per year.⁴ The findings of the study suggest that significant potential for growth exists for the fan industry of Pakistan.

¹Values are based on the membership of companies with Pakistan Electric Fan Manufacturing Association (PEFMA); and the survey results collected and tabulated by LUMS.

²Average estimated through survey conducted by LUMS.

³Estimate based on an average priced fan of Rs 1,800-2,000.

⁴Local demand has been stagnant at around 8-8.5 Million fans a year, whereas the industry exported around 1.7 million fans in 2009.

As stated above the local market is dominated by six large brands: (i) GFC Fans; (ii) Pak Fans; (iii) Royal Fans; (iv) Younas Fans (v) Parwaz Fans and (vi) Super Asia. Other companies have failed to establish any significant market share or branding in the local market. However, none of the firms have been able to create a brand in the international market. The products in export markets are normally branded as 'Gujrat Fans'.

Critical Issues Facing the Industry

B.1 Lack of Scale Economies

The issues faced by the sector are not too different from other small manufacturing sectors in Pakistan. The sector suffers at the hands of low levels of investment over time resulting in outdated technology and inadequate scale of production. The daily production of a median size factory in Pakistan is around 500 fans. In comparison the median size fan manufacturing unit in China produces on average 35,000 fans. This large scale production has enabled China to capture around 70% of the total world market for fans. However, Chinese fans are considered to be less robust in quality as compared to Pakistani fans. Chinese normally use composite and adulterated materials for producing their fans, whereas, the Pakistani fans comprise usually pure metals. In terms of its air blow capacity and coverage the Pakistani fans are considered better than their Chinese counterparts.

This finding suggests that Pakistan fan industry should not try to replace the Chinese market, instead should look to consolidate in its own niche markets and try to capture markets of high cost producers such as Spain, Germany and Italy. These countries are producing high value fans hence offer greater opportunity for Pakistani firms. However, some level of scale will still be required to maintain competitiveness in export markets. A key reason for lack of scale economies is closed ownership patterns in the industry. A vast majority of the units are owned and managed by individuals and managed as family businesses. The inertia that develops in such enterprises affects the performance of the fan industry at various levels. Firstly, this behaviour is reflected in a shocking absence of standards, with a whole variety of formats co-existing across parts, and defeating any move towards greater efficiency or scale. Encouragingly, companies that have achieved some scale and success such as GFC, Pak Fans, Royal, Younas, Parwaz and Super Asia have moved to standardized parts and have also invested in modern manufacturing processes.

B.2 Highly Unorganized and Poorly Documented Production Activity

An absence of central information sharing mechanisms means that it is difficult for investors to compare performance and operational efficiency. No formal benchmarking has ever been conducted on the sector. The industry is completely unaware of production management standards such as Standard Labour Hours (SLH), Maximum Absolute Utilization (MAU), Minimum Effective Utilization (MEU), Overall Effective Efficiency (OEE), Line Running Efficiency, Minimizing Wastages, etc. The capacity to document production activity to achieve 'lean management' does not exist. The interviews revealed that firms are not documenting wastes, nor documenting factory down time and break downs, ignoring indirect costs and not keeping strict track of inventory.

B.3 Myopic Entrepreneurial Mindset

Firms also suffer as a result, losing out on 'peer group' learning. While certifications would help greatly in export prospects or even in building brands locally, firms display an irrational reluctance to attain certifications such as ISO 9001 etc. This is possible due to the fact that any formalization is seen to compromise secrecy⁵ of production methods and increase transparency of information in the industry. Even the information about suppliers is restricted. Several successful companies have closed down in the past where the key person suddenly passed away or left the business for some reason. The successful companies in the industry present a contrast to these prevalent practices. They are characterized by management models where responsibilities and information are shared and devolved.

B.4 Inadequacy of the Ancillary Industry

The severe weakness of ancillary industries and institutionalized knowledge-sharing contributes further to the plight of the industry. Although, there is a large engineering university in Gujrat, the industry – academia linkage has only occurred at the extreme periphery. The 'fan engineering design' used in the local industry is still based on old techniques and resultantly has not shown responsiveness to changing demand trends towards more energy efficient fans. The larger units (GFC, PAK, Royal) have individually invested in some research and development which has provided certain advantages to these large companies. On the whole, however, the industry has been deprived of any systematic engineering upgrade to improve fan quality and characteristics. R&D has not only been limited on the engineering side but also on the design and product development side.

The Fan Development Institute which was established for the very purpose of developing fans and designing new products has failed to deliver its objective and its utility has been reduced to providing process services⁶ (die and mould making, tooling and turning, simple electro tests and certifications via Intertek). Interestingly, the Chinese fan industry took off once it started producing fans with alternative materials especially composite plastics and metals, which helped the Chinese in reducing their production costs significantly. Not having a flexible steel production base, the Pakistan fan industry is forced to use more expensive materials and hence lose competitiveness in international markets, especially in the market for utility fans.

B.5 Seasonal Production

Seasonality introduces further complication in this industry. Given 80% of the sales from Gujrat is confined to the local market where the demand only exists between January to early July, a large number of factories have to shut down operations in the remaining

⁵The element of secrecy is so strong that father's do not share all the information even with their sons working in the same business.

⁶There are different view points on the utility of the FDI; people who are closely associated with Pakistan Electric Fan Manufacturing Association (PEFMA) are quite positive, whereas those that are away from the association do not have anything positive to say about the FDI. The LUMS team visited the FDI and interviewed the key staff there. The research team believes that FDI, whereas, is providing useful services to small manufacturers, is still way off providing fan product development services. The FDI will require more dynamic staff and more machinery before it is able to deliver fan development services.

months. A survey conducted by the research team revealed that factories do not have sufficient capital to maintain their production in off season to have excess supply capacity during the season. This seasonal production also hits the industry by reducing availability of skilled labour. As the demand for labour is also cyclical, workers are not willing to get training in fan industry as job prospects are uncertain and exist only for a limited time during the year. The problem of skills availability is further accentuated as there are no fan specific training institutes in the region. FDI is offering training courses, however, their trainings are either relevant for the FDI service centre only (these include trainings of CAD-CAM facilities and Die & Mould Designs) or are based on outdated techniques and manuals. In both cases, the contribution made by FDI in providing skilled labour to industry is fairly limited. Interestingly, seasonal demand is not an issue in Gujranwala as factories have diversified into other products ranging from washing machines to motorcycles.

B.6 Quality Constraints

A main distinguishing factor between a stable/viable manufacturer and a weaker one is the quality of the fan. As an electrical product fans have to comply with certain minimum electric safety and performance requirements. Fans sold in Pakistan must comply with PSQCA PS1 electric safety and performance standard. Similarly, each export market has its own quality standard and certification requirements.⁷ The more sophisticated the market the stricter and costlier is the compliance requirements.

The survey conducted by the research team revealed that sticking to basic quality measures was the key to maintaining a successful fan business. Companies producing fans that are not in compliance with quality requirements normally perish sooner or later. The issues are numerous; there are companies that do not comply with any quality standard and as a result distort market prices by selling extremely cheap fans.⁸ Moreover, there are companies who desire to meet all quality aspects but are discouraged due to lack of capital and also the lack of enforcement of standards in the local markets. The performance of the fan depends on the quality of the electric steel sheet used to manufacture the rotor. Fans that are made from imported electric steel sheet are much superior in quality. However, as the price difference between steel sheet and scrap steel is more than 5x, majority of the manufacturers prefer to use local scrap steel (including oil drums) to produce the rotor. These results in high degree of re-work and return under warranty.

B.7 Limited Availability of Viable Credit

B.7.1 Capacity Issue of Firms

The sector also complains about lack of viably priced capital. We explored this issue deeply by interviewing firms and banks. In addition, a focus group was arranged with both stakeholders present. It was obvious from the focus group that the issues of capital availability and its appropriate utilization stem from inadequate capacities both at the level of firms and commercial banks. The firms suffer from typical SME asymmetric information issues and limited capacity to manage and provide reliable financial and balance sheet data.

⁷ SASO for Saudi Arabia; South African and Bangladesh Standards; CE for Europe and UL for the USA.

⁸ These factories usually operate seasonally shutting down at the end of the season.

Most of the financial transactions of the firms are recorded informally with much of this information residing only with the owner. The banks fail to trust even audited statements as they are assumed to be fictitious.

Even in cases where firms want to disclose their information fully they do not have the capacity to comply with a bank's documentation requirements. Moreover, the sector is not disciplined with the use of credit. In several cases the working capital limits or short term business loans are utilized for personal expenditure. This inappropriate use of capital puts further pressure on businesses as they load up on debt without any addition to the revenue.

The survey also revealed that religious/cultural views are rigid in Gujrat. Several firms commented that they consider traditional credit products not compliant with Sharia laws. Hence, they always tend to avoid credit products offered by the banks. However, we found strong preference for Islamic banking products. The inability of the banks to offer Islamic products designed for SME's has also been a critical factor impeding the sector's utilization of credit.

B.7.2 Capacity Issue of Banks

The study has also revealed that commercial banks have limited capacity to serve the requirements of SME credit in Pakistan. Commercial banks do not understand the concept of SME development finance and all lending is on commercial basis. Commercial lending is too expensive for SME sector. Data collected from regional banks verified that none of the banks had offered long-term development financing to any fan industry. Mostly, lending constituted short term commercial loans.

Secondly, there has never been a pressure on commercial banks to extend development/long-term credit to the SME sector. With large fiscal deficits of the federal and provincial governments and the presence of attractive spreads the commercial banks are comfortably maintaining large exposures to AAA rated debt.

The commercial banks also use the broad nature of the SME definition/classification to their advantage.⁹ Most of the lending done to SMEs includes clients that are near the border of being classified as an SME or a large corporate client. This lending by the commercial banks should be counted as corporate exposure, rather the nature of SME definition allows the banks to classify this as SME exposure. The banks have not been pushed to develop programmed-based lending products which would suit specific requirements of the sector.

⁹ To be categorized as an SME in Pakistan, a concern must not employ more than 250 persons in the case of a manufacturing or service concern, and 50 persons in the case of a trading concern. Moreover, its net sales should not exceed Rs 300 million and it must not possess assets worth more than Rs 50 million for a trading or service concern and Rs 100 million in the case of a manufacturing concern.

Opportunities for Growth

Our analysis reveals that the Pakistani fan industry has immense growth opportunities available, especially from export markets. The exports from the Pakistan fan industry have grown by more than 120% over the last five years, but its share in the global market remains miniscule. While growth in the local market is expected to stagnate with annual demand hovering in the region of eight million fans a year¹⁰, an increasing awareness of quality there suggests competition could shift from pure price play to increased differentiation, thus creating enormous room for innovation and technological advancement. However, growth of the industry is conditional upon provision of systematic support to the sector. Only with the development of ancillary industries and formalization of the upstream and downstream ends of the value chain can the fan industry come into its own. While tremendous raw potential exists, in order to catch up with the likes of Germany, Italy, Spain, USA, further investment and attention is required. If this process is triggered, we can expect consolidation of this largely fragmented industry. This consolidation will result in larger and more competitive firms.

An attractive opportunity in the form of outward foreign direct investment exists for more progressive firms. Such firms can, with some investment, acquire international brands (for example Italian brands on sale), R&D knowledge and distribution networks and quickly become global players. This will assist in improving quality and also provide enhanced access to higher value added markets. Internationalization will also resolve the issue of seasonality and will improve availability of skilled labour in the sector.

Key Recommendations

In drawing out our recommendations, we have focused both on strategic recommendations for enhancing competitiveness of the sector and also on regulatory changes that will improve credit provisioning to the fan sector. In case of strategic recommendations the role of State Bank is to act as an advocate with relevant government departments, whereas, for regulatory changes State Bank can make direct interventions.

Below we have summarized our key recommendations:

D.1 Strategic Recommendations

D.1.1 Technological Up-gradation:

- EDB should standardize all basic fan models. EDB should then impose a standardization requirement on the industry. These standards should be developed in line with global requirements.
- Gujrat Engineering University should be declared a centre of excellence in fan technology. It should be given adequate resources to build new facilities, hire new faculty and run a world-class R&D and training facility. Collaboration with Chinese engineering universities and fan industry should be explored in this context.

¹⁰ The figure has been estimated using the survey sample and also by using a logical calculation. Pakistan's current population is just over 170 million and the average household size in Pakistan is 7. This results in around 24 Million households. If 35% of the households replace one fan each then the total demand for will be around 8 Million fans a year.

- The Fan Development Institute (FDI) should be upgraded and given clear targets, e.g., to produce energy efficient fans, or achieve global standards with cost efficiency.
- SMEDA, TUSDEC and NPO need to conduct a machinery assessment of the fan industry. The assessment should identify the model, make, source and cost of all various types of machinery that is required to meet the technology upgradation needs of the sector.

D.1.2 Productivity

- NPO should conduct productivity benchmarking of the sector to identify irregular and inefficient manufacturing processes. NPO should also provide consulting support to move the industry towards lean production management tools and conduct trainings on production management.
- PSQCA, SMEDA, EDB and TDAP should conduct training around compliance with international quality standards. Provision of laboratory infrastructure will have to be ensured not necessarily by creating new structures but by upgrading the existing ones to be able to meet the requirements of the sector. PSQCA should also ensure strict enforcement of domestic standards both for local manufactured fans as well as imported. Only those imported fans should be allowed into the country that complies with domestic quality and safety standards. It is also recommended that government either through SMEDA or TDAP share at least 30% of the cost of getting compliance with international certifications such as CE Marking and UL Marking.

D.1.3 Skills

- A partnership between TEVTA Punjab and FDI is proposed to establish a joint training institute specifically focusing on Fans. TEVTA Punjab should make additional investments required at the premises of FDI to upgrade it into a training centre. The courses should not only teach theory but should be closely linked to the practical needs of the industry specifically relating to quality management.

D.1.4 Innovation

- SMEDA should work with a few large companies, the Gujrat Engineering University, and FDI on three high profile projects:
- Design and production of energy efficient fans.
- Design and production of mass market fans complying with global quality and safety standards.
- High value-added fans.

D.1.5 Management

- SMEDA should provide support to develop business strategies and train entrepreneurs on management models where responsibility is diversified. This is essential to reduce the 'key person' risk that exists because of the lack of succession planning.
- GIFT (Gujranwala) and Engineering University Gujrat should be funded to establish research centres focusing on the fan industry. These centres should serve as

knowledge hubs.

D.1.6 Export Promotion

- TDAP should develop fan focused export promotion initiative. TDAP should identify major buying clusters in export markets, use foreign office to establish contact with ‘key account managers’¹¹ at buying companies in those clusters and link them directly with manufacturers and suppliers for Gujrat and Gujranwala.
- The Board of Investment may play its role by facilitating the sector for outward investment targeted at acquiring international brands up for sale and also acquire international distribution networks. This will involve local investment banks to work for introducing consolidation in the fan sector. An alternative could be that the BOI acquires these international brands and distribution networks and then sell equity to local firms.

D.2 Recommendations on Credit Provision

- Product and programme based lending should be encouraged at single digit mark-ups. The State Bank should require commercial banks to finance machinery identified by SMEDA (from approved sources at recommended costs). The payments should be made directly to the machine manufacturer and the machine should stay as the property of commercial bank until all the payments against the credit have been settled. The commercial banks should physically verify the implementation of the whole process. Islamic banking products can provide even better solutions.
- Another critical time when short-term finance is required is during the off-season. The industry fails to stock finished products due to credit limitations. It is recommended that State Bank advocate strongly with commercial banks to lend to fan manufacturers during this period based on the value of unsold manufactured fan stock. The manufactured fan stock can be easily verified and the value can be tabulated easily. Based on the month end value of the stock, lending can be extended.

D.3 Regulatory Recommendations

- Loans up to Rs15 million for plant, machinery and equipment for registered SME’s should be approved as a ‘one window’ operation. These loans should be on single digit mark-up.
- The State Bank should either consider revising the definition of SME’s or it should further break the SME’s into small and medium. The State Bank should make it mandatory that at least 50% of their lending requirement to SME’s must be fulfilled by including small accounts. The maximum size for an account to qualify as a small account may be set at Rs 20 Million.
- Borrowing may be facilitated against guaranteed export orders.
- State Bank should make it mandatory of banks to support a network of mentors to deliver a free finance service to small and medium sized businesses across the country.

¹¹ Key account managers are people who take key buying decisions.

- State Banks should work with commercial banks to improve service levels to micro enterprises. This may involve developing new lending guidelines for micro enterprises.
- State Bank should push commercial banks to publish lending principles which clearly set out the minimum standards for small-sized, medium-sized and large businesses.
- State Bank should establish a transparent appeals processes for when loan applications are declined, with processes independently monitored by a senior independent reviewer, who will publish the results of their review.
- State Bank should make it mandatory for commercial banks to initiate a pre-financing dialogue 12 months' ahead of any term loan coming to an end specifically in case of SMEs. In other words the negotiations on financing agreements of SMEs should begin much ahead of time before expiry so that it can give planning time to SMEs and establish their need of further credit.
- State bank should set up lending targets in the fan industry with total lending by commercial banks to reach up to Rupees 10 Billion over the next three years.
- State Bank should publish a regular independent survey on business finance demand and lending supply in the SME sector.
- State Bank should hold regional outreach events in Gujrat.
- State Bank should annually review and suggest improvements in customer information including a review of literature and other materials (e.g., loan applications). Commercial Banks should submit their annual customer satisfaction reports and based on the feedback, State Bank should introduce and promulgate practices that are consumer friendly and makes provision of information easy and reliable.
- The State Bank should establish a fan sector strategy implementation body and a sub-group of bankers to continue the implementation and further development of ideas presented in this strategy paper.

Critical Success Factors

In the detailed report below we have provided sufficient amount of data that can be used by Commercial Banks to do analysis and estimation of risk levels for making investments in the fan sector. We have summarized below some of the key areas where the banks may focus on when determining the level of lending to fan industry.

- The age of the firm; older firms tend to be more stable.
- Number of distributors the firm supplies its products and the location of the distributors. The larger the network of distributors more stable is the firm. The larger is the concentration of distributors in urban centres, better is the quality of the fans and more viable is the company. The banks can verify this information from distributors.
- Greater the product split is skewed in favour of pedestals more likely is export market success.
- Firms selling fans at an ex-factory price of Rs 2,500 and above can be considered as more stable and financially viable.
- The number of quality certifications and standards certifications acquired by the firms. The minimum benchmark should be compliance certification with PS1 standard of

PSQCA. A company that has acquired several international certifications is more likely to experience sustained growth.

- The structure of the ownership. The more diversified the ownership structure the better will be the viability of the company.
- The top 6 companies produce approximately 7 Million fans a year and the remaining sector produces around 3.5 Million fans. This suggests that the average sized company produce approximately 9-10,000 fans a year. This translates to an average sale of Rs. 20 Million a year and a net profit of Rs. 1.5-2.0 Million. These benchmarks may be used to verify the production unit in terms of its performance.

1. Introduction

In the economic activities of most developing regions, small and medium enterprises (SMEs) play a major role. Pakistan is no exception. Its economy is dominated by SMEs, which produce most of its output and employ most of its workforce.¹² Specifically, SMEs constitute 90 percent of the economic establishments and contribute 30 percent of GDP and 25 percent of export earnings, and employ 78 percent of the non-agricultural labour force.¹³ Any strategy for economic and industrial development, therefore, must pay special attention to the issues that impact small and medium enterprises.

To be categorized as an SME in Pakistan, a concern must not employ more than 250 persons in the case of a manufacturing or service concern, and 50 persons in the case of a trading concern. Moreover, its net sales should not exceed Rs 300 million and it must not possess assets (excluding land & building) worth more than Rs 50 million for a trading or service concern and Rs. 100 million in the case of a manufacturing concern.

In view of their importance, the State Bank of Pakistan has initiated a series of surveys and studies to analyze and address the key issues faced by this sector. The programme designed by the State Bank of Pakistan will take a cluster approach and will cover many key SME sub-sectors. This study focuses on the fan manufacturing clusters based in Gujrat and Gujranwala.

The purpose of conducting this study was to enhance existing understanding of the Gujrat and Gujranwala fan clusters. This will serve as a 'public good' that should be shared among commercial banks, helping them in financing growth in this critical sector. It will also aid the State Bank of Pakistan in evaluating its existing regulatory measures and facilitation in provision of financing facilities for this sector. Specifically, the study aims to provide key information on the size, growth potential, key challenges, future outlook, existing and future financing needs, accounting practices, utilization of business services, and issues faced in accessing formal sources of finance.

1.1. The SME sector

At one end of Pakistan's private sector lie large, formal enterprises that tend to have preferential access to all forms of institutional lending, technology and the highly-skilled labour market. At the other end of the spectrum are small and medium enterprises that in many cases are informal units. This group produces much of the country's private output and accounts for most of the jobs. Yet, it remains mired in difficulties. It has neither the requisite access to financial capital, nor to managerial and technological resources necessary for their growth. To make matters worse, these enterprises struggle to get within earshot of policymakers.

Studies show that nearly 90 percent of employment to the labour force is provided by the private sector. However, most workers in the sector are not employed in large units; more than 60 percent of the workers are self-employed, and that only 16.5 percent are salary earners. Moreover, the overwhelming number of the employed is occupied in micro enterprises, including self-employment. Nearly 86 percent work in units with less than five

¹² The data for all Pakistan indicate that SMEs account for about 90 percent of all enterprises, employ 80 percent of the non-agricultural labor force, and account for approximately 40 percent of the GDP,

¹³ State Bank of Pakistan, 2nd Quarter Report 2009-10.

employees, while 93 percent are employed in units with less than 10 workers.¹⁴

1.2. Issues confronting SME'S

Despite the obvious importance of small and medium enterprises (SMEs) this sector is surprisingly understudied. Information about various SME dominated industries continues to be patchy. This includes the absence of a regular census of enterprises, and a very weak institutional structure for ascertaining the problems that these enterprises face and for obtaining feedback on the effectiveness of policies that are devised for them. Small and Medium Enterprise Development Authority (SMEDA) suggests that SME problems lie mostly in accessing financial capital, information about markets, access to skilled labour and poor access to technology.

The key constraints on the banking sector's ability to expand credit to the SME sector are discussed below.

1.2.1. Financing issues

Access to finance appears to be a major problem for SMEs. Consequently, most SMEs operate entirely on their own equity. The results of sample surveys for the Asian Development Bank suggest that in Pakistan only about 6 percent of fixed investment finance for SMEs comes from development finance institutions and commercial banks.¹⁵ More restricted surveys by the World Bank suggest similar results for the province of Punjab. These studies suggest that the start-up investment is self-financed, while continuing operations are largely funded through retained earnings. This is in sharp contrast to large firms, which are actively wooed by commercial banks both for working capital and fixed investment finance.

1.2.2. Information asymmetries, adverse selection and moral hazard

Information asymmetries and their consequence, the fear of adverse selection, are important underlying causes for highly restricted commercial bank lending to SMEs (and to micro enterprises). The information that SMEs can provide to banks (in the form of financial accounts, business plans, feasibility studies, etc.) often lacks detail, rigor and reliability. This problem is aggravated by the low level of education of small entrepreneurs, who may not be able to adequately articulate their case. This creates a classic situation of asymmetric information.

Asymmetric information means that the borrower (for example, the SME) knows far more about the state of his business than does the lender (the bank). The latter, therefore, may have to spend considerable resources to get an accurate picture of the business's finances and prospects. This leads to at least two problems. First, banks may not be able to differentiate adequately between high quality and low quality companies and projects. In such circumstances, interest rates do not work well as a screening device, because high interest may lead to an excessively risky portfolio because of the problem of "adverse selection"—that the most persistent applicants for loans, and hence perhaps the most successful in securing them, may be those with the least capacity (or intention) to repay.¹⁶

¹⁴ Labor Force Survey, 2001/02

¹⁵ Bari, Faisal, Ali Cheema and Ehsan-ul-Haque. SME Development in Pakistan: Analyzing the Constraints to Growth. Working Paper. Manila: Asian Development Bank, 2005

¹⁶ A senior banker interviewed told that, in his experience, the tenacity of an applicant generally bore an inverse relation to his capacity to repay.

Second, once banks have provided the funds, they may not be able to assess whether the enterprise is utilizing the funds in an appropriate way or is applying them in some other, riskier, direction that offers the borrower a possibility—even if it is remote—of a bigger pay-off; this is the well-known problem of “moral hazard.” A further disincentive is that most loans sought by SMEs are relatively small. Hence, the costs of ascertaining the state of the borrower’s business and of monitoring the use of the loan can be large relative to the size of the loan and thus severely reduce, or even eliminate, the bank’s potential profit on the loan.

To mitigate these problems, banks have adopted precautionary measures, such as requiring that financing be collateralized, with collateral often exceeding 100 percent of the loan. This, however, raises other problems as SMEs normally do not have many assets that can be collateralized. Moreover, the slow working of Pakistan’s judicial system means that it has generally been difficult and time-consuming for banks to take possession of the collateral. In view of all these difficulties, banks frequently refuse to lend at all or severely restrict the size of their loans to SMEs.

However, while severely restricting lending to SMEs might be perfectly rational from the point of view of an individual bank, it may not be ideal from the point of view of society as a whole, because lending may be held down to below the socially optimal level. The risk-adjusted returns to society might still be positive at the point at which the commercial bank stopped lending. In order to bridge this disjunction between social and private profitability, it is important to seek ways of strengthening the ability of financial institutions to lend to SMEs.

1.2.3. Risk profile

Another element highlighted by commercial banks as limiting the ability of SMEs to access finance is their higher risk. Most commercial banks regard SMEs as riskier (than large enterprises) for a number of reasons. First, SMEs face a more uncertain competitive environment than larger companies—they experience more variable rates of return and higher rates of failure. Second, SMEs are less equipped (compared to larger enterprises) in terms of both human and capital resources to withstand economic adversities, especially unforeseen economic shocks. Third, their inadequate accounting systems and lack of financial controls undermine the accessibility and reliability of information on profitability and repayment capacity. Finally, SMEs in Pakistan operate in a somewhat ambiguous environment regarding governance, which reduces the security of transactions. There is a greater risk that banks will not get paid, or that assets such as property will not be properly registered.

1.2.4. Transaction costs

The banks further report, that irrespective of considerations regarding the risk profile, the handling of SME financing in Pakistan is an expensive business. The banking sector consulted during the development of this report reckoned that the cost of appraising a loan application—or of conducting a due diligence exercise in view of a possible new client making a new investment—was largely independent of the size of the financing under consideration.

The banking sector feels that if the capacity of the SME sector were strengthened to overcome the foregoing impediments, then credit would flow more easily to this sector and

its availability would not be an issue.

In order to address the above issues it is imperative that information flow between stakeholders is enhanced and the capacity of the SME Sector is built so that it is able to access formal credit markets. With this in mind, we set out below the study of one specific SME dominated sector: Fans.

2. Fan sector of Pakistan

Pakistan's fan industry is mainly clustered in four major cities namely, Gujrat, Gujranwala, Lahore and Karachi. However, 98% of the country's production is centered at Gujrat and Gujranwala. The industry produces, on average, 10 million fans a year with an estimated value of Rs. 18 billion. Out of the total production, approximately 32% fans consist of pedestals, 5% brackets and the remaining 63% are ceiling fans¹⁷. Fan manufacturing belongs to the light engineering industry category, and is one of the industries that existed at the time of independence.

We have categorized the fan industry in Gujrat and Gujranwala as a cluster since there is a geographical concentration of the fan industry within which firms and other actors in the spatial economic system are formally or informally interlinked through their activities. This cluster offers the advantage of cutting the cost of production and complementarities of products. Moreover, the labour-division network in the cluster positively stimulates the diffusion of knowledge and information in the local industry.

2.1. History of the sector

Before the emergence of fan production, local metal workshops manufactured components for water pipes and water hand pumps in Gujrat. One of these small family-run units obtained the knowledge of electrical fan production by delegating a family member to learn from a leading fan producer in Amritsar in the then undivided British India. Thus, prior to 1947, a small base of fan producers had emerged in Gujrat. Demand for locally produced fans grew rapidly after 1947, boosted in particular by the exclusion of traditional Indian fan suppliers (particularly Amritsar-based) from the Pakistani market (Rana & Ghani, 2004). However, the development of the fan cluster is not the outcome of a planned intervention by the Pakistani state but has emerged from within as an endogenous process. Alongside geographical similarity, entrepreneurs within the cluster share identical social and community structures. They have common religious identities, and are part of the same dominant ethnic, language (Punjabi) and kinship groups.

Our survey also depicts that the majority (72%) of the respondents are operating in the fan manufacturing business for more than 10 years (as shown in the table below). Moreover, the correlation between age and sales is 0.9. This suggests that companies that are older in age are also the ones that have the highest sales. This reflects that the sector has significant stability in terms of solvency. This solvency and stability results from consistent demand in local market and the ever increasing demand in the export markets.

¹⁷ Field Survey done by LUMS team and meeting with Pakistan Electric Fan Manufacturers Association (PEFMA)

2.2. Composition of the sector

Global fan trade is classified on the basis of energy consumption. The fans that consume less than 125 watts of energy (SITC 74341; HS 8414.51) are generally referred to as domestic fans and the fans that consume over 125 watts (SITC 74343; HS 8414.59) are classified as industrial fans.

Table 1: Age of Business 18

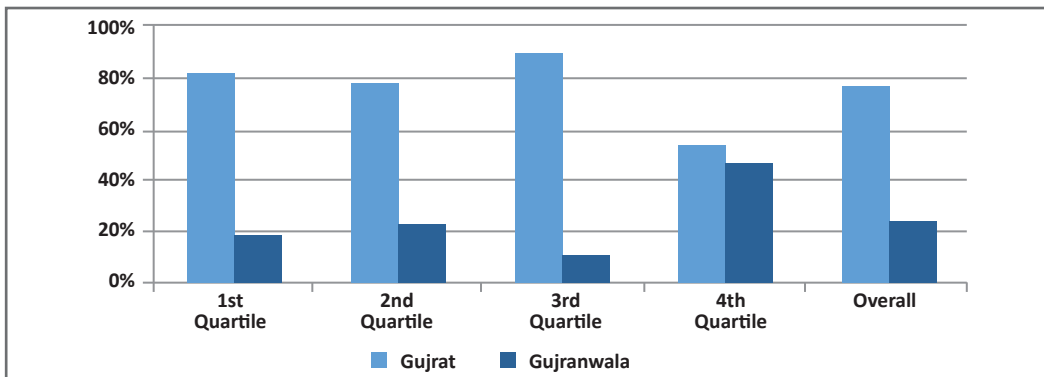
Response in each sales quartile	When was this business established?					Total
	< 1year	1 - 3	3 - 5	5 - 10	>10	
1 st Quartile- (Lowest 25% of sales)	3.7%	7.4%	0.0%	29.6%	59.3%	100.0%
2 nd Quartile	0.0%	0.0%	18.5%	14.8%	66.7%	100.0%
3 rd Quartile	3.7%	3.7%	7.4%	18.5%	66.7%	100.0%
Last quartile- (Top 25% of sales)	0.0%	0.0%	3.8%	0.0%	96.2%	100.0%
Total	1.9%	2.8%	7.5%	15.9%	72.0%	100.0%

Source: LUMS Survey (2010)

Fan industry in Pakistan is mainly dominated by production of domestic fans. Major fan producing countries in the world are Japan, Korea, Taiwan, Hong Kong, India and China. Japan is covering the high quality segment of the fan market. Korea and Hong Kong are targeting the middle segments while India, China, Taiwan and Pakistan are supplying comparatively low quality products at cheaper prices to the low-income segment.

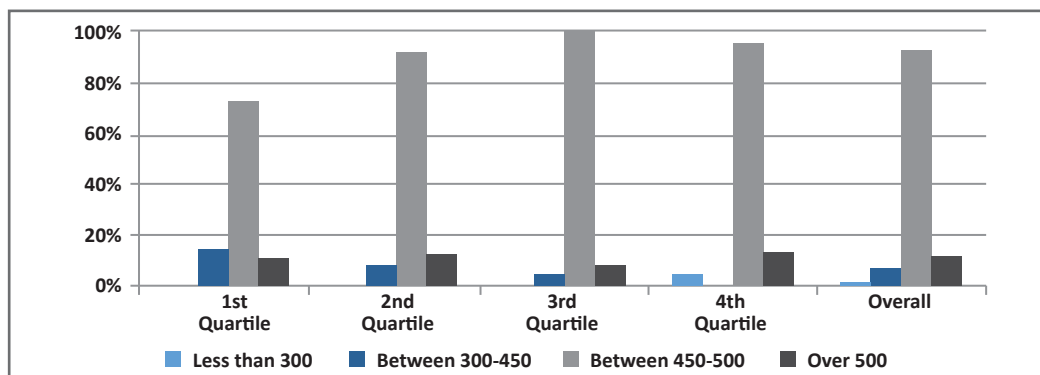
The largest concentration of fan manufacturers and the related vendor industry is found in the cities of Gujrat and Gujranwala. During our interviews, we were informed by industry sources that out of a total of Pakistan’s 450 fan manufacturers, approximately 70% (315) are located in Gujrat and 30% (135) are located in Gujranwala. Our survey confirms this information as shown in the graphs below.

Figure 1: Split of fan manufacturers between Gujrat & Gujranwala (Source: LUMS Survey 2010)



¹⁸ In order to assess if the values differ by the volume & size of the factory, we have sorted and divided the data into 4 groups with respect to annual sales. The 1st quartile represents firms with lowest sales and the 4th quartile represents firms with highest sales within the sample. All the graphs also contain average values.

Figure 2: Size of the Fan Industry (% response of the firms) (Source: LUMS Survey 2010)



2.3. Contribution to the national economy

Over the previous decade, the fan cluster has grown significantly in economic importance. Currently, the cluster enjoys approximately Rs. 18 billion in sales, and has experienced an average growth of 17% per year since 1999. The cluster provides direct employment to more than 35,000 workers in the area.

Table 2: Economic Importance of the Fan Industry

Characteristic	Value
Number of units	475-500
Total Annual Installed Capacity	10 million Fans
Current Production	8 – 10 million Fans
Current Total Local Demand	10 – 12 million fans
Total Export Potential	15 – 20 million fans
Contribution to National Exports	0.20%
Contribution to GDP	0.27%
Capital Output Ratio	0.25
Cluster Direct Employment	35,000 – 40,000
Cluster Indirect Employment	4 times the direct employment
Capital Labour Ratio	8 workers/million (Rs)
Total Estimated Investment	Rs 5.0 billion

Source: Field Survey done by LUMS team and interviews with PEFMA (2010)

Of the 450 companies, only 6 companies can be categorized as large scale manufacturing units. These units have in-house capacities to conduct most of the production processes inside the unit and are also characterized with higher levels of investment and modern technology. Tier 2 companies are numbered between 40-50 and have medium sized units and in-house capacities to conduct major portion of the production process. These units,

however, lack adequate finance for investment and access to modern technology. The remainder can be categorized as Tier 3 companies with small operations, high degree of outsourcing and outdated machinery. The average age of the machinery employed is between 5-10 years. Sales are also fairly concentrated with six large firms in Gujrat and three in Gujranwala, accounting for 70% of total industry sales.

The data from the survey suggests that the industry is dominated by small firms and as such does not benefit from economies of scale. The average capacity of a typical firm is around 500 fans per day which is extremely low as compared to Chinese counterparts where firms' average productivity is 35,000 fans per day.

The cluster offers direct employment to more than 35,000 people. This scale of employment is far below its potential as the industry currently faces a seasonal demand. Employment opportunities only exist for 5-6 months and as a result workers are not attracted.

Table 3: Contribution of Fan Industry to National Economy

Indicator	Value
To GDP (%)	0.27%
To Direct Employment (Numbers)	35,000 – 40,000
To Indirect Employment (Numbers)	140,000 – 160,000
To Exports (%)	0.2%
Source: Interviews by LUMS team (2010)	

It is estimated that industry is currently producing 10 million fans worth Rs. 18 billion. This figure implies that the sector contributes 0.27% to the national GDP. The fan industry also feeds on a wide range of supporting industries such as plastic, aluminium casting, steel, various parts, etc. and thus potential reverberations in economy are far greater than what is represented by the figure above. Pakistan Electric Fan Manufacturing Association (PEFMA) indicates that one employment in vendor industry creates three indirect employments elsewhere. Since employment in the fan industry is around 35-40,000, which is 0.4% of the total manufacturing employment (formal sector), adding 140-160,000 indirect employment in the industry makes it to go up to 1.54% of total manufacturing employment.

2.4. Key attributes of the sector

The fan cluster mainly consists of individual proprietorship firms and small partnerships. The level of formality is relatively high with over 90% of the firms being registered with the firm registrar (See figure 1). However, only a few large firms have been registered as private limited companies under the Companies Ordinance, 1984 (see table 4). The ownership structure represents the inherent myopic and closed mind set of the sector. The industry over the years has preferred to stay small and not invest significantly in expansion, especially that of its management and ownership structure. Hence, the sector is somewhat hostage to its old competitive advantages and production secrets. The

industry shies away from introducing new elements that could bring more transparency in operations and devolve control from the owners.

Figure 3: Firms Working as Registered Businesses, Source: LUMS Survey (2010)

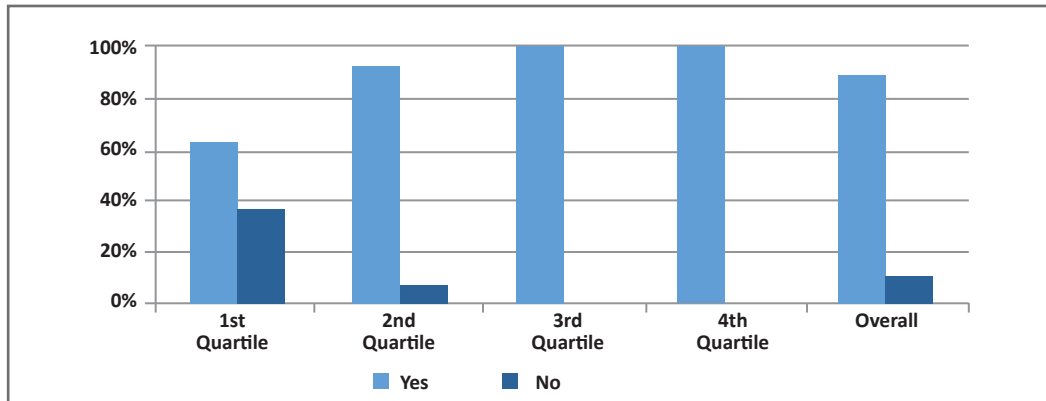


Table 4: Legal Entities of Firms

Response in each sales quartile	Type of legal organization			Total
	Individual ownership/ proprietorship	Partnership	Private limited company	
1st Quartile- (Lowest 25% of sales)	81.5%	11.1%	7.4%	100.0%
2 nd Quartile	63.0%	33.3%	3.7%	100.0%
3 rd Quartile	74.1%	25.9%	0.0%	100.0%
Last quartile- (Top 25% of sales)	61.5%	19.2%	19.2%	100.0%
Total	70.1%	22.4%	7.5%	100.0%

Source: LUMS Survey (2010)

2.5. SWOT analysis

Based on the industry interviews and survey finding we have developed the SWOT analysis below:

FAN INDUSTRY IN GUJRAT & GUJRANWALA

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> Significantly mature and well established industry Low cost labour Extensive domestic retail network Linkages with major local brands and with supply chain Established fan vendor industry Flexibility to meet market trend requirements Increasing reputation for quality Small capital requirement to upgrade production plants 	<ul style="list-style-type: none"> Low investment in technology and R & D Lack of scale both in vendor industry and fan assembly Industry's complete lack of willingness to move towards standard parts Cyclical production resulting in reduced availability of skilled workforce Environmental and Social Compliance issues Absence of domestic metallurgy industry Non-proactive marketing Few collaborative production and marketing efforts Weak Industry / Academia linkages Lack of internationally certified / accredited testing facilities Unreliable and expensive energy supply Male dominated workforce – social compliance issues Absence of proactive long term government policy Inconsistent quality parameters followed No production efficiency measurement or benchmarks followed Domestic demand extremely elastic Negative intra-industry competition Wide English language capability 	<ul style="list-style-type: none"> Growing demand in export markets Establishment of brands in export markets Scope for scale economies and specialization in manufacturing process Innovation towards energy efficient and décor fans A growing \$3.5 Billion international market Rising domestic market potential for better quality fans Outward FDI to acquire international brands and distribution networks Untapped ventures such as component fans i.e. PC fans 	<ul style="list-style-type: none"> Emergence of India as a competitor with better branding Stricter electrical safety standards Price variability in raw material and components Low entry and exist barriers Economic crisis has weakened worldwide consumer demand Consistent government support and incentives to promote fan sector competitiveness in competing countries (E.g. China and India) Negative image of Pakistan Security / law and order Social, environmental and quality compliance Fan substitutes High end domestic demand's preference for imported brands Stricter international certification standards Industry resistance to change

2.6. Value chain & productivity analysis

Value Chain analysis tool is employed to explain the specific issues faced by the producers of the fan industry. Where data is available analogies with reference to the global value chains are also made to identify critical weaknesses. The analysis points out that there are several supply side constraints as well as weaknesses in value addition. It must be emphasized that the value chain presented below represents what is typical for the industry. It is possible that some larger firms may be slightly better placed and some small ones slightly adversely placed than the representation presented below. However, the numbers provided below have been verified by industry representatives. The overall structure of the value chain suggests that industry typically adds 20% in value addition of around Rs 450 per fan. The vendors are adding almost same amount of value, however the importers take the major bulk of the value addition.

2.6.1. Material

The value chain analysis above depicts that over 80% of the costs represents the material and parts required to produce the fan. Out of this 50% of the materials are normally imported. The heavy reliance on materials results in volatile performance as minor changes in prices of parts and materials result in significant cost variability. The high value also suggests that there is little value addition / cost savings opportunities that are available. Moreover, as compared with international competitors such as China the local industry is at a disadvantage due to lack of research and development in materials. China has been able to diversify its production of materials required for fan manufacturing moving into PVC, composites of metals etc. Pakistan on the other hand is still relying on pure materials which are not cost effective.

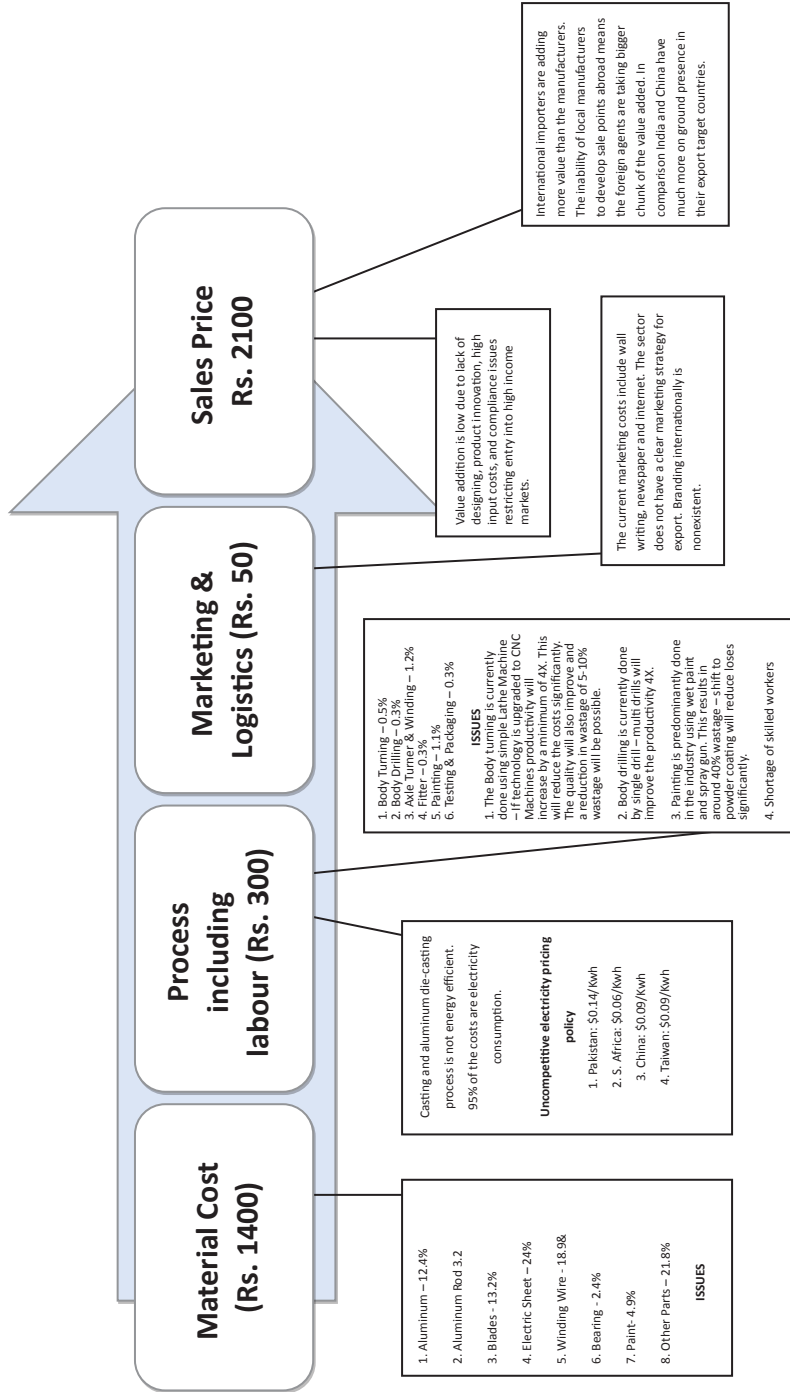
The strategy to address the issue is to facilitate the linkage between the industry and research and development institutions. The industry too should lay out their requirements about materials and the research institutions should develop newer materials that are cost effective. Furthermore, mergers should be encouraged to increase firm size so that greater production process is internalized. Additionally, standardization of parts should be encouraged in the industry. Moving to common parts will imply that large scale production is possible which will assist in reducing costs.

2.6.2. Melting & aluminium die casting

The first major in house process after material procurement is melting and die-casting of aluminium. The process is reasonably efficient except for costs and irregularity of electricity. This increases the costs of production and also the inconsistency in die making. Currently 5-6% of losses occur at this stage due to irregular quality. The vertical integration at this point in the value chain is the die casting industry. Gujranwala has developed strong capacity in die making and casting which adequately supports the industry. TUSDEC has also recently opened up 'tools and die making' center in Gujranwala which can adequately support the fan industry in the region.

The strategy to address this issue is to resolve the problem of electricity shortage and to provide training to workers working on die casting.

Value Chain for Fan Industry: Illustrated Product is Deluxe Model Ceiling Fan



2.6.3. Assembly process

Assembly process which is the main portion in terms of work head in a typical factory contributes only 3.8% to value addition. The portion predominantly represents wages paid to workers working on various machines. The main issue in this segment of the value chain is the low productivity due to inadequate upgradation of technology. More specifically, each process in the industry uses an older technology as compared to its counterparts. For example, the current technology used for body turning is lathe machine, if, technology is upgraded to CNC machines the productivity will increase by at least 4 times. Similarly, shifting drilling technology to multiple drilling will increase production 3 times. For pedestal fans currently majority of the industries use manual coiling techniques, moving to automatic coil inserters will increase productivity by 5 times. The change in technology will increase productivity, quality and performance of the product. When considering global value chains, China's production processes are much more efficient and highly productive. The Chinese fan manufacturers on average produce 45-50,000 Fans/ day as compared to the average firm in Pakistan only making around 200-300 fans/day. The current levels of productivity are extremely low not only due to lack of modern technology but also due to weak production process flow management. The assembly line in factories need to be rationalized so that the existing set ups achieve better technology.

Moreover, another critical area in assembly process is the painting cycle of fans. Over 90% of the firms are using spray paint technology with wet paint. This technique has a high wastage ratio. Around 40% of the paint is wasted and furthermore this technique is environmentally hazardous. The industry needs to move to more efficient techniques, such as electrostatic powder coating paint. This technology is not expensive and provides much better results in terms of quality and avoids wastage.

The strategy to address the issue of inadequate technology upgrade is to make it feasible for the firms to invest. The current impediment to investment in technology is significantly high rates of interest and access problems for SMEs. The government should facilitate the sector by establishing cost sharing schemes for technology upgradation, where government can pick up some of the costs of mark up due. Furthermore, a study may be conducted to evaluate the current performance of technology and most optimal shift required to maximize net gains. This study can give more specific recommendations on what should be the most efficient shift in technology given current industry capacity.

The industry should also be provided assistance to move to better production flow management, better inventory control systems and stronger productivity and production monitoring. In addition, the industry should jointly visit more productive factories in China to learn about the organization layout of the larger units, the level of technology, product diversification and standardization techniques. This exercise should benchmark the Pakistan Fan industry relative to China and draw out important lessons where improvements can be made.

2.6.4. Overall value addition

The current value addition is low due to high content of input and low price fetched by the product in the market. The VCA above reflect that the average price of a Pakistani fan (ceiling) is around US\$25.

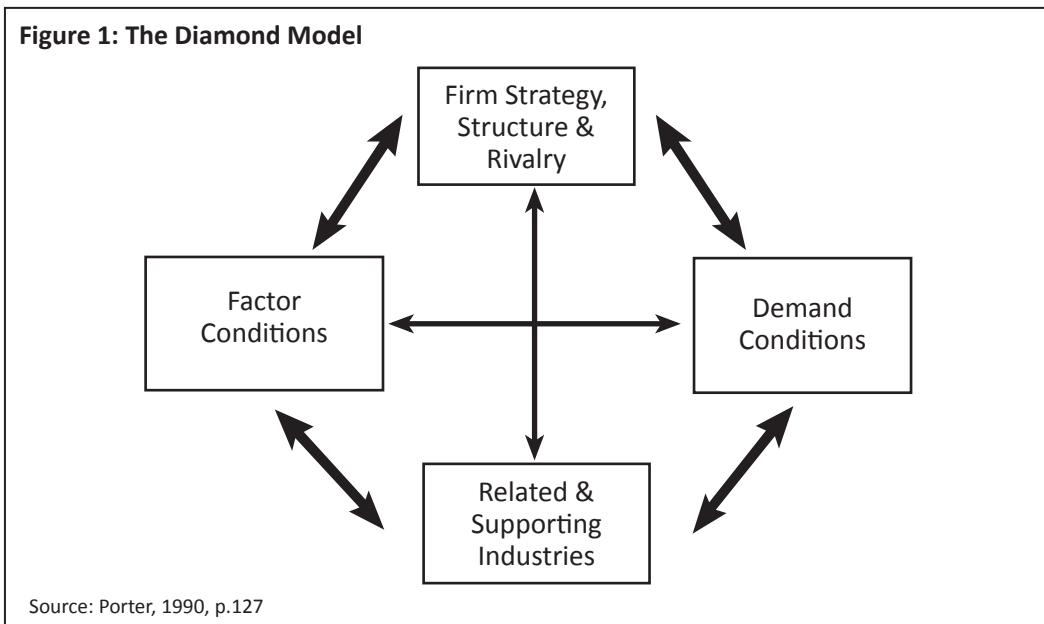
2.7. Framing competitiveness: Porter framework

Michael Porter used his Diamond Model, shown in Figure 5 below, as the basis of his explanation of the beneficial impact of industrial clusters on productivity and productivity growth. The four points of the diamond represent four categories of influence on a firm’s competitiveness that depend on its location:

1. Factor input conditions;
2. Context for firm strategy and rivalry;
3. Demand conditions;
4. Related & supporting industries

In developing the analysis for this study we have applied a modified form of Porter model to assess competitiveness of the fan sector in Pakistan. We have used the evidence collected through survey and field interviews to lay down the main frame competitiveness structure of the fan industry. This analysis will help policy makers, investors, sector players and the State Bank to easily learn about the main characteristics of the fan industry and make informed decisions in their own roles.

Figure 5: Porter’s Diamond Model



Factor input conditions include tangible aspects such as physical infrastructure and intangible ones such as information and the legal framework. The context for firm strategy & rivalry encompasses the local investment climate as well as local policies that affect rivalry. Demand conditions is the local market influence whether firms can move from imitative, low-quality products and services to competing based on differentiated products. The factors under the related & supporting industries category are the key facet of the diamond that relate to the formation and growth of industry clusters.

Porter argues that the quality of the business environment, defined by these four categories, is of paramount importance to an economy's sophistication and productivity, and hence its competitiveness. Further, he argues that the factors in the related and supporting industries category, of the cluster-specific aspects of the business environment, are the most significant. In particular, clusters influence productivity, innovation (and productivity growth), and new business formation, which in turn supports innovation and subsequently expands the cluster.

2.8. Overall financials

The fan industry is not any different from a typical SME sector in Pakistan. The availability of credible data is extremely rare especially when the data relates to the finances and assets of the company. Most efforts of the government to collect reliable data are weakened by inadequate response by the sector. A core example of this is the Census of Manufacturing Industries (CMI) data sets. This census is mandatory, however, still the response is extremely low and a significant amount of under reporting occurs at the level of firms. A critical reason for this is the trust deficit between the private sector and the public sector. The private sector is shy of giving information as they do not trust how the data will be used.

Moreover, on the side of the private sector the intent to pay minimum taxes is also a key reason to hide financial information. The claim of the private sector is that the government has failed to deliver the services that are required and waste the tax payers' money on undue expenditures. They also complain that those that do not pay any tax (i.e. are not even in the tax bracket) get away with hiding everything and those that try to pay taxes get more squeezed. This sentiment has to revise as Pakistan is already extremely low on tax to GDP ratio indicator. However, to do this the government will have to increase the tax base and bring services and agriculture more forcefully into the tax net.

This sentiment of hiding and not reporting true financial information whereas lessens the scope for tax collection, but impact the firms' abilities to benefit from support programmes and also in getting formal credit. The banks when reviewing financial information are unable to trust the figures provided by the industry. Even in cases where audited information is provided there is little evidence to trust the numbers. In order to make this report more useful for the banking sector we have prepared indicative financial statements for the fan sector that are split in terms of firm sizes.

2.8.1. Indicative income statements

We have provided below the indicative income statements for the firms in the fan sector.

Table 5: Indicative Income Statements- Source: LUMS Survey (2010)

Figures in Rs. million	1st quartile	2nd quartile	3rd quartile	4th quartile
Sales	8.780	23.952	49.809	196.202
Cost of Goods Sold	8.286	22.545	47.128	184.151
Gross Margin	0.490	1.410	2.680	12.050
Gross Margin Ratio	5.6%	5.9%	5.4%	6.2%
Operating Expenses	0.116	0.270	0.585	6.950
Operating Income	0.37	1.140	2.100	5.100

The table suggests large deviation in sales between firm categories. The largest mean sales are around 25x the sales of the smallest firms. Growth potential lie in upgrading 1st quartile firms to 3rd quartile. This upgrade will add around Rs. 14 Billion to the total turnover of the industry. Although the size of the sales varies significantly, the gross margin ratios are broadly similar. Only the larger firms have gross margins above 6%. It is again indicated that these numbers should be used as benchmarks and with an understanding that these may under represent the true financial figures. However, the numbers do add up with the value chain analysis which suggests that 80% of the costs are incurred on material.

2.8.2. Indicative balance sheets

To further assist the commercial banks information hub on the sector we have also constructed typical balance sheet for the industry again split by sale size.

Table 6: Indicative Balance Sheet for Fan Industry- Source LUMS Survey 2010

Figures in Rs. million	1st quartile	2nd quartile	3rd quartile	4th quartil
Assets				
Current Assets				
Cash	0.531	0.957	1.258	16.653
Inventory	0.795	1.234	1.829	27.233
Receivables	0.677	1.030	1.881	20.937
Total Current Assets	2.003	3.221	4.968	64.823
Fixed Assets				
Land and building	1.873	3.005	4.203	43.101
Plant and machinery	1.777	2.657	3.528	27.742
Total Fixed Assets	3.65	5.662	7.731	70.843
Total Assets	5.653	8.883	12.699	135.666
Receivables/Total Assets	<u>0.12</u>	<u>0.12</u>	<u>0.14</u>	<u>0.15</u>
P&M/Total Assets	0.31	0.30	0.29	0.20
Current Liabilities				
Account Payable	0.635	1.020	1.672	25.132
Shareholder's Equity	5.018	7.863	11.027	110.543
Total Liabilities	5.653	8.883	12.699	135.666
Account Payable/ Total Liabilities	0.11	0.11	0.12	0.18

The balance sheet also sketches a similar picture to the income statements. The first three tiers are similar in size; however, the fourth tier is extremely large. The top six companies would have balance sheets significantly larger than the 4th quartile as well. Moreover, the ratio of plant and machinery to total assets is almost identical in the first three tiers and slightly lower in the 4th tier. The ratio of receivable to total assets and payable to total liabilities are also quite similar, at least in the first three tiers of the group. This suggests that both large and small firms face similar credit cycles in terms of their sales and purchases. The value of large firms is bigger but this is expected due to their size.

2.8.3. Cash cycles

We have provided full details of the cash cycles in section 5. The broad highlights are the following:

- Around 81% of the purchases are made on credit
- Around 94% of sales are made on credit
- The average duration of payment to debtors is 30 days
- The average duration of payment from creditors is 90 days

2.8.4. Gaps in funding

We have estimated the following credit requirements for the entire sector:

- Technology up-gradation will require credit worth Rupees 3.5-4.0 billion
- Expansion of plants will require credit worth Rupees 1.5-2.0 billion
- Working capital requirement is estimated at around Rupees 3.5-4.0 billion

3. Industry structure & rivalry

The first broad determinant of national competitive advantage in a cluster is the context in which firms are created, organized and managed, as well as the nature of domestic rivalry. Porter argues that goals and strategies of firms, and the way they organize, vary widely among clusters, in ways that are influenced by their national environments and that, in turn, influence their competitive advantage.

Porter also accords particular importance to the presence of strong local rivals as a key to the development of successful industries in all clusters. Even where substantial economies of scale are necessary, a number of rival local firms are important. The domestic nature of the rivalry is important, because of the beneficial effects of visibility, ensuring that rivalry will be particularly intense because of personal pride. Domestic rivalry is also important in stimulating pressure to innovate because of the inability of each individual supplier to rely on shared advantages which stem from the cluster, such as factor costs.

3.1. Evidence and issues

Over the past decades, the fan industry in Gujrat and Gujranwala has developed from isolated family workshops to a cluster with the advantages of external economies and specialization. Firms in the cluster have achieved a moderate level of inter-organizational division of labour & interconnections and have shared the growth of the industry. The fan sector has become a vibrant manufacturing cluster with a lot of potential for creating economic value. However, it could never realize its true potential and most of the businesses are still sole proprietorships and have been managed by the same family over decades. Around 85% of the total fan production is sold domestically.

The structure of the industry is sharply fragmented with the big 5-6 companies producing around 70% of the total annual production of fans. These companies also dominate sales in the local market and have established local brand names for quality and superior fans. Most of the consumers in the local market (especially in the urban centres) always demand for these few brands. The respondents in the survey identified GFC fans, Royal fans, Yunus fans, Pak fans, Starco fans, and Metro fans as the big players in the industry.

The industrial manufacturing structure of the fan cluster has four integral parts: a labour-division network, a specialized supplier market, a solid sales network of domestic distributors, supporting institutions and the industry association.

3.1.1. New entrants in the cluster

Agglomeration or external economies in a cluster result in a demand and supply situation that is better within the cluster than in isolation and so it promotes the growth of incumbent firms and attract the entry of new firms. This growth and entry increases the intensity of agglomeration and so promotes further growth thereby creating a positive feedback loop. The fan cluster in Gujrat & Gujranwala is a vibrant one and it attracts new firms as

depicted from our survey.

New businesses are being formed for a variety of reasons. For example, individuals working somewhere in or near the cluster more easily perceive gaps in products or suppliers that need to be filled in. These individuals more readily leave established firms to start new ones aimed at filling the perceived gaps. However, figure 7 also shows that firms who are unable to compete within the cluster are exiting from it. A majority of survey participants believe that between 5-50 firms existed in the last 5 years. The survey also suggests that the total number of firms have increased in the last ten years this suggest that fan manufacturing is a viable business and is attracting net new investment.

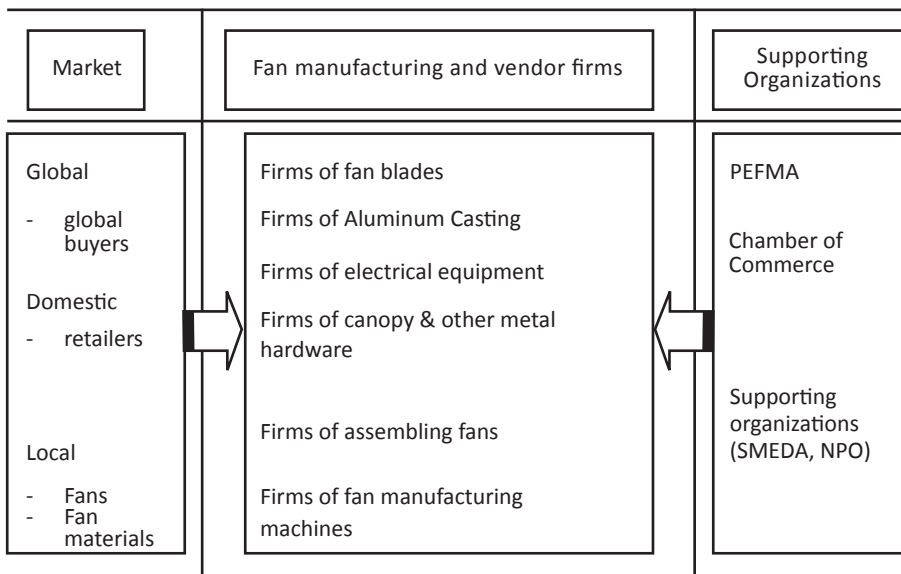
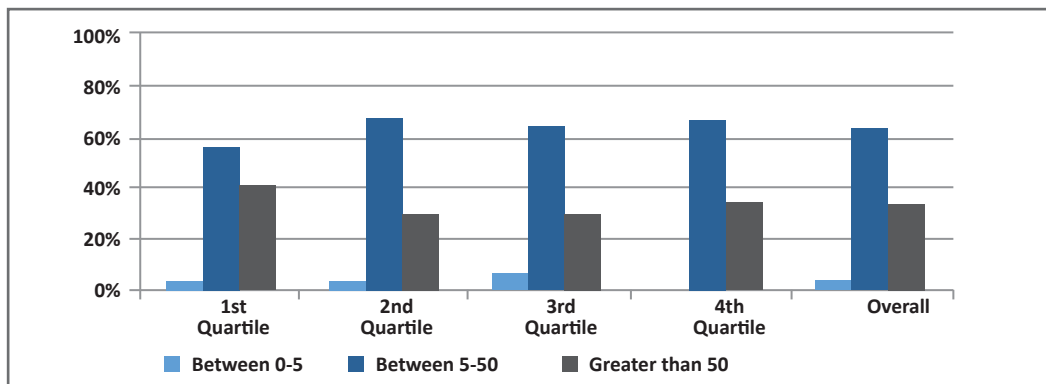


Figure 6: Structure of Fan Manufacturing Cluster in Gujrat & Gujranwala
 Figure 7: Businesses Closed Down in Last 5 Year



Source: LUMS Survey (2010)

3.1.2. Product mix

Ceiling fans represent 60% of the total fan production in Pakistan, while pedestal fans account for another 30%. The remaining 10% is divided into other products including table fan, table-cum-pedestal fans, wall bracket fans, exhaust fans and propellers. However, for export perspective the pedestal fan is more in demand as compared to the other types.

3.1.3. Market dynamics

The electric fan industry has a wide range of products like ceiling fans, pedestal fans, cabin and table fans, exhaust fans, blowers and air circulators. Each type of fan usually has several models. The market for electric fans can be divided into three broad segments:

1. Household: The demand in this segment is usually for general utility fans.
2. Institutional: The bulk demand for general-purpose fans by institutions such as hospitals, educational institutions, companies, industrial establishments and other organizations form a separate category in terms of their purchasing practices.
3. Industrial: industrial fans, exhaust fans and blowers for industrial use.

3.1.4. Competitive environment of the industry

The industry is known for its keen competitive market environment, both at the national and regional levels. Clustering brings a close and convenient connection among the firms in different parts of the value chain. However, as the products are mainly homogeneous, clustering also generates the problem of fierce competition among material suppliers, pushing them to use and develop their resources fully.

Some studies of clustering have also shown that it actually helps in collaboration and co-operation and generates positive externalities. However, in spite of the international successes in cluster development, Pakistani fan cluster still remains far behind in realizing the true economies that result from clustering. This is attributed to a lack of awareness and in depth understanding of the benefits of clustering and its impact on overall manufacturing competitiveness, and is the direct result of the culture in which the fan industry has historically conducted business, namely, one of secrecy, suspicion, and marketing/price warfare. Therefore, strong co-operation in terms of lending machinery to other producers, joint purchases of input materials, marketing of products, labour training and product development among firms is rare. However, weaker co-operation, including exchanging ideas and sharing information is more common.

However, the survey team did find elements of strong co-operation in family groups in the cluster. There are a few family groups, often made up of larger and more established firms which are operating in the cluster. While the groups are made up of a number of independent units, there is effective technical collaboration within them. Such group-wise co-operation includes the sharing of common technical facilities (such as high-pressure die casting and plastic injection moulding technology), shared testing laboratories, as well as sharing of inputs and labour force.

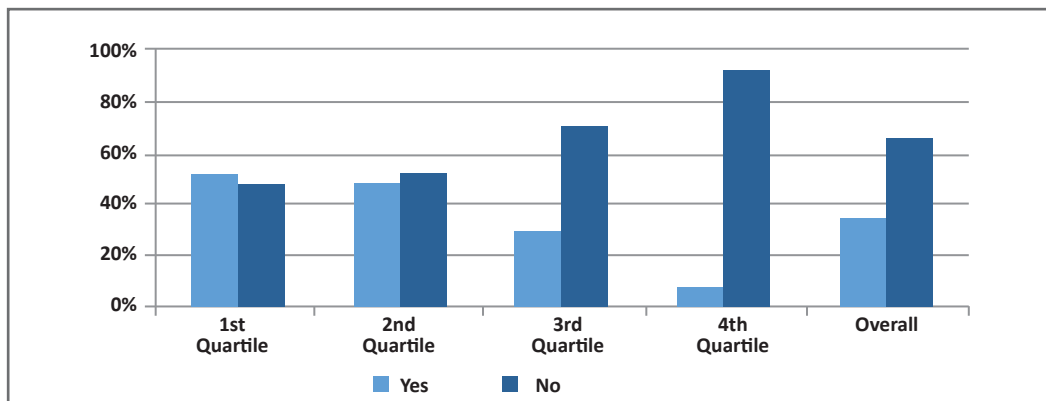
Despite local rivalry and limited bi-lateral cooperation in the cluster, dialogue does take place between local producers. Such informal collaboration is particularly strong with those with whom firms have a prior social tie of family kinship, friendship or a past history of working together. Moreover, we also found evidence of some networking in the cluster. Few firms are working as a consortium and trying to develop business models that go for joint

sourcing of orders and production. It is recommended that support must be provided to firms beginning to work as a consortium to further benefit from this clustering strategy and networking.

3.1.5. Barriers to entry

Opportunities perceived at Gujrat and Gujranwala is strongly pursued there because barriers to entry are lower than elsewhere. Needed assets, skills, inputs and labour, are readily available in Gujrat and Gujranwala region and these can be assembled more easily for a new enterprise. In addition, the cluster itself presents a significant local market. The entrepreneur seeking to benefit from established relationships often prefers to stay in the same community. Our survey also depicts that entrepreneurs of the area generally believe the entry barriers are low. Through our interviews we also found that some of the firms in Gujrat tried to shift their operations in Lahore and other cities, however, they had to eventually shut them down due to lack of availability of workforce, raw material and other components. The transportation of material from Gujrat or Gujranwala to other cities does not allow companies to run successfully elsewhere.

Figure 8: Are there Strong Barriers to Entry in the Cluster - Source: LUMS Survey (2010)



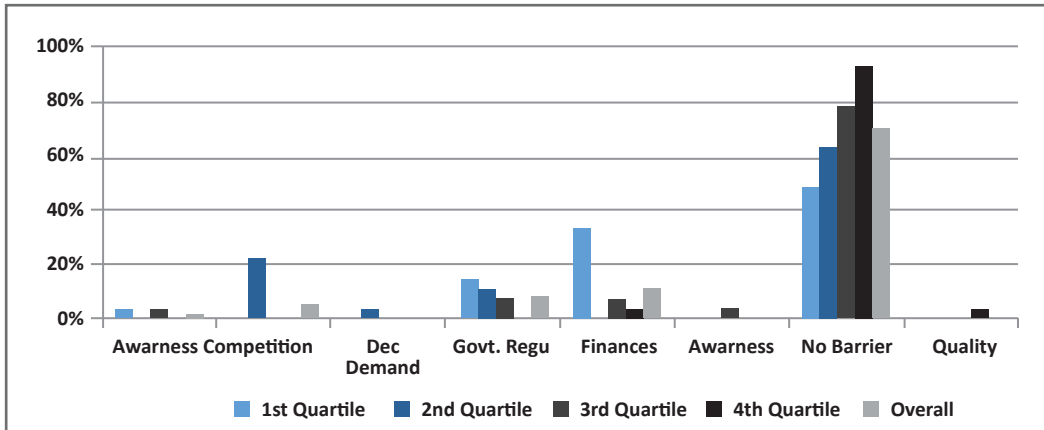
Interestingly, the smaller and informal firms feel that barriers to entry are stronger. This may be a result of these respondents misunderstanding the question as how competitive it is to enhance the market share, given 70% has been absorbed by the big six players.

Moreover, the smaller firms in the cluster believe that access to capital is an entry barrier into the cluster as well as significant constraint impeding their ability to gain further market share (see figure 9).

Examples of competition include the ability of the medium-sized manufacturers to rapidly copy the new designs introduced by the larger manufacturers and to offer the copy at a significant price drop. Frequently, they use look-alike brand names for example 'Super General Fans' (one of the premium fans is 'General Fans') (Rana & Ghani, 2004). These firms manufacture a relatively limited range of medium priced economy fans, utilizing fewer capital-intensive processes and lower quality material, and selectively outsourcing components to low cost vendors. Moreover, the smaller manufacturers have the ability to produce

low cost fans at minimal costs. The low costs are achieved by using simpler, widely diffused technology and older (often used) machines.

Figure 9: Barriers to Entry in the Fan Cluster - Source: LUMS Survey (2010)



Moreover, they hire only seasonal employees and also cater to far-flung rural markets through whole salers. Raw material is generally of inferior quality (Rana & Ghani, 2004); for instance, ‘drum steel’, made from recycled metal drums, is used as material for producing rotor armature. This is a major cost saver, however, severely limits the quality of the fans and also makes them highly inefficient in terms of electricity consumption.

3.1.6. Price competition

The manufacturers in the fan cluster face intense price competition. This is mainly due to the fact that the capital requirement to initiate an assembly operation is moderate. This, coupled with a lack of concern for quality, normally leads to price competition and some of the medium unit manufacturers also informed us that there were several instances of price undercutting in the cluster.

Contrary to these observations, the survey results show that the price of the fans have generally increased in real terms in the cluster due to increase in the raw material prices and the costs of doing business.

Despite the price competition among the incumbent firms, new players continue to join the industry. The increment in the number of firms have somewhat depressed the prices as in majority of the cases the new entrant uses a ‘low pricing’ strategy to gain market access. Our survey depicts that the prices in real terms have increased (see figure 11), however, the prices may have increased to a much higher level if new players were not entering in the industry.

Figure 10: Movement in General Prices of Fans – Source LUMS Survey 2010

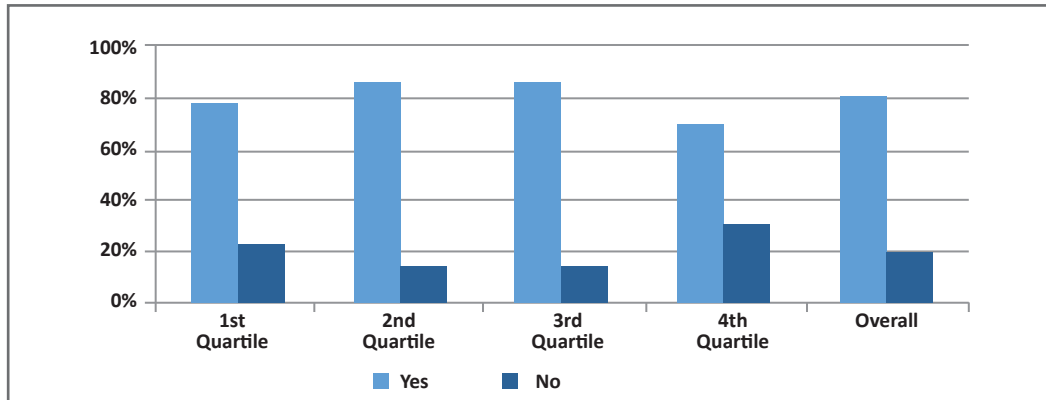
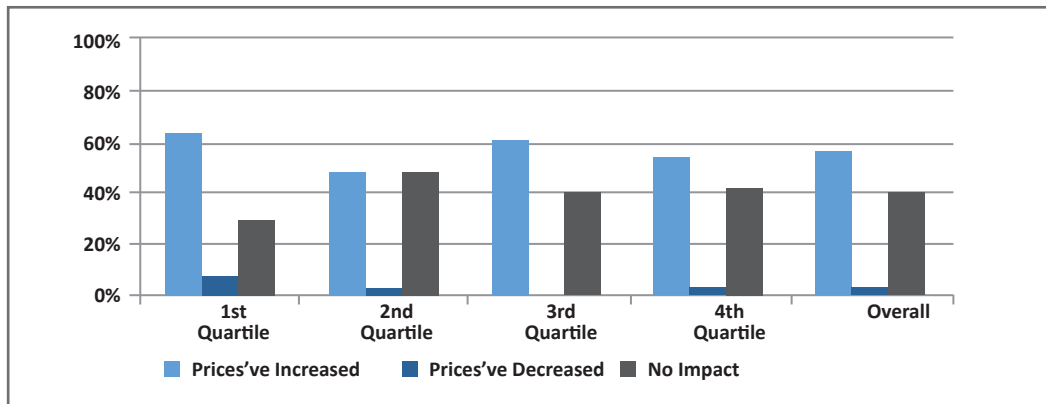


Figure 11: Impact on Prices due to Increase in the Number of Firms in the Industry (LUMS Survey)



The above data findings suggest that there is fierce competition in the fan cluster singling out the big six manufacturer which are the market leaders. This intense rivalry between the approximate 450 companies is likely to continue since entry and exit barriers are extremely low and setting up a fan manufacturing unit stays a fairly straight forward investment.

3.1.7. Succession planning

Succession planning is especially important for the small and medium firms in the fan cluster but our interviews with the entrepreneurs' show that very few of these firms formalize succession plans and they also do not understand the potential benefits of succession planning. Even if many entrepreneurs plan to pass the business leadership on to a family member, most of these firms would benefit from planning for orderly succession, particularly since non-family members or owners are sometimes involved.

Addressing the development needs of the successor also helps to avoid a host of potential problems for both the organization and family-member relationships.

Moreover, the secretive behaviour of the entrepreneurs results in significant key person risk. Companies that are more successful have developed management models where responsibilities and information is shared, on the other hand, in majority of the firms information is protected by the individual owner. Even the information about suppliers is restricted. Several successful companies have closed down in the past where the key person suddenly passed away or left the business for some reason. With such mindset, it will be extremely difficult for the industry to achieve its growth potential. The industry needs to realize that competition is outside not inside.

3.2. Strategy

In order to survive in this global marketplace, fan cluster will need to look beyond existing cluster boundaries and indeed across national boundaries, both for efficient source of components and new technologies, as well as for new markets. Linking with global chains and markets – both more demanding in terms of quality – would bring the motivations and resources (technical and financial) to make firms choose to upgrade. The association of PEFMA can play a huge role in this regard by focusing on calling global attention to this fan cluster and to promote the industry so that it can prosper in the international market. To illustrate, the association can hold international exhibitions to help expand the influence of the fan cluster in the international market. It can also help in the introduction of advanced technology for fan manufacturing as well as releasing recent international market information to its members.

Moreover, the State Bank of Pakistan can advocate with departments of the federal and provincial governments to work with the sector and help them articulate their competitive environment. Importantly organizations such as SMEDA and NPO should work with firms who intend to develop joint consortiums and want to benefit from scale economies. SMEDA should augment the existing efforts of the players in the sector to consolidate their production and upgrade their consortium strategies. This can be done by providing technical support to consortiums to formalize their relationships by drawing out proper contracts, assist them in formulating joint companies and developing cost and revenue sharing formulas and also support them to get credit for investment on a joint basis.

3.2.1. Increasing access to physical inputs

Access to good-quality inputs can be improved by increasing clustering and sub-contracting. Instead of competing with small and micro firms for scarce imported inputs, large firms can subcontract input production to these small firms. They can work with them and the government to diffuse technology and quality standards so as to improve the quality of inputs. Further increase in clustering within the fan industry is especially important for smaller firms because they stand to benefit relatively more from the economies of scales, the reduction of transport costs, the pooling of labour, and the spillover of technology that are enabled and promoted by clusters.

4. Demand conditions

Domestic demand conditions can play an important role in shaping the rate and character of improvement and innovation by firms. Porter considers three broad attributes of home

demand to be important:

- Composition of home demand: especially sophisticated demand such as demanding and anticipatory buyers
- Size and pattern of growth: e.g., early home demand which anticipates international demand
- Internationalization of demand: transmission of a nation's domestic preferences to foreign markets.

According to competitiveness framework presented above the sophistication of local customers is an integral reason why companies are forced to innovate and then succeed abroad. In the case of fan industry this factor is reasonably strong, as the industry is aiming to compete in segments where there is strong local demand. The sophistication of the local demand is however limited when compared to economies such as France, Finland, Italy and Brazil who are producing more sophisticated products. The level of sophistication of local demand has slightly improved as incomes have risen in recent times and consumers have started demanding better products. Innovations in the sector such as sun heater convertor fan; humidifier fans etc. are example of recent innovations by the industry.

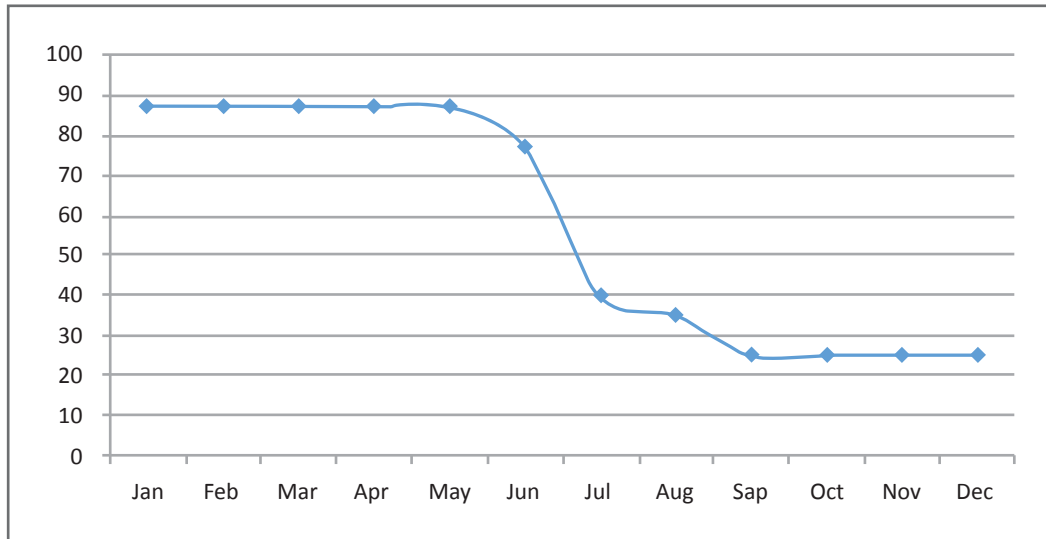
The export demand also varies significantly, from highly sophisticated to low value end products. Pakistan is currently catering for the low to medium end of the demand market. The Western economies are willing to pay significantly high prices for Fans if they meet new fashion/decor trends. For example companies such as Casablanca, Monte Carlo etc. have models that are selling for over US\$700/piece in the US market.

4.1. Evidence and issues

The survey revealed that most firms perceive that their capacity utilization is in the region of 80%¹⁹. This number is an inadequate indicator for demand as the industry currently operates seasonally. Figure 12, on the next page, suggests that industry only operates to near full production capacity in the first five months of the year. From July onwards the operations fall to a quarter of the total installed capacity. This issue is more relevant to the Gujrat fan industry since factories in Gujranwala have already diversified into making washing machines, geysers and some of the large units have even diversified into making motorcycles. Given that 80% of the sales from Gujrat are catering the local markets where the demand only exists between January to early July, a large number of factories have to shut down operations in the remaining months. The survey conducted by the research team revealed that factories do not have sufficient capital to maintain their production in off season to have excess supply capacity during the season.

¹⁹The reason we say that this is a perceived number is because there is hardly any factory in the sector which has in place systems that tracks performance against targets. There are no formal measures such as 'Maximum Absolute Utilisation'

Figure 12: Capacity Utilization over a typical 12-Month Production Cycle – (Source: Board of Investment and reconfirmed by LUMS Survey 2010)



We also found evidence that the industry is beginning to diversify its production into related products such as home appliances. However, this diversification is fairly limited and more so it is more prevalent in Gujranwala rather than Gujrat. Firms in Gujranwala - benefitting from other types of small vendor industry and varied skill base - have been more entrepreneurial and subsequently expanded into other products. The survey results presented below confirm that 86% of the respondents have concentrated activity limited to fans (see table 7). This aspect also impacts the demand characteristics as more diversified industries tend to experience more stable demands whereas the less diversified ones face variable and uncertain demand.

The reason provided by the industry of this segmentation between Gujrat and Gujranwala is also related to local demand. The industry players in Gujrat feel that Gujranwala is better placed in terms of attracting customers with varied demand coming from various parts of the country. Gujrat is still less well known for products apart from fans, ceramics and furniture. The absence of diversified consumers have somewhat limited the ability of the Gujrat fan manufacturers to diversify into other products. Moreover, it is only the large players in the industry that have a diversified production base. This suggests that limitation of capital is also a major factor constraining the efforts of firms to diversify their product base.

To analyze the strength of demand for products we have used 'growth in production over last 5 years as a key indicator. A high growth would normally imply that there is increase in demand both locally and internationally. Around 64% of the total respondents indicated that their units have experienced production growth, whereas only 21% observed a decline in growth. Moreover, the proportion of respondents observing growth in sales was high in all sale categories: 73% of the largest and 66% of the smallest players experienced positive growth.

The data also suggests that there is stability in demand and the industry has not suffered at the hands of global slowdown and also law and order and security issues that have affected Pakistan over the last few years. This is a positive signal for the industry and signifies its resilience to tough macroeconomic conditions.

Table 7: Diversification in Products (Cross-Tabulation) (Source: LUMS Survey 2010)

Response in each sales quartile	Type of manufacturing activity				Total
	only fans	Fans and washing machines	Fans, washing machines and other home application	Fans, washing machines, other home appliances, geysers	
1st Quartile (Lowest 25% of sales)	100.0%	0.0%	0.0%	0.0%	100.0%
2 nd Quartile	88.9%	7.4%	3.7%	0.0%	100.0%
3 rd Quartile	92.6%	3.7%	0.0%	3.7%	100.0%
Last quartile (Top 25% of sales)	61.5%	15.4%	0.0%	23.1%	100.0%
TOTAL	86.0%	6.5%	0.9%	6.5%	100.0%

Table 8: Growth in Production over the last 5 Years (Source: LUMS Survey 2010)

Response in each sales quartile	Growth in production over the last 5 years			Total
	Same	More	Less	
1st Quartile- (Lowest 25% of sales)	18.5%	63.0%	18.5%	100.0%
2nd Quartile	18.5%	48.1%	33.3%	100.0%
3rd Quartile	7.4%	70.4%	22.2%	100.0%
Last quartile- (Top 25% of sales)	15.4%	73.1%	11.5%	100.0%
Total	15.0%	63.6%	21.5%	100.0%

Another indicator used to measure the stability of the industry was growth in sales. As much as 87% of the respondents agreed that they experienced growing sales over the last 5 years. The number was as high as 95% in the largest 25% of the firms.

Table 9: Increase in Sales over the Last 5 Years (Source: LUMS Survey 2010)

Response in each sales quartile	Increase in sales over the last 5 years		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	81.5%	18.5%	100.0%
2 nd Quartile	88.9%	11.1%	100.0%
3 rd Quartile	85.2%	14.8%	100.0%
Last quartile- (Top 25% of sales)	92.3%	7.7%	100.0%
TOTAL	86.9%	13.1%	100.0%

When asked about the future outlook approximately 69% of the respondents suggested that they see sales growing over the next five years. This phenomenon is a result of more firms entering into export markets and them being encouraged by the positive response from such markets. The number is as high as 85% in the largest 25% of the firms while is around 60% for the smaller (50%) firms.

Table 10: Growth in Sales over the Next 5 Years (Source: LUMS Survey 2010)

Response in each sales quartile	Growth in demand in the next 5 years			Total
	No growth	Dexreasing	Increasing	
1st Quartile- (Lowest 25% of sales)	7.4%	25.9%	66.7%	100.0%
2 nd Quartile	14.8%	25.9%	59.3%	100.0%
3 rd Quartile	7.4%	25.9%	66.7%	100.0%
Last quartile- (Top 25% of sales)	7.7%	7.7%	84.6%	100.0%
TOTAL	9.3%	21.5%	69.2%	100.0%

4.1.1. Local demand patterns

The domestic market has continued to expand with the increase in construction activity and electrification in rural areas in the recent past. Our interviews also revealed that the demand for fans was directly correlated with the growth in construction sector. Last ten years has seen double digit per annum growth in the construction of the country and most of this activity has been a result of large housing schemes and sky rise commercial buildings. This upsurge has created more domestic demand for fans of all types.

As much as 75% of the total respondents (81% of the top 25%) feel that local demand for fans is approximately 15-20 Million fans a year (see Table 11). This demand is almost 50-100% above the current fan production by the industry. This finding suggests that growth for the industry will not necessarily come from export market but it could also come from the untapped potential in the local market. If the industry perception about the local demand is

correct then there are possibilities of making gains via scale economies.

Table 11: Total Local Market Size for Fans (Source: LUMS Survey 2010)

Response in each sales quartile	Total demand for fans in Pakistan				Total
	10 Million Fans	Between 10-15 Million	Between 15-20 Million	Over 20 Million	
1st Quartile- (Lowest 25% of sales)	7.4%	14.8%	77.8%	0.0%	100.0%
2 nd Quartile	3.7%	18.5%	74.1%	3.7%	100.0%
3 rd Quartile	7.4%	25.9%	66.7%	0.0%	100.0%
Last quartile- (Top 25% of sales)	7.7%	11.5%	80.8%	0.0%	100.0%
TOTAL	6.5%	17.8%	74.8%	0.9%	100.0%

However as discussed above the local demand for fans is subject to seasonal variations. Usually, fan manufacturers offer price discounts of up to 15% during the 'off-season'. The current average prices of fans in the local market are as follows.

Table 12: Average Price of Fans in the Local Market (Source: LUMS Survey 2010)

Response in each sales quartile	Mean Rs	N	Std. Deviation Rs
1st Quartile- (Lowest 25% of sales)	1,669	27	338
2 nd Quartile	1,736	27	478
3 rd Quartile	1,838	27	124
Last quartile- (Top 25% of sales)	2,084	26	447
Total	1,829	107	399

4.1.2. Export market competitiveness

The sector has recently picked up its performance in the export market. Figure 13 shows that foreign exchange earnings of the sector are consistently on the rise. For the most recent year (2009) the exports crossed US\$32 Million. This has increased Pakistan's share in world fan exports to over 1%. The sector contributes 0.2% to Pakistan's total exports. The sector has experienced double digit export growth over the last five years.

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Figure 13: Pakistan's Fan Exports (US\$ Million)- Source: UN Commodity Trade Statistics

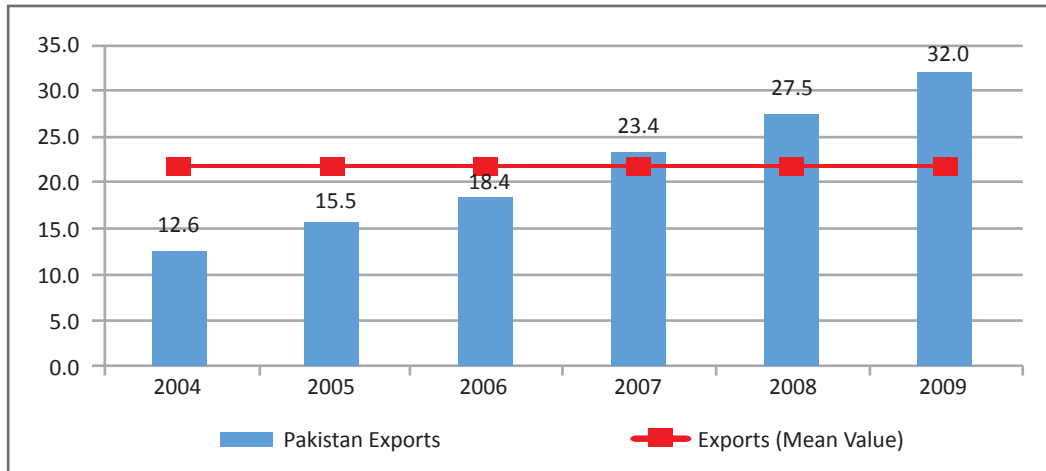


Figure 14: Export Potential for Pakistan Fan Industry (Source: LUMS Survey 2010)

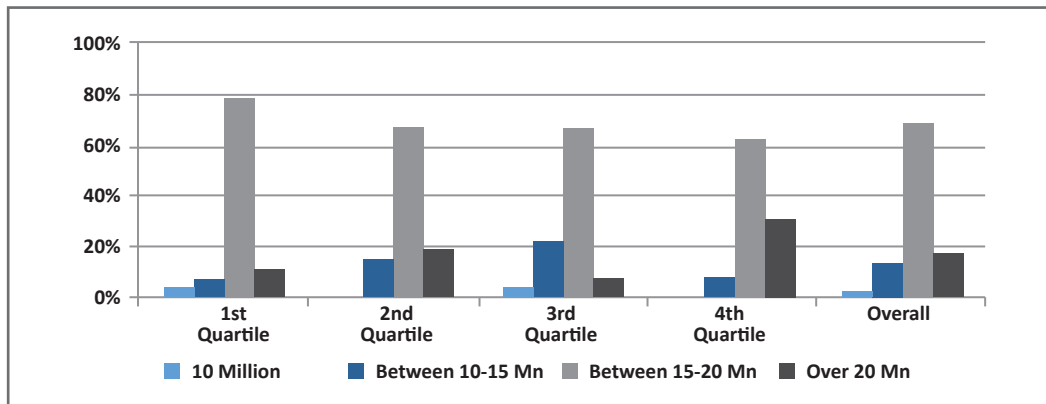


Table 13: Categorization of Firms as Exporters (Source: LUMS Survey 2010)

Response in each sales quartile	Do you export fans?		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	3.7%	96.3%	100.0%
2 nd Quartile	7.4%	92.6%	100.0%
3 rd Quartile	29.6%	70.4%	100.0%
Last quartile- (Top 25% of sales)	76.9%	23.1%	100.0%
Total	29.0%	71.0%	100.0%

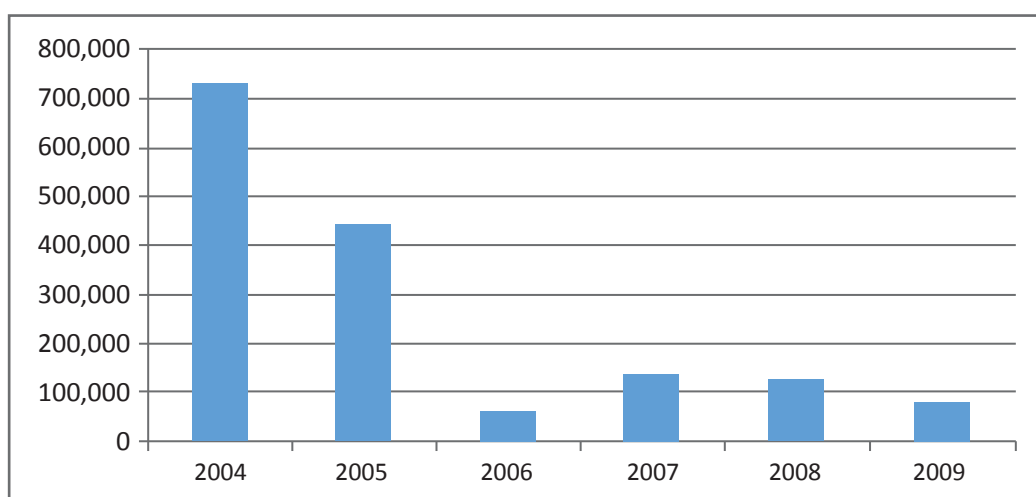
Table 14 further confirms the above findings and depicts that larger firms, due to their high quality product, availability of capital and investment in certifications, have a higher percentage of their sales coming from exports as compared to the smaller firms.

Response in each sales quartile	Mean	N	Std. Deviation
Lowest Quartile of Sales	2.96	27	15.396
Second Quartile of Sales	3.22	27	13.314
Third Quartile of Sales	11.85	27	25.387
Fourth and highest Quintile of Sales	30.96	26	29.224
Total	12.07	107	24.285

Moreover, Pakistan's fan industry also exports industrial category fans (HS 8414.59: Power >125Watts). However, the size of exports in this category is minimal and has been declining as shown in Figure 15.

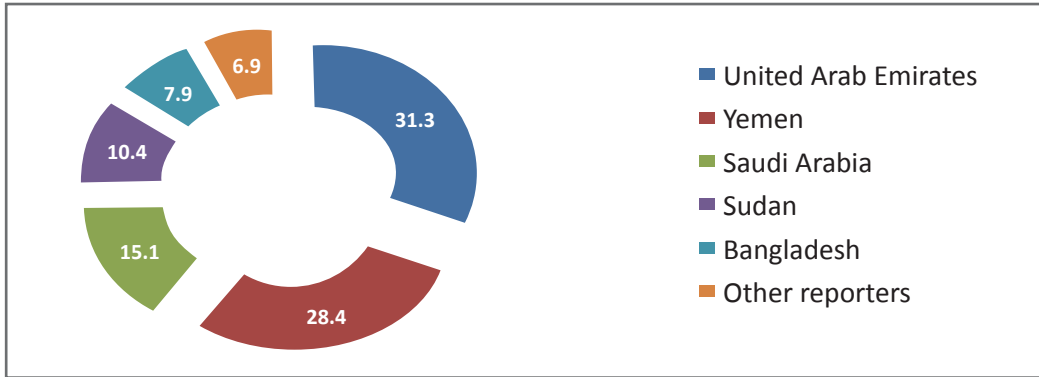
Pakistan fan industry has experienced rapid export growth over the last five years. Starting from exports of less than US\$10 Million, Pakistan is now exporting around US\$35 Million worth of fans every year.

Figure 15: Exports of Industrial Fans from Pakistan (US\$)- Source: UN Commodity Trade Statistics



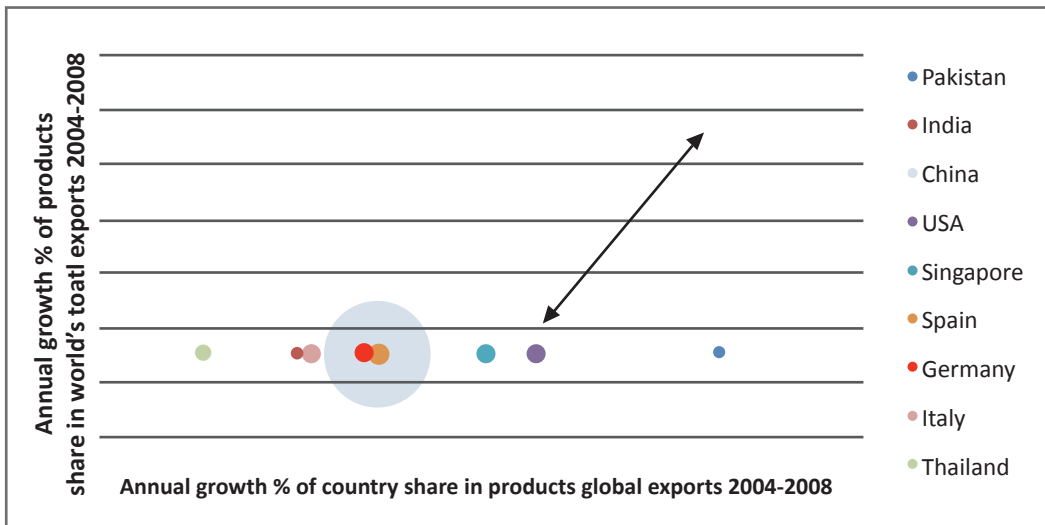
However, the current export market of Pakistan is concentrated in low value or low income countries. Figure 16 shows the export markets for Pakistani fans.

Figure 16: Export Markets of Pakistan Fans 2009 (% Shares)- Source: UN Commodity Trade Statistics



When analyzing export market competitiveness it also essential to look at the overall industry’s competitiveness in the world trade. In Figure 17 below, the vertical axis measures the worldwide growth in the export of fans, as a share of total world exports, while, the horizontal axis measures the growth in the export of product fans for a country as a share of total world export of fans. If the country’s product is on the right hand upper quadrant (competitive quadrant), it shows that the product is gaining in its international competitiveness. This is because its share in the export market for product is rising at a time when worldwide share of the product in total world exports is rising. The size of the bubble represents the size of the industry. Therefore, the more products a country has in the ‘competitive quadrant’ the stronger is its international competitiveness. The data on fans suggest that none of the countries are in competitive quadrant as fan trade globally has slightly gone down in the period covered.

Figure 17: Export Markets Competitiveness-Source: UN Commodity Trade Statistics

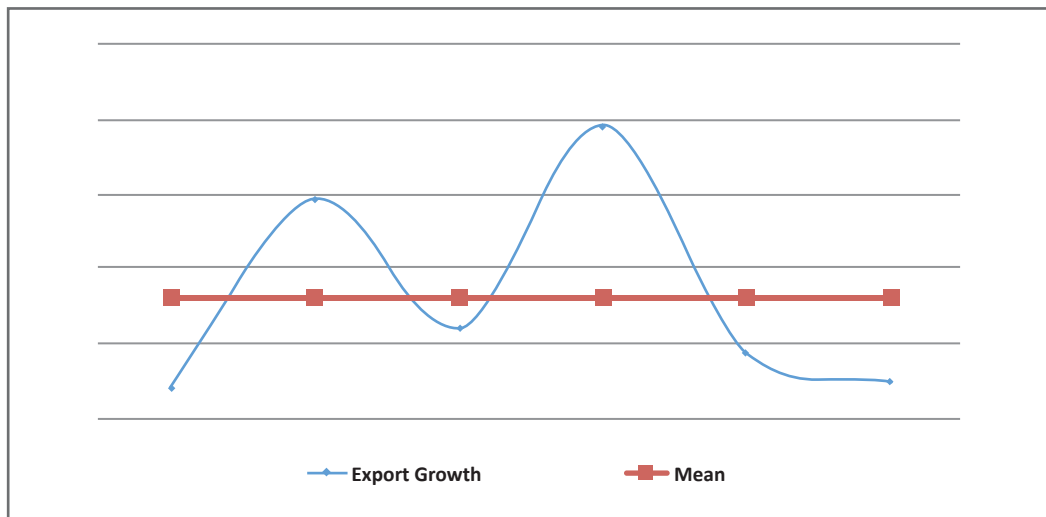


Pakistan's growth has accelerated significantly and is currently ahead of all its competition. Given the shrinkage in market share of Fans globally this growth is both an opportunity and a threat. It is an opportunity as when the other more mature global industry shrinks their size to meet changing trends, Pakistan can increase its absolute share in the fan market. It is a threat as overall industry is shrinking globally so over the long run growth will stagnate. However, the small size of the Pakistan industry (depicted by the size of the bubble) suggests that industry has not done as well as it should have. Looking at the numbers, Germany, US, and Spain are selling fans in export markets at comparable prices with Pakistan, but their shares are greater than Pakistan. Pakistan has access to a greater and a cheaper labour force in comparison to these countries yet it has stayed behind in gaining market share.

Pakistan fan industry has shown strong performance in terms of export growth. Figure 18 below presents the export growth of Pakistan Fan industry.

The increased growth rate in exports has resulted in rising share of Pakistan's industry in world fan trade. Figure 19 below shows the changing shares in fan trade globally. We have omitted the share of China on purpose as China on average has maintained greater than 70% of the market share. Showing China on the chart will result in all other countries collapsing to x-axis. Recently, Pakistan's share has exceeded that of India

Figure 18: Growth of Fan Exports from Pakistan (2004-09) % - Source: UN Commodity Trade Statistics



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Figure 19: Country Shares in Fan Exports (2004-2009) % - Source: UN Commodity Trade Statistics

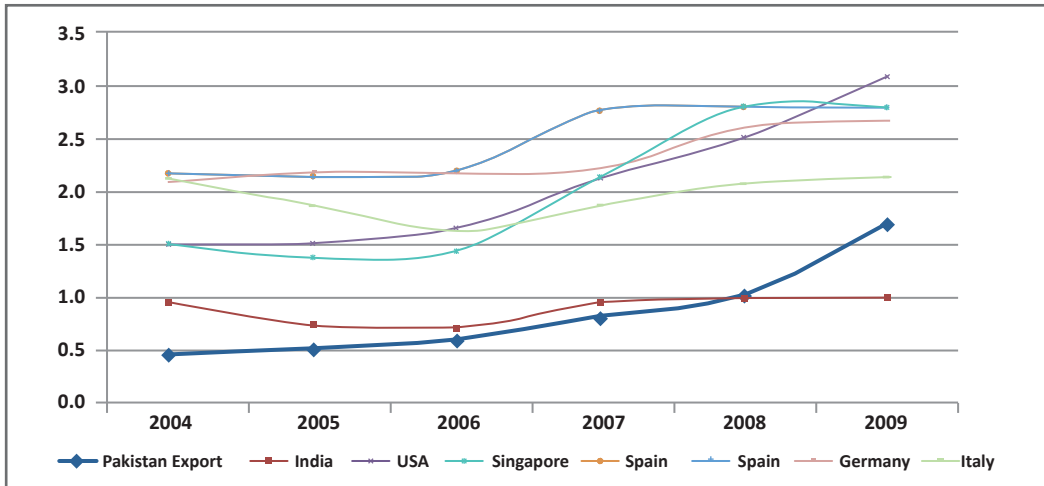
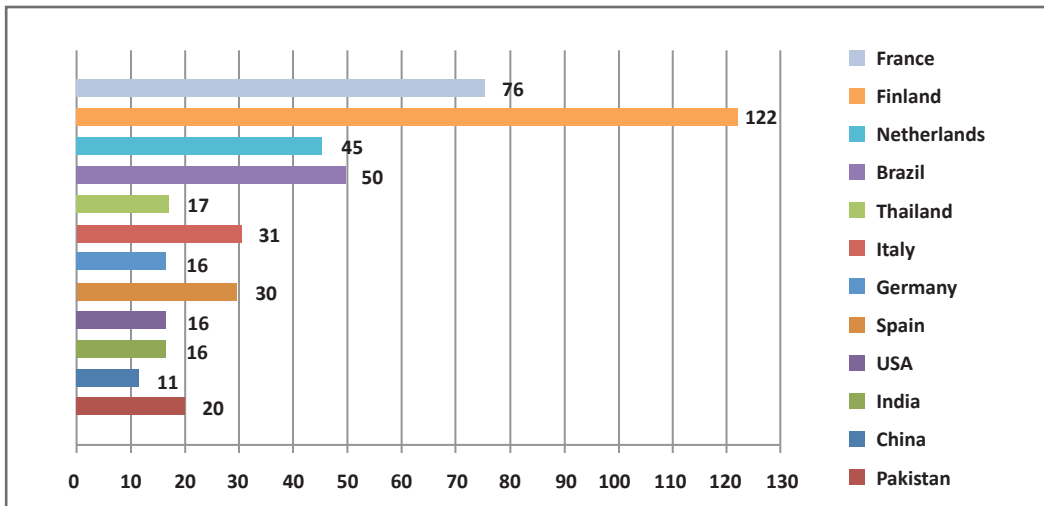


Figure 20 provides a comparison of per fan export price of various countries. The information suggest that whereas Pakistan does reasonably well as compared to China, India, US, Spain and Germany, the prices fetched by Pakistani fans are much lower than those produced in Italy, Finland, Brazil and France. This difference in price is mainly due to better designs, better quality, marketing and branding. Some of the high value added ceiling fans sell for around US\$500-600 in the US retail market. This analysis presents an opportunity and a threat. The industry should not only focus on producing and exporting more fans, in fact, it should focus more on value addition and making better design and innovative fans that fetch higher prices

Figure 20: Average Export Price of Fans in International Market US\$ - Source: UN Commodity Trade Statistics



Greater value addition seems only possible if Pakistan begins to make fans for high income markets.

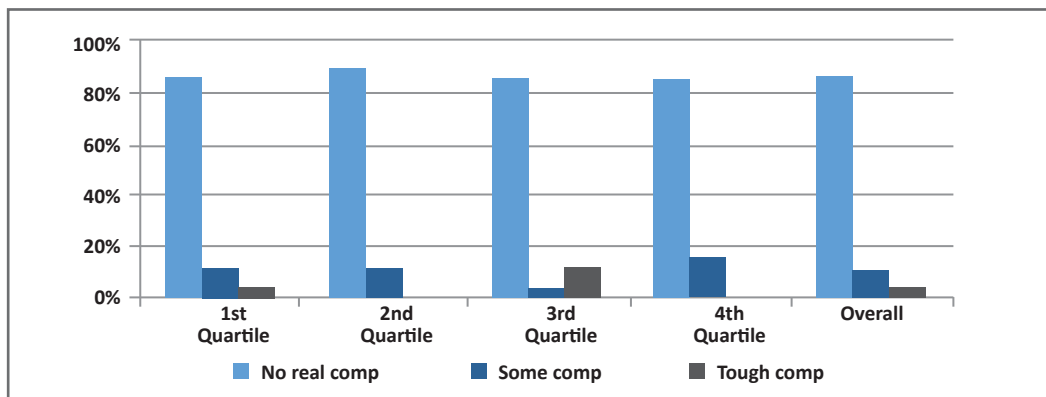
Moreover, the survey data shows that the fan cluster does not perceive low cost Chinese fans as a threat to the local industry. Above 80% of the respondents from different sizes of businesses observed that they did not see any threat from the Chinese fans in the local market. They said that the local market was wedded to the local made fans and the Chinese fans were unable to make their market locally. The reason for this being that local fans are better designed to give more air blow. Greater level of air blow is preferred by the local consumers. As Chinese fans are made up from light composite materials they fail to provide high air blow. The local market therefore did not venture for low cost Chinese fans.

4.1.3 Marketing strategies

Although amongst the leading manufacturers, the basic performance norms are apparently of a comparable standard, consumers have certain brand preferences. The strength of the leading brands is their long-standing relationship with consumers and the fan cluster. The local market is sharply segmented and is biased towards six large brands; (i) GFC fans; (ii) Pak fans; (iii) Royal fans; (iv) Younas fans; (v) Super Asia and (vi) Parwaz fans. Other companies have failed to establish any significant market share or branding in the local market. The products in export markets are normally branded as 'Gujrat fans'. This common branding has so far been beneficial for the industry; however, more specific branding will be required to maintain export shares and to get penetration into high value markets.

Forward ties are also very important for the fan cluster since the domestic competition revolves on hard selling approaches of the marketers in the fan industry.

Figure 21: Competition for Imported Fans in Local Markets – (Source LUMS Survey 2010)



The manufacturers build up ties with retail outlets across the country and set-up regional retailer networks. Most of them trade through a large number of retail outlets. The number of such dealers that a firm engages is related to the size and production volume of the manufacturer and the regional coverage of its sales. Thus, while SMEs in the cluster had, on average, 30 dealers and sold largely within the Punjab region or far off places, large firms, had on average over 100 dealers on their books and sold nationally, especially in the major cities.

Table 15: Sale Distribution Channel – (Source: LUMS Survey 2010)

Response in each sales quartile	Sale distribution channel				Total
	Through national dealers	Through national dealers and whole sellers	Through national dealers, whole sellers and direct sales	Other	
1st Quartile (Lowest 25% of sales)	18.5%	40.7%	37.0%	3.7%	100.0%
2 nd Quartile	0.0%	37.0%	63.0%	0.0%	100.0%
3 rd Quartile	0.0%	18.5%	81.5%	0.0%	100.0%
Last quartile (Top 25% of sales)	3.8%	3.8%	92.3%	0.0%	100.0%
TOTAL	5.6%	25.2%	68.2%	0.9%	100.0%

Producers extend various incentives to dealers to stock their products. They provide advertising and publicity material, and in some cases pay for dealer’s premises. As with subcontractors, manufacturers provide fans to dealers on credit, who repay in instalments (often on a quarterly basis) with the bulk of the payment being cleared at the end of the season. This often requires producers having to visit dealers in order to obtain full payment. Dealers, however, provide little in the way of feedback to raise quality standards, while protection from global competitors results in little pressure on manufacturers to innovate.

Some of the manufacturers also have a specialty retail outlet for direct selling to the consumer. The above arguments are based on the survey findings presented in Table 15 above:

For SMEs, advertising involves only billboards and wall paintings. Coverage is generally local, concentrating on the region where their retailer networks are more extensive. For large firms, advertising implies using print and electronic media as well as billboards to promote and protect brand names nationally. Advertising expenditures can be high at times. According to one of the Gujrat’s leading large firm, advertising accounted for a third of their total costs.

4.1.4 Inconsistent quality and certification

The industry generally feels that improving quality and standards is extremely important. Fan standards are normally two types; performance and safety. There are no defined quality or safety standards for fans in Pakistan. This practice has led to inefficiencies in the system. First, lack of quality and standards result in customary production techniques and a variety of different part being used by the industry. Quality is difficult to maintain when there are non-standard parts being employed. Therefore, lack of standards at local level results in unreliable quality in domestic market.

Furthermore, moving to higher value product in export markets requires complying with certain quality standards and attaining certifications. Currently testing facilities are inadequate for this purpose. Currently FDI at PEFMA has the following certificates for export:

- CE – Countries of European Union (at a cost of Rs. 0.175 million)
- SASO – Saudi Arabia Standards Organization (at a cost of Rs. 0.10 million)
- SABS – South African Board of Standard (at a cost of Rs. 0.20 million)

The government announced in Trade Policy 2009-2012, that it will bear the cost of safety standards certification of Underwriters Laboratory (UL). This certificate will help the fan cluster in gaining access to the US and North American markets. The total process cost of getting the certificate is Rs. 1.0 million per product. However, PEFMA urged the government to bear the total cost, instead of the 50% announced. In return, the industry agreed to increase the total exports of fans to cross \$1.0 billion just from the Gujrat region. Through the UL certificate, the cluster will have access to the US and North American markets which will double their export potential. The SMEs in Pakistan are deprived of UL certificates due to their financial weight, and only two companies, Pak Fans and GFC, have UL certificates in Pakistan. Moreover, none of these two companies has yet managed to penetrate the US market. Hence, meeting certification requirements is only part of the journey in becoming a successful exporter.

4.2. Strategy

4.2.1. Common branding

The government should facilitate common branding and consortium-building of companies to benefit from scale economies. A common branding of the cluster will enforce its identity and visibility in the international market. This will certainly improve the demand locally as well as internationally.

4.2.2. To institute domestic standards of quality

The fan manufacturers have realized that in order to get more margins from their product, it must meet stringent quality standards. In this regard, PEFMA can act as a bridge between government and its member enterprises in developing domestic standards of quality for fan manufacturing. This would not only enlarge the influence but will also enhance the reputation of the products from fan cluster. Having a consumer watch dog is extremely important to reward firms that are producing better quality fans and it will also help in protecting consumer rights.

4.2.3. Encourage exports of high value added products

- Incentives should be provided to the manufacturers exporting high value added fans in the form of low interest rates for acquiring the technology, tax rebates or duty exemption on raw materials.
- Incentive for obtaining the specific certifications for exporting high value added products.
- On the basis of personal connections of domestic and overseas Pakistani entrepreneurs, the fan industry in the cluster must build up a global sales network consisting of global buyers, Trade Development Authority of Pakistan (TDAP), and retailers. This sales network will also encourage firms in the cluster to cooperate with each other to expand into the mature market and enter new ones.
- Common pavilions should be held at all major potential export markets. These efforts should be channelled through the commercial attaché's of Pakistan in these countries.

- Export trainings should be provided to small but quality firms.
- Export credit should be made available to good quality small firms that are unable to export due to lack of funds.

5. Ancillary and support sector

Another broad determinant of advantage in a cluster is the presence of related and supporting or supplier industries which are also internationally competitive. The geographic proximity of internationally competitive supplier industries facilitates the process of innovation and upgrading in downstream industries in several ways:

- Efficient, early and rapid access to the most cost-effective inputs.
- Facilitation of ongoing co-ordination of firms and their suppliers.
- Access to valuable sources of information and insights, harvested by supplier companies from their international positions.

In many ways, the performance of an industrial sector is a reflection of the support that it is getting from its suppliers and vendors. The main supporting industries for the fan sector include; (i) guard makers; (ii) rotor stator; (iii) aluminium blades; (iv) aluminium rods; (v) enamelled copper wire; (vi) casting industry; (vii) training and research institutes; (viii) packaging industry; (ix) testing laboratories and certification agencies and (ix) marketing and branding agencies. The industry is reasonably satisfied with the work of major vendors, however, the lack of support for research and development institutions, marketing and branding support and weak packaging industry are major impediments to competitiveness.

There is no capacity in the industry, nor is there any support linked to the industry which can work on product designs, product development, quality and standards and marketing of products. The individual firms make most of the efforts to reverse engineer designs and use expensive and limited marketing techniques. Hardly, any firm in the industry receives direct feedback from end consumers. Due to high degree of informality and small size the access to banking facilities is also fairly limited. Finally, the testing and certification facilities are scarce and expensive. Below we have presented our analysis in detail.

5.1. Evidence and issues

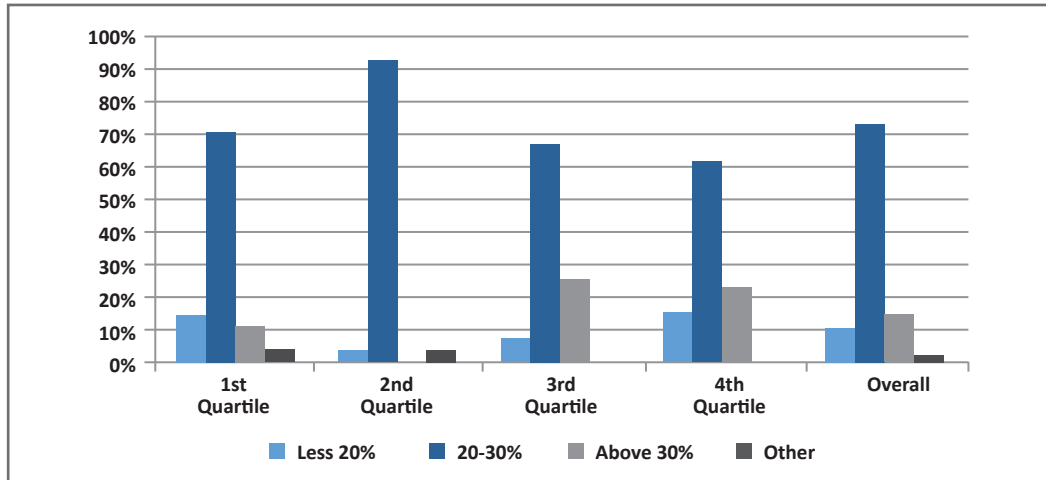
5.1.1. Sourcing of raw materials

Majority of firms in the cluster rely on local suppliers for raw materials and for a wide range of other key inputs. In the fan cluster, approximately two-thirds of firms use local suppliers for the main raw material (aluminium and scrap metal alloys used for castings and fan bodies). Most of the firms (approximately 85%) acquire capacitors from local suppliers, 88% obtain enamelled copper wire locally, 86% buy plastic components in the cluster, 88% are supplied imported ball bearings by local suppliers and 80% get their paint from the local sources. This level of specialization in input suppliers is further captured by the fact that only a handful of firms make cardboard packing boxes and packing material exclusively for the fan sector and similarly there are some cluster-based printing units that make labels for firms. Our survey results also indicate that around 30% of the raw material used in fan production is imported as shown in the figure below.

The specialized vendor base in the region of Gujrat and Gujranwala provide abundant raw materials for the local fan industry at short notice. However, these materials are generally usable only in the manufacturing of low quality fans. Therefore, there is a desire in fan manu-

facturers to increase the quality of their vendors, as depicted in table 16 below. Moreover, suppliers do seek feedback and provide assistance to fan manufacturers as and when problems occurred with inputs supplied.

Figure 22: Imported Components Used by the Fan Manufacturers (%) – (Source LUMS Survey 2010)



However, a closer inspection of these ties indicates a lack of substantial technical interaction which is also a cause of dissatisfaction. Although dialogue does take place, it tends to hover around price, source and availability. Technical discussion is rare.

Another reason for less than satisfactory vendor industry is the lack of willingness of the fan industry to move towards common parts. Even the very basic parts such as rods, screws, mountings which can easily be standardized have varied designs. The industry feels that moving to common parts will reveal their production secrets. As vendors have to produce multiple designs of the same part is difficult for them to enjoy scale economies and hence are not able to provide any such benefit back to the industry as well.

Table 16: Satisfaction with Quality & Availability of Inputs – (Source: LUMS Survey 2010)

Response in each sales quartile	Satisfied with quality & availability of input		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	37.0%	63.0%	100.0%
2 nd Quartile	44.4%	55.6%	100.0%
3 rd Quartile	44.4%	55.6%	100.0%
Last quartile- (Top 25% of sales)	46.2%	53.8%	100.0%
Total 43.0%	57.0%	100.0%	

Some of the raw material used for the manufacturing of high quality fans is imported. Common imports include the electric steel sheet, aluminium, enamelled copper wire, ball bearing, steel rod and PVC. Irregular and constrained supply of these raw materials presents major challenges to the electric fan industry. The firms with a higher percentage of imported raw materials also face fluctuating primary product prices. This is because those prices are determined by global demand and supply conditions completely beyond their control. Our survey revealed the following estimates of key inputs demanded by the fan industry (see table 17)

Table 17: Estimated Input Use by the Sector - Source: LUMS Survey 2010

Input Material	Qty
Copper Enameled Wire (Kg)	51,661,350
Aluminium (Kg)	13,487,500
Ball Bearings (Number)	17,152,000
Aluminium Blades (Kg)	52,293,838
Iron Guards (Kg)	37,410,000
Capacitors (Kg)	10,000,000
Raw Pig Iron (Kg)	19,608,800
Electrical Steel Sheet (Kg)	29,822,801

5.1.2. Level of vertical integration

Gujrat and Gujranwala fan cluster exhibits a high level of specialization as is evident by the existence of about 700 specialized vendors in different components and technologies such as castings, fan blades, rods, stands, fan guards, shafts, bushes, laminations, bush gears, worm sets, fan bodies, regulators, enamelled copper wire, switches and labels. Since the production process is technically divisible, each vendor tends to cover an individual or at the most three phases of production and is connected by specialized transaction networks coordinated by explicit forms of cooperation. This cooperation among the vendors and between the vendors and the producers generates the effect of the external economy (Rana & Ghani, 2004).

Specialized vendors are thus available for each of the manufacturing processes and inputs, particularly those required for producing an economy or low-priced fan. The survey results depict the same reliance as 92% of the respondents observed that they outsource some of their production processes. The level of outsourcing is least in bigger firms where only 77% of the firms stated that they outsource work.

Table 18: Outsourcing- (Source LUMS Survey 2010)

Response in each sales quartile	Do you outsource any process		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	96.3%	3.7%	100.0%
2 nd Quartile	92.6%	7.4%	100.0%
3 rd Quartile	100.0%	0.0%	100.0%
Last quartile- (Top 25% of sales)	76.9%	23.1%	100.0%
Total	91.6%	8.4%	100.0%

The fan cluster also includes specialized raw material suppliers and related services. Most of the raw materials used in making fans are manufactured locally, either in Gujrat or in Gujranwala with some inputs from Lahore. These include recycled pig iron and aluminium needed for casting fan bodies and blades, the re-rolled mild steel used for its rotor/stator units and metal used for other body parts, as well as paint, switches, enamelled copper wire and packaging material. Most of the equipment used in the sector is also locally fabricated.

The nature of the product results in the larger manufacturers producing the majority of components in-house. We have found in our research that generally the medium size manufacturers also perform coil winding in-house due to the critical impact of this process on fan quality.

5.1.3. Vendor relationships

Since the industry is working on a low cost model, the costs of writing, monitoring and enforcing contracts with vendors are very low in the whole cluster. The orders are generally given in person, or at times over the telephone. Detailed written specifications are not necessary as most of the parts are standard (for that particular firm) and have not changed in design or specification over the years (Rana & Ghani, 2004). Competition is intense; hence most vendors are very punctual and conscious of quality. Late deliveries or bad quality would result in the customer walking away to any one of the other competitors. It would also result in a quick loss in reputation as the fan manufacturing community is small and it is interconnected through family ties and friendships.

Similarly, if a customer delays payments or does not follow-up on other commitments, not only will the vendor walk away to another assembler, but it also causes a loss in reputation for the customer. A loss in trust in this closely-knit cluster can be suicidal.

The investments made by vendors are not specialized for any particular manufacturer and this result in low levels of relation-based assets. Each vendor sells to multiple manufacturers. The basic fan design has not changed over the years, and local weather conditions, as well as low per capita income, have resulted in a steadily increasing demand for inexpensive fans in the local market.

There is, however, a degree of co-ordination in production between component vendors and fan manufacturers in the cluster. Many components supplied by vendors are bulky in nature. This implies storage costs for producers that maintain stocks of input. Consequently, a common practice in the cluster is for vendors to hold stocks and supply components on a just-in-time basis.

5.1.4. Terms of payment with suppliers and buyers

It is a common practice in the cluster for firms to identify their preferred vendors based on price and negotiation on terms of payments. A large proportion of sampled respondents had dealt with the same input suppliers for over 5 years.

Table 19: Credit Availability from Vendors- (Source: LUMS Survey 2010)

Response in each sales quartile	Is the input material available on credit		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	81.5%	18.5%	100.0%
2 nd Quartile	77.8%	22.2%	100.0%
3 rd Quartile	81.5%	18.5%	100.0%
Last quartile- (Top 25% of sales)	84.6%	15.4%	100.0%
Total	81.3%	18.7%	100.0%

It is common practice in the cluster for vendors to supply parts to manufacturers on credit. Partial payment (usually less than 50%) is made at the time of placing an order. Although arrears are sometimes paid back in instalments during the production season, they are usually not cleared until the off-season, when manufacturers themselves obtain payments from their retailers. For vendors this results in a continuous process of revolving credit which causes liquidity problems and exposes them to the risk of manufacturers failing to pay. The survey results (see table 19) also depict that majority of the manufacturers (82%)

Table 20: Length of Credit Period by Vendors – (Source: LUMS Survey 2010)

Response in each sales quartile	Length of the credit period			Total
	30 days	Between 30-45 days	90 days	
1st Quartile- (Lowest 25% of sales)	96.3%	3.7%	0.0%	100.0%
2 nd Quartile	85.2%	11.1%	3.7%	100.0%
3 rd Quartile	85.2%	14.8%	0.0%	100.0%
Last quartile- (Top 25% of sales)	84.6%	11.5%	3.8%	100.0%
TOTAL	87.9%	10.3%	1.9%	100.0%

Table 21: Price marked up on Credit Purchase from Vendors- (Source: LUMS Survey 2010)

Response in each sales quartile	Increase in price if purchased on credit			Total
	10% or less	Between 10-20%	Greater than 20%	
1st Quartile- (Lowest 25% of sales)	29.6%	70.4%	0.0%	100.0%
2 nd Quartile	22.2%	77.8%	0.0%	100.0%
3 rd Quartile	33.3%	63.0%	3.7%	100.0%
Last quartile- (Top 25% of sales)	61.5%	34.6%	3.8%	100.0%
Total	36.4%	61.7%	1.9%	100.0%

purchase their raw materials on credit. Credit is normally provided for 30 days to the manufacturers, which is usually not paid on time. Data suggests that around 90% of the respondents availed a 30 day credit facility from their vendors (see table 20).

Moreover, when purchased on credit, the input prices are marked up by an average of 15% by the vendors. The survey corroborates this information (see table 21).

The credit cycle of the firms on the other hand is slightly longer than payment terms of their debt. The survey results reveal that most of the respondents in the sample sell on credit with a period of 90 days (see table 22). The findings imply that the fan manufacturers have to pay off their liabilities before they receive money from their debtors. This can create liquidity issues especially within smaller firms in the cluster.

Table 22: Sales on Credit – (Source: LUMS Survey 2010)

Response in each sales quartile	Do you sell on credit		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	96.3%	3.7%	100.0%
2 nd Quartile	92.6%	7.4%	100.0%
3 rd Quartile	96.2%	3.8%	100.0%
Last quartile- (Top 25% of sales)	92.3%	7.7%	100.0%
Total	94.3%	5.7%	100.0%

Table 23: Sales Credit Period (Days) – (Source: LUMS Survey 2010)

Response in each sales quartile	Credit Period				Total
	30 days	Between 30-45 days	90 days	> 90 days	
1st Quartile- (Lowest 25% of sales)	3.7%	25.9%	63.0%	7.4%	100.0%
2nd Quartile	11.1%	11.1%	74.1%	3.7%	100.0%
3rd Quartile	14.8%	14.8%	55.6%	14.8%	100.0%
Last quartile- (Top 25% of sales)	15.4%	23.1%	46.2%	15.4%	100.0%
Total	11.2%	18.7%	59.8%	10.3%	100.0%

5.1.5. Support institutions

Gujrat’s fan industry lacks a common services technology centre. However, with the development of the local fan cluster, some support institutions were introduced into the cluster, the most important of which is the Fan Development Institute (FDI). The purpose of the Fan Development Institute was to provide a smooth transition to the fan cluster from an industry solely concentrated on manufacturing into a cluster with internal innovation capability. However, it has failed to deliver its objective and its utility has been reduced to providing process services²⁰ (tooling and turning, simple electro tests etc.).

The Chinese industry really took off once they started producing fans with alternative materials especially composite plastics and metals. The development of alternative materials has helped the Chinese to reduce their production costs significantly.

The Pakistani fan industry is forced to use more expensive materials and hence loose competitiveness in international markets, especially the market for disposable fans.

The governmental departments can serve as nodes linking the firms, research centres, universities and the other institutions. These supporting institutions were supposed to strengthen the competence of the cluster in technological innovation, sales, and product quality control. In addition, universities and research institutions can potentially play an important role in supporting technology innovation in the fan cluster. However, currently there is no significant work being done between the University of Gujrat and the fan indus-

²⁰ There are different views on the utility of the FDI; People who are closely associated with PEFMA are quite positive, whereas those who do not actively participate in the affairs of the association do not have anything positive to say about the FDI. The LUMS team visited the FDI and interviewed the key staff there. The research team believes that FDI, while providing some useful services to small manufacturers, is still off the mark in providing fan product development services. It will require more dynamic staff and more machinery before it is able to deliver fan development services.

try.

Besides the supporting institutions, the fan manufacturing firms in the cluster has formed an industry association by the name of Pakistan Electric Fan Manufacturers Association (PEFMA). This association has over 300 registered members. The association has strived, in the past, to provide up-to-date information to its members and facilitate their communication with each other. However, the effectiveness of PEFMA in providing collective services to the cluster is limited except lobbying the government for support. The association has played a useful role in this regard especially on issues of trade policy (demanding duty exemptions for importing electrical steel and ball bearings) and fiscal policy (against the imposition of general sales tax on fans). However, the association is neither an important source of technical or marketing information nor for technical training.

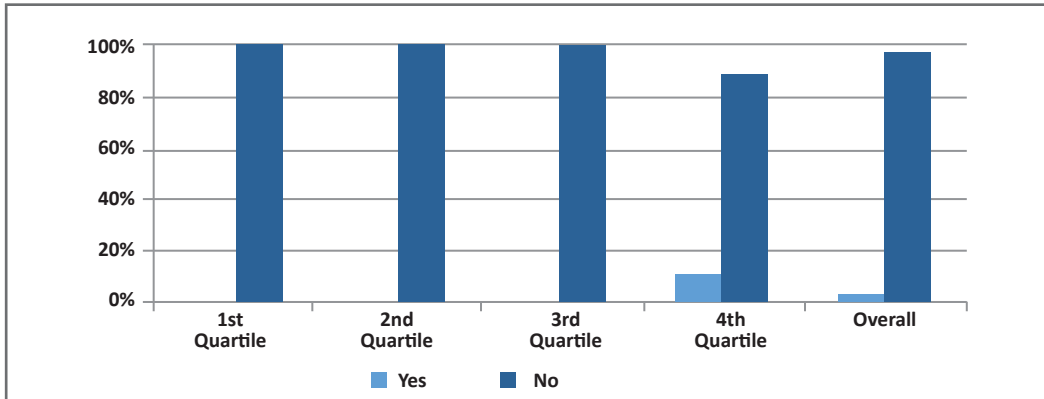
Recently, the association has urged the government to announce zero-rate for the fan industry along with decrease in import duties on raw material and tariff on electricity and gas. The association claims that these steps will help boost this vital industry both at the national as well as in the international market. However, it is pertinent to note that the association has made negligible efforts to improve the quality of fan being produced, help the member enterprises enter and expand in the domestic as well as overseas markets or build and strengthen an electronic information network.

5.1.6. Business development services

There are a broad range of activities that business development services (BDS) can take for the upgradation of the fan cluster. These include training, counselling, the provision of market information, the development of commercial entities, technology development and transfer, and facilitation of business linkages. However, there are currently no business development services, tailored for the fan industry, available to the firms. During our interviews with the firms, we gleaned from their discussion that administrative burdens are a significant barrier to the firms. For example, completing even well designed registration requirements can be an obstacle especially for SME firms due to their limited management, monetary and temporal resources. These enterprises are hard pressed to find the time to deal with the cumbersome paperwork (usually in English).

Moreover, the survey (see figure 23) depicts that there is a general lack of information on the part of the fan manufacturing firms regarding external sources where they can get some benefit in order to increase their competitiveness. Almost 100% of the firms responded by saying that they were not aware of any support activity by any agency in the cluster.

Figure 23: Awareness Regarding Efforts of SBP/GoP to Assist SME's – (Source: LUMS Survey 2010)



5.2. Strategy

5.2.1. Enhance capacity of fan development institute

FDI may be upgraded by providing additional required machinery. Moreover, FDI and TEVTA must engage on a joint effort to strengthen worker training capacity and develop fan industry relevant curricula. In addition, FDI must be assisted to develop linkages with Gujrat Engineering University to work on fan development and designs especially new energy efficient fans.

5.2.2. Building the capacity for testing the fans for export markets

Although most of the cluster is aware about certification requirements such as CE Mark, UL Mark etc., there is a need to provide financial as well as technical support to the firms so that they are able to meet quality requirements for certifications. It is not recommended to set up new laboratory infrastructure, instead financial resources should be spent on cost sharing with firms trying to meet international standards.

There were financial resources placed in trade policy 2010-12 for cost sharing on standards compliance, however, none of these funds have been made available to the sector.

5.2.3. To assist in learning from best performing countries

Lobby federal agencies (e.g., TEVTA, SMEDA, NPO) to assist the sector in learning best practices from rivals, such as China, and assist in joint ventures and technology transfer. By learning from successful foreign corporations, local firms can increase and accumulate independent innovation experience.

5.2.4. Standardization of common parts

The vendor industry will only pick up scale if the fan producing units move towards standardization of common parts. FDI, SMEDA and EDB should work with the cluster to develop common cost effective parts and train vendors to produce on these specifications. This action will not only build scale of the vendor industry but will also assist in fans meeting minimum quality specifications.

6. Factor markets

The quantity and quality of factors of production are clearly one determinant of competitive advantage. However, in Porter's view the factors of greatest significance to sustainable competitive advantage are those which are advanced and tailored to the needs of specific industries, i.e., specialized. For example:

- Advanced factor is a university research institute, or highly educated personnel
- Specialized factor are narrowly skilled personnel, institute with specific expertise.

However, these key inputs are not inherited but are created within a cluster. It is the rate at which factors are created, upgraded and made more specialized to particular industries that is most important for competitive advantage.

The basic infrastructure of industrial setup exists in Gujrat and Gujranwala. Both of the cities have favourable indicators in literacy (81.4% in Gujrat and 77.4% in Gujranwala), health (In Gujrat 45% population has easy access to public health facilities and remaining 55% use private health; the split is 20:80 in Gujranwala) and access to basic infrastructure relative to average indicators of Punjab. Gujrat has an unemployment rate of 15.5%, whereas the rate of unemployment in Gujranwala is 7.5%. Both these numbers are greater than the average of Pakistan which is around 3.0%.²¹ However, when comparing these numbers with international sectors against which Pakistan is competing, the quality of the provision of these basic factors in those countries is much superior.

The level of primary and secondary education is particularly weak resulting in labour input that is difficult to train. Hence, where as Pakistan has a large enough pool of young labour force, whether this translates into a competitive advantage is questionable.

The basic factors including quality of education, health facilities, infrastructure provision, and sanitation facilities need to improve in these cities for them to compete on better terms in global value chains. The strategy should not be to improve the numbers of schools or hospitals or road – the strategy should be to have better governance systems so that service deliver is efficient and the quality is regulated and strictly monitored.

The fan industry also lacks in competitiveness due to inadequacy of specialized factors such as modern technology, training institutes and research centres. The availability of capital is not only difficult but is also on the expensive side. Compared to other major players (China, India, Singapore, Thailand, Italy etc.) in the global fan market, Pakistan is far behind in technology and modern production processes. As discussed above this lack of technology results in inadequate productivity and higher costs of production. The impediment to achieving better technology is not only lack of capital but also lack of knowledge and appropriate skills to use modern technologies.

6.1. Labour

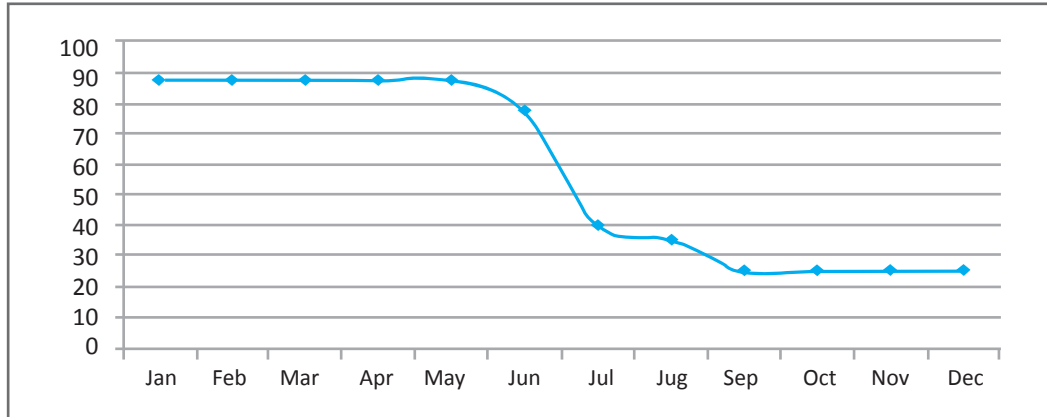
6.1.1. Evidence and issues

The issue of seasonal production is a critical hindrance for the growth of industry. This seasonal production is not only an impediment to investment but is also draining out the skilled workers from the industry. The workers have little incentive to train for an industry that only provides employment for 5 months during the year. The seasonality is affecting

²¹ TMultiple Indicator Cluster Survey (MICS); Punjab 2007-08

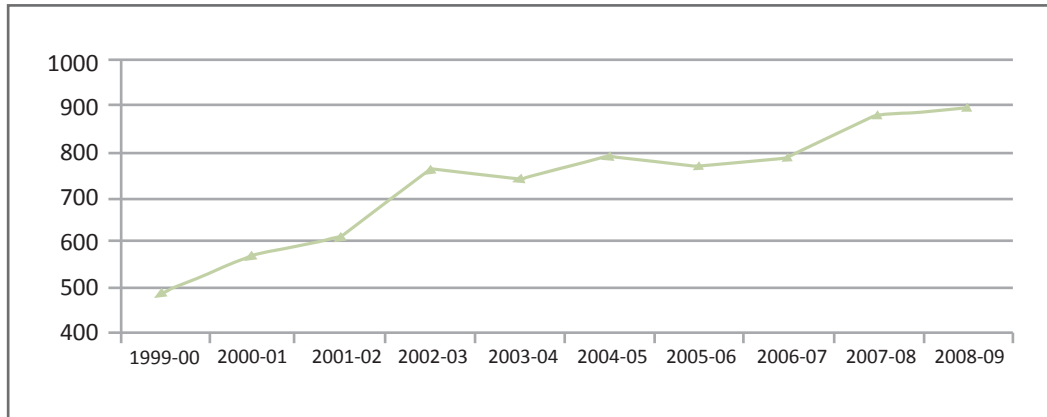
the productivity and deterioration of skills in the industry.

Figure 24: Capacity Utilization over Typical 12 Month Period- Board of Investment, Pakistan and LUMS Survey 2010



However, even with a shortage of skilled workers in the industry and seasonality effects the worker productivity (see figure 25) has been consistently improving over the last ten years. This represents a focus towards export markets and the increasing number of medium sized firms in the industry.

Figure 25: Annual Output/Worker- (Source: Punjab Bureau of Statistics)



The overall growth in output has also translated to growth in labour employment. Around 62% of the respondents answered that they have experienced growth in employment over the last 5 years.

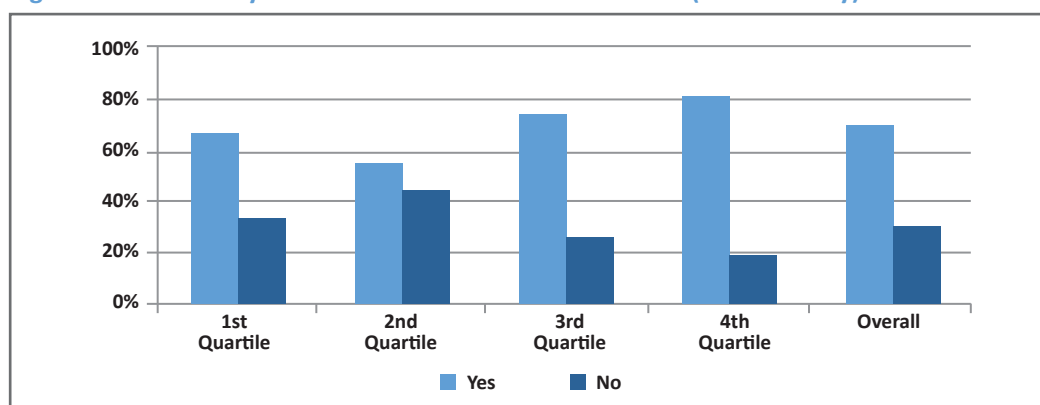
Table 24: Employment Growth- (LUMS Survey 2010)

Response in each sales quartile	Growth in employment over last 5 years			Total
	No Growth	Decreasing	Increasing	
1st Quartile- (Lowest 25% of sales)	14.8%	29.6%	55.6%	100.0%
2nd Quartile	18.5%	29.6%	51.9%	100.0%
3rd Quartile	11.1%	22.2%	66.7%	100.0%
Last quartile- (Top 25% of sales)	3.8%	23.1%	73.1%	100.0%
Total	12.1%	26.2%	61.7%	100.0%

6.1.2. Human Resource Availability

As discussed above seasonality of demand is an important impediment to skilled manpower. Fan industry offers employment opportunities for 5-6 months which does not attract workers at first place. Secondly, there are also inadequate training facilities for the industry. This is an impediment to achieving better technology i.e. low level of skills is impeding investment into modern machinery. The survey results also depict that there is a shortage of skilled workers in the cluster. The survey results show balanced response by the firms. Over 30% of the respondents observed that they faced problems in procuring skilled workforce.

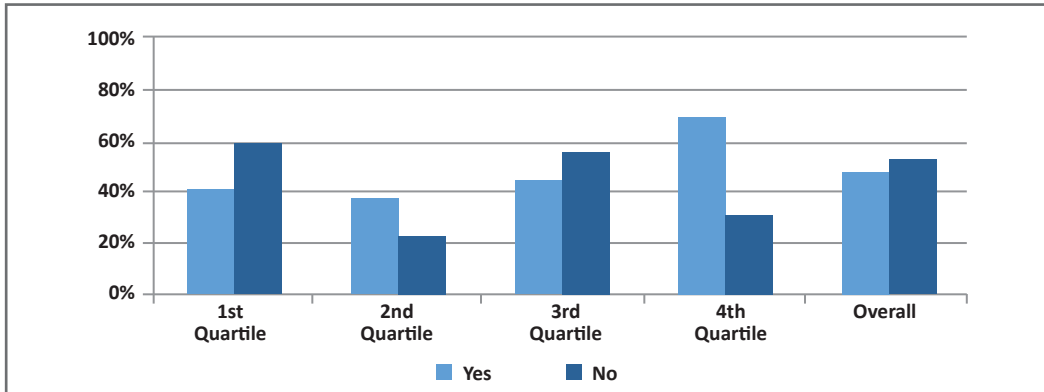
Figure 26: Availability of Skilled Workers in the Fan Sector- (LUMS Survey)



In light of the long-term labour market trends that have resulted in stagnant wage growth for those in the lowest quartile of the income distribution because of global competition, it appears that most low-wage workers (like those in the fan cluster) need to increase their skill levels in order to raise their earnings. However, there is no promising intervention in the fan cluster to improve the existing skills of the labour force. There is also lack of training institutes and research and development centres. The industry has access to Fan Develop-

ment Institute; however, the capacity of this institute to do meaningful training is fairly limited. The institute currently works as a service centre, provides basic testing and certification facilities in partnership with Intertek. The institute compares unfavourably to the research and training facilities that are available in countries which compete with Pakistan in international markets. The survey data also confirms this.

Figure 27: Availability of Workers Training Institutes in the Fan Cluster- LUMS Survey



6.1.3. Management capacity

Certain managerial practices are beneficial for productivity. These can be divided into four areas: operations, monitoring, targets and incentives. The shop-floor operations in the fan cluster should focus on the introduction of lean manufacturing techniques, the documentation of process improvements, and the rationale behind introductions of improvements. However, the fan cluster fails on all counts. For example, consider the management practice of performance tracking, where a firm systematically collects, analyzes, and communicates key performance indicators (KPIs). The absence of any easily collected and analytically useful measures of firm performance in the fan cluster indicates poor management.

Good monitoring of the firm should focus on the tracking of performance of individuals, reviewing performance (e.g., through regular appraisals and job plans), and consequence management (e.g., making sure that plans are kept and appropriate sanctions and rewards are in place). Currently, there is no monitoring system in place in the fan cluster firms. Performance of the labour force is generally made through subjective evaluations of the owner.

Good managers also examine the type of targets (whether goals are simply financial or operational or more holistic), the transparency of targets (simple or complex), and the range and interconnection of targets (e.g., whether they are given consistently throughout the organization). The owners of the fan manufacturing firms generally do not have a specific goal to target except meeting the current stream of orders.

Finally, good managerial practices cover the area of incentives which include promotion criteria (e.g., purely tenure-based or including an element linked to individual performance), pay and bonuses, and fixing or firing bad performer, where best practice is deemed the approach that gives strong rewards to those with both ability and effort. However,

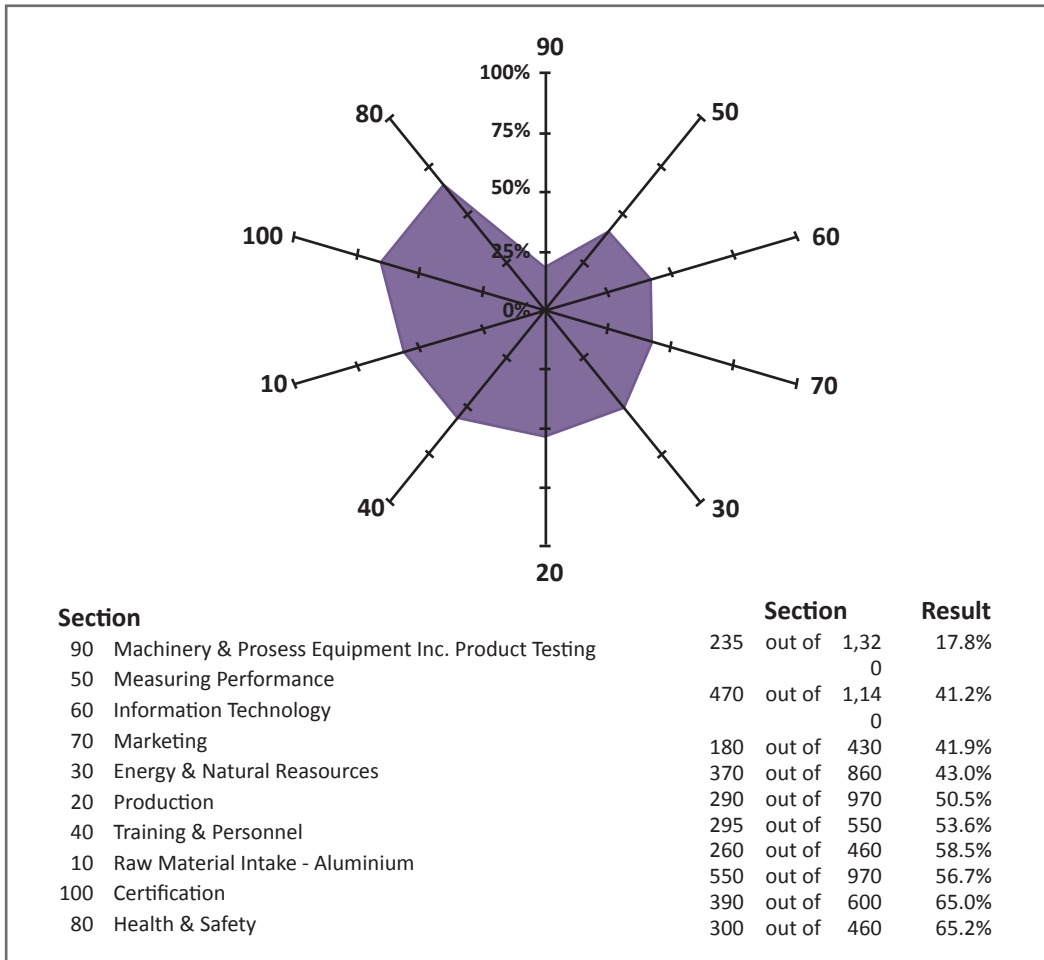
hiring or firing is generally based on the whims of the owner or the perceptions of the market.

The reasons why the fan industry has not adopted best management practices are manifold. First, although a management practice might be beneficial for productivity, there are also costs to take into account. Upgrading management is a costly investment and some firms may simply find that these costs outweigh the benefits of moving to better practices. In other words, although improving management practices increase productivity, profits will not rise. Secondly, firms have not adopted best practices due to simple heterogeneity. The optimal levels of practices vary due to differential costs and/or benefits. For example, investing heavily in best practice “people management” through rigorous appraisals will be less beneficial since workers are anyway unskilled and quite homogeneous. Thirdly, most of the firms in the cluster are family owned and they choose their own family members to control managerial activities instead of outside professional managers. This might be suboptimal for company performance but then the firm bears the family name and is managed by several generations.

6.1.4. No benchmarking indicators

The inadequacy of management results in poor tracking of performance against key benchmarks. The firms do not have any capacity to measure their performance against targets and production standard. There is no understanding of lean management tools at factory level neither there is any benchmarking done at the sector level. We have done some broad benchmarking against ten indicators. Each indicator represents detailed set of questions that were asked by representative companies. Each response was then scored under best practices. The scores shown below suggest that the industry does poorly on almost all the indicators that were considered.

Figure 28: Sample Benchmarking of the Cluster



Moreover, we also developed a sample OEE benchmark for each of the process of the supply chain. The figure and table below presents this result. The results show that industry lacks in OEE in all aspects of the supply chain. This is a direct consequence of low human resource availability at the managerial level to employ lean management tools.

6.2. Strategy

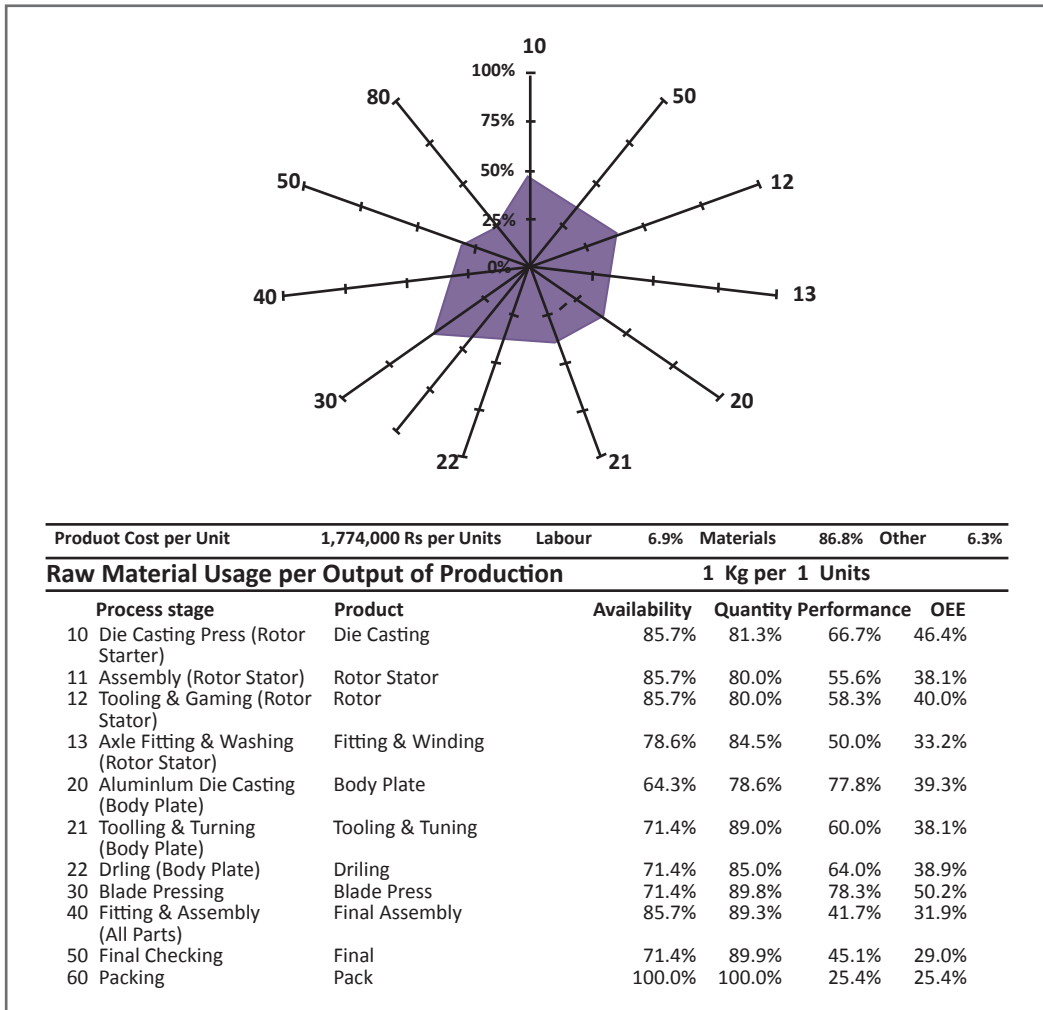
Upgrade FDI as Comprehensive Training Centre for Fan Manufacturing

FDI must be upgraded to offer trainings at all levels especially at floor level and management level.

Productivity Benchmarking

NPO should conduct a comprehensive productivity audit along the lines suggested above as an example. This productivity benchmarking should then be used to trigger change at the factory floor to shift firms towards lean management. NPO should take lead in this.

Figure 29: Sample Overall Effective Efficiency of the Fan Industry



SMEDA Support

SMEDA should offer trainings in the cluster on management systems, business strategy and marketing techniques. These should focus towards training the management to adopt good management practices and move towards implementing process management systems such as ISO 9001 etc.

6.3. Capital

6.3.1. Evidence and issues

Financial management of the fan cluster

A major problem in ascertaining the financial management practices of the fan cluster is the virtual non-existence of scientific financial data. The only major sources of data are the Census of Establishments (Government of Pakistan) and the Directory of Industrial Estab

lishments (Government of Punjab). Although much of the ‘official’ data have serious credibility issues, but some parts of it, like the number and location of establishments, is quite reliable. However, we could not use data from these sources since no recent census have been conducted.

Owing to the seasonality of the business, the cash flows of the firms in the cluster are also cyclical, with bulk of payments received at the start of the off-season. Moreover, a distinct pattern emerges between the outcomes by size of firms. Profitability and retained earnings decline significantly for smaller firms as compared to larger firms.

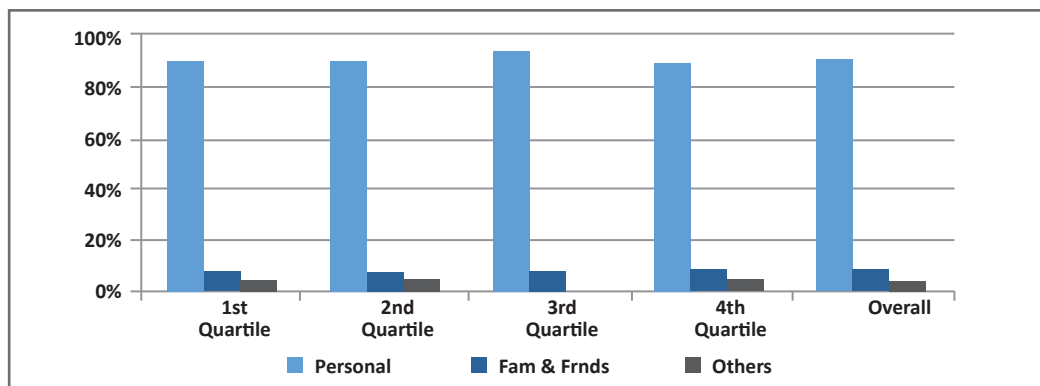
Table 25: Financial Practices in the Fan Cluster- (Source: LUMS Survey 2010)

Response in each sales quartile		Cash-sales to total sales ratio (%)	Value of inventory (Rs. in million)
Lowest Quartile of Sales	Mean	51.7	1.5
	Std. Deviation	21.3	2.0
Second Quartile of Sales	Mean	45.00	5.2
	Std. Deviation	18.0	11.0
Third Quartile of Sales	Mean	50.00	6.5
	Std. Deviation	17.5	4.7
Fourth and highest Quartile of Sales	Mean	51.1	36.0
	Std. Deviation	26.3	62.4
Total	Mean	49.4	12.1
	Std. Deviation	20.9	33.9

Leverage

The survey data and the data from SBP on finance for the firms in the fan cluster show that the larger firms in the fan industry, on average, are not highly leveraged by international standards. Only one firm out of the total sample is availing long-term finance from a banking institution. It is not clear whether for large firms, low leveraging occurs because they do not wish to borrow larger amounts, or whether the financial system does not permit them access to larger and more long-term loan amounts. This is because there are different view points on the issue on both sides of the debate. However, there is considerable evidence that smaller firms have difficulty in accessing bank credit (discussed in detail in the next section). The data suggests that most of the financing for smaller firms came from their owners, which was another indication of the firms’ limited access to external finance (see figure 31).

Figure 30: Sources of Funds for Establishment of Business- (Source: LUMS Survey 2010)



Profit margins

The profit margins are higher for larger firms as compared to smaller firm (see figure 32). In terms of percentage the larger firms are making profits between 10-15%, whereas, the smaller ones have profitability between 5-8%.

Table 26: Profit Margin on a Per Unit Basis- (Source: LUMS Survey 2010)

Response in each sales quartile	Mean (in US\$)	Std. Deviation (in Rs.)
1st Quartile- (Lowest 25% of sales)	94.07	30.0
2nd Quartile	106.26	42.0
3rd Quartile	98.89	34.0
Last quartile- (Top 25% of sales)	127.69	53.2
Total	106.53	42.2

The pricing pattern is also the same in export markets. The larger firms are able to charge a higher price as compared to smaller firms. On average the larger firms are getting \$6/fan more than the smaller firms.

Table 27: Average Export Price in US\$- (Source: LUMS Survey 2010)

Response in each sales quartile	Mean (in US\$)	Std. Deviation (in Rs.)
1st Quartile- (Lowest 25% of sales)	16.0	0.0
2 nd Quartile	21.2	1.8
3 rd Quartile	22.4	1.0
Last quartile- (Top 25% of sales)	22.2	1.8
Total	22.0	1.9

Accounting and costing procedures

Most of the firms in the fan cluster are reluctant to commit the resources necessary for maintaining high quality financial information reporting. In some large firms, where

Table 28: Financial Statements- (Source: LUMS Survey 2010)

Response in each sales quartile	Do you prepare financial statements		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	59.3%	40.7%	100.0%
2nd Quartile	81.5%	18.5%	100.0%
3rd Quartile	88.9%	11.1%	100.0%
Last quartile- (Top 25% of sales)	96.2%	3.8%	100.0%
Total	81.3%	18.7%	100.0%

financial statements are being prepared, the reports are non-compliant with international accounting standards. Moreover, there are deficiencies in disclosure and lack of rigorous monitoring by external auditors. Small and medium sized firms often do not keep written records for official use. However, during our interviews with the SME firms, we found that they do keep some written records for personal reference. Those who were not skilled in accounting, maintained records on small pieces of paper, especially about input, costs and output sold. However, 81% of the respondents in the survey told us that they do prepare financial statements but these are not audited (see table 25).

Table 29: Audited Financial Statements-(Source:LUMS Survey 2010)

Response in each sales quartile	Audited financial statements		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	7.4%	92.6%	100.0%
2nd Quartile	11.1%	88.9%	100.0%
3rd Quartile	51.9%	48.1%	100.0%
Last quartile- (Top 25% of sales)	57.7%	42.3%	100.0%
Total	31.8%	68.2%	100.0%

The entrepreneurs also informed us that they often maintain two books: one for government officials and the other one for personal use.

Table 30: Formal Accounts for Tax –(Source: LUMS Survey 2010)

Response in each sales quartile	Formal accounts for tax		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	44.4%	55.6%	100.0%
2nd Quartile	70.4%	29.6%	100.0%
3rd Quartile	96.3%	3.7%	100.0%
Last quartile- (Top 25% of sales)	96.2%	3.8%	100.0%
Total	76.6%	23.4%	100.0%

Key source of funds for the cluster

Developed financial markets allocate financing to firms wishing to invest in profitable ventures. When these markets work well, they give firms of all types the ability to seize promising investment opportunities. They reduce firms' reliance on internally generated cash flows and money from family and friends – giving them access to external equity and debt, something that smaller firms in particular often lack. However, the financial market in the fan cluster is not functioning properly which is another reason for declining productivity and output levels. The failure of the financial market has left the cluster no choice but to rely on the trade credit and money from personal sources as their key source of funds. This problem is more acute in the smaller firms. However, trade credit is riskier since the default rate is very high in the industry on both the debtors and creditors side.

Table 31: Default of Debtors- (Source: LUMS Survey 2010)

Response in each sales quartile	Default of debtors in last 5 years		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	63.0%	37.0%	100.0%
2nd Quartile	85.2%	14.8%	100.0%
3rd Quartile	81.5%	18.5%	100.0%
Last quartile- (Top 25% of sales)	96.2%	3.8%	100.0%
Total	81.3%	18.7%	100.0%

Trade credit on input raw material is easily available to the fan cluster as compared to bank financing since 81% of the respondents are using trade credit. This credit is available for a period of 30 days but for larger firms, the credit is extended to 45 days.

Access to formal credit

The survey data depicts that there is only one firm in the fan cluster which is utilizing the

long-term facility from banks. It also shows that the ratio of current liabilities to total liabilities for the larger firms in the fan cluster is a bit higher than the international standards. Since long-term loans are not being utilized in the fan industry, it prompts the suggestion that the firms are constrained in their access to long-term debt. Over-reliance on short-term liabilities may be potentially dangerous for the cluster, because it exposed enterprises to a sudden shortage of financing if creditors refuse to roll over the debt.

Moreover, leverage patterns also differ by size. Smaller firms reported significantly lower ratios of debt to equity and of total liabilities to total assets, implying that they may have experienced problems in accessing formal sources of debt finance. From all these findings, it appears that long-term financing is not accessible for most of the firms in the cluster. Moreover, during our interviews we learned that the ratios discussed above have remained stable over time. This implies that these problems in differential access to financing seem to be a structural issue.

The problems are more acute for smaller sized firms in the cluster which are virtually shut out from access to bank credit. The maturity structure of bank lending to smaller and medium sized enterprises is also shorter than that of credit extended to larger firms.

The high incidence of business failure among the firms in the fan cluster and persistent bad debt problems are some of the factors that inhibit the banking institutions from extending credit to the fan industry without collateral. The survey data suggests that size plays an important role in access to bank financing than in access to trade credit.

Type of Financing Products

There are three categories of financing products offered by the financial market in the Gujrat and Gujranwala region. These categories include working capital finance, long-term finance and trade finance.

Working Capital finance:

Working capital needs of the firms in the cluster typically decline during the off-season but increase substantially during the season. Commercial banks in the area have devised various forms of lending, which are described briefly below:

Overdraft: A facility whereby a customer can overdraw the current account up to an agreed limit. The customer can, at any time, deposit money into the account to reduce the outstanding balance or he can draw out money whenever he needs it as long as he does not exceed the limit. But the management of the credit risk of the facility is relatively difficult for the lender, in view of the absolute lack of control over the end-use.

Running Finance:

Running finance is generally used to finance current assets such as stock and debtors with prescribed margins, usually ranging between 20% and 30%. From the credit risk point of view, banks in the area informed our research team that they generally favour running finance over overdraft because: (a) running finance loans are easier to monitor and control than overdrafts and (b) running finance loans are granted for a specific purpose, and the repayment period and source of repayment are usually made known to the bank by the borrower at the time the facility is agreed upon. Most of the short-term borrowing to the fan cluster is through the facility of running finance.

However, during our interviews with industry sources, we came to know that this also has two drawbacks: (a) the focus on the current assets often results in the overlooking of overall financial standing and (b) the supplier credit can often be downplayed by the borrower. Moreover, ascertaining the supplier's claim on the stock lying in the premises of the customer is an arduous task.

Cash Finance: this facility is generally provided against pledge of goods. The pledged goods are released to the borrower against cash payment only. In case, the pledged goods are seasonal in nature, the customer is required to adjust the facility before the season ends. Since there is no raw material required by the fan cluster which is seasonal in nature, therefore, the banks generally do not offer cash finance facility to the cluster firms.

Long-term finance:

Trade finance: this refers to an entire spectrum of financing instruments developed by commercial bankers to fund and control trade. A properly structured trade finance facility goes a long way in reducing the credit risk and is often preferred by banks over overdraft and loans. Letters of credit, export credit financing, bank guarantee, bills of exchange purchased and trust receipts are some of the financing instruments. Both large and medium firms in the fan cluster are significantly associated with trade credit.

Existing and future financing needs

Well-functioning financial markets impose discipline on firms to perform, driving efficiency, both directly and by facilitating new entry into product markets. And they create opportunities for firms and households to manage risks. As a result, all the stakeholders benefit. However, the manufacturers in the fan cluster do not truly realize the potential of these efficiencies and need to be educated about its benefits. The survey results depict that only half of the respondents are interested in availing a long-term loan for financing fixed assets especially machinery.

However, this does not imply that the fan manufacturing firms do not want to enhance their existing machinery and technology. The survey results also show that 75% of the respondents already know about and want to upgrade the existing technology in their factories.

Table 32: Long-term Financing Facility- (Source: LUMS Survey 2010)

Response in each sales quartile	Interest in availing long-term finance		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	44.4%	55.6%	100.0%
2 nd Quartile	33.3%	66.7%	100.0%
3 rd Quartile	63.0%	37.0%	100.0%
Last quartile- (Top 25% of sales)	42.3%	57.7%	100.0%
Total	45.8%	54.2%	100.0%

Table 33: Best Place to Acquire Technology- (Source: LUMS Survey 2010)

Response in each sales quartile	Do you know the best place to acquire technology?		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	59.3%	40.7%	100.0%
2 nd Quartile	77.8%	22.2%	100.0%
3 rd Quartile	77.8%	22.2%	100.0%
Last quartile- (Top 25% of sales)	84.6%	15.4%	100.0%
Total	74.8%	25.2%	100.0%

Most of the respondents (89%) also believe that technology upgradation can enhance their production by at least 50%, as shown in the table below.

Table 34: Increase in Production as a Result of Capital Expenditure- (Source: LUMS Survey 2010)

Response in each sales quartile	Credit Period				Total
	Less than 20%	Between 20-30 days	Between 30-40 days	More than 50%	
1st Quartile- (Lowest 25% of sales)	3.7%	25.9%	63.0%	7.4%	100.0%
1st Quartile- (Lowest 25% of sales)	0.0%	3.7%	7.4%	88.9%	100.0%
2nd Quartile	3.7%	0.0%	7.4%	88.9%	100.0%
3rd Quartile	0.0%	7.4%	7.4%	85.2%	100.0%
Last quartile- (Top 25% of sales)	3.8%	0.0%	3.8%	92.3%	100.0%
Total	1.9%	2.8%	6.5%	88.8%	100.0%

Moreover, the surveyed respondents want to repay the long-term finance for technology upgrade within 5 years, as shown in the table below.

Table 35: Repayment of Long-Term Finance- (Source: LUMS Survey 2010)

Response in each sales quartile	Repayment of long-term finance			Total
	5 Years	Between 5-7 Years	Greater than 7 Years	
1st Quartile- (Lowest 25% of sales)	33.3%	37.0%	29.6%	100.0%
2nd Quartile	48.1%	29.6%	22.2%	100.0%
3rd Quartile	22.2%	29.6%	48.1%	100.0%
Last quartile- (Top 25% of sales)	53.8%	34.6%	11.5%	100.0%
Total	39.3%	32.7%	28.0%	100.0%

Brief account of the lending processes and type of securities

There are different steps involved in the loan process. To apply for any kind of loan, the applicant must have an account with the bank. The applicant, then, submits loan application forms, along with the following documents: (a) Attested copy of NIC; (b) The business plan; (c) Bank statement for past 6 months; (d) audited financial statements for the last 3 years; (e) Borrower's basic fact sheet and the (f) stock reports. If the applicant wants to offer property as collateral, then the following additional documents are needed. (g) Sale deed/ title deed/ transfer letter; (h) non-encumbrance certificate; (i) fard milkiyat; (j) form from property tax department.

In the next step, the applicant would have to pay the application processing fee to the bank (usually varies between Rs. 2,000 to Rs. 3,000). It is the duty of the applicant to fill out all the forms correctly and also provide the requisite documents. The list of documents also varies for different type of loans and for different types of collaterals offered. When all the required documents are available to the bank, the credit department analyzes the documents for any discrepancies. The branch officers also visit the applicant's premises to check his business viability and verify the stock reports and other documents. After the branch verification, the credit department carries out the evaluation and appraisal of the loan request. The bank also obtain legal opinion certificate from its lawyers for the clearance of the title of applicant's property offered as collateral and gets it evaluated from a professional evaluator company of its own choice. If all of the above steps turn out to be positive, the credit department prepares a credit application and forwards it to the approval authorities in the headquarters of the bank.

The head office of the bank generally raises different queries on the loan application and if the credit department satisfies all queries, then the loan amount is sanctioned. The next step is to prepare all the loan documents and get them signed by the customer of the bank. Afterwards, legal documents are prepared and executed and the collateral is mortgaged in the bank's favour. Moreover, the current assets of the borrower (stocks and/or receivables) are also hypothecated by the bank in its favour.

It is only after this long process of credit approval, that the loan amount is finally disbursed to the borrower. This can take anywhere from 3 months to more than 6 months for a bank to go through all these processes.

Banks comfort level in extending credit

Beyond the problems faced by the fan companies in identifying and preparing profitable projects, additional barriers are faced by Pakistani banks in lending to the sector, including high (per loan Rupee) transaction costs and the increased risk associated with lending to smaller clients.

Banks do charge more for riskier loans, but the fact that their knowledge of risk is imperfect, and poorer than that of borrowers, means that increasing interest rates cannot fully protect them: when lenders charge higher interest rates, they discourage borrowers with low risk, low-return ventures, leaving them mainly with borrowers for high-risk projects. By its nature, then, raising interest rates increases the risks lenders are exposed to. The problem is heightened by the possibility of dishonesty and weak contract enforcement – only honest borrowers are discouraged by high interest rates.

We found out from the survey data that only one firm, out a total sample size of 107, is availing long-term finance and the top 5 firms in the industry do not have a long-term debt portion in their capital structure. This is a surprising fact given that other studies have found out that large firms usually have more long-term debt as a proportion of total assets compared to smaller firms, and are more likely to use external long-term finance compared to small firms. The reasons of this might be the reluctance of banks to offer long-term finance to the fan cluster.

Issues in accessing formal credit

In assessing the factors which would affect access to credit, traditional theory would suggest that in well-functioning credit markets, lenders would base their decisions on the overall financial soundness of firms and on expected performance and projected cash flows, adjusted for risks and transaction costs, rather than upon firm size. Measures readily available for expected performance, adjusted for risks, are difficult to construct, however at a very simple level, greater sales and profits should be associated with greater access to credit. In addition, firms with increasing sales, increasing turnover (sales/assets) ratios, lower volatility of sales or lower liabilities to assets ratios, would be expected to have greater access to credit and less credit constraints. However, our survey has found out that smaller and younger firms are more credit constrained than larger and long established firms of the fan cluster.

Several reasons can be pointed out why access to credit is affected by firm size in addition to performance. First, greater constraints are faced by small firms in the fan cluster due to market imperfections, in the form of greater information asymmetry. This is more relevant in the Gujrat and Gujranwala region due to poor quality and lack of provision of financial information. This leads to greater difficulties in credibly conveying the quality or the innovativeness of their product and the quality of their projects to the financial institutions. Small firms and especially small young firms, lack the long credit or banking history of larger and longer established firms. Moreover, small firm's performance is not assessed by independent auditors and they are unable to provide audited financial statements to the financial

institutions. Most of the times, banks had to make a subjective judgment as to their financing requirements and cash flows of their project. Although the financial institutions are not beneficiaries of upside gains but they are potential losers in the event of downside firm failure, therefore, information about performance of the firm is critical to them. Such information asymmetries, and thus adverse selection and moral hazard, has led to credit rationing in the fan cluster; a situation where, with a given total supply of credit, small and young fan manufacturing firms are unable to obtain a loan at any interest rate. This credit rationing explains the credit constraints faced by the small firms in the fan cluster.

The sector also complains about lack of viably priced capital. The research team explored this issue deeply by interviewing firms, banks and also arranging a focus group comprising banks and firms. It seems that the issues of capital availability and utilization stems from inadequate capacities both at firm level and at the level of commercial banks. The firms suffer from typical SME asymmetric information issues and limited capacity to manage and provide reliable financial and balance sheet data. Most of the financial transactions of the firms are recorded informally and most of this information is only available with the key person. The banks fail to trust even the audited statements as they have been manipulated by the accountants and the tax lawyers.

Even in cases where the firms want to disclose their information fully they do not have the capacity to record their transactions in a bankable format. Moreover, the sector is not disciplined with the use of the credit. In several cases the working capital limits or short term business loans are utilized for conducting personal expenditure. This faulty use of capital puts excess pressure on businesses as they face additional costs without any enhancement to the revenue side. This issue is further augmented as historically companies have only made minimal self investment into their factories. The profits are normally spent on alternative real investments such as land or on life style maintenance (buying bigger houses and cars). This has resulted in limited capital & technology accumulation and weak balance sheets. Finally, we found a strong preference for Islamic banking products in Gujrat. The inability of the banks to offer Islamic products designed for SME's is also a critical factor that has kept the sector away from utilizing credit.

The study has also revealed that the commercial banks also have limited capacity to serve the requirements of SME credit in Pakistan. The commercial banks do not understand the concept of SME development finance and as a result all their lending is on commercial basis. Commercial lending is too expensive for SME development. Data collected from regional banks verified that none of the banks had offered long-term development financing to the fan industry. The nature of most of the loans was short term commercial loans. Secondly, there has been no concentrated pressure on commercial banks to extend development/long-term credit to the SME sector. With large fiscal deficits at the federal and provincial government levels and the presence of attractive spreads the commercial banks are comfortably maintaining large exposure to government. The commercial banks also use the broad nature of the current SME definition to their advantage²². Most of the lending done to SME's is near the maximum limit with low end spectrum completely

²²To be categorized as an SME in Pakistan, a concern must not employ more than 250 persons in the case of a manufacturing or service concern, and 50 persons in the case of a trading concern. Moreover, its net sales should not exceed Rs 300 million and it must not possess assets worth more than Rs 50 million for a trading concern and Rs 100 million in the case of a manufacturing concern.

ignored by the banks. These clients normally represent corporate lending and not lending to SME's. The banks have not been pushed to develop programme based lending products which suits specific requirements of the sector.

Collateral based Lending

The adverse effects of this information asymmetry are usually mitigated by banks by asking for collateral. However, larger firms own more assets to be provided as collateral. In the case of smaller firms, there is no collateral to be provided. But even if there is, it is often of a personal nature. Greater reliance on personal assets may discourage investments at the margin as they imply additional risks.

On the other hand, banks in the area usually do not focus on evaluating the cash flows of the businesses. Nevertheless, a cash flow structure of the business would help the banks in measuring the loan size as a multiple of the company's cash flow or earnings before interest, taxes, depreciation and amortization, commonly referred to as EBITDA. Since the company's ability to generate profits is the primary source of repayment, cash flow financing would be a better approach than collateral based financing.

However, our interviews with the industry sources and our visits to their factories have convinced us that we should also not overemphasize on cash flow lending. Rather, a preferable strategy for the local banks in the existing cluster conditions would be to base their decisions on performance-based lending – lending decisions based on collateral and risk-bearing ability, cash flow and repayment capacity, ability to generate earnings as well as economic efficiency and business performance. In short, performance-based lending should be based on the following four key components:

1. Risk and collateral assessment
2. An assessment of the income-generating capacity of the business
3. Business efficiency and productivity analysis
4. Assessing repayment capacity

Differences in Risk

Small firms in the fan cluster are also associated with real risk differentials compared to large firms, since it is a common understanding in the cluster that small firms have a higher failure rate compared to larger firms. Small and especially new firms have relatively more volatile sales due to fewer opportunities for diversification of their output or client base. Smaller firms are therefore considered less likely to survive any economic downturn. By contrast, larger firms in the fan cluster are more diversified and thus better protected against economic fluctuations. Furthermore, the top 5 firms in the fan cluster are older and better established, which itself demonstrates their survival under market competition.

Such differences between large and small firms are translated into higher bank transaction cost of lending to small firms. These real transaction cost differentials refer to search, information, evaluation, and monitoring as well as high risk. During our interviews with banking professionals, some of them were of the view that the real cost of lending to small firms was approximately twice that of lending to large firms.

Industry effect

Looking at other variables which could affect firms' access to finance, we found out during our interviews that there is also an industry effect operating in the banking circles. Banks favour firms of specific industries as credit clients, lending more to 'growth industries' such as textiles and other large scale industries and the fan industry is not on the top of their list. An alternative explanation for an industry effect is that some industries are more likely than others to depend on external financing, depending upon initial project scale, cash flows and requirements for continuing investment. Since average investment level in the sector is only Rs. 10 million per firm, the fan industry is not attractive for banks.

Managerial Capabilities

Although variations in firm performance are largely associated with traditional characteristics such as location, industry, size, age, or capital but there are also some intangibles specific to the firm which also affect performance. Managerial capital of the firm or the skill of its workforce is also included in those intangible factors. Our interviews revealed that firms with more educated owners/managers have more access to credit than firms with less educated owners/managers. This is due to their ability to smooth complicated loan application procedures, presenting positive financial information, and/or building closer relationships with banks. Furthermore, better educated owners are more likely to have proficient skills in finance, marketing, production and international business that would lead to firm's growth.

Relationship based banking

During our interviews with banking professionals as well as the owners of the fan industry firms, we found out that closer banking relationships could reduce transaction costs that emanate from information asymmetries. Closer banking relationships can facilitate the flow of information between borrower and lender, easing the bank's assessment of managerial skills, business prospects firm needs and resources. The better informed the bank, the more it will be able to apply prospects based lending methods rather collateral based lending.²³

Closer relationships could be established through longer association, uniqueness of association, or interaction over multiple financial products that allow the bank to learn about the firm's cash flows.

A bank is more likely to extend credit to a firm that has an existing savings or current account and/or availing other financial services like credit card etc.

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Another interesting finding from the survey is that the firms that borrow from multiple banks are charged at slightly lower rates and face higher availability of credit. These multiple relationships with banks imply that the repute of the firm travels fast in the small banking community of the area and information about the firm is being shared by the banks.

²³ Although some firm owners complained that their relationship with bank managers is getting less valuable since the decisions are taken at the head office of the bank by people who do not have that close relationship with them.

In sum, firms in the fan cluster typically have unexploited opportunities for substantial process innovation as well as product innovation but usually do not have the in-house capacity to prepare and implement the projects needed to achieve those innovations. They face lot of barriers in accessing commercial financing even after profitable projects with high return on investment have been identified.

6.4. Strategy

Suggestions on improving the bankability of the cluster

The medium and small firms in the cluster have fallen behind the benchmarks set by larger manufacturing firms in terms of productivity, performance, efficiency and technology. Therefore, they are seen by banks as riskier firms to invest their money in. In the given situation of the cluster, these firms can adopt different ways by which funds can be channelled to them. For example, they should apply for a loan from a bank as a group instead of individual small firms. This will reduce the overhead cost of the bank. Moreover, members of the group can act as guarantors for one another, thereby reducing the bank's risk. The group, or other agency such as PEFMA, can also carry out lot of the processing and administrative functions, such as corresponding with the banks, checking on creditworthiness of the group members, collecting payments and so on, thereby reducing costs to the bank further. A reliance on personal references rather than financial collateral further reduces costs.

Most of the firms in the Gujrat and Gujranwala cluster are also members of the local chamber of commerce in these cities which identifies with the needs of the locality. The chamber can also use its intimate knowledge of the local firms to act as referee as to whether individual firms are worthy of financial support from the banks and can also arrange insurance or loan guarantees which small firms can use to obtain finance from the local banking institutions.

Moreover, SBP can play a role of important regulator to ensure that credit reaches up to the desired recipients. It is important for the central bank to determine if the institutional vehicles designed are reaching their target client base of SME firms in the fan cluster and have, in fact, contributed to the development and expansion of the cluster.

- SBP can monitor the breadth and depth of outreach by supervising:
- Number of active borrowers
- As a percentage of total SME firms in the fan cluster
- As a percentage of total firms in the fan cluster
- Average loan balance or amount per borrower
- The structure of credit, i.e., short term versus long term loans
- On-time loan repayment rate and incidence of loan defaults
- Increase in exports due to the funding provided by commercial banks

Tailoring of commercial bank products

The realization is now growing that lending programs that worked for larger firms are not succeeding in reaching the small and medium firms of the fan cluster. Our team has identified two important methods by which commercial banks can tailor their products for the industry. These methods include cluster lending and establishment of a venture capital fund.

Cluster lending

Cluster lending represents an innovative approach that can be utilized by domestic financial institutions in Gujrat and Gujranwala to increase lending for fan manufacturing projects. Cluster lending refers to lending operations targeted at certain clusters of industries that are co-located for some economic reason. The objectives of cluster lending to the fan cluster include:

- Lending for investments to increase fan industry competitiveness through technology upgradation
- Lending for cost reduction through reduced wastage and increased operational efficiencies
- Lending for increased productivity; and
- Lending for improved product mix

The cluster approach can bring specialized technical support and outreach to smaller and medium enterprises along with follow-up loan provision based on a standardized, replicable model that can result in substantial reductions in transaction costs per loan. This approach was very successful in several clusters around the world. For example, see the box below for the auto cluster in India.

Box 1: Project Uptech, Cluster Lending For the Auto Cluster at Pune, India – (Source Taylor et.al 2008)

State Bank of India set up a technology upgradation project by the name of Project Uptech for small and medium enterprises in 1988. SBI relied exclusively on its Central Office for designing, managing and staffing Project Uptech. Consider the example of the auto cluster at Pune. The project's team catalogued the opinions of entrepreneurs in the cluster as well as their requirements, and identified possible organizations and experts to form an expert panel. With this expert panel in place, Project Uptech launched the implementation in the auto component industry cluster in January 1996. In close consultation with the entrepreneurs and the workers of the firms, the technical experts identified a set of activities and investments required to enhance the competitiveness of the units. In so doing, the technical experts also helped the cluster firms to move from making simple components to subassemblies. A total of Rs. 96 million loans were made by SBI to the 42 cluster units over a 4-year period. The borrowing factory used the sanctioned loans to pay for equipment, machinery, or services as was found suitable for that particular unit. Typically, a firm in the cluster used its loan to cover costs of specific equipment, such as a special-purpose shearing machine with automatic feed.

Venture capital fund

It is a well-established fact in the fan cluster that start-up firms bring fresh and innovative ideas to the industry and as such play a significant role in the innovation process as well as economic growth. However, the financing of start-ups is subject to significant problems and therefore traditional finance institutions generally avoid financing them. The venture capital funds bridge this gap and act as financial intermediaries whose aim is to fit the start-up's needs; their structure, contracts, practices and skills enable them to overcome the problems related to start-up finance.

The establishment of a venture capital fund should be given serious consideration, particularly to promote high-risk innovative projects, which have potential for higher returns on investment.

A venture capital fund, at this mature stage of the fan cluster, will help in the technological advancement of the cluster. It is essential for the sustained growth and development of the fan cluster and without it the cluster is likely to stagnate or decline. By using venture capital funds, the firms in the cluster can invest in research and development, development of organizational capabilities and collective learning.

To ease the cost of borrowing for technology upgrade

- Provide loans through small industries schemes such as those run by PSIC or BOP for technology upgrade and compliance certification requirements.
- Share the cost of interest mark up so to moderate interest costs.

Products by commercial banks

During the survey the research team found strong evidence that the capacity of the commercial banks to work on SME finance development is insufficient. The banks are more comfortable in providing standard products suited to corporate borrowers and commercial borrowers. The focus of lending towards development is extremely weak. SME development finance is a new area for commercial banks and do not have the required capacity to design development products. We recommend that SBP should make it mandatory for commercial banks to train their product development officers in obtaining more specific products for SMEs. There are two possibilities that can be followed in this regard. The banks can develop a standard menu of products or alternatively the banks can go for more customized products. We recommend that for the fan sector and for the SME sector in general there is a need to develop a standard menu focusing on SME development. The customization approach can be used with larger clients. Some recommended products that can be developed by the banks include the following:

- **Lending against inventory during off season:**
Although there is no restriction by SBP on commercial banks to lend against inventory, this practise is not common in the fan industry. The cyclical production in fan industry is a major obstacle to growth and given large credit cycles it becomes impossible for a majority of the factories to maintain production during off season. The banks should offer a standardized product offering a certain percentage of the total inventory as running finance.
- **Lending against confirm export orders:**
Firms that have a track record of exports should be allowed to avail credit on basis of future orders. The loan procedures should give high credit marks to those companies that can provide guaranteed export orders from existing buyers.
- **Leasing of specific technologies at single digit rates**
SBP BMR schemes exist in this regard; however, the accessibility is an issue. SBP should make it mandatory for banks to lend through these incentive schemes.
- **Lending to vendors secured through the 6 large firms:**
Banks can initiate a pilot product where lending is ensured through the leaders in the supply chain. The banks can lend to suppliers of the 6 large firms in the industry and secure payments through them.

- Preferential lending against export targets:

Banks should provide preferential credit to industries that are exporting over 25% of their production. The preferential rate must be linked to certain minimum export performance targets. If the targets are not met then firms failing to meet targets should be penalised.

6.5. Technology

Evidence and issues

The large firms in the industry possess better quality and more capital-intensive machinery as compared to the medium and smaller players in the industry. For example, the larger players generally have automatic winding machines; automatic progressive die stamping power press, pneumatically controlled capstan lathe machine, as well as a few other imported machines that collectively cost more than Rs. 50 million. Moreover, investment in imported plastic moulding machines in the early nineties has allowed the large firms to manufacture lightweight plastic moulded fans. The larger firms are also using conveyer management to achieve higher production.

However, overall the sector suffers from low levels of investment over time resulting in outdated technology and inadequate scale of production. The daily production of a medium size factory in the cluster is around 500 fans. In comparison, the medium size fan manufacturers in China produce an average of 35,000 fans. This remarkable difference in scale implies that it is next to impossible to transform the Pakistani fan industry where it becomes capable of replacing existing Chinese markets. Instead, Pakistani fan industry should look to consolidate in its own niche markets and try to capture markets of high cost producers such as Spain, Germany and Italy.

Our survey also depicts that the technology currently being used in the sampled firms is around 10 years older.

Table 36: Age of Technology Installed- (Source: LUMS Survey 2010)

Response in each sales quartile	Age of technology			Total
	5 Years	Between 5-10 Years	Greater than 10 Years	
1st Quartile- (Lowest 25% of sales)	3.7%	29.6%	66.7%	100.0%
2nd Quartile	14.8%	48.1%	37.0%	100.0%
3rd Quartile	22.2%	48.1%	29.6%	100.0%
Last quartile- (Top 25% of sales)	19.2%	46.2%	34.6%	100.0%
Total	15.0%	43.0%	42.1%	100.0%

A main distinguishing factor between a stable/viable manufacturer and a weaker one is the quality aspect of the product. Being an electrical product, fan has to comply with certain minimum electric safety and performance requirements. Fans sold in Pakistan must comply

with PSQCA PS1 electric safety and performance standard. Similarly, each export market has its own quality control standard and certification requirements.²⁴ The more sophisticated the market, stricter and costlier is the compliance requirements. The survey conducted by the research team revealed that sticking to basic quality measures was the key to maintaining a successful fan business. Companies producing fans that do not comply with quality requirements normally end up being bankrupt. The issues here are manifold; there are companies that do not comply with any quality standard and as a result distort market prices by selling extremely cheap fans. These factories usually operate seasonally, shutting down at the end of the season. Moreover, there are companies who desire to meet all quality aspects but are discouraged due to lack of capital and also the lack of enforcement of standards in the local markets.

However, with the increasing competition in the market, firms in the cluster are now realizing that an up gradation of their equipment is becoming necessary (See table 34).

Table 37: Willingness to Upgrade Technology- (Source: LUMS Survey 2010)

Response in each sales quartile	Willingness to upgrade technology		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	88.9%	11.1%	100.0%
2 nd Quartile 88.9%	11.1%	100.0%	
3 rd Quartile 100.0%	0.0%	100.0%	
Last quartile- (Top 25% of sales)	96.2%	3.8%	100.0%
Total	93.5%	6.5%	100.0%

Firms are also reluctant to share information with each other and hence no ‘peer group’ learning takes place. Moreover, firms are reluctant to get certifications such as ISO 9001 etc. as they feel that these changes will alter their production methods and increase transparency of information in the industry. As a result of poor manufacturing process management, the production capacities remain low. For example, a typical firm may take up to 5 days to produce a batch of different design.

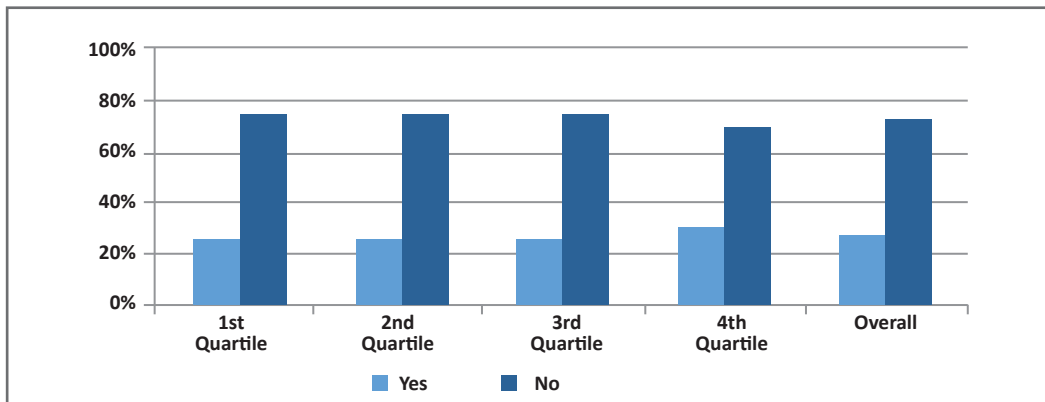
State of R&D

Another critical weakness of the sector has emerged due to inadequate engineering support provided to the sector. The literacy levels in the sector remain low and the industry has failed to upgrade its engineering base over time. Although, there is a large engineering university in Gujrat, the industry – academia linkage has only occurred at the extreme periphery. The ‘fan engineering design’ used in the local industry is still based on old techniques and resultantly has shown responsiveness to changing demand trends towards more energy efficient fans. The larger units (GFC, Pak, Royal etc.) have individually invested in some research and development which has provided certain advantages to these large companies. On the

¹⁹ SASO for Saudi Arabia; South African and Bangladesh standards; CE for Europe and UL for USA.

whole, however, the industry has been deprived of any systematic engineering upgrade to improve fan quality and characteristics. R&D has not only been limited on the engineering side but also on the design and product development side. The survey analysis also depicts that the respondents generally feel that there is no proper research and development institute for the fan industry in Pakistan. Even those that have said yes to this question usually referred to the FDI.

Figure 31: Presence of Research & Development Institute for Fan Industry in Pakistan- (LUMS Survey 2010)



The literature on clustering shows that access to international global production networks and sources of new knowledge are the two most important factors that drive innovation in a cluster. Since innovation is a complex process, success relies on the coming together of a variety of players, such as suppliers, customers, other firms, universities, research and technology organizations and other intermediaries. Together these players form part of the knowledge transfer system. The most successful clusters will be those that excel at generating and disseminating knowledge and exploiting it on a commercial basis. One such example is the IT cluster in Bangalore.

Box 2: Ingredients for the success of Bangalore as an innovative cluster – (Fan 2009)

Bangalore started as a local cluster focused on aeronautics. It slowly grew into IT and then into biotechnology. By the end of 1990s, many multinational companies had established R&D centres in the city. Bangalore has acquired many of the necessary ingredients to gain such status: good educational institutions, a critical mass of innovative companies, and entrepreneurial culture, and the presence of venture capital.

As they evolve, the focus of clusters moves from production to innovation. This transformation occurs when a threshold number of innovative entrepreneurs exist. As global competition increases, local clusters are becoming crucial for enhancing competitiveness. Clustering and dense inter firm networks provide advantages for firms of all sizes. Clusters represent a new way of thinking about national, state, and local economies, which imply new roles for government, companies, and other institutions in enhancing competitiveness. The evolution of Bangalore indicates that public policy must focus on designing a set of enabling instruments that must be implemented at the regional and local levels. In the

early phases of a cluster, the policy focus has to be on supplying manpower and improving infrastructure. In the growth phase, the focus must be on supporting entrepreneurship, networking and innovation. In later phases, availability of venture capital is crucial. Local institutions and government must play an increasing role in a cluster if it is to become truly innovative.

Product development

The electrical fan industry in Gujrat and Gujranwala clusters has grown steadily during the last 30 years. However, this growth neither brings in its wake a reasonable amount of product standardization across the industry nor did it bring an internationally acceptable quality. Given that fan manufacturing is an assembly process, the size of the output is highly dependent on the timely availability of inputs. As the parts are non-standardized, vendors have failed to achieve scale as they are required to produce several different designs even for very basic parts used in fan manufacturing. On the other hand, companies that have achieved some scale and success such as GFC, Pak Fans, Royal etc. have moved to standardized parts and have invested in modern manufacturing processes.

The large manufacturers generally introduce at least one new design every year. This has resulted in the rapid introduction of several new designs in the form of table, exhaust and pedestal fans. In addition to plastic fans, these manufacturers have recently introduced decorative fans and fans with lights. Some are also planning to introduce mist fans in the coming season.

Innovation initiatives

Over the last few decades, there has been a steady introduction and diffusion of technologies in the fan cluster. The largest firms have generally introduced the newer technologies. Initially, new technologies are treated as proprietary and developed in-house; for example, when the CEOs of two premium fan producers visited Japanese fan producers in 1984, one of the ideas they brought back was that of plastic bodied fans. They imported plastic injection moulding machines and developed in-house expertise in the new technology. These fans gained popularity in the 1990s despite the general psyche of the Pakistani market that heavier fans were better. This period witnessed an increasing number of new designs in plastic pedestal fans, exhaust fans and wall bracket fans. In the late 1990s, the medium-sized fan assemblers also started producing plastic fans with parts procured from manufacturers in Gujranwala.

Over time the proprietary technology diffused within the medium-sized firms and vendors in the cluster. Once the technology reached the vendors, it became available to the smaller manufacturers. For example, axle shafts were produced in-house by GFC (one of the premium fan producers) until the late nineties. However, as the technology gradually spread, GFC decided to outsource axle shafts to specialized vendors since their cost of production was about 25% lower (Rana & Ghani, 2004).

STRATEGY

To liaise with engineering universities for R&D in materials:

To facilitate the linkage between the industry and engineering universities such as University of Gujrat, UET Lahore for research and development in new materials. The industry should lay out their requirements about materials and the research institutions should develop newer materials that are cost effective. The University of Gujrat should put effort into research on innovations in fan production and must cooperate with the industry association PEFMA to set up a Fan Production Technology Research Centre.

7. Policy & Regulatory Environment

7.1. State Bank's current interventions

SBP constituted the Development Finance Group (DFG) in 2006 to cover a broad range of critical areas relating to fulfilment of development finance needs of deprived sectors that needs attention of the central bank. The DFG group also deals with the SME sector and steers implementation of policy, legal and regulatory frameworks for this sector.

Some of the important steps that SBP took in this regard are the following:

- The central bank expanded the scope of refinancing facility for modernization of SMEs by including almost all SME sectors. This scheme will allow SMEs to avail financing at concessional rates for local purchase/import of machinery for BMR of existing units and setting up of new units.
- SBP has initiated market segmentation and cluster development surveys, such as the one on the fan cluster, with the objective of assisting SBP in improving its regulatory framework and facilitate banks in realigning their business strategies in order to come up with customized banking products and services for SMEs.
- SBP has launched a Credit Guarantee Scheme (CGS) for SMEs which will allow banks to develop a portfolio of fresh borrowers who are creditworthy, but cannot fit into their usual credit parameters, especially when collaterals are required. It will allow banks to assess SMEs on the basis of cash flows.
- SBP introduced SME Finance Grass Roots Cluster Training Program for credit officers of the banks to equip them with latest tools and technology being used in SME finance across the globe.
- SME Finance Department of the central bank, in collaboration with Shore Bank, offered training programs on credit scoring for SMEs.

7.2. Evidence and issues

The taxation and regulatory environment have a significant impact on the cost of business and economic performance of the cluster. It is important also because of the impact of the global economy on the fan cluster. In future, the ability of the fan cluster to respond to challenges and opportunities emerging from globalization would be critical. The manufacturers are already apprehensive of the impact that lower tariff barriers and the emergence of China as a major global fan manufacturer will have on their continued ability to compete.

The centralized processing of loans by commercial banks has a critical impact on the capital availability. The Branch Managers are more informed about the local SME businesses as compared to credit officers sitting in head offices. The centralized processing allow for paper based processing only and few confusions in records can result in a wrong decision. On the other hand the local branch managers are more informed about their local client and hence can take better decisions.

The sector also complains that they fail to meet the overall export orders due to lack of capital available. The firms are currently not allowed to borrow against their inventory of finished products. The companies feel that if they are allowed to borrow at reasonable rates against their stock of produced foods then this will allow them liquidity to build up stocks in the down season. This inventory build-up will allow the firms to better meet their customer demand (local as well as international) during peak season.

Finally, as the results of the study suggest that quality is a key feature in determining the viability of fan industry, there is a need to set and enforce minimum requirements of safety and quality. A consumer watchdog could be established that can rate companies in terms of their quality. We introduced this idea with the sector and got a mix response in terms of its transparent adoption. We still feel that it is an important area that must be pursued may be by an organization such as NPO.

7.3. Strategy

Setting Regulations

Enforce quality regulations and involve PSQCA and NPO to organize a quality and value for money fans rating system. Moreover, SBP can intervene through the following measures

- State Bank should revise the definition of SME and split the firm sizes into different groups. A lead may be taken from the definition of SME used in India presented in Table 35 below.
- State Bank should advocate strongly loan processing for SME's as a one window operation. The limit for these loans should be a maximum of Rs. 15 Million and it may be restricted to long term finance only.
- State Bank should make it mandatory for banks to support a network of mentors to deliver a free finance service to small and medium sized businesses across the country.
- State Bank should work with commercial banks to improve service levels to micro enterprises. This may involve developing new lending guidelines for micro enterprises.
- State Bank should push commercial banks to publish lending principles which clearly set out the minimum standards for small-sized, medium-sized and large businesses.
- State Bank should make it mandatory for commercial banks to initiate a pre re-financing dialogue 12 months' ahead of any term loan coming to an end specifically in case of SMEs. In other words the negotiations on financing agreements of SMEs should be much ahead of time before expiry so that it can give planning time to SMEs and establish their need of further credit.
- State bank should set up lending targets in the fan industry with total lending by commercial banks to reach up to Rupees 10 Billion over the next three years.
- State Bank should publish a regular independent survey on business finance demand and lending supply in the SME sector.
- State Bank should hold regional outreach events in Gujrat
- State Bank should annually review and suggest improvements in customer information including a review of literature and other materials (e.g., loan applications).
- The State Bank should establish a fan sector strategy implementation body and a sub-group of bankers to continue the implementation and further development of ideas presented in this strategy paper.

Table 38: SME Split Definitions in India

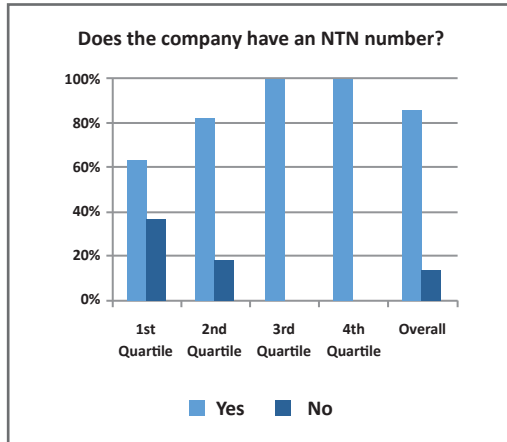
Enterprise	Engaged in Manufacturing / Preservation of Goods (Incl. Processing Units)	Engaged in Providing / Rendering of Services	Remarks
Micro Enterprise	Not to exceed Rs. 25 Lakhs.	Not to Exceed Rs. 10 Lakhs.	1. Separate threshold Investment limits proposed by the Act fo Manufacturing and Services Sectors. 2. Micro Enterprises newly introduced under both the usectors.
Small Enterprise	More than Rs. 25 Lakhs but does not exceed Rs. 5 Crores.	More than Rs. 10 lakhs but does not exceed Rs. 2 Crores.	
Medium Enterprise	More than Rs. 5 Lakhs Crore Rupees but does not exceed Rs. 10 Crores.	More than Rs, 2 Crore Rupees but does not exceed Rs. 5 Crore.	

8. Data chapter

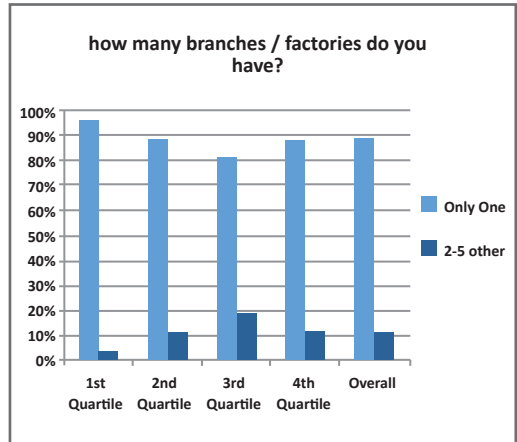
We have presented some useful indicators for commercial banks and State Bank in this chapter. All these number are derived from primary research done under the project. In all data tables and figures we have split the firm analysis into 4 categories. The 1st Quintile/Quartile represents the firms with the lowest sales (bottom 25%) and the 4th Quintile/Quartile refers to firms with highest sales (top 25%). The 2nd and 3rd quintile/quartiles represent the 50% firms in between.

8.1. Particulars of establishment

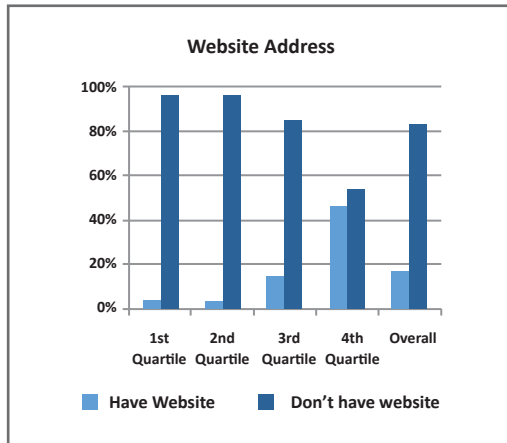
NTN status



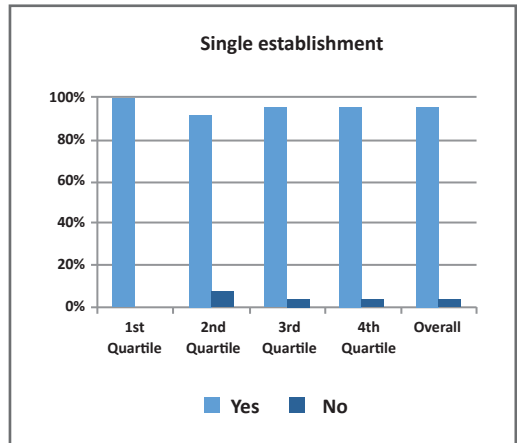
Number of branches and side offices



Companies with operational website (%)

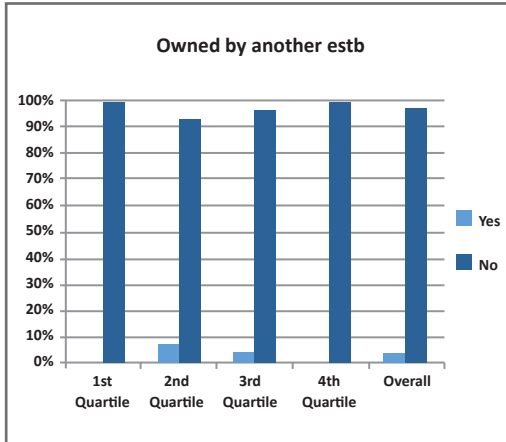


Firms as single establishments (%)

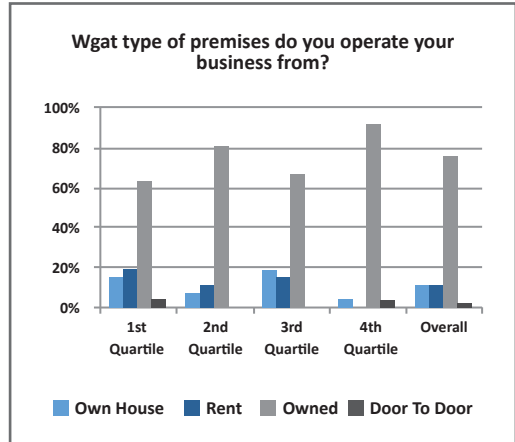


Source: LUMS Survey (2010)

Firms owned by other establishments

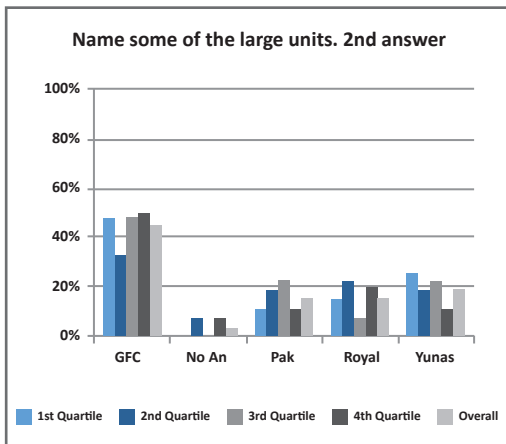


Type of premises for the factory

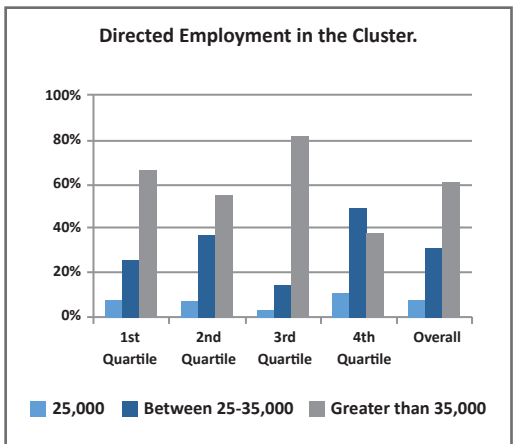


8.2. Perception about industry

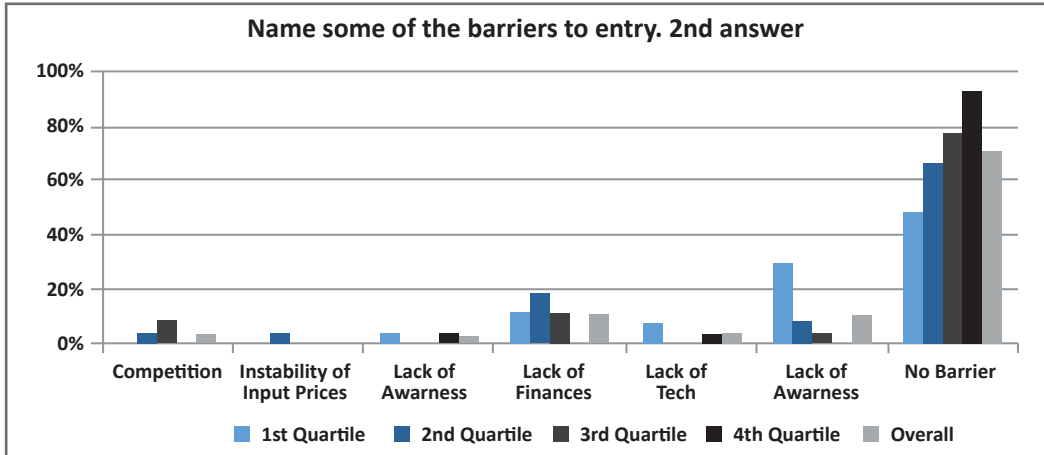
Largest units in the industry



Employment in the cluster

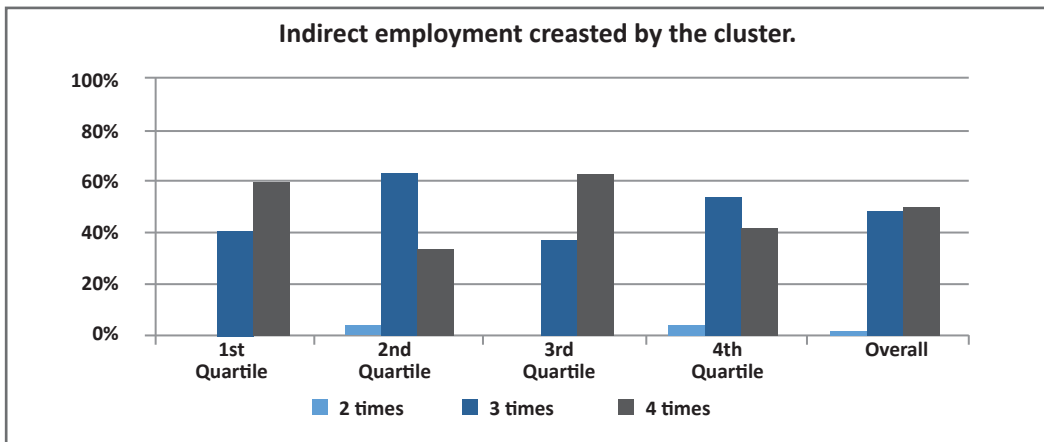


Barriers to entry



Source: LUMS Survey (2010)

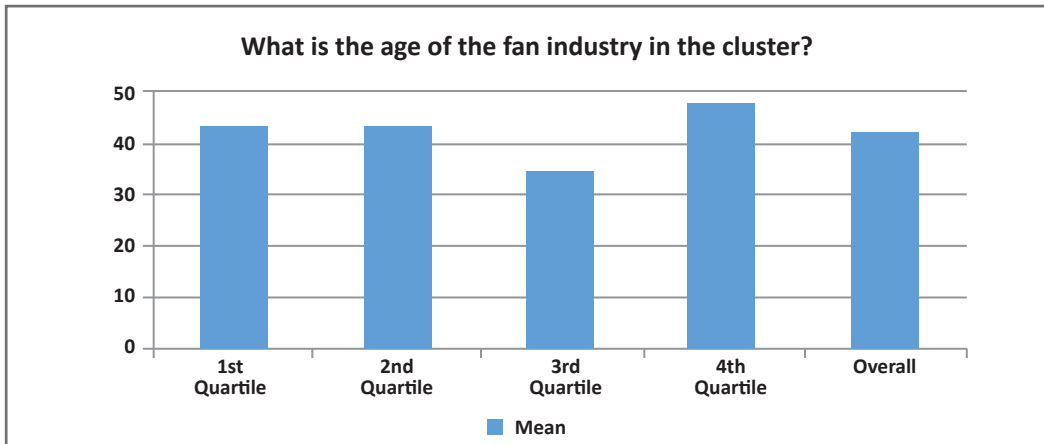
Indirect employment created by the cluster



Factors for being successful in fan industry

Response in each sales quartile	Table 1: Age of Business ¹⁸					Total
	Finance	Management	Marketing	Technology	No answer	
1st Quartile (Lowest 25% of sales)	3.7%	0.0%	0.0%	0.0%	96.3%	100.0%
2nd Quartile	0.0%	0.0%	3.7%	0.0%	96.3%	100.0%
3rd Quartile Last quartile	3.7%	7.4%	0.0%	0.0%	88.9%	100.0%
(Top 25% of sales)	0.0%	0.0%	0.0%	3.8%	96.2%	100.0%
Total	1.9%	1.9%	0.9%	0.9%	94.4%	100.0%

Age of the fan cluster (years)



Source: LUMS Survey (2010)

8.3. Firm characteristics

Value of input relative to total fan value (%)

Response in each sales quartile	Value of input as a % of fan value			Total
	Between 50-60%	Between 60-70%	More than 70%	
1st Quartile- (Lowest 25% of sales)	11.1%	48.1%	40.7%	100.0%
2nd Quartile 18.5%	59.3%	22.2%	100.0%	
3rd Quartile 11.1%	37.0%	51.9%	100.0%	
Last quartile- (Top 25% of sales)	11.5%	42.3%	46.2%	100.0%
Total	13.1%	46.7%	40.2%	100.0%

Means of record keeping

Response in each sales quartile	How do you keep record of inventory, sales, creditors & debtors			Total
	Hand written books	Computer software	Accounting department	
1st Quartile- (Lowest 25% of sales)	85.2%	14.8%	0.0%	100.0%
2nd Quartile	92.6%	3.7%	3.7%	100.0%
3rd Quartile	70.4%	29.6%	0.0%	100.0%
Last quartile- (Top 25% of sales)	26.9%	38.5%	34.6%	100.0%
Total	69.2%	21.5%	9.3%	100.0%

8.4. Production/management characteristics

Cost of setting up a fan unit

Response in each sales quartile		Cost of setting up a Fan Unit same size as yours (Rs. millions)	Total annual production of fans (Units)
Lowest Quartile of Sales	Mean	5.75	8,933
	Std. Deviation	3.83	13,478
Second Quartile of Sales	Mean	8.30	84,129
	Std. Deviation	4.00	353,324
Third Quartile of Sales	Mean	13.52	36,185
	Std. Deviation	7.82	49,047
Fourth and highest Quartile of Sales	Mean	171.38	103,076
	Std. Deviation	251.4	133,237
Total	Mean	48.60	57,660
	Std. Deviation	140.80	191,960

Market shares: Urban vs. Rural

Response in each sales quartile		Share of the urban market (%)	Share of the rural market (%)
Lowest Quartile of Sales	Mean	91.67	8.33
	Std. Deviation	9.094	9.094
Second Quartile of Sales	Mean	90.37	9.63
	Std. Deviation	8.762	8.762
Third Quartile of Sales	Mean	88.70	11.30
	Std. Deviation	8.389	8.389
Fourth and highest Quartile of Sales	Mean	80.77	19.23
	Std. Deviation	15.407	15.407
Total	Mean	87.94	12.06
	Std. Deviation	11.409	11.409

Total annual turnover

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	8.78	5.02
2nd Quartile	23.95	5.20
3rd Quartile	49.80	9.11
Last quartile- (Top 25% of sales)	196.20	228.37
Total	68.50	133.5

Cost of upgrading technology

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	6.70	7.79
2nd Quartile	7.92	3.55
3rd Quartile	10.65	8.44
Last quartile- (Top 25% of sales)	34.81	42.57
Total	14.83	24.38

External finance needed for capital expansion

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	2.56	2.12
2nd Quartile	3.85	1.96
3rd Quartile	6.04	9.20
Last quartile- (Top 25% of sales)	18.31	18.79
Total	7.59	12.03

Source: LUMS Survey (2010)

Type of bank accounts operated

Response in each sales quartile	Separate Internal and External Accounts		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	7.4%	92.6%	100.0%
2 nd Quartile	18.5%	81.5%	100.0%
3 rd Quartile	18.5%	81.5%	100.0%
Last quartile- (Top 25% of sales)	61.5%	38.5%	100.0%
TOTAL	26.2%	73.8%	100.0%

Average wage bill (per annum)

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	395	306
2nd Quartile	1,133	1,217
3rd Quartile	2,279	1,028
Last quartile- (Top 25% of sales)	10,292	12,342
Total	3,462	7,221

Average fixed costs (in case of no production) per annum

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	116	146
2nd Quartile	270	376
3rd Quartile	585	431
Last quartile- (Top 25% of sales)	6,949	18,586
Total	1,934	9,473

Source: LUMS Survey (2010)

Lowest sales recorded in last 10 years (per annum)

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	2.87	2.23
2nd Quartile	8.52	3.46
3rd Quartile	25.0	39.54
Last quartile- (Top 25% of sales)	43.65	39.80
Total	19.80	31.82

Highest sales recorded in last 10 years (per annum)

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	9.24	5.07
2nd Quartile	25.45	5.68
3rd Quartile	50.76	9.20
Last quartile- (Top 25% of sales)	199.73	227.07
Total	70.09	133.65

8.5. Banking relationship & financing characteristics

Use of banks for commercial transactions

Response in each sales quartile	Use banks for business transactions		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	88.9%	11.1%	100.0%
2nd Quartile	96.3%	3.7%	100.0%
3rd Quartile	96.3%	3.7%	100.0%
Last quartile -(Top 25% of sales)	92.3%	7.7%	100.0%
Total	93.5%	6.5%	100.0%

Source: LUMS Survey (2010)

Firms with businesses bank accounts

Response in each sales quartile	Bank accounts in the name of the business		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	34.6%	65.4%	100.0%
2nd Quartile	46.2%	53.8%	100.0%
3rd Quartile	70.4%	29.6%	100.0%
Last quartile- (Top 25% of sales)	76.9%	23.1%	100.0%
Total	57.1%	42.9%	100.0%

Business Interested In Availing Working Capital Facility

Response in each sales quartile	Interested in availing working capital facility from banks		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	48.1%	51.9%	100.0%
2nd Quartile	7.7%	92.3%	100.0%
3rd Quartile	44.4%	55.6%	100.0%
Last quartile- (Top 25% of sales)	46.2%	53.8%	100.0%
Total	36.8%	63.2%	100.0%

Duration requirement for working capital

Response in each sales quartile	Optimal time duration for a working capital loan			Total
	Ongoing running financing	6 months	1 year	
1st Quartile- (Lowest 25% of sales)	50.0%	0.0%	50.0%	100.0%
2nd Quartile	57.1%	0.0%	42.9%	
3rd Quartile	66.7%	0.0%	33.3	100.0%
Last quartile- (Top 25% of sales)	75.0%	8.3%	16.7%	100.0%
Total	62.8%	2.3%	34.9%	100.0%

Source: LUMS Survey (2010)

Ease of getting commercial credit from banks

Response in each sales quartile	Easy to get credit from bank		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	92.6%	7.4%	100.0%
2nd Quartile	92.0%	8.0%	100.0%
3rd Quartile	100.0%	0.0%	100.0%
Last quartile -(Top 25% of sales)	100.0%	0.0%	100.0%
Total	96.2%	3.8%	100.0%

Duration of current banking relationship

Response in each sales quartile	Mean (in years)	Std. Deviation (in years)
1st Quartile- (Lowest 25% of sales)	9.20	3.40
2nd Quartile	13.35	14.75
3rd Quartile	11.22	4.34
Last quartile- (Top 25% of sales)	15.46	9.36
Total	12.33	9.33

Working capital requirement (Rs. / annum)

Response in each sales quartile	Mean (in million Rs.)	Std. Deviation (in million Rs.)
1st Quartile- (Lowest 25% of sales)	5.97	5.74
2nd Quartile	7.38	4.41
3rd Quartile	10.26	8.52
Last quartile- (Top 25% of sales)	45.38	96.68
Total	17.05	50.21

Source: LUMS Survey (2010)

Feasibility of current market rate of interest

Response in each sales quartile	Current market-up- rate is		Total
	Market friendly	Independent to market growth	
1st Quartile- (Lowest 25% of sales)	7.4%	92.6%	100.0%
2nd Quartile	7.4%	92.6%	100.0%
3rd Quartile	22.2%	77.8%	100.0%
Last quartile- (Top 25% of sales)	19.2%	80.8%	100.0%
Total	14.0%	86.0%	100.0%

Comparing formal & informal rates of mark-up

Response in each sales quartile	Current market-up rate as compared to informal money lending rate		Total
	Bank rate is lower	Bank rate is higher	
1st Quartile- (Lowest 25% of sales)	88.9%	11.1%	100.0%
2nd Quartile	81.5%	18.5%	100.0%
3rd Quartile	81.5%	18.5%	100.0%
Last quartile- (Top 25% of sales)	84.6%	15.4%	100.0%
Total	84.1%	15.9%	100.0%

8.6. Business risks and issues

Key indicators of financial viability

Response in each sales quartile	Key parameters for financial viability of a fan manufacturer				Total
	Quality Wire	Energy efficient	Brand name	Texhcnical Skills of labour	
1st Quartile- (Lowest 25% of sales)	7.4%	3.7%	88.9%	0.0%	100.0%
2nd Quartile	3.7%	0.0%	96.3%	0.0%	100.0%
3rd Quartile	3.7%	0.0%	96.3%	0.0%	100.0%
Last quartile- (Top 25% of sales)	3.8%	0.0%	92.3%	3.8%	100.0%
Total	4.7%	0.9%	93.5%	0.9%	100.0%

Business viability

Response in each sales quartile	Will you shift to another industry		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	11.1%	88.9%	100.0%
2nd Quartile	18.5%	81.5%	100.0%
3rd Quartile	18.5%	81.5%	100.0%
Last quartile- (Top 25% of sales)	11.5%	88.5%	100.0%
Total	15.0%	85.0%	100.0%

Businesses with own brands

Response in each sales quartile	Own brand		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	85.2%	14.8%	100.0%
2nd Quartile	96.3%	3.7%	100.0%
3rd Quartile	96.3%	3.7%	100.0%
Last quartile- (Top 25% of sales)	96.2%	3.8%	100.0%
Total	93.5%	6.5%	100.0%

Business producing for OEMS (%)

Response in each sales quartile	Do you produce for OEMs?		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	22.2%	77.8%	100.0%
2nd Quartile	14.8%	85.2%	100.0%
3rd Quartile	19.2%	80.8%	100.0%
Last quartile- (Top 25% of sales)	19.2%	80.8%	100.0%
Total	18.9%	81.1%	100.0%

Source: LUMS Survey (2010)

Affiliation with large local brand

Response in each sales quartile	Do you produce for any large local brand?		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	44.4%	55.6%	100.0%
2nd Quartile	37.0%	63.0%	100.0%
3rd Quartile	33.3%	66.7%	100.0%
Last quartile- (Top 25% of sales)	23.1%	76.9%	100.0%
Total	34.6%	65.4%	100.0%

Vendor capacity

Response in each sales quartile	Is the capacity of suppliers sufficient?		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	92.6%	7.4%	100.0%
2nd Quartile	88.9%	11.1%	100.0%
3rd Quartile	88.5%	11.5%	100.0%
Last quartile- (Top 25% of sales)	88.5%	11.5%	100.0%
Total	89.6%	10.4%	100.0%

Source: LUMS Survey (2010)

Business viability

Response in each sales quartile	Will you shift to another industry		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	11.1%	88.9%	100.0%
2nd Quartile	18.5%	81.5%	100.0%
3rd Quartile	18.5%	81.5%	100.0%
Last quartile- (Top 25% of sales)	11.5%	88.5%	100.0%
Total	15.0%	85.0%	100.0%

Businesses with own brands

Response in each sales quartile	Own brand		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	85.2%	14.8%	100.0%
2nd Quartile	96.3%	3.7%	100.0%
3rd Quartile	96.3%	3.7%	100.0%
Last quartile- (Top 25% of sales)	96.2%	3.8%	100.0%
Total	93.5%	6.5%	100.0%

Business producing for OEMS (%)

Response in each sales quartile	Do you produce for OEMs?		Total
	Yes	No	
1st Quartile- (Lowest 25% of sales)	22.2%	77.8%	100.0%
2nd Quartile	14.8%	85.2%	100.0%
3rd Quartile	19.2%	80.8%	100.0%
Last quartile- (Top 25% of sales)	19.2%	80.8%	100.0%
Total	18.9%	81.1%	100.0%

9. Conclusion

This report investigates the importance of the fan cluster for Pakistan's economy and the determinants of its success. Particular emphasis on the report was given to firm size, firm performance and a host of other factors which may affect firms' access to finance in the cluster. We found that the road to upgrading the cluster is independent innovation. The collective action of the cluster through PEFMA and mastering international market regulations and safety standards are not enough to solve the fundamental problem of upgrading. The most essential point for the sustainable development of the fan industry in Gujrat and Gujranwala is to improve the capacity for independent innovation to help the industry reach a higher place along the global value chain. Independent innovation is a multifaceted concept. It contains the four patterns of innovation proposed by the United Nations Industrial Development Organization – product innovation, process innovation, function innovation and interdepartmental innovation – and emphasizes the role of inter-organizational R&D departments, research centres with outputs of new technology, other firms with advanced technology, and universities. It even requires firms to improve the way they conduct their businesses, sales activities, service operations, branding and other value-added capabilities. Firms should receive support from the government in their effort to enter the global value chain system through innovation.

The report has highlighted various aspects relating to building sector level competitiveness in the fan industry. The approach used was based on the Porter's Diamond analysis and key to successful clusters. We would classify the fan industry as an industrial hotspot and still not a cluster. The reason for this being that some basic ingredients of a successful cluster are still missing in the fan industry. The industry has very weak linkages with academia and technical/engineering research & redevelopment centres. This has resulted not only in outdated technology but also in outdated engineering in the fan industry. The engineering logic is still based on 30/40 year old designs. Hence, the fans are not energy efficient and designing capacities are limited. Moreover, there is hardly any information sharing within the sector. The companies are too secretive about their processes, marketing, orders, workers and production. There are no firm-firm linkages or learning in the sector. Finally, logistic support and marketing infrastructure is also missing which are key ingredients of making a successful cluster. Hence, the report strongly recommends that sector is facilitated through PEFMA platform where they engage a continuous dialogue and move towards stronger integration as a cluster.

When looking at the credit constraints the analysis suggest a two tier problem. Firstly, the dearth in capacity of the private sector to record production as well as financial data in bankable format is a big impediment. The banks are unable to obtain documents and records that represent the true financial position of the company. The fan cluster is predominantly small and hence little resources are available with the firms to employ managers looking after the finances. It is normally the single owner who keeps a track of all the records. Secondly, we also found sufficient evidence regarding banks lack of willingness to explore the SME sector. SME development finance is an area not well known to the banks and currently they prefer large corporate loans and classify them as SME allocation. The State Bank of Pakistan will have to intervene and revise the SME definition to introduce further bifurcations of firms by turnover. Once the definition is split then State Bank should set mandatory limit of credit for each type of firms. This will help in funds channelling into the real SME sector and will also ensure success of State Bank's incentives schemes that are introduced to help the small firms.

We also realize that the strategy presented above is all encompassing and presents a massive agenda. The success of these strategic recommendations depends on how effectively and timely these recommendations are implemented. We are also sensitive to the fact the most of the strategic recommendations are beyond the control of State Bank's direct mandate. However, as the purpose of the exercise was not only collection and tabulation of data we feel it is necessary that State Bank should take ownership of all the recommendations and advocate for implementation. In this regard we would like to recommend establishing an implementation committee. The implementation committee should represent members from State Bank, SMEDA, PEFMA, FDI, TEVTA, TUSDEC, UET Gujrat, Academia (we would recommend one of the researchers from LUMS to be made part of implementation for continuity) and NPO. The mandate of the committee should be to develop an implementation plan with clear time lines and targets based on the strategy paper. The implementation plan should highlight the roles and responsibilities and steer the implementation of activities. State Bank will have to play an anchor role to bring all stakeholders on one table and monitor progress on implementation.

Moreover, the implementation committee should also be assisted by a sub-committee comprising SME specialists/product developers from commercial banks. This sub-committee should be tasked to develop and refine the proposed financing products in the strategy paper. The sub-committee will develop and operationalize the broad type of credit products that have been highlighted in this paper. Once these products are developed and piloted these should be made available as standard lending products for the fan cluster.

Hence, the success of this strategy lies in its implementation and we feel that State Bank can play the role of a facilitator to bring other stakeholders together and also allying the commercial banks to initiate a thought process addressing the development needs of the SME sector.

11. REFERENCES

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