

Policy Paper Series
2012-13

SKILL DEVELOPMENT IN THE MSME SECTOR



भारतीय लघु उद्योग विकास बैंक
SMALL INDUSTRIES DEVELOPMENT BANK OF INDIA

Addressing gaps in MSME eco-system

Skill Development in the MSME Sector

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भारतीय लघु उद्योग विकास बैंक Small Industries Development Bank of India

- Set up on April 2, 1990 as subsidiary of IDBI, under an Act of Indian Parliament as an Apex Financial Institution for SSI (now MSME as per Government direction).
- Became autonomous in 2000 and now government ownership is held through public sector banks and insurance companies.
- Present authorized capital ₹ 1000 crore and paid-up capital ₹ 450 crore.
- Consistent profit making and dividend paying (since inception) (25% in the last two years).
- Balance Sheet size of ₹ 59,385 crore as on March 31, 2012.
- Cumulative disbursements of over ₹ 2,44,286 crore benefitting more than 325 lakh entrepreneurs as on March 31, 2012.
- Branch Offices at 85 locations across India covering all states and all major MSME clusters. Outreach widespread through associate/partner institutions
- Over 1,000 staff, mostly professionals, cut across multi-disciplines such as, Engineering, MBA, CA, etc.
- Wide range of financial and non-financial products and services for MSME directly as well through banks and other intermediaries.
- Preferred nodal agency for different ministerial schemes in sectoral areas such as textiles, food processing, leather, CLCSS etc.
- International Partnership- Leveraging association with lead international bi-lateral and multi-lateral institutions (World Bank, ADB, JICA, Japan; DFID, U.K; IFAD, Rome; KfW & GIZ, Germany, AFD, France, etc.) which includes imbibing global best practices, both financing and non financing, for Indian MSMEs Institutional solutions-
 - Set up its first associate in 1999 – SIDBI Venture Capital Ltd. (for providing venture capital) and SIDBI Foundation for Micro Credit.
 - Set up Credit Guarantee Fund Trust for Micro and Small Enterprises in 2000.
 - In 2004, started financing the Medium Sector Enterprises (with setting up of ₹ 10,000 crore SME Fund with SIDBI). Accordingly, now caters to the Micro, Small and Medium Enterprises.
 - In 2005 launched one of the world's largest MSME sector development project (MSMEFDP) in partnership with World Bank, DFID, UK; KfW and GIZ, Germany. Department of Financial Services, Ministry of Finance, Government of India is the Nodal Agency of the Project.
 - In 2005, set up SME Rating Agency Ltd. (India's first SME dedicated rating agency) and India SME Technology Services Limited to function as a technology bank for MSMEs in India.
 - In 2008, set up India SME Reconstruction Ltd. as the country's first MSME focused Asset Reconstruction Company.
- Designed, developed and disseminated several financing and non financing solutions especially products/services in niche areas of risk capital, sustainable finance, skill development, technology upgradation, enterprise development, etc.

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FOREWORD



Civilizations, Societies & Cultures are continuously evolving and with that the requirements for goods and services in an economy are constantly changing. This requires systemic adaptation of technologies and human skill sets thereof. Government of India, having been seized of the matter, set up the National Skill Development Mission to take India on the desired growth path.



As per the estimate of National Skill Development Mission, over 250 million people need to be skilled by 2020. The skilling and re-skilling of our manpower will result in reaping “Demographic Dividends” and contributing to India’s emergence as a global economic power. Looking into the unique position of India in the global demographic space with one of the youngest populations in the world, there is a felt need to provide greater impetus to encourage the young population to take up new economy jobs and also necessary entrepreneurial activities such that several of them become “job providers” rather than “job seekers”. Considering the importance of the subject, the Budget for 2013-14 has mentioned of skilling 50 million work force during the 12th five year plan.

Small Industries Development Bank of India (SIDBI), being the principal financial institution for the MSME Sector, has always been persistently endeavouring to attend to the credit and non-credit needs of MSMEs in a holistic manner. In the context of skill development, SIDBI has brought out a policy study report on “Skill Development in the MSME Sector”. The report not only maps the skill gaps, but also presents structured training modules for skill development for select industry sectors and brings out concrete suggestions and strategies.

I am sure that this study will meet sectoral and cluster based skill development needs of MSMEs and thus fills an important gap in demand and supply of skilled manpower. We propose to share the skill development modules to help in meeting the targets of National Skill Development Mission, thereby contributing to the process of enhancing competitiveness of MSMEs in India.



S. Muhnot
Chairman & Managing Director

PREFACE



In India, the Micro, Small and Medium Enterprises (MSME) sector plays an important role by contributing significantly to the national priorities of enhanced employment, production and exports. The sector has the potential to grow faster, but is constrained among others by lack of skilled manpower. This inhibits MSMEs in attaining their full potential.



SIDBI has been contributing towards the skill development of the human resources sector through its specially designed scheme called Skill-cum-Technology Upgradation Programme (STUP). So far, SIDBI has supported 1,504 STUPs and trained over 32,000 persons. Further, under its MSME Financing and Development Project (MSMEFDP) project, it has nurtured private Business Development Services (BDS) providers, strengthened certain government training institutes and developed new skill development curricula with reference to specific cluster needs. Skill development training has been provided to more than 11,000 persons on various functional areas viz., production including storage, distribution, handling and logistics, marketing, finance and information and communication technology. In the select clusters covered under the present study, MSME- FDP had extended support to over 480 firms and 125 BDSPs on various functional areas. The stakeholders in these adopted clusters, expressed desire that there is a need to standardize and formalize the skill development by appropriate mapping of gaps. The present policy paper - "Study on Skill Development in the MSME Sector" attempts to attend to these expectations.

Besides identification & mapping the skill gap in select industry groups, the paper analyses and benchmarks the training modules to the best industry practices, suggests a sustainable framework for their implementation & knowledge transfer mechanism. For the ready reference of policy makers, the study also includes simple course modules in tip sheet format.

It is my firm belief that the policy paper will go a long way in initiating a meaningful discussion in human resources skill development in the MSME sector and ultimately in developing appropriate skills levels in various clusters.


N. K. Maini
DMD

MESSAGE



The Micro Small and Medium Enterprise (MSME) sector plays an important role in Indian as well as global economy. The sector plays a catalytic role in making an economy innovative, vibrant and resilient. Globally, technology has been a key differentiator to the competitiveness of an economy, more importantly the MSMEs. Among the major challenges faced by the MSMEs in India involving access to financial and non financial services, technology takes a higher slot. Lack of access to trusted information on updated/upgraded technologies as also non-availability of affordable, appropriate and updated technology hinders their growth. These impacts the ability of MSMEs to compete in markets not only at local or national level but also globally.



It has been endeavor of SIDBI to promote, finance and develop the sector through various financial instruments, information dissemination and policy advocacy measures. We have been bringing out a series of knowledge booklets, policy series as also toolkits.

I am happy that SIDBI is laying before the policy makers another thought provoking policy paper. I am sure the Technology Vision 2020 intent to contribute to removing of information asymmetry on technology issues by enlisting expectations of MSME domain on technology front will succeed. I am sure this will contribute to MSMEs next level of growth as also act as a change agent steering the wheels of MSMEs prosperity by ensuring match making of supply of business services to the demand of MSMEs thus easing the way they do business.



T R Bajalia
DMD

About MSME- FDP



A brief about MSME- FDP

SIDBI is the Implementing Agency for the “MSME Financing and Development Project (MSME - FDP)” involving the World Bank, DFID, UK and KFW & GIZ, Germany as partners. The Department of Financial Services, Ministry of Finance, Government of India is the Nodal Agency for the Project. The Project attends to demand and supply side needs of MSMEs through judicious provision of financial and non-financial services. Project has adopted an innovative approach (caters to target population which spans across stakeholders of MSME domain) to attend to poverty alleviation through enterprise development in MSME domain. The grounding of enterprises and instilling competitiveness in them contributes to National development as also the Millennium Development Goals.

The Project objective was to “improve MSME access to finance (including term finance) and business development services, thereby fostering the MSME growth, competitiveness and employment creation”. This was to be achieved by focusing on:

- ▶ Enabling the framework for MSME financing by banks.
- ▶ Helping banks to gain better access to longer term financing for lending to the MSME sector.
- ▶ Mitigating banks risks related to MSME lending and reducing transactions costs of such lending, while, at the same time, ensuring the banks enhance quality of their MSME loan portfolio.
- ▶ Strengthening Business Development Services (BDS) and market linkage programs for MSMEs.

Making Market Work for MSMEs (through BDS market development in 19 Indian clusters).

The Key innovative tools/ model used for BDS delivery are given below:-

Voucher Support - Subsidizing by the project towards initial payout by MSMEs to BDS on tapering basis through a tripartite arrangement between BDS, MSME and Facilitating Agency (FAs) - where FAs role has been to oversee successful transaction completion.

BDS Clinic - A one point solution and matchmaking platform bringing MSMEs/ BDS together for on the spot viable solutions.

BDS on Wheels - A vehicle carrying BDS to cater to MSMEs service requirements at the place of MSMEs (with thrust on MEs)

BDS Panel - Created Panel of > 450 empanelled BDS who have successfully rendered services to MSMEs thus giving the needed trust (it includes a pool of FAs - with more than 110 personnel in team), BDS Consortia (pooling BDS of different specialization under one umbrella to offer advantages of collaboration), nineteen virtual BDS (each cluster has a website which have acted as knowledge repository), benchmarking of costs leads to reduction in fee etc.

Value chain mapping - Every cluster underwent Diagnostic Study which mapped critical pressure points and were attended throughout project intervention. The emergent scenario post implementation was compared to pre-launch situation as mapped by diagnostic study.

Who-Does-Who-Pays (WDWP) Matrix - The tool has been adopted to map the availability of BDS and their existing users including paying pattern in the clusters. This was tracked for pre and post situation.

Cluster Coordination Committee - This instilled ownership among key cluster actors towards project initiatives right from inception (diagnostic) till exit (handing over to exit vehicles). It vetted, validated, monitored and guided the initiatives.

Cross Learning's & Exposure Visits - For learning's from successes and failures in other clusters, Project organized cross learning workshops on regular basis (at national / regional level which has evolved as an institutionalized learning mechanism). More than 16 such learning workshops upgraded the capacity of FAs.

Skill Development Models (with MFI, BMO led, Corporate Houses, Academia-Industry Partnership etc.) were tested and validated institutional BDS.

Knowledge Series / Policy Papers / Tool Kits - Several policy papers / publications (e.g. Factoring Global Best Banking Practices in MSME Financing and Development , MSME Report 2010, 2011 Toolkits (e.g. Walk-in-Kit for Corporatization of MSMEs - fostering corporatization so as to enable 95% non-corporate MSMEs to slowly adopt it for growth and rise up the value chain, web enabled MSME Kit etc.), Series on Risk Capital for MSMEs, etc. Under MSME- FDP, Technology Modernization were taken as a focused area for intervention and at least 7 clusters (out of 19) saw technological /production processes related interventions. Technology initiatives were related to:

- Technology upgradation
- Cleaner /greener production technologies
- Advanced technologies for processing
- Drudgery reduction technologies
- Product and design diversifications
- Information and Communication Technology (ICT)

Main achievements and lessons from technology initiatives are described in details below:

Technological Up-gradation: Improvisation of Tanning Drum in Chennai led to cost reduction. Upgradation of Coupla in Coimbatore cluster to maximize the use of coal resulted in an estimated saving of approximately ₹ 11.2 Million per annum. Similarly in Rourkela, 3 technology demonstration on latest technologies in automated CNC and welding machines were organized which led to adoption of the technology.

Cleaner/Greener Production Technologies: Common evaporating unit and treatment plant for hazardous waste and effluent was successfully done in Ahmedabad Dyes and Chemical cluster. Similarly pollution reduction equipment (Multiple Effective Evaporator with latest technology) was introduced in Hyderabad pharma cluster.

Advanced Technology for Processing: One of the major problem faced by the Panipat Floor Coverings Cluster is low productivity (as more than 90% of the tufting and composite manufacturing firms are using manual tufting guns for tufting operations). This is also resulting in diminishing repeated orders for small tufting and composite firms from exporters as they are unable to supply the goods on time and thereby affecting the entire supply chain. The problem identified was inability to utilize electrical tufting guns (ETGs) as in house mechanics were not properly trained in repairing and maintaining the guns leading to frequent break downs resulting in reluctance of the labour in using the guns; and thereby finally leading to low productivity. Introduction of new technology when accompanied by the necessary skill development measures is most successful as the case of Electrical Tufted Guns (ETGs) shows in the Panipat Cluster. The same was also tested successfully in Bhadoli Carpet Cluster. Similarly, in Ganjam, under Cashew processing, shifting from 'Roasting' technique to 'Boiling' technique decreases the wastage by 30% (which led to saving of approximately ₹ 99 Million per year for 36 firms).

Drudgery Reduction Technologies e.g. Semi-Automatic Spinning Ratt in Allepuzzha cluster wherein this shift to small mechanized interventions has provided enormous benefits. Introducing economical semi mechanized looms have proven to not only reduce human drudgery (for example the women had to walk 10-12 km but now can sit and do retting) but also enhance efficiency.

Design Diversification: Design innovations ensures sustainability of cluster firms e.g. in Shantiniketan cluster, 28 new designs (surface and patterns) and 12 mock ups designs were introduced through design workshop during the course of the project with a high response from the buyers. Similarly Designers' Club initiative in Tirupur has given rich dividends. Tirupur, the textile hub is also a hub of potential designers. But due to lack of knowledge, information, and adequate platform, the designers were unable to show their talent and needed a platform to hone their skills. Tirupur BDS Project identified this need and founded a Club for Designers in association with NIFT - TEA. The club is founded with the objective of promoting designers from the cluster and to build industrial linkages through the experts. Supporting agendas with inbuilt sustainability traits have been mainstays of project.

Product Diversification: Kolkata is known for industrial gloves. A formal network (M/s United Creations Pvt. Ltd.) of six industrial gloves manufacturers decided to make a move from industrial to fashion gloves. This was a new product meant for exports and there was a need for an international expert who understands the product as well as the market. The Project partially supported hiring the services of German trainer. He trained 27 workers. Later another 20 persons have been trained by some of the trainees. The typical leather required was being sourced from overseas and is now being sourced from two local producers. After over six months of trial and error with the support of the expert, two tanneries have reached the quality levels needed and the raw material is now being sourced from them. The initial German buyer of the product was also linked by the BDS provider. Later the network found a buyer each in Holland and Spain. An order worth ₹ 3 Million has already been completed. Sales are expected to cross over ₹ 20 Million by the year 2011-12. Clearly many product (fashion gloves in Kolkata cluster) and design diversification efforts (in Shantiniketan cluster) also benefitted the MSMEs enormously.

Information and Communication Technology: Given the criticality of adoption of ICT among Indian MSMEs, the phenomenon has been effectively leveraged by many discerning small enterprises as a tool

for gaining competitive advantage for long term growth. However, adoption of ICT by 132 MSMEs poses unique challenges and constraints which can prevent full realization of potential. Under the project, initiatives were seen in the area of computer aided design and enterprise resource planning. Most of the ICT/IT adoption was witnessed in the engineering clusters. Use of ICT can promote enormous efficiencies and cost savings with current usage at very low levels. MSMEs that are using ERPs have learnt the benefits of integration of planning, production, inventory, quality control, financial, depts and enhancing the efficiency of inventory management, planning, procurement, etc.

Few Case studies on Technological Change

Issues related to technological change surfaced and succeeded in cases of strong business needs. However because of high level of uncertainty involved in such experimentation, these interventions did not witness serious lead from the stakeholders. As a result these were mostly supply side interventions, led by the facilitating agencies, only to be picked up by the stakeholders, once such intervention proved its economic sense. At times, lack of appropriate training also led to restricted use of appropriate technology. Accordingly, the various models of technological changes witnessed include exposure to improved technology in benchmark cluster (Ganjam), training by embedded service provider - machinery supplier (Panipat), introduction through private service provider (Kanpur and Alapuzha), and identification of best practices by the strategic service provide (Coimbatore), etc.

1. Technological Change through Benchmarking in Ganjam

Ganjam and Gajapati is the home of 120 cashew processing units supplying cashew to the domestic market for more than three decades but remained untouched by the advanced methods of processing that can take the product to the international market. Raw cashew is processed to palatable cashew kernel through traditional method of roasting, shelling and peeling yielding low quality product with high wastages. The project took a series of initiatives in order to make the cluster realize its potential. An exposure 38 entrepreneurs was organized to Mangalore and Kollam cluster to learn best practices and advanced technology for processing. Again with the help of strategic BDSPs, trial and demonstrations events were organized in the cluster to make entrepreneurs learn different modern techniques for better quality and productivity and at the same time could be environment friendly. The initiatives resulted in converting 42 units from traditional roasting method to processing via boiling method. With this, average production of a unit increased from 10-15 bags to about 25 bags and increased profitability by ₹ 550 per bag. This technology intervention has brought tremendous change in the cluster. More than 20% cashew units are now using better technology for cutting, peeling, grading, etc. and started having 18 grades instead of 8 grades. The method of steam-boiling and hand-cum-pedal operated shelling combination has been found to be more cost-effective and better technique over the traditional methods. With this, the turnover of the cluster increased by ₹ 68 crore. Advantages of this steam boiling method amount to a saving of 29.66 per cent on labour costs and increased income from the

Picture 1: Old Roasting Method

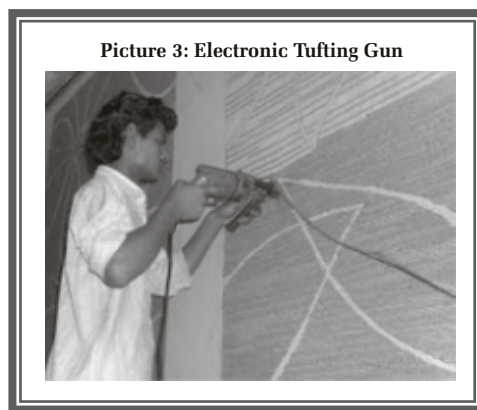


Picture 2: New Boiling Method



sales of cashew nut shell liquid (CNSL) apart from improved productivity and reduced air pollution. In addition, over 840 new employment opportunities were created through production expansion, setting up of new units, etc.

With the technology change and subsequent expansion, there was a well felt need for skilled manpower to operate and maintain the machines. To address this, project in collaboration with the cashew processors association and one Government ITI in the cluster designed a full time 3 month certificate course and got it approved by the State Council for Technical Education & Vocational Training (SCTE & VT). This course is now successfully run by the ITI through its well trained faculty staff.



2. Training Induced Technology Adoption in Panipat Floor Covering Cluster

Picture 3: Electronic Tufting Gun Nearly 132 (40%) units out of the total 331 units in the Panipat Floor Covering cluster are micro and small tufting and composite manufacturing units which act as sub-contractors to bigger exporters. While the bigger export manufacturers have adopted superior technologies, 90% of the subcontracting units predominantly use manual methods for production. Specifically the project identified that the manual tufting guns beings used by the smaller units reduced productivity leading to units inability to manufacture in larger scales.

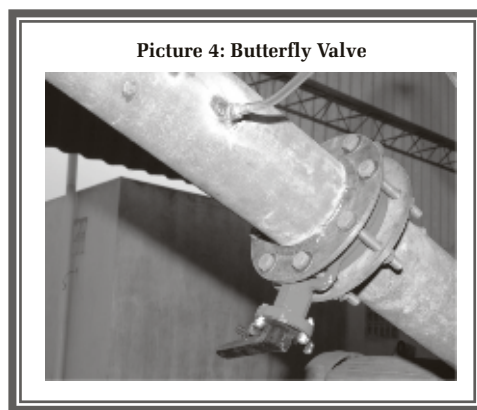
In order to overcome this problem, Electronic Tufting Guns (ETGs) were introduced to the cluster by the project not only with an aim to improve productivity but also to reduce employees' fatigue. The better output that can be achieved was demonstrated in the cluster. 17 training programs were conducted in the cluster through which 508 workers from 60 units were provided training. Following this the units were made to interact with ETG suppliers. As a mass demand was created for the product, a bulk purchase of 1000 ETGs was made by 50 units. Further training of an in house mechanic in each of the units was also carried out to ensure smooth operations.

With the new ETGs the output of the units has gone up from 1.5 meters to 4 meters per day. This in turn has led to an average increase in wages from ₹ 180 to ₹ 240 per day per worker. Furthermore the investment per ETG at ₹ 7500 was recovered in a month's time making this low cost technological intervention sustainable and viable.

3. Energy Savings through Technology Improvement in Foundry in Coimbatore

60 per cent of the 250 odd foundries in Coimbatore are small scale proprietary concerns with an estimated average annual turnover of ₹ 5 million. Most of them are equipped with single blast cupola furnaces. About half of them are suppliers to the pumps/valves unit in the cluster. They operate with an average profitability of 10 per cent. Although stricter pollution control norms have led a top few to switch over to induction furnace, but unstable power supply and strict time limits on the usage of electricity have led most of the units to continue with the traditional coke-based melting technology. Scope exists for improving operations by shifting to divided blast cupola (DBC) to improve energy efficiency and venturi scrubber to reduce emissions. Due to more investment cost, entrepreneurs are inclined to go for change.

Meanwhile, a quick survey by a foundry expert in December 2009, suggested that uncontrolled flow of air into the cupola is burning excess coke and controlling air supply will help in reducing percentage of coke used per melt. The expert suggested that installation of a butterfly valve at the inlet pipe from where air flows into the cupola to burn the coke, will provide optimum air supply and reduce usage of coke. A manometer can be used to check the pressure of the cupola and the opening of the butterfly valve can thereafter be manually adjusted depending on the manometer reading. Such controlled flow will reduce percentage of coke usage by nearly 10%.



One of the foundry units, M/s Coimbatore Engineering Corporation (CEC), implemented the suggestion. The butterfly valve is a custom made product, depending on the pipe size, and was fabricated by the consultancy cell of the local engineering college – PSG Institute of Technology. This led to an investment of about ₹ 10000. Few months into the operation, CEC is able to reduce coke metal ratio, i.e. the ratio of weight of coke and metal used for burning from 1:9 to approximately 1:10, leading to reduced coke usage by approximately 10 per cent.

Each melting operation uses about 1 ton of coal valued at ₹ 25,000 and four such Castings are made on an average every month by an average foundry unit. Hence it is estimated that a unit can save up to ₹ 10,000 per month. Thus the investment can be recouped in a month and profitability is estimated to increase by ₹ 120,000 per year. The results were disseminated by conducting workshop and also interaction with the beneficiary.

Following the successful demonstration in one unit, the project facilitated the adoption of this technology in 25 more foundries resulting in low consumption of coke, reduction in pollution emissions levels and a total savings of approx. ₹ 25,00,000 per annum.

4. Productivity Improvement through Technology Modification in Alappuzha Coir Cluster

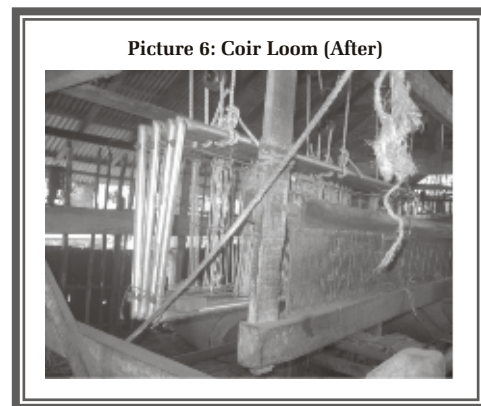
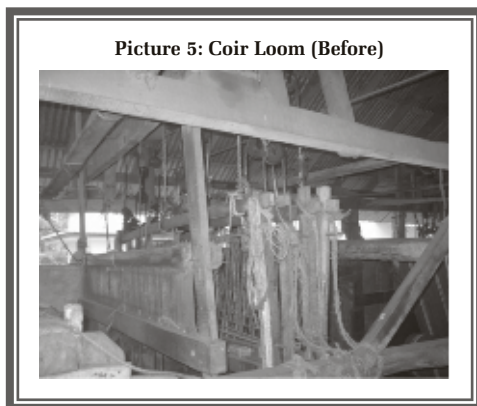
The coir industry in Alappuzha is more than a century old and the technology being used have barely been altered since then. Up until the past decade the idea of mechanization had not taken root in the industry. Even though a small amount of this has percolated itself into some parts of the value chain, like spinning, de-husking and de-fibreing, the weaving industry, which employs more than 1.5 lakh weavers, remains largely untouched by technology up-gradation. Statistics from the coir board state that more than 85% of the weaving looms in Kerala have not undergone any kind of mechanization. The project identified this need for increased mechanization and that it would directly result in helping SMEs produce mats at lower costs and higher volumes thus increase their competitiveness on the whole.

A Pilot initiative was launched in March 2010 to attempt such a change in the cluster. A BDS for lean manufacturing visited the looms and assessed the level of mechanization that will be required and also permissible in the given environment. As many of these looms were situated in the interior parts of the cluster where power shortage was a problem, it was decided that the changes that are to be suggested be non-electrical and will aim at improving the productivity at low cost. After the assessment a set of

simple changes were suggested by the BDSP and five local loom manufacturers were given a basic training to implement the same.

The project supported 35 looms which have been upgraded. The various changes were specific to each unit depending on how old each loom was. However in almost all of the units the heavy wooden frames were replaced by G. I. pipes, ball bearing was introduced where there was manual pumping done with the legs to make the movement effortless, the final wooden cylindrical beam which rolled the finished mat was made iron with a gear arrangement and the frames were also optimally balanced. These changes, though minor, resulted in considerable increase in productivity. One of the owners of a beneficiary unit reported an increased output of 15m per day and resulting additional profit of ₹ 100 per day per loom.

The project has trained 20 loom manufacturers from various areas in the cluster so that their reach will be greater and that they will be able to provide services in the interior parts of the cluster as well. Not only are the changes suggested low-cost (approximately ranging from ₹ 12,000 - ₹ 15,000 per loom), they are also not drastically different or new. While radical changes may be barriers in themselves, the small scale ones as, mentioned above are being incorporated without interfering with the traditional mind of the artisan in the cluster of Alappuzha.



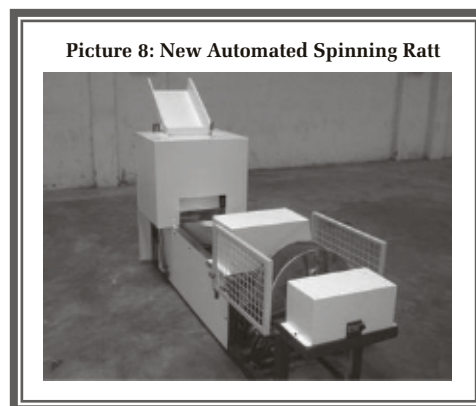
5. Production Improvement through Introduction of Automatic Spinning Ratt in Alappuzha

The spinning of coir yarn required to produce mats and other related coir products in Alappuzha is currently a very labor intensive process. The traditional spinning ratt required 3 women, one at the spinning wheel and two others to feed in the fiber while walking backwards. This method can yield 12-15 Kg per day. Though a number of units still use the above mentioned method of spinning the yarn, a slightly more mechanized version has also been introduced in the industry. The wheel which was previously hand-spun was attached to a motor hereby reducing the number of workers required from three to two. The yarn that is obtained through this method is in shorter fixed lengths. This results in another operation called spooling, where the yarns are made attached together manually and made into spools before the weaving operation can begin. This spooling operation is also a manual one. Also a shed space of approximately 50 ft, worth around ₹ 85,000 is required for this spinning operation.

With the project support a BDSP from Ahmedabad was introduced to the cluster. He developed 3 versions of a semi-automatic ratt that would use minimal space and effort. However a few hitches persisted due to which commercial production was not possible. Following this a coir machinery

manufacturer based at Bangalore was brought in who introduced a fully automated design. This new design proved to be commercially viable with increased productivity and reduced the drudgery of workforce drastically. The machine also spins the yarn in to a spool eliminating manual spooling in the process.

This new model of the spinning ratt was launched in the cluster and demonstrated to the units. While the older model of ratt has a productivity of 8-12 kg per day, the newer model's output is 17 kg per day. The productivity per worker further increases as 2 machines require only one operator. Additionally, the investment cost is ₹ 45,000 against ₹ 85,000 required for setting up of a shed in the older model. The wages of a single worker increases by ₹ 80 per day and an estimated increase in turnover by ₹ 20 crore is possible on 20% of the spinning units adopting the technology.



This spinning operation is performed predominantly by women workers and the level of manual labor involved is tremendous. The new spinning ratt will minimize this drudgery involved. Introducing this innovative design will revolutionize the industry and increase its potential by many folds.



**Report on
Skill Gap Mapping, Training Modules,
Implementation Framework
and
Knowledge Transfer Mechanism**



Summary



The document covers the following aspects of the project titled, "Study on Skill Development in the MSME Sector":

- **A summary of the "Survey Report" on Skill Gap Mapping** – Overview of identified skill gaps in the identified clusters and the assessment of corresponding training needs
- **Training Modules** – A review of existing training infrastructure and detailed description of training curriculum on the basis of identified training needs
- **Implementation Framework and Knowledge Transfer Mechanism**– Recommendations on Partner Training Organisations / Institutes / Vendors, Mode of Delivery, Required Infrastructure for Training Delivery, Duration of Courses, Indicative Fees Chargeable, Cost Sharing Structures, Recognition / Certifications by Industry Associations/ Business Member Organisations (BMOs)

The current report also incorporates feedback received from the various BMOs, with whom the consultant shared and discussed the "Survey Report" in detail. The curriculum for the various courses recommended was developed in consultation with:

- Recognized training providers in each of the identified industry clusters
- Published literature available from central government bodies such as the Directorate General of Employment and Training (DGET) and National Skill Development Corporation (NSDC)
- Subject Matter Experts, BMOs, Specialized Training Providers, ITIs , Cluster Development Agencies, etc in each of the identified clusters

A Note on the Project Objectives

The primary objective of the study is to assess skill gaps in the industry sector(s) of MSMEs and recommend policy action to address the issue(s) emerging thereof.

The Skill-gap assessment in the above-mentioned industry sector(s) will aid in addressing the following sector needs:

1. Enhancing the competitiveness of identified industry groups by way of increased productivity through skill up-gradation
2. Generating employment opportunities for the unskilled persons, while addressing the issue of urban unemployment among the educated youth
3. Enhancing the skill level of semi-skilled and underemployed persons leading to their self-employment and setting up of new enterprises

A sample survey has been undertaken among 300 MSMEs / stakeholders in the following 8 clusters:

Cluster	Sector
Ludhiana	Knitted Apparel
Tirupur	Knitted Apparel
Kolkata – Shantiniketan	Leather
Chennai	Leather
Hyderabad	Pharmaceuticals
Pune	Fruit & Vegetable Processing
Chandigarh – Panchkhula – Mohali	Engineering
Bhadoli	Floor Covering

Summary of Survey Report

Skill Gap Analysis Methodology

Skill gap assessment and implementation of training modules in the identified clusters is done in a phased manner. The first phase of the assignment includes the assessment of skill gaps in the identified clusters. The current skill gaps in the clusters are assessed based on the function in the organisation i.e., production, marketing, finance as this would bring in the role of function and its importance for the development of overall business.

The methodology used by the consultant included both qualitative and quantitative survey. During Qualitative survey, a primary level assessment of the cluster related to skill gaps was done. The assessment includes identification of important stakeholders in the cluster and during the process of qualitative survey, a number of officials from Cluster development agencies, Industry Associations, Government/ Private training institutes and MSME's were met. This would help in understanding the internal processes, cluster dynamics and linkages, current needs of the cluster in terms of employment and skill set requirement as per industry. The qualitative survey has acted as the basis for preparing the questionnaire related to quantitative survey.

The quantitative survey was done in the identified 8 clusters and the sampling of MSME's was done based on the type of product and category of MSME. It was ensured that representation across micro, small and medium enterprises and also firms under different product categories were taken into account while developing the sample plan. The mapping of skills gaps was done based on the functional areas in individual units. The broad functional areas that were covered for mapping the skill gaps are production including storage, distribution, handling and logistics, marketing, finance and information and communication technology. The skill gaps are identified based on these functional areas and the survey report is prepared based on the findings from sample survey.

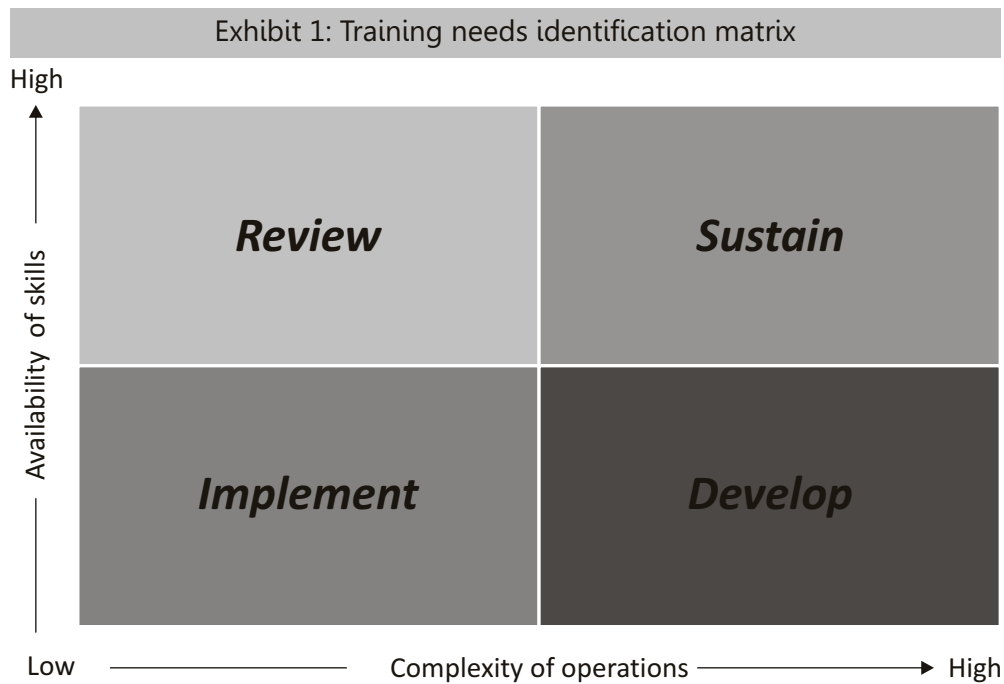
After the exhaustive qualitative and quantitative surveys in the identified clusters, a training needs identification matrix has been developed to capture the skill gaps and corresponding training requirements. The matrix is generated based on two important aspects of skill development. The first aspect is the complexity of operation of a particular process and the second aspect is the available skill set to operate. The matrix represents the areas related to the degree of complexity of operation vis-a-vis the required skill set of the workers. Based on the matrix, the training needs and the priority that needs to be given for the implementation for training programs can be identified. Exhibit-1 indicates the template that has been used for all the identified clusters as the basis for the identification of training needs.

The template sets the prioritisation scheme for the identified skill gaps and training needs. The following explains the brief idea about the training needs identification matrix.

- **Review:** This refers to the skills with respect to existing industry standards and practices. It indicates the critical processes where the skills required to perform a job are high, whereas the complexity levels of such processes are low. In such cases, manpower planning and review of skill sets is required.
- **Sustain:** This represents the skills that needs to be improved on a continuous basis to keep pace with the industry practices. For processes where the complexity of operations and available skill sets are both high, sustaining these is a challenge and training programs targeting sustainability of processes and skills are required.
- **Develop:** This is the most crucial of all the needs and also it indicates the trainings that are not offered by the industry/cluster. The complexity of operations is high while the skills required to

perform are low, hence the need to develop through structured training programs in order to enhance the employable skills of the employees. These can relate to critical production areas where acute shortage of skilled manpower is a common problem

- **Implement:** This refers to the areas/ processes in an organization where the complexity of process is low and the available skills to perform the processes are also low. Training programs are required to be initiated as soon as possible since this is the simplest way to upgrade.



While undertaking this gap assessment, several initiatives on Skill Development in clusters by MSME financing & Development Project (MSMEFDP) by SIDBI were highlighted by stakeholders. This pilot sets example and give directions to sustainable approach to the crucial aspect of Skilling / Reskilling MSME domain. A glimpse of thematic initiatives on Skill Development is at Annexure 1.

Identified Training Needs

Based on intensive survey, the overview of identified training needs in each cluster has been compiled. Below are tip sheets, which map the skill gaps and training infrastructure in each of the clusters.

Ludhiana knitwear cluster

Tip Sheet with identified Skill Gaps and Training Infrastructure

Exhibit 2: Tip Sheet Ludhiana Cluster						
Ludhiana		Shop Floor - Production			Middle Management	
Processes in Value Chain	Knitting	Fabric Processing	Garmenting	Quality Control	Knitting/Fabric Processing	Garmenting
Sub Processes	Scouring, Machine Operations	Bleaching, Milling, Dyeing, Printing, Finishing	Embroidery, Cutting, Stitching, Linking, Button Holing, Assembling, Washing, Pressing, Labeling, Packing	Quality Control and Assurance	Production Planning, Industrial Engineering, Procurement, Logistics, Inventory Management, Maintenance Management	Fashion Designing, Fashion Forecasting, Merchandising
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Semi-Skilled	Semi-Skilled	Skilled	Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	Low	Low	Medium	Low	High
Skill Gap (Low/Medium/High)	High	High	High	High	High	Low
Training needs (Review /sustain /implement /Develop)	Implement	Implement/Develop	Implement	Develop	Develop	Sustain

Exhibit 2: Tip Sheet Ludhiana Cluster							
Ludhiana		Shop Floor - Production				Middle Management	
Processes in Value Chain	Knitting	Fabric Processing	Garmenting	Quality Control	Knitting/Fabric Processing	Garmenting	
Training needs (Review /sustain /implement /Develop)	Implement	Implement/Develop	Implement	Develop	Develop	Sustain	
Available Training Courses	Certificate course on M1 machine – Knitting Manufacturing Software	NA	Diploma Course in Apparel Manufacturing Technology, Certificate course on Industrial Sewing Machine Operator, Certificate course on apparel making, pattern making, Certificate course on cutting and tailoring and Certificate course on embroidery and needle work SMART Courses for sewing operator, finishers and packers, checkers, machine technicians	Diploma course in Apparel Assurance Technology, Certificate course on production and quality control	Certificate course in merchandising	Diploma course in Fashion Designing, Diploma Course in Knitwear Designing, Diploma course in Fashion Production and Merchandising	
Available Training Institutes	Sportking Institute of Fashion Technology	NA	Apparel Training and Design Centre, Industrial Training Institute (Women)	Apparel Training and Design Centre	Sportking Institute of Fashion Technology	Sportking Institute of Fashion Technology	

Exhibit 3: Identified training needs

Development area	Worker/Supervisor training	Manager level training
Production	Computerized knitting machine operations Stoll/Sulzer machine operations Stitching operations Dyeing operations Checking operations Printing operations Linking operations Garmenting Machinery mechanics	Production planning Maintenance management Inventory management Fashion designing Industrial engineering Lean manufacturing Merchandising
Quality	Basic knowledge on quality aspects of yarn, fabric and garments Quality procedures	Quality Control and Assurance
Sales & Marketing		Customer development <ul style="list-style-type: none"> • New market identification • Gathering market information • Understanding customer needs Marketing management <ul style="list-style-type: none"> • Brand awareness • Target pricing strategies • Product management • Media and promotion
Exports		Export documentation and logistics Knowledge on export markets regulations and norms

Tirupur Knitwear Cluster

Exhibit 4: Tip Sheet Tirupur Cluster						
Tirupur		Shop Floor - Production			Middle Management	
Processes in Value Chain	Knitting	Fabric Processing	Garmenting	Quality Control	Knitting/Fabric Processing	Garmenting
Sub Processes	Scouring, Machine Operations	Bleaching, Milling, Dyeing, Printing, Compacting, Calendaring, Raising, Finishing	Embroidery, Collar Making, Cutting, Stitching, Linking, Button Holing, Assembling, Washing, Pressing, Labeling, Packing	Quality Control and Assurance	Production Planning, Industrial Engineering, Procurement, Logistics, Inventory Management, Maintenance Management	Fashion Designing, Fashion Forecasting, Merchandising
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Semi-Skilled	Semi-Skilled	Skilled	Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	Medium	Low	Low	Low	Low
Skill Gap (Low/Medium / High)	Medium	Medium	High	High	High	High
Training needs (Review /sustain /implement /Develop)	Implement	Review/Implement	Implement	Develop	Develop	Develop

Exhibit 4: Tip Sheet Tirupur Cluster

Tirupur	Shop Floor - Production				Middle Management	
	Knitting	Fabric Processing	Garmenting	Quality Control	Knitting/Fabric Processing	Garmenting
Available Training Courses	NA	NA	Short term courses on computer aided apparel designing and pattern making, SMART Courses for sewing operator, finishers and packers, checkers, machine technicians	Short term courses/Certificate courses on apparel quality management and quality control	Diploma course on garment manufacturing for graduates Certificate programme on production supervision and quality control	Diploma course in apparel merchandising and management Certificate course on fashion designing and garment construction
Available Training Institutes	NA	NA	NIFT TEA College of Knitwear Fashion, Apparel Training and Design Centre	NIFT TEA College of Knitwear Fashion, Apparel Training and Design Centre	NIFT TEA College of Knitwear Fashion, Apparel Training and Design Centre	NIFT TEA College of Knitwear Fashion

Exhibit 5: Identified training needs

Function	Supervisor level training needs	Manager level training needs
Production	Computerized knitting machine operations Stoll/Sulzer machine operations Stitching operations Linking operations Dyeing operations Checking operations Machine mechanics Printing	Production planning Inventory management Fashion designing Maintenance management Industrial Engineering Soft skills Garmenting Knitting/fabric processing
Quality control	Awareness on quality related aspects Quality control procedures	Quality control and assurance
Sales & Marketing		Customer development <ul style="list-style-type: none"> • New market identification • Gathering market information • Understanding customer needs Channel development <ul style="list-style-type: none"> • Developing right channel mix • Monitoring channels Marketing management <ul style="list-style-type: none"> • Brand awareness • Target pricing strategies • Product management • Media and promotion
Exports		Knowledge of export related procedures and regulations

Kolkata-Shantiniketan Leather cluster**Exhibit 6: Production Function Tip Sheet**

Processes in Value Chain	Tanning	Leather goods manufacturing	Footwear manufacturing	Designing	Quality Checking
Sub Processes	Liming, Deliming, Tanning	Clicking, Stitching, Skiving	Lasting	Designing of leather goods and footwear as per contemporary fashion trends	Physical Testing, Chemical Testing
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Semi-Skilled	Semi-Skilled	Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	Low	Low	Low	Medium
Skill Gap (Low/Medium/ High)	Medium	High	High	High	High
Training needs (Review /sustain /implement /Develop)	Develop / Review	Develop	Develop	Develop / Sustain	Develop / Sustain
Available Training Courses	Pollution control course offered by CLRI	Advanced certification course in shoe and leather goods making, run by GCELT		Designing and Pattern making courses offered FREYA design institute	Quality control methods in leather and footwear manufacture conducted by CLRI
Available Training Institutes	Central Leather Research Institute (CLRI) Govt. College of Engineering and Leather Technology (GCELT) FREYA design institute				

Exhibit 7: Identified Training Needs

Development Area	Worker/ Supervisory Training	Management Level Training
Production	<ul style="list-style-type: none"> • Productivity improvement • REACH regulations • Pre-treatment of effluent before discharge • Vocational training on clicking, skiving, stitching, lasting, soaking, de-liming, tanning 	Technology up gradation Production process layout Production scheduling & planning Cleaner process technologies Lean manufacturing
Quality Management	Quality assessment Defect tracking techniques to reduce rejection rate	Quality Norms such as CE Quality control processes
Equipment Maintenance	Basic housekeeping activities Machine knowledge	Preventive maintenance
Sales & Marketing	E commerce business potential Preparing marketing brochures	Knowledge of export markets and export marketing Contemporary design trends Customer development
Finance	Knowledge about SA8000 accounting standards	Information about financial subsidy schemes and SME ratings

Chennai Leather Cluster

Exhibit 8: Production Function Tip Sheet

Chennai	Production				
Processes in Value Chain	Tanning	Leather goods manufacturing	Footwear manufacturing	Designing	Quality Checking
Sub Processes	Liming, Deliming, Tanning	Clicking, Stitching, Skiving	Lasting	Designing of leather goods and footwear as per contemporary fashion trends	Physical Testing, Chemical Testing
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Semi-Skilled	Semi-Skilled	Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	Low	Low	Medium	Medium
Skill Gap (Low/Medium/High)	Medium	High	High	High	Medium
Training needs (Review /sustain /implement /Develop)	Develop / Review	Develop	Develop	Develop / Sustain	Develop / Sustain
Available Training Courses	Pollution control course offered by CLRI	Diploma program in Leather processing and leather goods by CLRI	Lasting making & finishing course conducted by CFTI	Designing and Pattern cutting courses offered by CLRI & CFTI	Quality control methods in leather and footwear manufacture conducted by CLRI
Available Training Institutes	Central Leather Research Institute (CLRI) Central Footwear Training Institute (CFTI)				

Exhibit 9 Identified Training Needs

Development Area	Worker/ Supervisory Training	Management Level Training
Production	<ul style="list-style-type: none"> • Productivity improvement • Process training • Safety precautions • REACH regulations • Vocational training on clicking, skiving, stitching, lasting, liming, deliming, tanning 	Raw materials procurement planning Inventory management Budgeting & production planning Cleaner process technologies Implementing lean manufacturing
Quality control	Quality checking procedures Defect tracking techniques Chemical testing	Quality Norms such as CE Importance of product certification
Equipment Maintenance	Machine knowledge	Preventive and predictive maintenance
Sales & Marketing	Using B2B websites and other digital marketing tools Preparing marketing brochures	Brand building and promotional activities Contemporary design trends Customer development <ul style="list-style-type: none"> • New market identification • New customer identification • Relationship building with existing customers • Product innovation
Finance	Compliance with SA8000 standards	Information about financial subsidy schemes and SME ratings

Hyderabad Pharmaceutical cluster

Exhibit 10: Tip Sheet Hyderabad Cluster

Hyderabad	Shop Floor - Bulk Drugs Production								Shop floor - Formulation production		Middle Management
	Chemical Processing	Filtering	Drying	Milling	Packing	Quality control	Tablets	Capsules	Liquid orals	Production	
Processes in Value Chain	Charging, Reactor operation	Filtration, Purification	Maintaining prescribed conditions, Handling	Operation of CNC milling machines or automated milling machines	Identifying packaging material, Packaging	In-process Quality checks	Dry mixing, Granulation, Drying, Milling, Blending, Compression, Packing	Mixing, Wet granulation, Drying, Dry granulation, Blending, Filling, Polishing, Packaging	Mixing, Filtration, Bottle washing, Filling, Sealing, Labeling, Packaging	Procurement, Production planning, GMP, GLP, Maintenance Management, Water management	
Type of Skill Requirement (Semi-skilled / Skilled)	Skilled	Skilled	Skilled	Semi-skilled	Skilled	Skilled	Skilled	Skilled	Skilled	Skilled	
Availability of Manpower (Low /Medium / High)	Medium	Medium	Medium	Medium	High	High	Medium	Medium	Medium	High	
Skill Gap (Low/Medium/High)	Medium	High	High	Medium	High	High	Medium	High	Medium	Medium	
Training needs (Review /sustain /implement /Develop)	Review	Review	Implement	Develop	Sustain	Develop	Implement	Implement	Sustain	Implement	

Exhibit 10: Tip Sheet Hyderabad Cluster

Hyderabad	Shop Floor - Bulk Drugs Production						Shop floor - Formulation production			Middle Management
	Chemical Processing	Filtering	Drying	Milling	Packing	Quality control	Tablets	Capsules	Liquid orals	
Processes in Value Chain	Diploma in pharmacy									
Available Training Courses	Diploma in pharmacy									
Available Training Institutes	National Institute of Pharmaceutical Education and Research, Gokaraju Rangaraju college of pharmacy, Govt. Polytechnic, G. Pulla Reddy college of pharmacy, Kamla Nehru Polytechnic for Women, Sri Venkateswara college of Pharmacy									
	No specific training programs available									
	National Institute of Pharmaceutical Education and Research									

Exhibit 11: Identified training Needs

Development Area	Worker/ Supervisory Training	Management Level Training
Production	Productivity Improvement Safety Health and Hygiene Packaging - Blister feed operations Milling Techniques (CNC Operations)	Effluent treatment/ Waste water management Production planning
Equipment Maintenance	Machine knowledge Spares requirement planning	Preventive and predictive maintenance
GMP and Lean Manufacturing	Health and Hygiene Process sanitisation	Standard Operating Procedures Good Laboratory Practices
Quality Control	Clinical Trials and reporting In-process quality checks	Standards and norms Process controls Standard operating procedures
Sales & Marketing	Sales force effectiveness Developing proper channel mix	E-commerce
Soft Skills	Verbal communication skills Attitude and Motivation	Managerial and Leadership Skills Verbal communication, foreign languages

Pune Fruits and Vegetables cluster

Exhibit 12: Tip Sheet Pune Cluster						
Shop Floor - Production						
Pune						Middle Management
Processes in Value Chain	Farm produce	Primary processing	Secondary processing	Distribution	Quality control	Production
Sub Processes	Procurement, Price Negotiation, Cleaning	Grading, Sorting, Cutting, Trimming	Mixing fruit concentrate, Temperature control, Bottling/capping, Sterilization, Cooling, Labeling	Packing and export market regulations	Quality checks at procurement, Quality control techniques	Procurement, Demand planning, Production scheduling, Quality norms, Product certification, Maintenance management
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-skilled	Semi-skilled	Semi-skilled	Semi-skilled	Skilled	Skilled
Availability of Manpower (Low /Medium / High)	High	Low	Low	Medium	Medium	High
Skill Gap (Low/Medium/High)	Low	High	High	High	High	High
Training needs (Review /sustain /implement /Develop)	Implement	Implement	Implement	Review	Develop	Develop
Available Training Courses	Minimum Competency Vocational Course in Cookery, Diploma in Hotel Management and Catering technology, Certificate course in food production, Training programs for food sector under NAFARI's services, Bachelor's degree in food technology, Vocational course in Food Science and Quality control					Quality assurance and food safety management system, Training on GMP, Technology Management in Agri and Food sector, Entrepreneurship Development programme, Business development programme
Available Training Institutes	Maharashtra State Institute of Hotel Management and catering technology, National Agriculture and Food Analysis and Research Institute (NAFARI), MIT college of food technology and management, SNTD college of Home Science					National Agriculture and Food Analysis and Research Institute (NAFARI)

Exhibit 13: Training Needs Identified

Development Area	Worker/ Supervisory Training	Management Level Training
Production	Batch controls Process training Material grading, sorting	Demand Planning and Forecasting Production scheduling and planning Manpower planning Procurement
Quality control	Quality Testing Quality Assessment and Rejections	Quality Norms Importance of Product Certification
Equipment Maintenance	Machine knowledge Spares requirement planning	Preventive and predictive maintenance
GMP	Health and Hygiene Process sanitisation	Standard Operating Procedures Effluent Treatment Techniques
Regulatory and Export compliance	Handling and Packaging	Export market regulations WHO standards International Taxation and Freight norms
Sales & Marketing	Importance of labelling Sales force training	Demand forecasting Marketing management Market Development Product pricing

Chandigarh-Mohali-Panchkhula Engineering cluster

Exhibit 14: Production Function Tip Sheet

Exhibit 14: Production Function Tip Sheet					
Chandigarh	Production				
Production Processes	Conventional machine operations	CNC machine operations	Maintenance operations	Quality control processes	Modern manufacturing techniques
Sub Processes	Tooling, drilling, tapping, welding	CNC machine programming	Preventive maintenance techniques	Basic metrology, advanced techniques such as six sigma	Lean manufacturing, just in time inventory, equipment reliability, cellular manufacturing, total quality management
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Skilled	Semi-Skilled	Semi-Skilled / Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	Medium	Medium	Low	Low
Skill Gap (Low/Medium/High)	High	Medium	High	High	High
Training needs (Review /sustain /implement /Develop)	Implement / Develop	Implement / Develop	Implement / Develop	Review / Develop	Sustain / Develop
Available Training Courses	ITI Chandigarh offers training in various trades as well as short term modular courses. CTR, Ludhiana provides training on CAD/CAM, welding, grinding, die making, fixture design, etc.	CNC programming and operating courses offered by Sam's Techno School. In addition CTR, Ludhiana provides short duration training programs on CNC operations.	CNC machine maintenance courses offered by Sam's Techno School	Basic metrology course conducted by Sam's Techno School	Mahindra & Mahindra is planning to organize training on modern quality processes such as six sigma, 5S, etc. for its vendors.
Available Training Institutes	Industrial Training Institute (ITI), Chandigarh Central Tool Room (CTR) Ludhiana Sam's Techno School				

Exhibit 15: Identified training Needs

Development Area	Worker/ Supervisory Training	Management Level Training
Production	<ul style="list-style-type: none"> • Productivity improvement • Usage of proper tools and fixtures • Vocational training on conventional lathe operations, CNC m/c programming, tooling, drilling, tapping, welding and shot blasting 	<p>Low cost automation techniques</p> <p>Knowledge of CAD / CAM techniques</p> <p>Demand forecasting</p> <p>Lean manufacturing</p> <p>Energy audits</p>
Quality control	<p>Calibration and operation of basic quality checking tools</p> <p>Defect tracking techniques</p>	<p>Implementation road map for quality control processes such as TQM, Six Sigma.</p> <p>Achieving OEM quality norms</p>
Equipment Maintenance	Machine knowledge	Preventive and predictive maintenance
Sales & Marketing	Export documentation and regulations knowledge	<p>Modern marketing and branding techniques</p> <p>Knowledge of domestic and foreign markets</p>
Finance	Knowledge about excise duties, cenvat credit	Information about factoring services and SME ratings

Bhadohi Floor Covering Cluster

Exhibit 16: Production Function Tip Sheet

Bhadohi	Production				
Processes in Value Chain	Dyeing	Warping	Knotting & Weaving	Washing (Chemical Finishing)	Quality Checking
Sub Processes	Color Selection, Designing, Chemical Processing	Rod Replacements, Shedding, Spinning, Yarn Making	Knot Selection, Knot Designing, Pattern Selection, Color Selection	Washing, Chemical Processing, Standard Maintaining	Physical Testing, Chemical Testing
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Semi-Skilled	Skilled	Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	High	Low	Medium	Low
Skill Gap (Low/Medium/High)	High	Low	High	High	Medium
Training needs (Review /sustain /implement /Develop)	Develop	Review	Develop	Develop	Develop/ Implement
Available Training Courses	Certificate course in carpet yarn dyeing	Level I Course in Yarn Making Spinning of woolen/ cotton yarn	Certificate Course in Hand knotted Carpets Level II Course in Carpet Design- CAD	IICT Washing and testing labs Physical Testing Courses	Certificate course in Physical Testing, Texture and withdrawal force
Available Training Institutes	Indian Institute of Carpet Technology, MSME Development Institute				

Exhibit 17: Identified Training Needs

Development Area	Worker/ Supervisory Training	Management Level Training
Production	Productivity Improvement Mechanised Production Dyeing Weaving Knotting	Chemical Testing Importance of ISO standards
Quality		Quality standards and Quality testing
Equipment Maintenance	Machine knowledge Spares requirement planning	Preventive and predictive maintenance
GMP & Lean Manufacturing	Health and Hygiene Process sanitisation	Standard Operating Procedures Effluent Treatment Techniques Certification
Sales & Marketing		Brand awareness Pricing strategies Product marketing Intellectual property (Patenting)
Computer Designing	Manual Designing Innovative designing, colour combination	CAD, CAM
Exports	Designing per international standards	New Market & Product Development Incoterms & Global Practices
Soft Skills	Verbal communication skills Attitude & Motivation	Managerial & Leadership Skills Verbal communication, foreign languages

Ludhiana: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Ludhiana has training institutes catering to knitwear industry, with a healthy representation from government and private sector. The government has established training institutes to support the skill development programs both in the textile sector and MSME sector as a whole. MSME-DI and MSME tool room have been set up by Ministry of MSME's to organize entrepreneurship development programs and to provide techno-managerial assistance to MSME's. In order to strengthen the skilled workforce to support growing textile industry, Ministry of Textiles (MOT) has nominated Apparel Training and Design Centre (ATDC) to organize short term courses in textile clusters. Along with this MOT has institutionalized textiles committee to deliver training and support services to textile clusters located all over India.

Over the years Ludhiana knitwear cluster has evolved as one of the major destinations for high quality textile education due to the presence of private institutes in the cluster. Sportking Institute of Fashion Technology (SIFT), Ivanna institute are among the elite institutes for textile education and these institutes organize specialized training programs for the industry in fashion design, knitting and garmenting functions both at operator and managerial levels. The private institutes have fully equipped labs and computerized machinery to support the training programs both in terms of theory and practical aspects. Most of the institutes, both private and public, offer industry oriented training courses related to knitting, garmenting, quality control, fashion design, merchandising.

MSME-Development institute renders technical consultancy services, techno- managerial assistance, training as well as common facility services for the development of existing and new MSME's. The activities of the institute include technical services, training programs, ancillary development, awareness seminars/ workshops, ISO certification, marketing and export promotion, bar coding etc. Currently, the institute is offering training programs in entrepreneurship and managerial skills development.

Central Tool Room (CTR), Ludhiana was setup to support the small scale enterprises by rendering technical consultancy services, common service facilities like manufacture of various types of tools, heat treatment related services. The role of CTR in knitwear cluster development is minimal as it mostly caters to plastics and metal processing industries.

Industrial Training institute for women organizes training programs on knitting, embroidery and garmenting. The ITI has both, elementary and advanced level courses in all garment related trade.

Apparel Export Promotion Council (AEPC) has conceptualized ATDC's all over India to meet the industry's growing requirement for a steady supply of trained workforce and professionals with domain expertise in apparel manufacturing technology. ATDC, Ludhiana offers diploma and certificate courses under different disciplines of knitwear technology. ATDC has started SMART training programs for youth, women and disadvantaged sections of the society which comprises employment oriented courses and career oriented courses.

SIFT is a private institute and has been set up by the Sportking Group of Industries. Its objective is to train students with comprehensive range of intellectual skills and to deliver highest standards of education through trained faculty. The institute is reputed for its infrastructure and high quality education. The infrastructure of the institute includes design studio, pattern making and draping workshops, laboratories, computer lab, library, resource center. The institute – industry interface has been excellent and this is strengthened by the institute's Memorandum of Understanding with many apparel industries, trade and industrial associations.

Along with this there are private BDS training institutes in the cluster which organizes in-house training programs for the individual unit and also class based programs at a common facility center for the cluster. With respect to training programs, the consultant has identified training providers in the private sector. The BDS providers in private sector for organizing training programs in Ludhiana are

- Ivanna Institute of Fashion technology
- Northern India Institute of Fashion Technology
- Northern India Textile Research Association
- Inter National Institute of Fashion Design
- JD institute of fashion
- Pearl academy of fashion

To summarize, the following exhibit indicates the training infrastructure available in Ludhiana knitwear cluster

Exhibit 18: Tip Sheet: Overview Of Training Infrastructure In Ludhiana knitwear Cluster				
Indicators	Private	Colleges/ Universities	Government (MSME DI, MSME Tool Room)	Industry Associations
Indicative List of Institutes/ Organisations	Sportking Institute of Fashion Technology (SIFT), Ivanna Institute, NIIFT, JD institute of fashion, INIFD, Pearl academy of fashion	Government Institute of Textile chemistry and knitting Technology, ITI for women	MSME-DI, MSME Tool Room, ATDC, Textiles committee	Knitwear club, KAMAL, FEKTA, APPEAL
Courses	Production, Marketing	Production Related	Entrepreneurship, Management development, Quality, Production related	Merchandising, Production related, Fashion and Garment design
Frequency of Training	Annual, 6 month, 3 month, trainings as when and required by the industry	Annual	Annual, bi-annual, monthly (fast track programs)	Annual, 6 months, 3 day workshops as and when required
Relationship with Industry	Strong industry interface	Frequently tapped by industry	Facilities used by industry, Tie-ups for placements	Industry body
Fee based / non-fee based	Fee Based	Fee Based	Fee Based	Non-Fee Based for Members
Whether trained professionals are directly employable in MSMEs or need further training.	Yes	No	Yes	Only for employees of enterprises
Training Infrastructure	Fully Equipped	Basic Infrastructure	Fully Equipped	Programs typically held in association with MSME DI or MSME Tool Room

Exhibit 18: Tip Sheet: Overview Of Training Infrastructure In Ludhiana knitwear Cluster				
Indicators	Private	Colleges/ Universities	Government (MSME DI, MSME Tool Room)	Industry Associations
Sourcing of Trainers	Internal	Internal/ at times, external subject experts	Internal	Sourced from colleges/ industry oriented training institutes
Industry Recognition	Significant for diploma and degree courses	Not significant	Only for specific diploma courses like smart programs by ATDC	Within organizations
Course Infrastructure (Regular / customized offerings)	Customized Offerings Modular Training	Regular	Regular/ customized offerings	Regular/ Fast track courses
Intake (Annual)	NA	NA	NA	For Members
Placement (Annual) – MSMEs / Other	MSME's, Large Industries	NA	MSME's	Only for employees of enterprises

In addition to this, knitwear club has been active in organizing training programs in association with SIDBI. Knitwear club organized training programs in garmenting for women and still knitting for freshers and the response was good. Most of the enterprises feel that it is important to nurture the skills of their manpower for the overall development of the firm but they have not organized any in-house training programs. Major reason mentioned was migratory labor available within the cluster, which is not reliable and easily poached by competing firms. Also most of the firms did not display willingness to bear the training program costs. Instead they prefer to send workers to training institutes.

Curriculum Development - Overview

Definition & constituents

The various levels of training modules that are currently developed by the consultant has been done in joint association with various private and public BMO's (Business Member Organization i.e. Industry Association) located in the cluster for training purposes. The identified BMO's in Ludhiana cluster have significant experience in organizing training programs both/ either at workers level and/or managerial level. The assessment of training infrastructure and delivery mechanism of training modules are finalized after deep interactions with industry associations and training institutes.

While developing the training courses the following sources were utilized:

- Modular employable skills by Director General of Employment and Training related to textiles sector
- Sardar Vallabhai Patel International school of textiles and management

The training modules developed for shop floor employees/ workers are based on the role expectations in the production process. All the training modules developed are tailor made to fill the immediate gap in the skill level of workers at shop floor level. Thus, while defining the training modules in production and related processes the following constituents are necessary:

- Modular programs at various specific roles and targeted towards the immediate skill gap
- Certificate courses at managerial level to provide an exhaustive overview of various concepts and related techniques

Production related training programs

During the initial interactions and the survey conducted by the consultant in Ludhiana Knitwear cluster, the following skill gaps are identified in production related areas:

- There is acute shortage of operators to work on computerized knitting machines, stitching operations, stoll machines, garmenting process, dyeing and printing processes. Similarly, there is a shortage of supervisors to supervise work on these machines
- Skill gaps have been observed at managerial level jobs for processes including marketing management, production planning, scheduling, inventory management, merchandising, lean manufacturing, industrial engineering

The Consultant has taken the above into consideration while formulating the training modules matrix for production and related areas. The matrix indicates the training modules at worker, supervisor and managerial level.

Exhibit 19: Training matrix for production and related processes

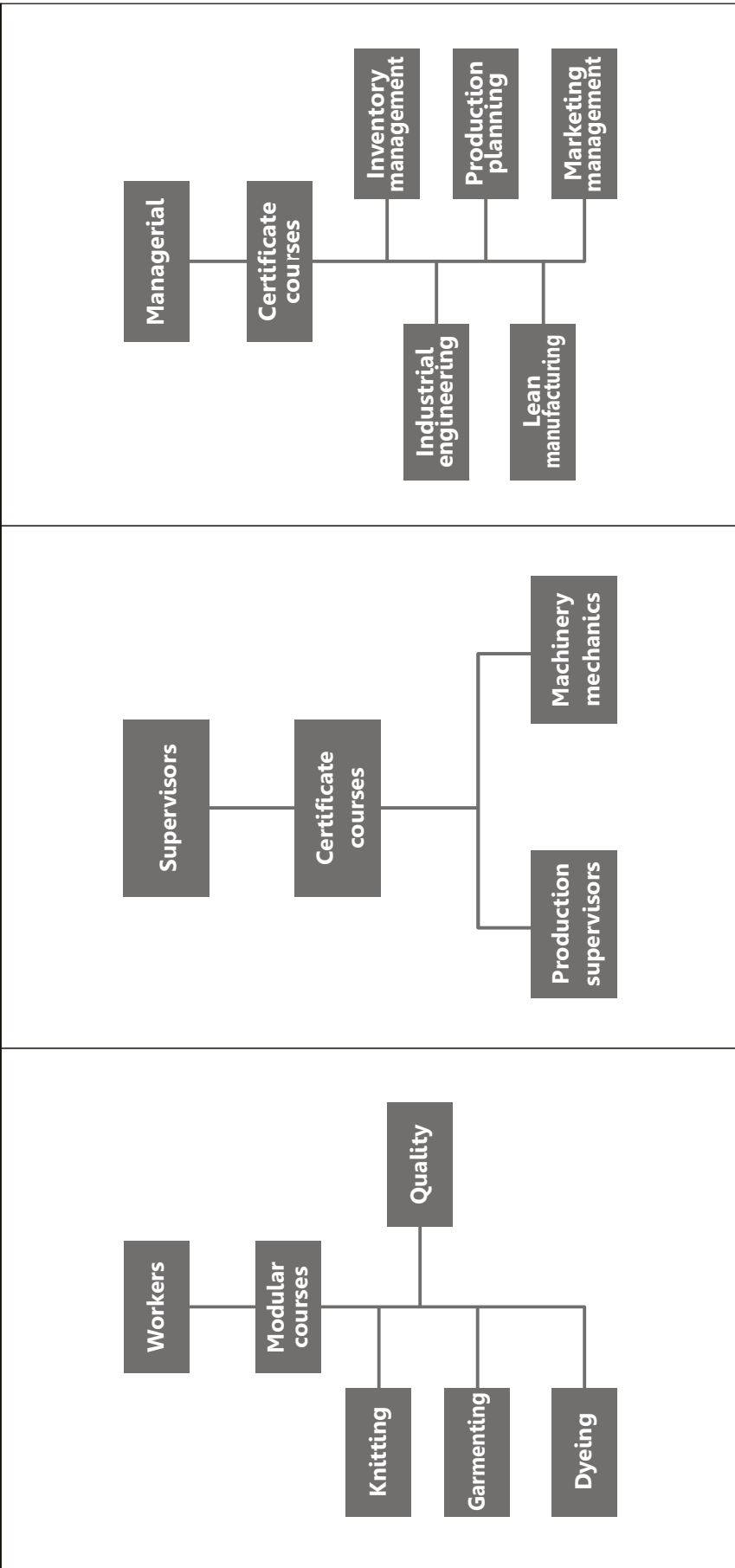


Exhibit 20: Modular courses at operator level in knitting operation

Job role	Knitter – Manual Flat knitting machine	Knitter – Computerized Flat/Circular knitting machine	Operator– Peaching machine
Entry Qualification	Age:16 Education :10 th standard	Age: 16 Education : 10 th standard	Age:16 Education : 10 th standard
Role expectations	To creel the cones and knit the fabrics by operating the flat knitting machine manually	To creel the cones as per the pattern and knit the fabric on a flat/circular knitting machine	To operate peaching machine and deliver the fabric with desired finish
Overview of course content	<ul style="list-style-type: none"> • Knowledge of knitting patterns and creeling the cones • Basic concepts like count, shade and yarn types. • Basics of flat knitting machine and understanding its operation • Importance of maintaining RH% for knitting and quality of fabric • Conditioning of cones before knitting • Precautions and safety practices for the operation of manual knitting machine 	<ul style="list-style-type: none"> • Knowledge of knitting patterns and creeling the cones • Basic concepts like count, shade and yarn types. • Basics of flat/circular knitting machine and understanding its operation • Importance of maintaining RH% for knitting and quality of fabric • Conditioning of cones before knitting • Precautions and safety practices for the operation of flat/circular knitting machine 	<ul style="list-style-type: none"> • Basics of peaching and knowledge of peaching of knitted fabrics • Knowledge of peaching machine and quality of brushes • Knowledge about Quality of knitted fabrics and their suitability of peaching • Safe practices and precautions for machine operation

Exhibit 21: Modular courses at operator level in dyeing and garmenting operation

Job role	Operator – Dyeing	Packer – Fabric roll	Garment cutter
Entry Qualification	Age: 16 Education: 10 th standard	Age: 14 Education : 7 th standard	Age: 14 Education: 8 th standard
Role expectations	To ensure that the right color is applied in the required pattern	He must be able to pack the knitted rolls	He must be able to cut any type of garment
Overview of course content	<ul style="list-style-type: none"> • Introduction to sulphur and vat colors - Properties, Application • Dispersed an oxidized colors - Properties and functions • Mordant and mineral colors • Mordant dyes, function, importance of mordanting, methods of mordanting • Insoluble Azoic dyes Properties • Selection of combinations of naphtholes and bases for different colors 	<ul style="list-style-type: none"> • Basics about roll packing and roll folding • Importance of packing the fabrics in rolls • First aid and fire fighting 	<ul style="list-style-type: none"> • Basics on drafting and construction • Knowledge on marking, laying on fabric, • Different types of cutting machine and fusing technology, identifying different parts of garments

Exhibit 22: Modular courses at operator level in garmenting

Job role	Operator – Basic Stitching	Operator – Special Stitching machine	Operator - Computerized embroidery machine	Operator - Linking
Entry Qualification	Age: 14 Education: 5 th standard	Age: 16 Education: 10 th standard	Age: 16 Education: 10 th standard	Age: 16 Education: 10 th standard
Role expectations	He must be able to cut and sew garments	He must be able to operate sewing machines, single needle machine, button fixing and hole making machine and other special machines	To operate computerized embroidery machine	He must be able to operate linking machines to link collars/armbands on to knitted garments
Overview of course content	<ul style="list-style-type: none"> • Basics on different seams like flat seam, french seam, felling seam etc. and stitches • Importance of pattern making and cutting techniques • Basic operation of treadle sewing machine • Maintenance of sewing machine 	<ul style="list-style-type: none"> • Basics on operation of treadle machine, over lock machine, button hole machine, popping machine and button fixing • Operation and control of power machines – double needle m/c, over lock, flat lock, button hole etc. • Quality aspects 	<ul style="list-style-type: none"> • Basics on different machines, needles, denier threads used on different types of fabric • Knowledge of different types of embroidery sequence, cording, boring and beads etc. • Basics on colors used and measurements of embroidery • Basic maintenance of embroidery machine 	<ul style="list-style-type: none"> • Basics of knitting operation • Basics of linking and procedure to be followed for linking of collars/armbands with knitted garments • Operation of linking machine • Trouble shooting of linking machine • Practical training on linking machine

Exhibit 23: Modular courses at operator level in garmenting

Job role	Operator – Printing & finishing	Garment checker	Garment packer
Entry Qualification	Age: 16 Education: 10 th standard	Age: 14 Education: 8 th standard	Age: 14 Education: 5 th standard
Role expectations	To handle the printing activities and ensure that the print is as per the requirement <ul style="list-style-type: none"> • Textile printing • Preparation of cloth for printing - singeing, de-sizing, scouring and bleaching • Methods of printing • Hand block printing, Stencil printing, Screen printing, Direct printing, Roller printing, Transfer printing • Styles of printing • Direct style, dyed style, discharge style, resist style, batik printing, tie and dye, Azoic style, crepon style, metal printing style • Recipes for printing and after treatments • Introduction to textile finishing, types of finishes, Ingredient used for finishing, preparation of finishing mixture • Operation of finishing machineries 	To inspect the garments at fabric level, stitching level and finished product level <ul style="list-style-type: none"> • Knowledge about garments as per comfort, occasion and season • Basic knowledge on various fabrics, accessories, stitching • Basics on defects and their classification in fabric stitching • Measurements and quality principles 	He should be able to pack garments following procedures and norms as per the customer requirement <ul style="list-style-type: none"> • Knowledge of color, fabric, texture • Packing procedure and knowledge of quality aspects • Knowledge of packing ratio as per specification sheet
Overview of course content			

Exhibit 24: Modular courses at operator level in quality

Job role	Assistant - Quality control lab	Fabric Inspector – QC lab	Helper - Knitting	Assistant - Stores (Yarn section)
Entry Qualification	Age: 14 Education : 7 th standard	Age:14 Education :7 th standard	Age:14 Education :5 th standard	Age:14 Education : 7 th standard
Role expectations	Inspection of GSM (gram per sq.mt) and dimensions of the knitted fabric	To inspect the knitted fabric for defects, fabric grading and reporting.	Bring the yarn from stores and distribute to knitters ; Deliver the knitted fabric to Quality control lab for inspection	Record the receipts of yarn count wise, lot wise, color wise, order wise and issue as required; Separately maintain a record of unused yarn
Overview of course content	<ul style="list-style-type: none"> Inspection of length and width of fabric without stretching GSM measurement Reporting observations in the log book of lab Communication skills Awareness about safety rules 	<ul style="list-style-type: none"> Knowledge of fabric types and different types of defects Knowledge about 4 point inspection system and inspecting the fabric Sampling methodology and setting limits for AQL (Acceptable Quality Level) and AOQL (Average Quality level) Reporting skills for recording observations in a suitable format 	<ul style="list-style-type: none"> Basics of yarn terminology System of handling yarns, cones and knitted rolls Keeping records of yarn stock Importance of pasting stickers on knitted rolls Knowledge of house-keeping practices Awareness about safety rules and required protective equipment 	<ul style="list-style-type: none"> Basics of store management Knowledge about various yarns and understanding the requirement of the production personnel Accounting of stocks in the store Safe practices to handle goods Knowledge of purchase and exchange Communication skills and analytical ability Safety practices

Exhibit 25: Certificate courses in production at supervisor level

Job role	Mechanic – Knitting	Mechanic – Garmenting	Production supervisor
Entry Qualification	Age:14 Education : 10 th standard	Age: 14 Education:10 th standard	Age: 18 Education: 10 th standard Experience: 2 years in textile industry
Role expectations	To handle all the maintenance activities of knitting - erection, periodic maintenance and overhauling etc. <ul style="list-style-type: none"> • Basic concepts like gauge of the machine and count of the yarn • Knowledge of mechanisms and various parts of knitting machines • Thorough understanding of knitting machines – size of cylinders and gauges, spares • Knowledge of standard maintenance practices • Awareness of safety precautions while working on the floor • Importance of first aid, firefighting, cleanliness and personal safety • Use of safety gadgets 	To handle all maintenance activities of different machines like cutters, fusing machines, iron boxes and washing machines etc. <ul style="list-style-type: none"> • Knowledge about machines and their mechanisms • Maintenance practices • Periodic inspection of machines and recording the condition of the machine • Servicing and overhauling • Machinery assembling and dismantling 	He should be able to handle all production related activities on shop floor with thorough knowledge on operation of machinery <ul style="list-style-type: none"> • Basics of communication • Knowledge on work procedures • Basics techniques for troubleshooting of general problems on shop floor • Techniques used for estimation of production schedules and manpower requirement planning • Methods used for problem identification and analysis • Knowledge on safety rules and regulations • Workers motivation techniques • General techniques used to improve production methods, equipment performance and quality.
Overview of course content			

Exhibit 26: Certificate courses in production at managerial level

Course title	Maintenance management	Inventory management	Production planning and control
Eligibility criteria	Formal education: B. Tech or a degree in technology relate courses (or) Experience: 5 years	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years
Objective of the course	To get acquaintance with maintenance methods and working practices to reduce plant downtime	To familiarize the participants with the importance and costs associated with inventory and understand the current inventory management practices	To understand the importance of demand forecasting, application of various production planning techniques
Course content	<ul style="list-style-type: none"> • Basics and broad aspects of maintenance • Introduction to maintenance planning and scheduling • Maintenance productivity improvement and wastage reduction • Planned maintenance systems and practices • Breakdown analysis and Machine failure analysis • Machine reliability and maintainability improvement • Preventive maintenance system and practices • Spare parts management • Lubrication management and practices • Standard safety procedures in maintenance 	<ul style="list-style-type: none"> • Basics: Inventory and its importance • Types of inventory – Seasonal, Decoupling, Cyclic, Pipeline, Safety • Types of inventory costs – Carrying cost, Cost of ordering, cost of shortages • Inventory control for deterministic demand items • EOQ – Economic Order Quantity • Inventory control systems • The continuous review system • The periodic review system • Selective control of inventory • ABC classification • XYZ classification • FSN, VED classification 	<ul style="list-style-type: none"> • Importance of demand forecasting • Models for forecasting • Extrapolative methods • Causal methods • Resource planning – Materials, Manpower, Capital, Machinery • Basic strategies for production planning – level and chase • Level strategy • Inventory based alternatives • - Build inventory • - Backlog/backorder/shortage • Chase strategy • Capacity adjustment alternatives • - Overtime/under time • - Variable number of shifts • - Hire/lay-off workers • Capacity augmentation alternatives • - Subcontract/outsourcing • - De-bottleneck • Scheduling and its importance • Scheduling rules

Exhibit 27: Certificate courses in production at managerial level

Course title	Fashion Design	Lean manufacturing (LM)	Industrial engineering
Eligibility criteria	Education: Diploma in fashion design (or) Experience: 2 years relevant experience	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years
Objective of the course	To learn the fundamentals and understand the various aspects of fashion design	To understand the concepts and to facilitate the participants to carry out lean manufacturing practices in their respective units	To familiarize the concepts of industrial engineering and its applications
Course content	<ul style="list-style-type: none"> • Fundamentals of fashion design • Principles and elements of design • Fundamentals of textile fibers and yarns • Introduction to pattern making and stitching • Pattern making through drafting and flat pattern technique • Garment construction • Pattern making through draping • Surface ornamentation • Pattern making/cutting • Computer aided designing - Illustration 	<ul style="list-style-type: none"> • History and need for lean manufacturing • Key drivers of LM - Value stream, Focus on waste, Continuous improvement, Customer focus and CRM, Time based competition, Employee empowerment, Performance measures • Tools and methods to establish lean enterprise <ul style="list-style-type: none"> - Cellular manufacturing - Total Quality management - Value stream mapping - Just in time - Kanban system - Balanced flow, Single piece flow - Standardized work - Quick changeover/reduce setup - Tact time, Pokka-yoke - 5S system 	<p>Elements of industrial engineering</p> <ul style="list-style-type: none"> • Introduction • History of industrial engineering • Productivity – Types of production, types of productivity, Factors influencing productivity • Work study – Work content, Method study, Procedure of method study, Advantages and limitations • Techniques of work measurement – work sampling, time study, PMTS • Ergonomics – Principles of ergonomics, anthropometry • Operations: PPC, Layout, maintenance, value analysis, quality • Advances in industrial engineering • Introduction to operations research and its benefits • Work systems design • Systems approach

Marketing related Training Programs

Based on the survey administered by D&B India ("Consultant"), the following skill gaps are identified in marketing function:

- the entrepreneurs lack skills in identifying new potential markets and building brands
- the managers lack skills to gather market information and understand customer needs
- export documentation and logistics

Based on the identified skill gaps the following training modules are developed for managers in marketing function

- Modular course on export documentation and logistics
- Certificate course on marketing management
- Certificate course on merchandising

Exhibit 28: Modular course in export documentation and compliance

Eligibility criteria	Formal education: part-time or full time degree or Experience: 1 year in exports
Objective of the course	To familiarize with current regulations and procedures relating to execution of international trade and the incentives and finance available in India for exports
Course content	<ul style="list-style-type: none"> • International trade contracts: Forms and important clauses • Terms of trade based on Inco terms and methods of payment –Letters of credit: Types and operation • International trade documents – Commercial and regulatory documents: Bills of exchange, transport documents, invoices and certificates, Marine insurance • Excise duty procedure for exports, Export and import duty procedure under customs, FEMA regulations relating to exports and imports • Foreign trade policy applicable to Textile industry • Export credit from banks in India, Pre-shipment and post-shipment credit • Export credit insurance

Exhibit 29: Certificate course on marketing management and merchandising

	Apparel merchandising	Marketing management
Objective of the course	To develop skills required to plan, develop and merchandise apparel product lines.	To familiarize with basic theories, concepts, methods, practices of contemporary marketing
Course content	<ul style="list-style-type: none"> • Introduction, Traits of merchandiser, Scope of merchandising management • Merchandising in Indian textile industry • Structure of merchandising function, Managing relation of merchandising with other departments • Value chain analysis – Fashion merchandising, Fashion cycle, Fashion terminology, Factors affecting fashion • Merchandising planning and control – marketing plan and merchandising plan, Production analysis, Sales estimation • Marketing research for merchandiser, Sales analysis • Merchandising line development process –Product development Design, Sketches, Pricing strategies, Quality standards • Material sourcing and decision – Source evaluation, single vs. multiple sourcing, domestic and international sourcing. 	<ul style="list-style-type: none"> • Marketing concepts • Consumer behavior, Buying decision process for fabric and apparels • Business buying process for fabrics and apparels, Fiber and yarn marketing in India, Sales policies in Indian textiles sector • Fashion forecasting and Demand measurement, Segmentation and targeting, Product life cycle • Marketing strategies for apparel brands • New product in textiles, Apparel product design and development, Product and product mix, Need for fashion brands, Latest trends in apparel brand positioning • Developing pricing strategies, Wholesale marketing and distribution in fabric and apparel • Managing communication, Sales promotion, Sales force management, Apparel retail marketing, Catalogue marketing and online marketing • Success stories of Indian textile brands through brand building

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size, cost and delivery channels

Production related courses at operator and managerial level

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Cost Of the Program	Delivery Model
Modular	Operator - Computerized flat/circular knitting machine	SIFT	30 Hours	30-35		Classroom and practice lab of knitting
Modular	Operation of Peaching machine	SIFT	30 Hours	30-35		Classroom
Modular	Dyeing operation	SIFT	30 Hours	30-35		Classroom
Modular	Garment cutter	ATDC	30 Hours	30-35		Classroom
Modular	Operator – Stitching	ATDC	30 Hours	30-35		Classroom
Modular	Operator – Computerized embroidery machine	ATDC	30 Hours	30-35		Classroom
Modular	Operator – Linking	ATDC	30 Hours	30-35		Classroom
Modular	Operator – Printing and finishing	ATDC	30 Hours	30-35		Classroom
Modular	Assistant – Quality control	Textiles committee	30 Hours	30-35		Classroom
Certificate	Mechanic – Knitting	ATDC	60 hours	20-25		Classroom
Certificate	Mechanic – Garmenting	ATDC	60 hours	20-25		Classroom
Certificate	Production supervisor	ATDC	60 hours	20-25		Classroom
Certificate	Maintenance management	MSME-DI	80-90 hours	20-25		Classroom
Certificate	Inventory management	MSME-DI	80-90 hours	20-25		Classroom
Certificate	Production planning	MSME-DI	80-90 hours	20-25		Classroom
Certificate	Fashion design	SIFT	80-90 hours	20-25		Classroom
Certificate	Lean manufacturing	SIFT	80-90 hours	20-25		Classroom
Certificate	Industrial engineering	SIFT	80-90 hours	20-25		Classroom

Marketing related training programs

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Cost Of the Program	Delivery Model
Modular	Export documentation and compliance	BDS provider on exports	3 Days	30-35		Classroom
Certificate	Merchandising	SIFT	3 Days	30-35		Classroom
Certificate	Marketing management	SIFT	60 Hours, 15 Day Program	30-35		Classroom

Prioritisation of Training Programs:

Of the various programs indicated above, the consultant recommends the following programs to be initiated on pilot basis for testing and evaluation.

Production:

- Modular course in computerized flat/ circular knitting machine operations at operator level
- Modular course in dyeing operations at operator level
- Certificate course in production planning at managerial level

Marketing: Certificate course in merchandising at managerial level

Fees and cost sharing:

The cost of various training programs listed above would range from around ₹ 15000-25000 for the indicated batch size for production related courses. For courses under marketing and financial modules, the cost would be around ₹ 5000-10000 for the mentioned batch sizes.

The cost of the training programs is relatively lower and is expected to improve the productivity of the units in the cluster. As a result, the entrepreneurs have indicated that they would be willing to bear a portion of the cost of such training interventions. However, the following challenges have to be handled while deploying the training modules:

- Local languages and communicating the right training programs at right hierarchical levels is important
- Devising techniques to retain the trained staff is important. A common issue with entrepreneurs not resorting to training modules is that workers tend to switch to better paying jobs after training

Delivery Channels

Primary interactions with entrepreneurs and industry association, namely knitwear club and Knitwear and Apparel Manufacturers Association of Ludhiana (KAMAL), the following points have to be considered while delivering the training modules:

The industry associations are in a position to aggregate information and further disseminate the same across industry associations. All programs that are important and require industry acceptance are currently being conducted through the industry associations. Therefore, for the success of the training modules, it is important that all training programs should be conducted under the banner of the industry association. The association should take upon the onus of marketing and communicating the training program to all its member enterprises

The industry associations can offer attractive packages to the enterprises that undergo the stipulated training within a year. In this case, the following elements can be laid out by the associations for a calendar year: Stipulated number of training programs to be conducted within a calendar year, stipulated number of employees to be trained in the calendar year.

It is recommended to adopt a mechanism in order to minimize the problem of employees poaching after training in the cluster. The names of employees that are trained should be sent and compiled at the industry association level; this list should be circulated amongst all cluster enterprises. Further, such employees should be given a training certificate only after 6 months from the date of completion of such training. The certification from the industry association should be treated with highest degree and should improve the employability of the workers.

Certifications & Recognitions

A tri-partite recognition formula should be adopted by the industry association. In the case of Ludhiana textiles cluster, the following members should be involved in the certification & recognition:

- o Training provider,
- o BMOs/ Industry Association conducting the program
- o Ministry of MSME (MoMSME)

Feedback on Skill Gap Mapping Report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 30: List of people who have provided feedback on the report

Name	Organization	Designation	Feedback
Mr. S. Charanjiv Singh	Knitwear Club	Secretary	The report was appreciated for its comprehensiveness in skill gaps and methodology used. Even the institute has initiated industry oriented training programs to address skill development needs of the cluster. The institute has agreed with the identified skill gaps in the report both at operator and managerial level.
Mr. H. Singh	ATDC	Principal	The report is good enough in terms of identified skill gaps in the cluster with more emphasis on skill gaps at operator level, which is the pressure point in skill development of the cluster.

Tirupur: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Tirupur, being one of the developed textile clusters in India, has the training infrastructure well in place to support training programs both for industry workers and students who want to make a career in textile industry. The leading training institutes in Tirupur namely NIFT-TEA, SIHMA institute of fashion designing and apparel training, have been established under the aegis of local industry associations. The infrastructure available to organize training programs by private institutes is sophisticated and the noteworthy aspect is the active industry interface of these institutes where in the participants would get the opportunity to get inducted in local industry units after course completion.

The infrastructure set up by Government of India to meet the current and future training needs of the cluster is significant; the testimony to this is the initiative by Ministry of Textiles (MOT) to set up Apparel Training and Design Centre (ATDC) to strengthen skilled workforce to the growing textile industry. Also MOT has established 'Textiles Committee' to organize training programs and deliver support services to textile units. In order to fill the supply gaps to the textile industry at managerial level, MOT has established Sardar Vallabhai Patel International School of textiles and management to groom future managers to support the growing textile industry.

NIFT-TEA Knitwear Fashion Institute is the premier technical institute in the cluster, which leads for knowledge up-gradation in the cluster, by providing regular diploma, certificate, graduate as well as postgraduate level courses for knitting, fashion designing, merchandising, apparel manufacturing and management. The Institute was promoted by Tirupur Exporters' Association (TEA) to improve the human resource skills of the cluster with the technical support from National Institute of Fashion Technology (NIFT). The Institute also offers part time programs for the employees who are working in the industry and has also created a separate division to have an interface between the industry and the institute.

SIHMA Institute of Fashion and Apparel Training were started by the South India Hosiery Manufacturers' Association (SIHMA) in association with a BDS provider, under the initiative of UNIDO, during the Cluster Development Programme in 2001. The objective of starting this Institute was to provide technical inputs to upgrade the skills of the employees who were working in the industry. It offers diploma courses, part-time courses in merchandising and management development courses for entrepreneurs.

Apparel Training and Design Institute (ATDC) is three -years old organization, started in the cluster by Apparel Export Promotion Council (AEPC) to train the people at the shop- floor level. The focus of the Institute is to provide training in garment manufacturing technology. The training at ATDC is provided to the workers for a period of 45 days at operator level in different garmenting operations. It also offers certificate and diploma courses in knitwear manufacturing technology, fashion design and quality control.

Textiles committee was set up under Ministry of Textiles to ensure the quality of textiles and textile machinery both for internal consumption and export purposes. As a part of its main objective, textiles committee has been organizing various training programs in quality control, knitting and garmenting in the cluster. It offers modular courses in different functions of textiles for duration of 2-7 days.

Sardar Vallabhai Patel International school of Textiles and Management (SVPITM) is an autonomous institute set up under the aegis of Ministry of textiles to groom dynamic, professional managers for Indian textile industry. The institute offers full time post graduate programs in textiles and apparel management for students. The institute is supporting the industry in the form of continuing education programs by offering management development programs and executive development programs.

Along with this there are private BDS training institutes in the cluster which organizes in-house training programs for the individual unit and also class based programs at a common facility center for the cluster. With respect to training programs, the consultant has identified training providers in the private sector. The BDS providers in private sector for organizing training programs in Tirupur are

- Premier Institute of Apparel Management
- Altius Fashion Institute

To summarize, the following exhibit indicates the training infrastructure available in Ludhiana knitwear cluster

Exhibit 31: Tip sheet: Overview of training infrastructure in Tirupur textiles cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Indicative List of Institutes/ Organisations	NIFT-TEA, SIHMA Institute of Fashion and Apparel Training, Premier Institute of Apparel Management, Altius Fashion Institute	Sardar Vallabhai Patel Institute of Textile Management	ATDC, Textiles committee	SIHMA, TEA, TIF, AEPC
Courses	Production, Accounting, Merchandising, Apparel fashion designing, Quality control, Computer Aided Apparel Designing, Entrepreneurship	PGDM in textiles management	Production related, Fashion design, CAD, Quality control, SMART courses	Courses framed by industry association sponsored training institutes
Frequency of Training	Annual, Bi-annual, Monthly	Annual	Annual, Bi-annual, Monthly	Scheduled on need based
Relationship with Industry	Strong industry interface	Industry interaction is low	Facilities used by industry, Tie-ups for placements	Industry body
Fee based / non-fee based	Fee Based	Fee based	Fee Based	Non-fee based for association members
Whether trained professionals are directly employable in MSMEs or need further training.	Yes	NA	Yes	Only for employees of enterprises
Training Infrastructure	Fully Equipped	Fully Equipped	Fully Equipped	-

Exhibit 31: Tip sheet: Overview of training infrastructure in Tirupur textiles cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Sourcing of Trainers	Internal	Internal	Internal	Sourced from association sponsored training institutes
Industry Recognition	Highly significant	Not significant	Only for specific diploma courses like smart programs by ATDC	Within organisations
Course Infrastructure (Regular / customized offerings)	Customised Offerings Modular Training Certificate courses Short-term programmes	Regular	Regular/ customized offerings	Regular/ Fast track courses
Intake (Annual)	NA	Not specified	NA	For Members
Placement (Annual) – MSMEs / Other	MSME's	Large industries	MSME's	Only for employees of enterprises

Curriculum Development - Overview

Definition & constituents

The various levels of training modules that are currently developed by the Consultant has been done in joint association with various private and public BMO's located in the cluster for training purposes. The identified BMO's in Tirupur cluster have significant experience in organising training programs both/ either at workers level and/or managerial level. The assessment of training infrastructure and delivery mechanism of training modules are finalised after deep interactions with industry associations and training institutes.

While developing the training courses the following sources were utilised:

- Modular employable skills by Director General of Employment and Training related to textiles sector
- Sardar Vallabhai Patel International school of textiles and management

The training modules developed for shop floor employees/ workers are based on the role expectations in the production process. All the training modules developed are tailor made to fill the immediate gap in the skill level of workers at shop floor level. Thus, while defining the training modules in production and related processes the following constituents are necessary:

- Modular programs at various specific roles and targeted towards the immediate skill gap
- Certificate courses at managerial level to provide an exhaustive overview of various concepts and related techniques

Production related training programs

During the initial interactions and the survey conducted by the Consultant in Tirupur Knitwear cluster, the following skill gaps are identified in production related areas:

- Skill gaps have been observed at managerial level jobs for processes including marketing management, production planning, scheduling, inventory management, quality control, maintenance. The major skill gap identified in the marketing function is the lack of marketing management skills in order to identify new markets and potential buyers. The other skill gap identified can be the lack of importance and knowledge of brand development and the potential to utilize the domestic markets.
- At operator level, skill gaps are observed in the areas of knitting machine operation, stoll /Suzler machine operation, dyeing, stitching, checking, printing and linking.
- The major issue faced by the cluster is resource mobilization and motivation for enrolling for training programs.
- Managers, supervisors and production-in charge lack soft skills such as communication skills, team development and motivation skills for undertaking their activities.

The Consultant has taken the above into consideration while formulating the training modules matrix for production and related areas. The matrix indicates the training modules at worker, supervisor and managerial level.

Exhibit 32: Training modules matrix

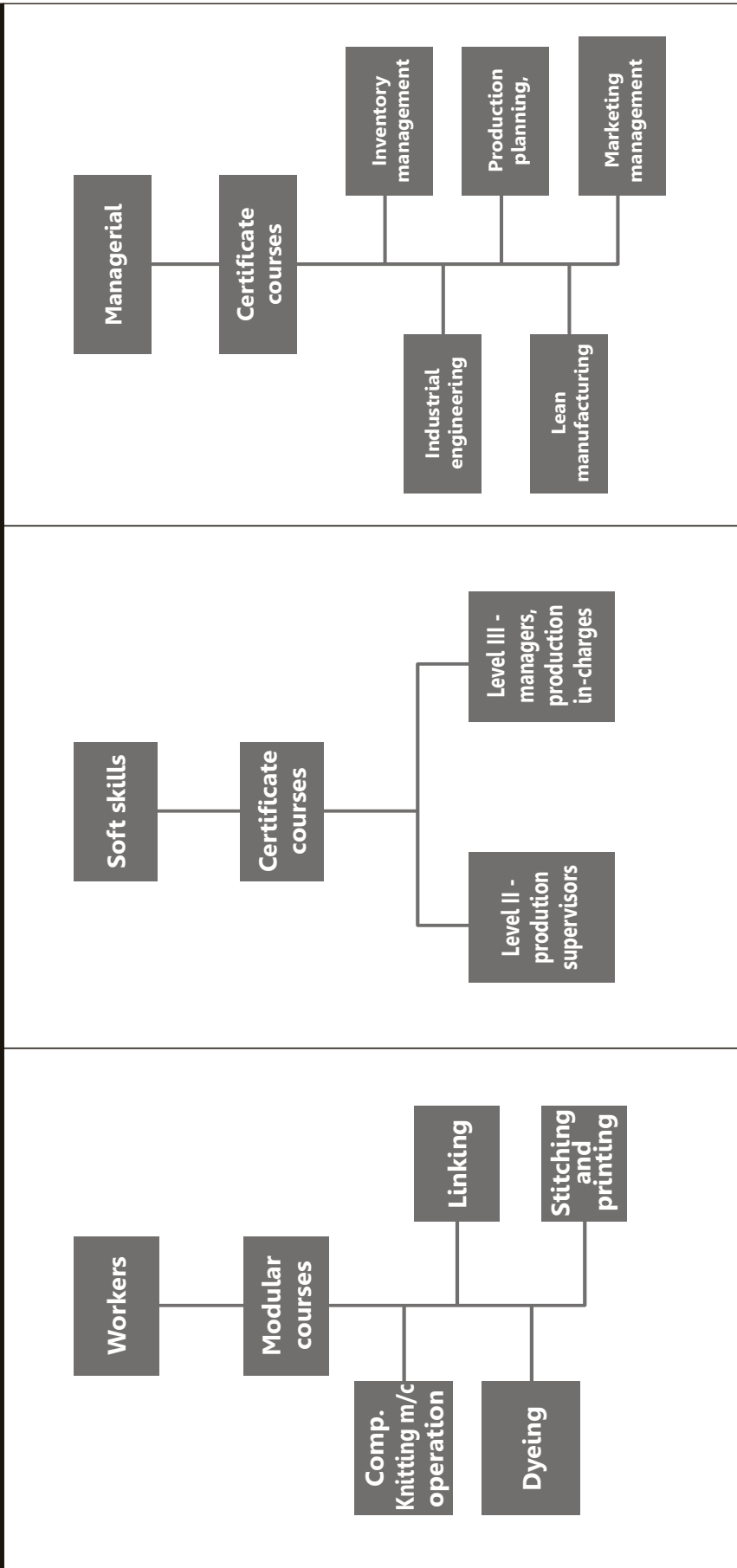


Exhibit 33: Modular courses at operator level

Job role	Operator – Dyeing	Knitter – Computerised Flat/Circular knitting machine	Operator – Basic Stitching
Entry Qualification	Age: 16 Education: 10 th standard	Age: 16 Education : 10 th standard	Age: 14 Education: 5 th standard
Role expectations	To ensure that the right color is applied in the required pattern	To creel the cones as per the pattern and knit the fabric on a flat/circular knitting machine	He must be able to cut and sew garments
Overview of course content	<ul style="list-style-type: none"> • Introduction to sulphur and vat colors - Properties, Application • Dispersed an oxidized colors - Properties and functions • Mordant and mineral colors • Mordant dyes, function, importance of mordanting, methods of mordanting • Insoluble Azoic dyes Properties • Selection of combinations of naphtholes and bases for different colors 	<ul style="list-style-type: none"> • Knowledge of knitting patterns and creeling the cones • Basic concepts like count, shade and yarn types. • Basics of flat/circular knitting machine and understanding its operation • Importance of maintaining RH% for knitting and quality of fabric • Conditioning of cones before knitting • Precautions and safety practices for the operation of flat/circular knitting machine 	<ul style="list-style-type: none"> • Basics on different seams like flat seam, french seam, felling seam etc. and stitches • Importance of pattern making and cutting techniques • Basic operation of treadle sewing machine • Maintenance of sewing machine

Exhibit 34: Modular courses at operator level

Job role	Operator – Special Stitching machine	Operator - Linking	Operator – Printing & finishing
Entry Qualification	Age: 16 Education: 10 th standard	Age: 16 Education: 10 th standard	Age: 16 Education: 10 th standard
Role expectations	He must be able to operate sewing machines, single needle machine, button fixing and hole making machine and other special machines <ul style="list-style-type: none"> Basics on operation of treadle machine, over lock machine, button hole machine, popping machine and button fixing Operation and control of power machines – double needle m/c, over lock, flat lock, button hole etc. Quality aspects 	He must be able to operate linking machines to link collars/armbands on to knitted garments <ul style="list-style-type: none"> Basics of knitting operation Basics of linking and procedure to be followed for linking of collars/armbands with knitted garments Operation of linking machine Trouble shooting of linking machine Practical training on linking machine 	To handle the printing activities and ensure that the print is as per the requirement <ul style="list-style-type: none"> Textile printing Preparation of cloth for printing - singeing, de-sizing, scouring and bleaching Methods of printing Hand block printing, Stencil printing, Screen printing, Direct printing, Roller printing, Transfer printing Styles of printing Direct style, dyed style, discharge style, resist style, batik printing, tie and dye, Azoic style, crepon style, metal printing style Recipes for printing and after treatments Introduction to textile finishing, types of finishes, Ingredient used for finishing, preparation of finishing mixture Operation of finishing machineries
Overview of course content			

Exhibit 35: Certificate courses in production at supervisor level

Job role	Mechanic – Knitting	Mechanic – Garmenting
Entry Qualification	Age:14 Education : 10 th standard	Age: 14 Education:10 th standard
Role expectations	To handle all the maintenance activities of knitting - erection, periodic maintenance and overhauling etc.	To handle all maintenance activities of different machines like cutters, fusing machines, iron boxes and washing machines etc.
Overview of course content	<ul style="list-style-type: none"> • Basic concepts like gauge of the machine and count of the yarn • Knowledge of mechanisms and various parts of knitting machines • Thorough understanding of knitting machines – size of cylinders and gauges, spares • Knowledge of standard maintenance practices • Awareness of safety precautions while working on the floor • Importance of first aid, firefighting, cleanliness and personal safety • Use of safety gadgets 	<ul style="list-style-type: none"> • Knowledge about machines and their mechanisms • Maintenance practices • Periodic inspection of machines and recording the condition of the machine • Servicing and overhauling • Machinery assembling and dismantling

Exhibit 36: Certificate courses in production at managerial level

Course title	Maintenance management	Inventory management	Production planning and control
Eligibility criteria	Formal education: B. Tech or a degree in technology related courses (or) Experience: 5 years	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years
Objective of the course	To get acquaintance with maintenance methods and working practices to reduce plant downtime	To familiarize the participants with the importance and costs associated with inventory and understand the current inventory management practices	To understand the importance of demand forecasting, application of various production planning techniques
Course content	<ul style="list-style-type: none"> • Basics and broad aspects of maintenance • Introduction to maintenance planning and scheduling • Maintenance and productivity improvement and wastage reduction • Planned maintenance systems and practices • Breakdown analysis and Machine failure analysis • Machine reliability and maintainability improvement • Preventive maintenance system and practices • Spare parts management • Lubrication management and practices • Standard safety procedures in maintenance 	<ul style="list-style-type: none"> • Basics: Inventory and its importance • Types of inventory – Seasonal, Decoupling, Cyclic, Pipeline, Safety • Types of inventory costs – Carrying cost, Cost of ordering, cost of shortages • Inventory control for deterministic demand items • EOQ – Economic Order Quantity • Inventory control systems • The continuous review system • The periodic review system • Selective control of inventory • ABC classification • XYZ classification • FSN, VED classification 	<ul style="list-style-type: none"> • Importance of demand forecasting • Models for forecasting • Extrapolative methods • Causal methods • Resource planning – Materials, Manpower, Capital, Machinery • Basic strategies for production planning – level and chase • Level strategy • Inventory based alternatives • - Build inventory • - Backlog/backorder/shortage • Chase strategy • Capacity adjustment alternatives • - Overtime/under time • - Variable number of shifts • - Hire/lay-off workers • Capacity augmentation alternatives • - Subcontract/outsource • - De-bottleneck • Scheduling and its importance • Scheduling rules

Exhibit 37: Certificate courses in production at managerial level

Course title	Fashion Design	Lean manufacturing (LM)	Industrial Engineering
Eligibility criteria	Education: Diploma in fashion design (or) Experience: 2 years relevant experience	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years	Formal education: B. Sc or B. E or any degree course (or) Experience: 5 years
Objective of the course	To learn the fundamentals and understand the various aspects of fashion design	To understand the concepts and to facilitate the participants to carryout lean manufacturing practices in their respective units	To familiarise the concepts of industrial engineering and its applications
Course content	<ul style="list-style-type: none"> • Fundamentals of fashion design • Principles and elements of design • Fundamentals of textile fibres and yarns • Introduction to pattern making and stitching • Pattern making through drafting and flat pattern technique • Garment construction • Pattern making through draping • Surface ornamentation • Pattern making/cutting • Computer aided designing - Illustration 	<ul style="list-style-type: none"> • History and need for lean manufacturing • Key drivers of LM - Value, Value stream, Focus on waste, Continuous improvement, Customer focus and CRM, Time based competition, Employee empowerment, Performance measures • Tools and methods to establish lean enterprise <ul style="list-style-type: none"> - Cellular manufacturing - Total Quality management - Value stream mapping - Just in time - Kanban system - Balanced flow, Single piece flow - Standardised work - Quick changeover/reduce setup - Tact time, Pokka-yoke - 5S system 	Elements of industrial engineering <ul style="list-style-type: none"> • Introduction • History of industrial engineering • Productivity – Types of production, types of productivity, Factors influencing productivity • Work study – Work content, Method study, Procedure of method study, Advantages and limitations • Techniques of work measurement – work sampling, time study, PMTS • Ergonomics – Principles of ergonomics, anthropometry • Operations: PPC, Layout, maintenance, value analysis, quality • Advances in industrial engineering • Introduction to operations research and its benefits • Work systems design • Systems approach

Marketing related training programs

Exhibit 38: Certificate courses in marketing at managerial level

Job role	Market research and demand assessment	Marketing management	Merchandising
<p>Overview of course content</p>	<ul style="list-style-type: none"> • Overview <ul style="list-style-type: none"> - Importance of assessing new markets - Relevance to existing markets - Product performance and logistics networking • Market research <ul style="list-style-type: none"> - Demand side surveys - Quantitative estimations of competition, demand, supply - Identification of effective market penetration techniques • Sales force effectiveness <ul style="list-style-type: none"> - Importance of sales force - Channels, Media and Information gathering - Documentation and ERP Modules for market information • Demand assessment <ul style="list-style-type: none"> - Determination of accurate demand assessment models - Documentation of historical data - Demand Forecasting Techniques 	<ul style="list-style-type: none"> • Marketing concepts • Consumer behavior, Buying decision process for fabric and apparels • Business buying process for fabrics and apparels, Fiber and yarn marketing in India, Sales policies in Indian textiles sector • Fashion forecasting and Demand measurement, Segmentation and targeting, Product life cycle • Marketing strategies for apparel brands • New product in textiles, Apparel product design and development, Product and product mix, Need for fashion brands, Latest trends in apparel brand positioning • Developing pricing strategies, Wholesale marketing and distribution in fabric and apparel • Managing communication, Sales promotion, Sales force management, Apparel retail marketing, Catalogue marketing and online marketing • Success stories of Indian textile brands through brand building 	<ul style="list-style-type: none"> • Introduction, Traits of merchandiser, Scope of merchandising management • Merchandising in Indian textile industry • Structure of merchandising function, Managing relation of merchandising with other departments • Value chain analysis – Fashion merchandising, Fashion cycle, Fashion terminology, Factors affecting fashion • Merchandising planning and control – marketing plan and merchandising plan, Production analysis, Sales estimation • Marketing research for merchandiser, Sales analysis • Merchandising line development process –Product development Design, Sketches, Pricing strategies, Quality standards • Material sourcing and decision – Source evaluation, single vs. multiple sourcing, domestic and international sourcing

Soft Skills

The Consultant has developed training modules for soft skills in three modules to fill the skill gaps at different levels of the organization. The following indicates the training modules of soft skills

- Module I: Workers and other support staff
- Module II: Supervisory level staff
- Module III: Proprietors and managerial staff

Based on the skill gaps identified in Tirupur cluster there is an immediate need to implement soft skills training modules at supervisory level, managerial level. Module II and module III needs to be implemented in the cluster to fill the skill gaps in this area. For the detailed course curriculum please refer to the Soft Skills section at the end of the report.

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size, cost and delivery channels

Production related courses at operator and managerial level

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Operator – Dyeing	ATDC	30 Hours	30-35	Classroom and practice lab of knitting
Modular	Knitter – Comp. Flat/Circular knitting machine	NIFT-TEA	30 Hours	30-35	Classroom
Modular	Operator - Basic stitching	ATDC	30 Hours	30-35	Classroom
Modular	Operator – special stitching machine	ATDC	30 Hours	30-35	Classroom
Modular	Operator – Linking	ATDC	30 Hours	30-35	Classroom
Modular	Operator – Printing and finishing	ATDC	30 Hours	30-35	Classroom
Certificate	Mechanic –Knitting	NIFT-TEA	60 hours	20-25	Classroom
Certificate	Mechanic – Garmenting	NIFT-TEA	60 hours	20-25	Classroom
Certificate	Maintenance management	NIFT-TEA	80-90 hours	20-25	Classroom
Certificate	Inventory management	SVPITM, Coimbatore	80-90 hours	20-25	Classroom
Certificate	Production planning	SVPITM, Coimbatore	80-90 hours	20-25	Classroom
Certificate	Fashion design	NIFT-TEA	80-90 hours	20-25	Classroom
Certificate	Lean manufacturing	SVPITM	80-90 hours	20-25	Classroom
Certificate	Industrial engineering	SVPITM	80-90 hours	20-25	Classroom

Marketing related training programs

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Certificate	Merchandising	SIHMA	90 hours	30-35	Classroom
Certificate	Market Research and Demand Assessment	SVPITM	40 hours	30-35	Classroom
Certificate	Marketing Mgmt.	SVPITM	90 hours	30-35	Classroom

Soft skills related training modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Certificate	Module II	SVPITM	90 hours	30	Classroom
Certificate	Module III	SVPITM	60 hours	30	Classroom

Prioritisation of Training Programs:

Of the various programs indicated above, the Consultant recommends the following programs to be initiated on pilot basis for testing and evaluation.

Production:

- Modular course in computerised flat/ circular programs at operator level
- Modular course in stitching operations at operator level
- Certificate course in production planning at managerial level

Marketing: Certificate course in marketing management at managerial level

Fees and cost sharing:

The cost of various training programs listed above would range from around ₹ 15000-25000 for the indicated batch size for production related courses. For courses under marketing and financial modules, the cost would be around ₹ 5000-10000 for the mentioned batch sizes.

The cost of the training programs is relatively lower and is expected to improve the productivity of the units in the cluster. As a result, the entrepreneurs have indicated that they would be willing to bear a portion of the cost of such training interventions. However, the following challenges have to be handled while deploying the training modules:

- Local languages and communicating the right training programs at right hierarchical levels is important
- Devising techniques to retain the trained staff is important. A common issue with entrepreneurs not resorting to training modules is that workers tend to switch to better paying jobs after training

Delivery channels:

Primary interactions with entrepreneurs and industry association, namely Textiles Exporters Association (TEA), South India Hosiery Manufacturers Association (SIHMA), the following points have to be considered while delivering the training modules:

- It is understood that the role of industry associations in the cluster has been significant and it is evident in the form of development of common facility centers for the cluster and set up of training institutes for human resource development. The industry associations like TEA, SIHMA are quite active in the cluster and are in a position to aggregate the information and further disseminate across the MSME units. Most of the training programs that are important and require industry acceptance are currently being conducted through the industry sponsored training institutes NIFT-TEA and SIHMA institute of fashion apparel and training. Therefore for the success of the training modules, it is important that all training programs should be conducted under the banner of industry associations.
- The training programs are to be advertised well in advance at least two months before in the cluster. This ensures maximum participation from different units in the cluster both at operator and management level. The industry association needs to be informed beforehand about the activities so that industry association would apprise its members about the importance and value creation because of these training programs to the cluster. It is recommended to convince the entrepreneurs in the cluster about the benefits of these cluster specific training programs for maximum participation.
- The training programs needs to be scheduled during non-peak season because this would be appropriate time for employees at management level to attend the certificate courses and also the promoters would feel comfortable in sending them to the training institutes. For employees at operator level the training programs are to be scheduled during shift hours rather than scheduling the training programs before or after the shift. It is important to consider these nuances in organizing training programs as this would ensure maximum participation and would not defeat the purpose of human skill development
- The trainer or facilitator preferably should be a local person, who is well versed in speaking Tamil language. The trainer should be in a position to give solutions to workers/employees problems in the plant rather than just speaking about generic aspects in the course. The trainer should be ready to share possible solutions to specific problems which would boost the confidence level of workers in solving problems at shop floor level.
- In order to encourage the entrepreneurs to send their employees for training or organize in-house training programs, the industry association can offer attractive packages to the enterprises that undergo stipulated training within a year. It can be either in the form of stipulated number of training programs to be conducted within a calendar year or stipulated number of employees to be trained in the calendar year. It creates a culture of continuous learning and fellow unit promoters would adopt this because of peer pressure.
- It is recommended to adopt a mechanism in order to minimize the problem of employees poaching after training in the cluster. The mechanism should be designed in such a way that at industry association level an agreement needs to be signed among members so that no unit would recruit a trained employee within 6 months after the completion of training program. For certificate courses, the certificate approved by Associations would be issued to the employee only after 6 months from the date of completion.

Certifications & Recognitions

A tri-partite recognition formula should be adopted by the industry association. In the case of Tirupur textiles cluster, the following members should be involved in the certification & recognition:

- o Training provider, BMO
- o Industry Association conducting the program
- o Ministry of Textiles/ MoMSME

Feedback on skill gap mapping report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 39: List of people who have provided feedback on the report			
Name	Organization	Designation	Feedback
Mr. Shabbir	Apex Cluster Development Services (ACDC)	Cluster development manager	The report was appreciated for its thoroughness in covering skill gaps both at operator and managerial level. Some highly relevant skill gaps have been pointed out in the cluster like production planning, inventory management, quality control etc.
Mr. S. Shaktivel	Textiles Exporters Association	Association Manager	The report comprehensively covers the skill gaps in the cluster. He cautioned us to convince the management of individual units about the value and the benefit of training programs before implementing the modules in the cluster.
Dr. N. Gokarneshan	NIFT-TEA	Principal	He appreciated the good work that SIDBI is doing for the cluster. The report has got all the elements related to skill gaps and suggested to develop tailor made modules to fill the skill gaps. Based on these lines NIFT-TEA has recently started short term courses for industry workers to upgrade the skills in the cluster.

Kolkata - Shantiniketan: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Central Leather Research Institute (CLRI)

CLRI is premier research institute. It provides services ranging from education in leather technology and footwear manufacturing, research, and consultancy, to testing services. It provides services in the area of testing chemical properties of leather and leather products on a fee basis. CLRI has collaborated with SATRA Footwear Technology Centre, UK, an internationally acknowledged testing center for footwear and allied products.

The major training initiatives of CLRI are:

- Advising firms on clean process technologies and energy conservation practices.
- To educate on the various guidelines (SATRA, REACH) and to elaborate on standards on chemical usage so as to be compliant with these guidelines.
- Training program on design of leather goods. The program is aimed at providing necessary technical expertise in pattern designing of leather goods to meet the requirements of fashion and quality conscious international market.
- Training program on quality control methods

Government College of Engineering and Leather Technology (GCELT)

The institute offers a B.Tech and a M. Tech course on leather technology. The course has been designed with inputs from various disciplines: biotechnology, polymer science and technology, environmental science & technology and synthetic organic chemistry to equip students to combat the challenges they would face in the leather industry. In addition the institute offers a two-year advanced certificate course in shoe and leather goods making. The institute is planning to install a Pilot Tanning Centre at Bantala leather complex for carrying out education and research work for the industry.

MSME Development Institute (MSMEDI), Kolkata

MSMEDI set up by the Ministry of MSME under Government of India (GoI), implements various programs and schemes for making the Indian MSME's globally competitive. The activities of the institute include technical services, training programs, ancillary development, awareness seminars/workshops, ISO certification, marketing and export promotion, etc. The major focus areas are:

- Entrepreneur Skill Development Program (ESDP): are designed keeping in mind the new market developments. All these courses are designed for educated unemployed youth who are looking for a job or want to take up entrepreneurship as their career in the leather sector.

- MSMEDI organizes training programs on export management, export packaging, export marketing, export policies and procedures, etc.
- MSMEDI offers consultancy and training services for ISO 9000 certifications.
- Management Development Programs (MDPs) are two week long training program targeting the entrepreneurs or supervisory staff of MSME units. These programs cover industrial management, financial management, production management, marketing management, personnel management and export management. There is also provision to conduct MDPs customized to the needs of the industry.

National Institute of Fashion Technology, Kolkata (NIFT)

NIFT Kolkata offers a three year degree course and a short term diploma course in leather designing. The course curriculum includes leather garment designing, shoe designing and bag designing. NIFT also provides design services to export houses in the leather industry.

FREYA design institute:

FREYA is a design and training institute supported by the ILPA Infrastructure Development Foundation. It is situated at the Calcutta Leather Complex. The institute offers design and pattern-making courses. FREYA provides designs to export houses custom made to suit their requirements. In addition it also offers pattern making services and making of prototypes for units in the leather industry. The institute is equipped with modern machinery and undertakes job work for many enterprises in the cluster. In addition the design studio has a library, meeting hall, and facilities for conducting training programs.

Skills for Employment in Leather Fabrication (SELF):

IL&FS Cluster Development Initiative Limited under the 'Skills for Employment in Leather Fabrication (SELF)' initiative offers programs to train shop floor operators for employment in leather industry. The training programs lasts for 30 days and is provided free of cost. The technical training module focuses on stitching, fitting and folding, skiving and clicking. In addition candidates are also coached on soft skills, personal hygiene, team behavior etc.

TANSTIA FNF Service Centre, Chennai (TFSC)

TFSC is a collaborative venture between Tamil Nadu Small and Tiny Industries Association (TANSTIA) and Friedrich Naumann Stiftung Fur die Freiheit (FNF), Germany, established to render supporting services to Micro, Small and Medium Enterprises. TFSC offers support services such as training, consultancy, information and handholding services to micro, small and medium enterprises. TFSC also works at the macro level for the long term sustainability of the sector. The macro activities include conferences, studies and economic lectures on topics of relevance to MSMEs.

Industrial and Technical Consultancy Organisation of Tamilnadu Limited, Chennai (ITCOT)

ITCOT is a joint venture of leading financial institutions, State Development Corporations, and Commercial Banks. ITCOT provides advisory and training programs to its clients. In the leather sector, ITCOT has been involved in preparing project plans for several initiatives by leather cluster stakeholders such as up gradation of common effluent treatment plants, leather footwear special

economic zone in Sriperumbudur, Footwear Components Park, etc. The company provides comprehensive training programs catering to various levels of workforce in an enterprise ranging from workers, supervisors, middle management to top management.

SGS

SGS is an inspection, verification, testing and certification company. The company provides specialized business solutions that improve quality, safety and productivity and reduce risk for its customers. SGS India has been engaged by Council of Leather Exports (CLE) as the official agency for providing REACH related information & advisory services to CLE member. SGS regularly conducts awareness programs on REACH at all CLE centers i.e. Chennai, Delhi, Kanpur, Kolkata, Mumbai, Agra, Jalandhar, and other leather clusters. In addition SGS also advises enterprise on international standards such as SA8000, CE, etc.

To summarize, the following is the status of training infrastructure available in the Kolkata Leather Cluster:

Exhibit 40: Tip Sheet: Overview Of Training Infrastructure In The Leather Cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Indicative List of Institutes/ Organisations	BDS Training Providers	CLRI, NIFT	CLE	FREYA design institute supported by Indian Leather Products Association (ILPA) Infrastructure Development Foundation

Courses (production / designing / marketing etc.)	Machine operations, Lean manufacturing, Quality, REACH guidelines, Design, Marketing techniques, Financial management, Export documentation, SA8000, IT related	Production and related process technologies, Machine operations, Maintenance, Quality testing, Designing	Export information related & infrastructure, Foreign trade fair participation, Arranging workshops & seminars	Design related activities, Production operations
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Frequency of Training.	As required	Degree and diploma courses, Short term courses	As required	As required
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Relationship with industry	Not well recognized by industry	Availed by the industry when required, Testing services regularly used by the industry	Regularly used by the industry	Regularly used by the industry
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Fee based / non-fee based	Fee Based	Fee based, however, subsidies under certain schemes may be available	Fee Based	Fee Based
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Exhibit 40: Tip Sheet: Overview Of Training Infrastructure In The Leather Cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Whether trained professionals are directly employable in MSMEs or need further training.	Yes	Yes	Enterprises directly availing the service	Enterprises directly availing the service
Training Infrastructure	Basic infrastructure	Class rooms and fully equipped workshops	Arranges space for members at trade fairs, Arranges space for members at trade fairs	Premises has facilities for members at trade fairs workshops
Sourcing of Trainers	Internal but on need basis external faculty from industry or institutes is used	Internal Faculty	External mostly from industry or institutes	Internal faculty is there but on need basis external faculty is also tapped
Industry Recognition	Not significant	High for degree and diploma courses	High for trade fairs	Programs conducted as per industry needs
Course Infrastructure (Regular / customized offerings)	Customized Offerings, Modular Training	Regular	Customized workshops & seminars	Customized Offerings
Intake (Annual)	NA	NA	NA	For Members
Placement (Annual) – MSMEs / Other	NA	MSMEs, Large Industries	Only for employees of enterprises	MSMEs, Large Industries

Curriculum Development - Overview

Definition & constituents

The following matrix relates to the various levels of training programs that are currently developed by the Consultant in joint association with various private and public BMOs that are present in the cluster for training purposes.

While developing the training courses, the following sources were utilized:

- National Council for Vocational Training syllabi on chemicals industry: Syllabus is available for the leather industry directly with the NCVT, however, related industry syllabi were referred while developing the suggested modules
- Modular Employable Skills by National Skill Development Corporation

Thus, while defining the production level training programs, the following constituents are necessary:

- Modular programs at various levels specific and targeted towards the immediate need-gap
- Refresher or certificate courses to be taken up to provide an exhaustive overview of various processes and related effective techniques

Production & Related Processes

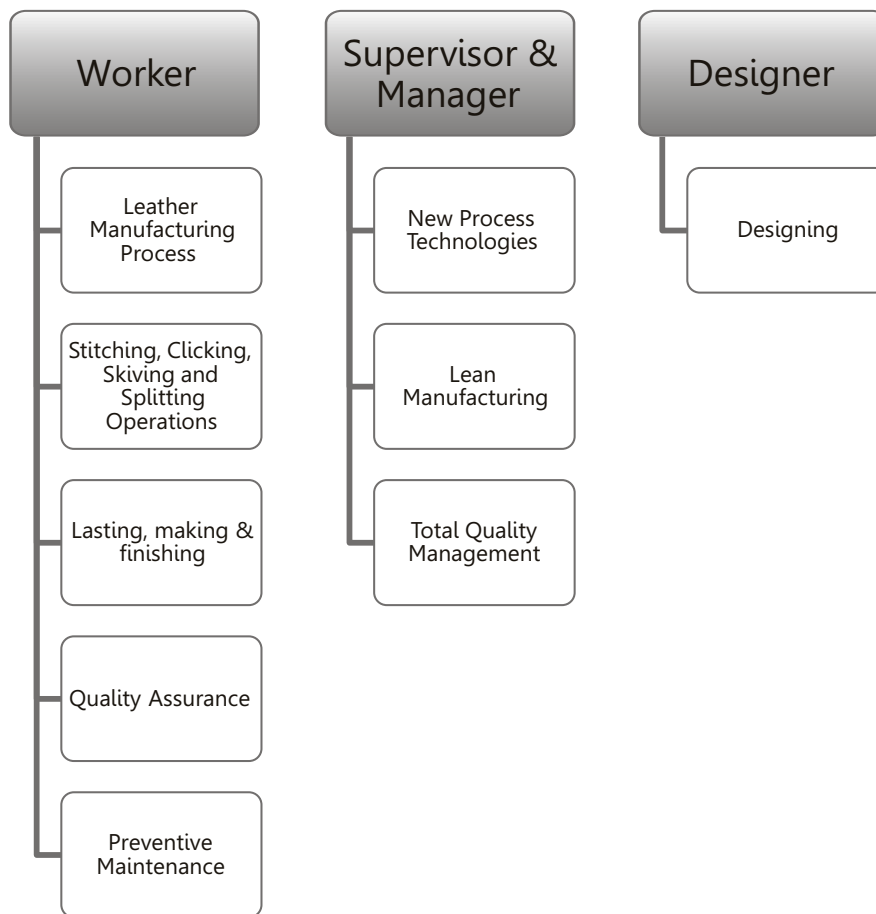
The training matrix below is developed for "Production and Related Processes". During the initial discussions and the survey conducted by the Consultant in the Kolkata cluster, the following needs emerged in production related areas:

- There appears to be a huge shortage of skilled labor across the value chain in the cluster. The primary reason for the lack of skills among the workers is the lack of suitable training or formal qualifications on the part of the workers. Leather tanning operations and basic operations in manufacturing leather goods and footwear such as clicking skiving, stitching, lasting etc. are the priority areas where a large skill gap exists in the cluster.
- A training program focused on preventive maintenance procedures has been designed to augment the skills of the workers in the cluster.
- A significant proportion of micro and small enterprises employ only sensory quality checking for their products. The entrepreneurs and workers need to be made aware of quality standards and importance of formulating a standard quality process for the enterprise. Accordingly two sets of quality training programs have been designed as specified below:
 - o Basic quality checking processes for workers.
 - o Total Quality Management for supervisors and managers.
- Majority of units in the cluster have not upgraded their technology and still depend on human skills or older machines for their operations. There is an urgent need for training supervisors and managers on new process technologies which would reduce their effluent discharge, energy and water consumption. In addition they also need to be made aware as to how to be compliant with REACH guidelines.

- Knowledge of Lean Manufacturing is very limited in the cluster; hence a structured training program has been designed on this topic for supervisors and managers.
- Most of the firms generally follow the design supplied by the customer or copy the design of big companies with certain modifications. A prime example being Khadim, a big footwear unit; the company is very conventional in its design outlook and usually it follows the practice of identifying successful designs from big brands such as Nike, Reebok etc., modifying these designs suitably and launching them. Thus to encourage more innovation in this space a program focusing on augmenting the design skills has been proposed.

The Consultant has taken the above into consideration while formulating the following matrix for production and related areas.

Exhibit 41: Training Matrix for Production & Related Processes



Source: Consultant

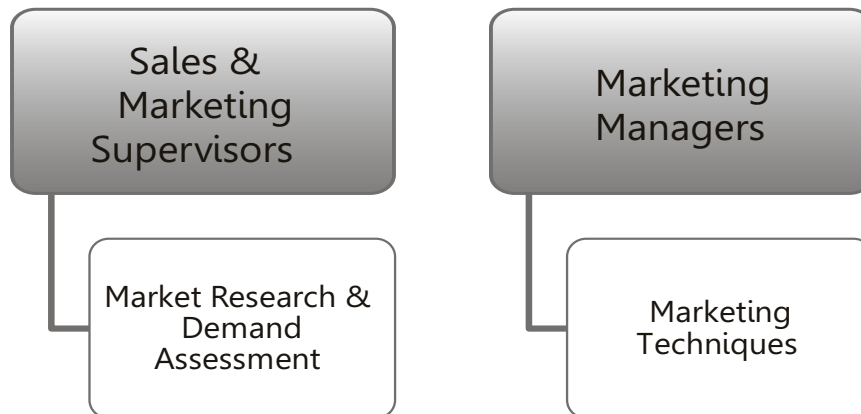
Marketing Related Training Programs

The trade in exports is presently channelized through business houses which buy from small and micro enterprises and then in turn export the products. However, in this process, the small and micro units remain devoid of benefits and hence they have expressed the desire to connect with export buyers directly. Therefore, these units require training in identifying potential foreign markets and formulating entry strategies.

A cost effective way for micro and small firms to reach foreign buyers would be to utilize the internet to promote their products and reach potential customers. Although there is awareness about internet marketing tools and Business to Business (B2B) websites the entrepreneurs in the cluster are not able to effectively utilize these tools to generate sales for their products. There is urgent need to hone the skills of the enterprises in the cluster in terms of utilizing e commerce web sites. MSMEFDP spearheaded by SIDBI initiated few sustainable measures which have started to show positive results.

Hence with respect to marketing, the two courses listed below in the exhibit are proposed:

Exhibit 42: Training Matrix for Marketing & Related Processes

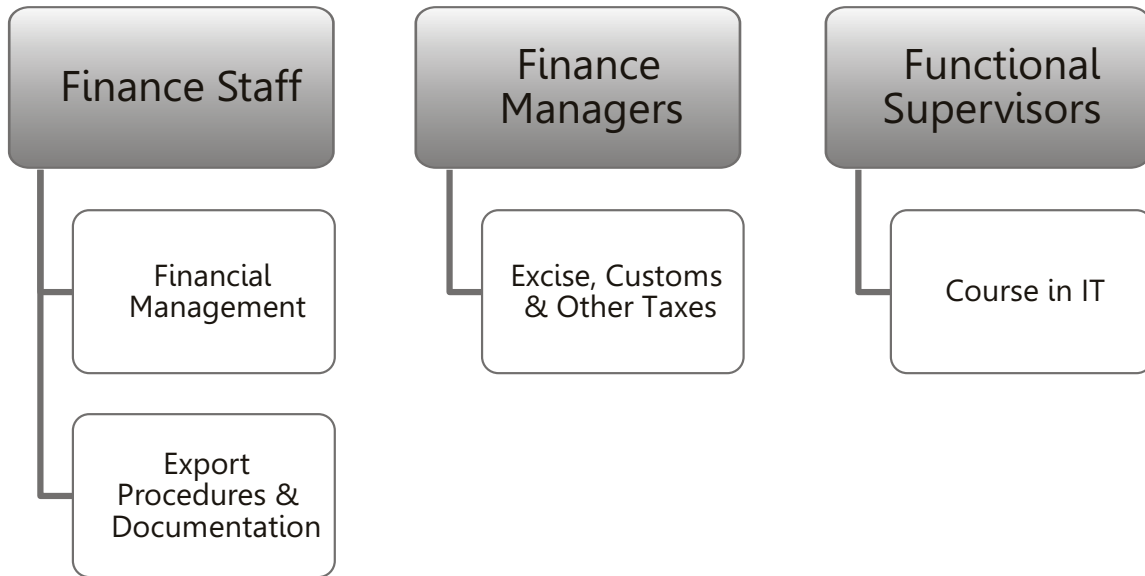


Source: Consultant

Finance & IT Related Training Programs

Effective financial management is one of the key success factors for an enterprise; hence a training module focusing on best practices in the field of finance and information about various government subsidy schemes has been designed for finance staff in the cluster. For entrepreneurs who want to break into the export market there is a huge gap in understanding of export regulations and other information. A specific training module covering export rules and documentation has been proposed for finance staff in the cluster. For managers, an advanced certificate training program covering the topics of excise, customs and other taxes is proposed. In today's world basic IT skills such as MS office, email communication, etc. is an urgent need for all staff in the cluster.

Exhibit 43: Training Matrix for Finance & IT



Source: Consultant

Detailed Curriculum for Individual Clusters

Production and Related Processes

Modular Course on Leather Manufacturing Process

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 600 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Overview	<ul style="list-style-type: none"> • Terms used in the leather manufacturing sector such as hide, skin, grain side, flesh side, pelt etc. • Nomenclature, specifications, standard sizes and weights of various types of hides and skins. • Knowledge of stages in leather processing – pre tanning, tanning and post tanning. • Knowledge of different machines used in the tanning process. • Knowledge of different types of chemicals used in tanning. • Knowledge of different types of defects in finished leather. • Knowledge of the finishing operations to be performed as per the use of leather. • Knowledge of quality checking procedures.
Machine operations	<ul style="list-style-type: none"> • Operate different machine in leather manufacturing process such as rolling machine, drum machine, drying machine, splitting machine, shaving machine, buffing machine, glazing machine, rolling machine, etc. • Standard operating procedures for each machine to prevent defects such as marks, cuts, scars etc. in leather.
Material handling	<ul style="list-style-type: none"> • Sorting and grading of hides and skins • Preparation of chemicals used in chemical and vegetable tanning. • Storing of raw hides and finished leather.
Hands-on-experience	<ul style="list-style-type: none"> • Familiarization with workshop • Proper House Keeping with safety including fire, lighting, equipment etc. • Preventive maintenance of machines, both electrical and mechanical. • Checking finished leather as per specifications.

Modular Course on Stitching, Clicking, Skiving and Splitting Operations

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 240 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Overview	<ul style="list-style-type: none"> • Knowledge of structure and quality of leather. • Properties and defects of leather • Parts of Leather and their suitability to cut component • Line of Tightness and stretchiness in Leather • Knowledge and application of synthetic materials and adhesives. • Different types of sewing machines such as flat bed, cylinder bed and post bed. • Principles and rules of clicking. Instructions for economical clicking. • Purpose of skiving and different types of skiving. Different types of stones used for skiving. • Purpose of splitting and different types of splitting. • Knowledge of quality checking procedures.
Machine operations	<ul style="list-style-type: none"> • Sewing machine operations - threading of needle, changing the needle, winding and threading the bobbin case, adjusting the stitch length, tension and pressure. • Types of stitch formation, chain stitch, lock stitch. • Carry out clicking and cutting operations such as straight cutting, curved cutting, kit cutting, angle cutting, round cutting. • Skiving machine operations – changing the belt, sharpening the knife, changing the grinding stone. • Splitting machine operations – adjusting the thickness, using thickness measuring gauge, proper way of feeding leather components, sharpening and changing of the grinding stone & knife, changing the upper roller as per the thickness of the leather.
Material handling	<ul style="list-style-type: none"> • Selection of leather suited for a particular product.
Hands-on-experience	<ul style="list-style-type: none"> • Proper House Keeping with safety including fire, lighting, equipment etc. • Maintenance, which includes cleaning, oiling, etc. • Maintaining a job card for the machine. • Safety precautions while operating the machine. • Checking procedure for finished products.

Modular Course on Lasting, making & finishing

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 2 weeks / 4 weeks
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Overview	<ul style="list-style-type: none"> • Introduction about lasting department. • Tools used in lasting department. • Last and types of last. • Different types of constructions and advantages. • Bottom components. • Properties of insole and types. • Properties of soles and types. • Properties of toe puff and counter stiffener and types. • Properties of heels and types. • Adhesive types of adhesive. • Mechanism of bonding. • Details about functions of individual machines. • Types of finishers and methods. • Faults and remedies. • Knowledge of quality checking procedures.
Machine operations	<ul style="list-style-type: none"> • Knife making. • Sequence of operations and flow charts of different types of constructions. • Roughing and scouring practice. • Hand lasting practice. • Machine lasting practice. • Lasting of upper.
Material Handling	<ul style="list-style-type: none"> • Leather board cutting. • Machine project.
Hands-on-experience	<ul style="list-style-type: none"> • Drafting of scrap leather toe side and seat by nails. • Preparation of upper and bottom components. • Preparation of insole and shank board. • Sole preparations. • Heel preparation and edge treatments. • In process control. • Machine maintenance. • Checking procedure for finished products.

Modular Course on Quality Assurance

- Batch Size: 25
- Qualifications: Workers/ Shop-floor employees
- Duration: 2 weeks
- Delivery Model: Classroom and practical operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Quality processes	<ul style="list-style-type: none"> • Changing environment and business needs • Knowledge of quality checking and testing method of different leather products. • Process of checking of finished products to ensure they are as per specifications. • Root cause analysis to identify specific points in the production process where defects are introduced. • Knowledge of rework procedures in order to remedy the defects. • Method of proper packaging. • Method of proper storing. • Selection of transport for the product.

Modular Course on Preventive Maintenance

- Batch Size: 25
- Qualifications: Workers/ Shop-floor employees
- Duration: 3 days
- Delivery Model: Classroom based and practical machine operations
- Infrastructure Requirements: Projector, Computer, Software, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Preventive maintenance	<ul style="list-style-type: none"> • Concept and objectives of maintenance. • Maintenance functions – Basic and managerial functions. • Types of maintenance: Breakdown – Planned. • Types of planned maintenance: Routine – Scheduled – Preventive – Corrective – Predictive. • Design for maintenance. • Reliability centered maintenance. • Benchmarking best practices in maintenance management. • Autonomous maintenance.

Modular Course on New Process Technologies

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 2 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Effluent management	<ul style="list-style-type: none"> • Adopting new technology and processes to reduce water consumption. • Reducing the use of polluting chemicals. • Pretreatment of effluents before release to common effluent treatment plant. • Improved technology to ensure zero discharge norms are achieved. • Up gradation of equipment to reduce energy consumption.
REACH guidelines	<ul style="list-style-type: none"> • Registration • Evaluation • Authorisation communication in supply chain • Notification • Restriction • Obligation of exporters under REACH • Procedure to achieve reach compliance

Certificate Course on Lean Manufacturing (Production Planning, Process Layout)

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Lean manufacturing	<ul style="list-style-type: none"> • What is lean? • Key concepts of lean manufacturing. • Lean tools and supporting strategies. • Fourteen principles of the Toyota Way.
Waste elimination	<ul style="list-style-type: none"> • Value-added & non-value-added activities. • 3 Ms – Muri, Mura & Muda. • Seven Wastes.
Preparing enterprise for lean	<ul style="list-style-type: none"> • Introduction. • 5S & Visual Management. • Team Building.
Just in time (JIT)	<ul style="list-style-type: none"> • Introduction. • Supplier relationships. • Flow & Pull System. • Kanban.
Issues in implementing JIT	<ul style="list-style-type: none"> • Key issues. • Establishing Standardized Processes. • Implementing Total Productive Maintenance (TPM). • Pillars of TPM.
Manufacturing Cells	<ul style="list-style-type: none"> • Introduction to Manufacturing Cells (Cellular layouts). • Heijunka / Demand Leveling.
Creating Lean Processes across the Enterprise	<ul style="list-style-type: none"> • Value Stream Mapping • Poka-Yoke • Quick Change Over (SMED)

Certificate Course on Total Quality Management (TQM)

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 4 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Module 1	<ul style="list-style-type: none"> • Executive Briefing on TQM • Concept of Cost of Poor Quality • Creativity, Innovation & Quality Improvement • Problem Solving • Application of QC tools in problem solving • Exercises on Problem Statements & Mission Statements • Project definition & Organisation • Team Building
Module 2	<ul style="list-style-type: none"> • Diagnostic journey : Analyzing symptoms & formulating theories • Data Collection • Flow Diagram • Graphs & Charts • Brainstorming • Cause & Effect Analysis
Module 3	<ul style="list-style-type: none"> • Diagnostic journey : Validating theories and identifying root causes • Stratification • Pareto Analysis • Scatter Diagram • Histogram
Module 4	<ul style="list-style-type: none"> • Remedial Journey • Designing solutions • Addressing resistance to change • Implementation of selected solutions • Holding the gains • Checking & Monitoring control systems • Making presentation

Modular Course on Designing

- Batch Size: 25
- Qualifications: Design Staff
- Duration: 4 weeks
- Delivery Model: Classroom based with Practical exercises
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Product knowledge. • Leather grading and costing. • Finishing of leather goods. • Pattern cutting. • Market awareness (India and overseas). • Market segmentation. • International design trends.
Design principles	<ul style="list-style-type: none"> • Product and form design. • Ergonomics. • Product photography. • Foundation design drawing. • Analytical drawing. • Geometric construction. • Colour composition. • Space form and structure. • Environmental perception. • Photography illustration. • Science and liberal art. • Design concept and construction.

Marketing and Related Processes

Modular Course on Market Research and Demand Assessment

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Marketing and Sales Supervisors
- Duration: 30 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of Assessing New Markets • Relevance to existing markets • Product Performance and logistics networking
Market research	<ul style="list-style-type: none"> • Demand Side Surveys • Quantitative estimations of competition, demand, supply • Identification of effective market penetration techniques
Sales force effectiveness	<ul style="list-style-type: none"> • Importance of sales force • Channels, Media and Information gathering • Commercial databases for market information
Demand assessment	<ul style="list-style-type: none"> • Determination of accurate demand assessment models • Documentation of historical data • Demand Forecasting Techniques

Certificate Course on Marketing

- Batch Size: 30 to 35
- Qualifications: Marketing Managers
- Duration: 45 hours
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
What is marketing?	<ul style="list-style-type: none"> • Functions of Marketing • Relevance of Product, Price, Promotions and Place • Decision Making • Cost and benefits of Marketing • Developing effective marketing programs
Customer relationship management	<ul style="list-style-type: none"> • New customer development • Effective communication and marketing • Prospecting • Developing marketing collaterals. • Customer enquiry handling • Quotations, proposals and conversions • Managing customer value through CRM and lifecycle management
Website and B2B	<ul style="list-style-type: none"> • Benefits of a website • Role of internet and B2B market places • Creation of online product portfolio • Role of E-commerce and E-product catalogues • Website and Web Analytics, Ad sense

Finance and IT Related Processes

Modular Course on Financial Management

- Batch Size: 20 to 25
- Qualifications: Finance Staff
- Duration: 2 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Underlying theory	<ul style="list-style-type: none"> • Nature of financial statements • Creation of income statement & balance sheet • Creation of cash flow statement & cash conversion cycle • Interpretation of financial statement
Analytical tools	<ul style="list-style-type: none"> • Working capital management • Cost optimisation • Cost reduction & cost control • Activity based costing • Analysis of performance • Emerging business models • Keys to success
Financing schemes	<ul style="list-style-type: none"> • Information about various subsidy schemes offered by state and central agencies. • Knowledge of financial schemes targeted specifically to the leather industry. • Eligibility criteria of the above mentioned schemes. • Procedure to avail assistance under these schemes.

Modular Course on Export Procedures and Documentation

- Batch Size: 20 to 25
- Qualifications: Finance Staff
- Duration: 3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Underlying theory	<ul style="list-style-type: none"> • Procedural formalities for starting an export business • Understanding the framework of export business – impact of external environment • Understanding the framework of export import policy 2009-14. • Understanding the role of documents in export business. • Customs clearance formalities of export cargo. • Banking: foreign exchange risk management. • Marine Insurance, ECGC. • Incentives and benefits to exporters – export promotion schemes.
Practical case studies	<ul style="list-style-type: none"> • Procuring an export order and entering into a sales contract. • Appropriate use of delivery terms – INCOTERMS 2010. • Ensuring guaranteed payment using appropriate techniques. • Payment through Letters of Credit with special reference to UCP 600. • Processing of an export order.

Certificate Course on Excise, Customs and Other Taxes

- Batch Size: 30 to 35
- Qualifications: Finance Managers
- Duration: 20 hours
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Overview of relevant fiscal procedures. • Physical verification and stock keeping.
Recent Changes and tracking	<ul style="list-style-type: none"> • Filing of returns. • Changing norms for Excise and Customs. • Awareness of DEPB and other schemes. • Tax holidays, Green Initiatives etc.
Compliance	<ul style="list-style-type: none"> • Assess impact on business of compliance • Separate designated areas for sampling • Separate designated areas for excise purposes

Certificate Course in IT

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: All Functional Supervisors
- Duration: 40 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, MS-Office Applications

Topic	Contents
Overview	<ul style="list-style-type: none"> • Introduction to IT • Advantages and limitations of IT • Role of IT in information age
Basic Data Processing	<ul style="list-style-type: none"> • Introduction to Excel and other data processing software like Access • Excel Formula and basic data analysis
Documentation Software	<ul style="list-style-type: none"> • Applications with MS-Word
Presentations	<ul style="list-style-type: none"> • Applications with MS-PowerPoint
Communication software	<ul style="list-style-type: none"> • Email and Internet Overview • Business Communication

Overview of Workshops Conducted

A work shop was conducted among micro enterprise owners who are primarily manufacturing leather goods such as bags and wallets. The enterprises were based in the Sodepur area. The main learning from the discussion at the workshop included:

- The level of mechanization is pretty low. The units mainly used traditional domestic machines such as sewing machines, skiving machines etc., in their day to day operations.
- In terms of labor, they conceded that there is a shortage of labor willing to work in the leather trade. The main reason for this was the low wages offered to entry level workers in the leather sector as compared to other sectors such as construction. However more than the lack of workers; the major concern facing these micro enterprises is the drastic reduction in the value of orders. Many of the enterprises in the area have been forced to close down.
- The primary concern voiced by the entrepreneurs is the lack of knowledge about export markets. They are unable to directly get in touch with foreign buyers and hence are forced to do job work for big export houses. The entrepreneurs lack the required financial muscle to go abroad and participate in international trade fairs. The immediate requirement is capacity building in terms of how to identify potential clients and communicate with them.
- The literacy about marketing tools and techniques is pretty low among the entrepreneurs. They do not even have the basic knowledge of preparing marketing collaterals. A structured program covering the basic concepts of marketing focusing on the 4Ps (Product, Price, Promotion, Place) is required.
- They do not have much idea about e-commerce web sites such as www.alibaba.com or how to leverage them to promote their products among international buyers. The awareness of digital marketing tools is pretty low. There is urgent need for training modules focusing on creating online portfolio of products to showcase to international customers.
- An essential component of client interaction is effective business communication and client negotiation. In addition to marketing knowledge, the entrepreneurs also need to be provided training to improve their verbal and written communication skills.
- The foreign buyers maintain a very strict policy with regard to quality norms. Many of these entrepreneurs still do not realize the importance of quality assurance processes which meet the requirements of international buyers. Hence these entrepreneurs need to be made aware of the procedures by which they can be compliant with the requirements of the international buyers in terms of quality and environmental norms.

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size and delivery channels. The cost of various training programs listed below would range from around ₹ 35000-45000 for the indicated batch size for production related courses. For courses under marketing and financial modules, the cost would be around ₹ 10000-15000 for the mentioned batch sizes.

Production Related Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Leather Manufacturing Process	CLRI	600 hours	30	Classroom / Practical
Modular	Stitching, Clicking, Skiving and Splitting Operations	CLRI, IL&FS-CDI, FREYA	240 hours	30	Classroom / Practical
Modular	Lasting, making & finishing	CLRI, IL&FS-CDI, FREYA	2 weeks / 4 weeks	30	Classroom / Practical
Modular	Quality Assurance	CLRI	2 weeks	25	Classroom / Practical
Modular	Preventive Maintenance	CLRI	3 days	25	Classroom / Practical
Modular	New Process Technologies	CLRI, SGS	2 days	25	Classroom
Certificate	Lean Manufacturing (Production Planning, Process Layout)	TFSC Chennai, ITCOT Chennai	3 days	25	Classroom
Certificate	Total Quality Management (TQM)	TFSC Chennai, ITCOT Chennai	4 days	25	Classroom
Modular	Designing	NIFT, FREYA	4 weeks	25	Classroom / Practical

Marketing Related Training Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Market Research and Demand Assessment	TFSC Chennai, ITCOT Chennai	30 hours	30-35	Classroom
Certificate	Marketing	TFSC Chennai, ITCOT Chennai	45 hours	30-35	Classroom

Finance & IT Related Training Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Financial Management	TFSC Chennai, ITCOT Chennai	2 days	20-25	Classroom
Modular	Export Procedures and Documentation	TFSC Chennai, ITCOT Chennai	3 days	20-25	Classroom
Certificate	Excise, Customs & Other Taxes	To be determined	20 hours	30-35	Classroom
Certificate	Course in IT	ITCOT Chennai	40 Hours	30-35	Computer Lab

Delivery Channel

Ministry of Rural Development under the Special Projects for Skill Development of Rural Youths under Swarnjayanti Gram Swarozgar Yojana (SGSY) has launched a training program designed to equip the unemployed rural youths from the below poverty line (BPL) households with marketable skills, which would enable them to either secure jobs in the industry or pursue sustainable self-employment opportunities through micro enterprise. One of the industries covered under this scheme is leather. This placement linked skill development program was initiated on the public private partnership (PPP) model through selected Project Implementing Agencies (PIA). The Consultant recommends using the salient features of this scheme listed below as appropriate delivery mechanism for implementing the skill development scheme in the Kolkata-Shantiniketan Leather cluster:

- **Leverage the existing infrastructure** and facilities for operation of training centers. No new capital investments for infrastructure to be made. Existing infrastructure of industry, governments, and educational institutions will be used to set up training classrooms and workshops. In Kolkata, existing classroom and related infrastructure of CLRI, NIFT, FREYA and training centers of ILFS-CDI under SGSY scheme could be utilized.
- Arrange the requisite machinery and equipment for training from the perspective employers to the extent possible on lease/rent or as contribution / participation of employer. The institutes and agencies such as CLRI, NIFT, FREYA and training centers of ILFS-CDI under SGSY scheme could be tapped for the machines and equipment required for vocational training.
- **Design demand driven** training programs with inputs from the prospective employers from the industry to ensure that the industry employ the trained persons. The training program should be designed in consultation with industry bodies such as Council of Leather Exports (CLE), Indian Leather Products Association (ILPA), Indian Leather Technologist Association (ILTA), etc. The prime objective being providing employment to candidates, a key element of the training would be practical machine operations. In this regard, the Consultant proposes tie ups with local industry so that the participants can spend the last part of their training program, working as apprentices in actual factory environment.

- The skills imparted to the beneficiaries should allow them to earn more than the prescribed minimum wages.
- Training and course content should be in **local languages** either Bengali or Hindi (for migrant labor) so as to ensure better absorption by the target audience who may not have exposure to English.
- In addition to technical skills, soft skills are also to be imparted to training participants so that they are equipped to make the transition from an agrarian backdrop to the industry environment
- **Duration** of the training should preferably be short of up to 3 months so as to minimize the time for which the participants have to be away from productive work opportunities. The Consultant proposes that the training program timing should be kept flexible (part time, weekends, full time, etc.) keeping in mind the requirements of the target groups. In case of people who are already employed the training program should be carried out during the evening so as not to hamper their regular working schedules. A good practice would be to arrange training programs during the months when there is a slack in demand for the goods produced in the cluster. During the slack period the workers would be relatively free to attend the training programs.
- **Certification and assessment** of the trainees to be done by independent third party agencies acceptable to the industry / prospective employers so as to ensure high quality standards and employment. The Consultant proposes that a tri-partite recognition formula should be adopted involving the following members in the certification & recognition process:
 - o Training provider
 - o Industry Association
 - o MSME Ministry or the Local MSME DI
- Trainees coming from remote locations to be provided boarding & lodging facilities wherever it is required. In other cases the trainees are to be provided with to and fro transport and food. The Consultant proposes that the existing hostel facilities of ITIs and other government and private institutes can be utilized for providing boarding facilities especially during the time when the regular students go for their vacations.
- For **mobilization of trainees**, appropriate awareness and publicity campaign to be conducted in local electronic/print media and meetings organized. Identification of trainees will be done on basis of preferential treatment to marginalized social groups like women, SC / ST and Handicapped persons, minorities and persons from BPL category. The Consultant proposes to leverage local bodies such as panchayat leaders, NGOs, community based organization to spread word about the training programs. Once the first batch of students complete the training and are employed, their testimonials would generate further buzz to attract more participants.
- There should be a **preliminary screening** of the candidate to assess whether he / she has the required aptitude for the trade in which training is to be imparted and also to reduce mid-course/post training dropout of the candidate before placement. The candidates would have to undergo certain tests pertaining to hand-eye coordination, finger dexterity and colour blindness.

- **Funding:**

- o The government may meet 75% of the cost of the project and balance 25% may be met by contribution from the industry, state government or the private implementing agency.
- o The maximum cost per trainee (for the government) to be borne through the scheme would be up to ₹ 14100/-

As specified above other initiatives of strategic importance including financial institutions could explore a similar avenue for supporting program.

Feedback on skill gap mapping report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 44: List of people who have provided feedback on the report

Name	Organisation	Designation	Feedback
Mr. S. P. Ghosh	Indian Leather Products Association	Asst. Director	The report comprehensively covers the skill gaps in the cluster. He cautioned us to convince the management of individual units about the value and the benefit of training programs before implementing the modules in the cluster.
Ms. Antara Kumar	FREYA	Executive Director	The report was quite comprehensive in identifying the skill gaps. FREYA has been involved with MSMEFDP under which the cluster implementing agency EDI facilitated the conduction of training programs for the leather sector.

Chennai: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Central Leather Research Institute (CLRI)

CLRI is premier research institute. It provides services ranging from education in leather technology and footwear manufacturing, research, and consultancy, to testing services. It provides services in the area of testing chemical properties of leather and leather products on a fee basis. CLRI has collaborated with SATRA Footwear Technology Centre, UK, an internationally acknowledged testing center for footwear and allied products.

The major training initiatives of CLRI are:

- Advising firms on clean process technologies and energy conservation practices.
- To educate on the various guidelines (SATRA, REACH) and to elaborate on standards on chemical usage so as to be compliant with these guidelines.
- Training program on design of leather goods. The program is aimed at providing necessary technical expertise in pattern designing of leather goods to meet the requirements of fashion and quality conscious international market.
- Training program on quality control methods
- Computer Aided Designing (CAD) course for garments and footwear design. CAD has been making tremendous impact both in the design and manufacture of garments and footwear. CAD software allows manufacturers to cut their time to market dramatically and so boost market share and profitability. The significant advantages that are related to the implementation of CAD are material optimization, lead time minimization, enhanced storage and quick retrieval, production planning and costing analysis.

Central Footwear Training Institute (CFTI)

The institute offers subsidized courses in leather technology and footwear manufacturing. In addition to academic courses the institute also offers technical consultancy services to the enterprises in the cluster in terms of pattern development & grading etc. The major training programs of CFTI are:

- CFTI offers a regular diploma (2 year) and certificate (6 months to 1 year) courses focusing on footwear design & production, CAD, pattern cutting, last making, etc.
- Short term course of 1 or 3 month duration on areas such as design & pattern cutting, shoe upper clicking & closing, last making, etc.
- Outreach program providing skill based training footwear in and access to technical resources to weaker section of the society with special focus on women

MSME Development Institute (MSMEDI), Chennai

MSMEDI set up by the Ministry of MSME under Government of India (GoI); it implements various programs and schemes of GoI for making the Indian MSME's globally competitive. The activities of the institute include technical services, training programs, ancillary development, awareness seminars/workshops, ISO certification, marketing and export promotion, etc. The major focus areas are:

- Entrepreneur Skill Development Program (ESDP): are designed keeping in mind the new market developments. All these courses are designed for educated unemployed youth who are looking for a job or want to take up entrepreneurship as their career in the leather sector.
- MSMEDI organizes training programs on export management, export packaging, export marketing, export policies and procedures, etc. It facilitates participation of micro & small enterprises in International Trade Fairs.
- MSMEDI offers consultancy and training services for ISO 9000 certifications.
- Management Development Programs (MDPs) are a week long training program targeting the entrepreneurs or supervisory staff of MSME units. These programs cover marketing management, financial management, industrial management, production management, materials management, total quality management and export management. There is also provision to conduct MDPs customized to the needs of the industry.

National Institute of Fashion Technology, Chennai (NIFT)

NIFT Chennai is a premier institute offering graduate courses in fashion, textile, accessory & knitwear design and apparel production. It also offers a post graduate course in fashion management. The institute primarily offers footwear related design programs for the leather industry. Its bachelor's course on design and accessories involves about 30 students every year.

Footwear Design and Development Institute (FDDI)

FDDI operates under the aegis of the Ministry of Commerce and Industry, GoI, and offers programs on footwear technology, design and retail management. In addition, it also offers design services through a product development center.

IL&FS Cluster Development Initiative (IL&FS-CDI)

IL&FS-CDI under the 'Skills for Employment in Leather Fabrication (SELF)' initiative offers programs to train shop floor operators for employment in leather industry. The training programs lasts for 30 days and is provided free of cost. The technical training module focuses on stitching, fitting and folding, skiving and clicking. In addition candidates are also coached on soft skills, personal hygiene, team behavior etc.

TANSTIA FNF Service Centre (TFSC)

TFSC is a collaborative venture between Tamil Nadu Small and Tiny Industries Association (TANSTIA) and Friedrich Naumann Stiftung Fur die Freiheit (FNF), Germany, established to render supporting services to Micro, Small and Medium Enterprises. TFSC offers support services such as training, consultancy, information and handholding services to micro, small and medium enterprises. TFSC also works at the macro level for the long term sustainability of the sector. The macro activities include conferences, studies and economic lectures on topics of relevance to MSMEs.

Industrial and Technical Consultancy Organisation of Tamilnadu Limited (ITCOT)

ITCOT is a joint venture of leading financial institutions, State Development Corporations, and Commercial Banks. ITCOT provides advisory and training programs to its clients. In the leather sector, ITCOT has been involved in preparing project plans for several initiatives by leather cluster stakeholders such as up gradation of common effluent treatment plants, leather footwear special economic zone in Sriperumbudur, footwear Components Park, etc. The company provides comprehensive training programs catering to various levels of workforce in an enterprise ranging from workers, supervisors, middle management to top management.

SGS

SGS is an inspection, verification, testing and certification company. The company provides specialized business solutions that improve quality, safety and productivity and reduce risk for its customers. SGS India has been engaged by Council of Leather Exports (CLE) as the official agency for providing REACH related information & advisory services to CLE member. SGS regularly conducts awareness programs on REACH at all CLE centers i.e. Chennai, Delhi, Kanpur, Kolkata, Mumbai, Agra, Jalandhar, and other leather clusters. In addition SGS also advises enterprise on international standards such as SA8000, CE, etc.

To summarize, the following is the status of training infrastructure available in the Chennai Leather Cluster:

Exhibit 45: Tip Sheet: Overview Of Training Infrastructure In The Leather Cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Indicative List of Institutes/ Organisations	BDS Training Providers	CLRI, CFTI, NIFT, FDDI	CLE	Indian Finished Leather Manufacturers & Exporters Association (IFLMEA); Indian Leather Products Association (ILPA)
Courses (production / designing / marketing etc.)	Machine operations, Quality, Lean manufacturing, REACH guidelines, Marketing techniques, Financial management, Export documentation, SA8000, IT related	Production and related process technologies, Machine operations, Maintenance, Quality testing, Designing	Export related information & infrastructure, Foreign trade fair participation, Arranging workshops & seminars	Facilitate participation in trade fairs, Arranging workshops & seminars
Frequency of Training.	As required	Degree and diploma courses, Short term courses	As required	As required
Relationship with industry	Availed by the industry when required	Availed by the industry when required, Testing services regularly used by the industry	Regularly used by the industry	Regularly used by the industry
Fee based / non-fee based	Fee Based	Fee based, however, subsidies under certain schemes may be available	Fee Based	Fee Based

Whether trained professionals are directly employable in MSMEs or need further training.	Yes	Yes	Enterprises directly availing the service	Enterprises directly availing the service
Training Infrastructure	Basic infrastructure, Certain big agencies have workshops and other facilities	Class rooms and fully equipped workshops	Arranges space for members at trade fairs, Premises has facilities for workshops	Fully equipped design studio and classrooms
Sourcing of Trainers	Internal but on need basis external faculty from industry or institutes is used	Internal Faculty	External mostly from industry or institutes	External mostly from industry or institutes
Industry Recognition	Not significant	High for degree and diploma courses	High for trade fairs	High for trade fairs
Course Infrastructure (Regular / customized offerings)	Customized Offerings, Modular Training	Regular	Customized workshops & seminars	Customized workshops & seminars
Intake (Annual)	NA	NA	NA	For Members
Placement (Annual) – MSMEs / Other	NA	MSMEs, Large Industries	Only for employees of enterprises	Only for employees of enterprises

Curriculum Development - Overview

Definition & Constituents

The following matrix relates to the various levels of training programs that are currently developed by the Consultant in joint association with various private and public BMOs that are present in the cluster for training purposes.

While developing the training courses, the following sources were utilized:

- National Council for Vocational Training syllabi on chemicals industry: Syllabus is available for the leather industry directly with the NCVT, however, related industry syllabi were referred while developing the suggested modules
- Modular Employable Skills by National Skill Development Corporation

Thus, while defining the production level training programs, the following constituents are necessary:

- Modular programs at various levels specific and targeted towards the immediate need-gap
- Refresher or certificate courses to be taken up to provide an exhaustive overview of various processes and related effective techniques

Production & Related Processes

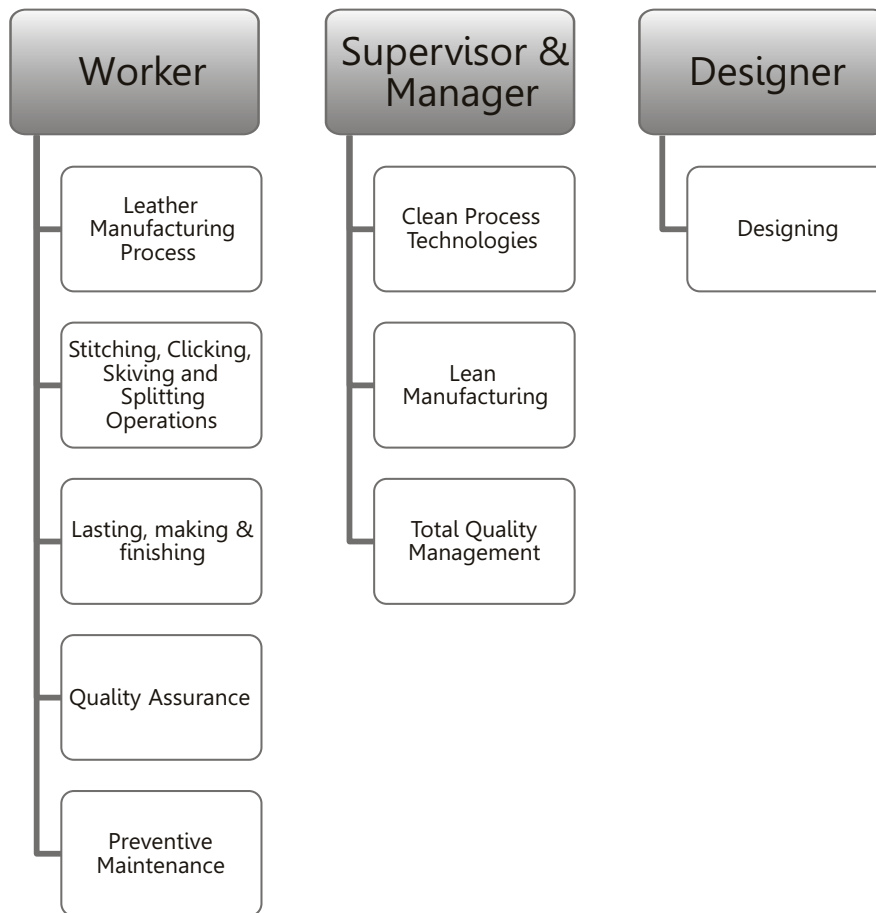
The training matrix below is developed for "Production and Related Processes". During the initial discussions and the survey conducted by the Consultant in the Chennai cluster, the following needs emerged in production related areas:

- Leather tanning operations and basic operations in manufacturing leather goods and footwear such as clicking skiving, stitching, lasting etc. are the priority areas where a large skill gap exists in the cluster. The major reason for this is that these activities are handled by workers who neither have any skills nor any formal education. They basically learn the skills on the job.
- A training program focused on preventive maintenance procedures has been designed to augment the skills of the workers in the cluster.
- Lack of knowledge about quality processes is a key focus area that has been identified at both the worker level and the supervisor or managerial level. Accordingly two sets of quality training programs have been designed as specified below:
 - o Basic quality checking processes for workers.
 - o Total Quality Management for supervisors and managers.
- There is an urgent need for training supervisors and managers on clean process technologies which would reduce their effluent discharge, energy and water consumption. In addition they also need to be made aware as to how to be compliant with REACH guidelines.
- Knowledge of Lean Manufacturing is very limited in the cluster; hence a structured training program has been designed on this topic for supervisors and managers.

- Most of the firms generally follow the design supplied by the customer or copy the design of big companies with certain modifications. Thus a program focusing on augmenting the design skills has been proposed.

The Consultant has taken the above into consideration while formulating the following matrix for production and related areas.

Exhibit 46: Training Matrix for Production & Related Processes



Source: Consultant

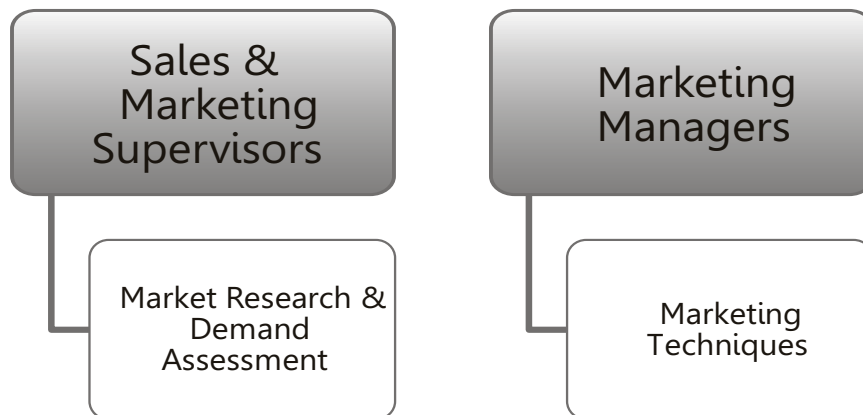
Marketing Related Training Programs

The trade in exports is presently channelized through business houses which buy from small and micro enterprises and then in turn export the products. However, in this process, the small and micro units are left and hence they have expressed the desire to connect with export buyers directly. Therefore, these units require training in identifying potential markets and customers, developing appropriate marketing strategies through effective branding and promotions.

The entrepreneurs have indicated a high degree of awareness about e-commerce websites, but in practice the proportion of sales generated by the internet channel is quite less. The enterprise owners require training on how to properly leverage the B2B websites to contact potential customers and generate orders from them.

Hence with respect to marketing, the two courses listed below in the exhibit are proposed:

Exhibit 47: Training Matrix for Marketing & Related Processes



Source: Consultant

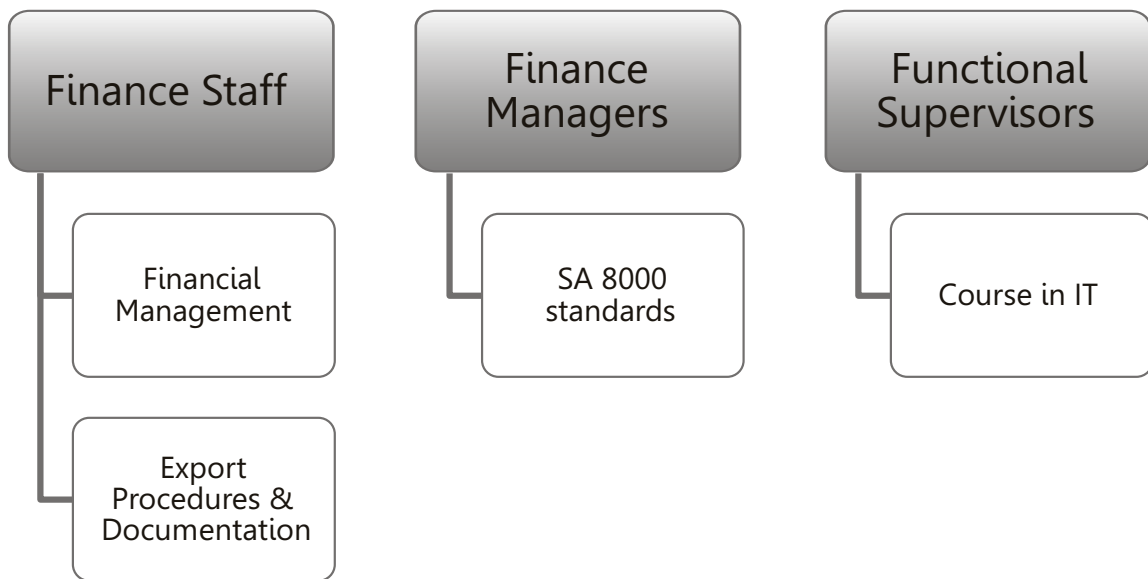
Finance & IT Related Training Programs

Effective financial management is one of the key success factors for an enterprise; hence a training module focusing on best practices in the field of finance and information about various government subsidy schemes has been designed for finance staff in the cluster.

For entrepreneurs who want to break into the export market there is a huge gap in understanding of export regulations and other information. A specific training module covering export rules and documentation has been proposed for finance staff in the cluster. In addition another key area related to export finance is SA8000 accountings standards; a training program focused on this has been suggested for finance managers.

In today's World basic IT skills such as MS office, email communication, etc. is an urgent need for all staff in the cluster.

Exhibit 48: Training Matrix for Finance & IT



Source: Consultant

Detailed Curriculum for Individual Clusters

Production and Related Processes

Modular Course on Leather Manufacturing Process

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 600 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Overview	<ul style="list-style-type: none"> • Terms used in the leather manufacturing sector such as hide, skin, grain side, flesh side, pelt etc. • Nomenclature, specifications, standard sizes and weights of various types of hides and skins. • Knowledge of stages in leather processing-pre tanning, tanning and post tanning. • Knowledge of different machines used in the tanning process. • Knowledge of different types of chemicals used in tanning. • Knowledge of different types of defects in finished leather. • Knowledge of the finishing operations to be performed as per the use of leather. • Knowledge of quality checking procedures.
Machine operations	<ul style="list-style-type: none"> • Operate different machine in leather manufacturing process such as rolling machine, drum machine, drying machine, splitting machine, shaving machine, buffing machine, glazing machine, rolling machine, etc. • Standard operating procedures for each machine to prevent defects such as marks, cuts, scars etc. in leather.
Material handling	<ul style="list-style-type: none"> • Sorting and grading of hides and skins • Preparation of chemicals used in chemical and vegetable tanning. • Storing of raw hides and finished leather.
Hands-on-experience	<ul style="list-style-type: none"> • Familiarization with workshop • Proper House Keeping with safety including fire, lighting, equipment etc. • Preventive maintenance of machines, both electrical and mechanical. • Checking finished leather as per specifications.

Modular Course on Stitching, Clicking, Skiving and Splitting Operations

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 240 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Overview	<ul style="list-style-type: none"> • Knowledge of structure and quality of leather. • Properties and defects of leather • Parts of Leather and their suitability to cut component • Line of Tightness and stretchiness in Leather • Knowledge and application of synthetic materials and adhesives. • Different types of sewing machines such as flat bed, cylinder bed and post bed. • Principles and rules of clicking. Instructions for economical clicking. • Purpose of skiving and different types of skiving. Different types of stones used for skiving. • Purpose of splitting and different types of splitting. • Knowledge of quality checking procedures.
Machine operations	<ul style="list-style-type: none"> • Sewing machine operations - threading of needle, changing the needle, winding and threading the bobbin case, adjusting the stitch length, tension and pressure. • Types of stitch formation, chain stitch, lock stitch. • Carry out clicking and cutting operations such as straight cutting, curved cutting, kit cutting, angle cutting, round cutting. • Skiving machine operations - changing the belt, sharpening the knife, changing the grinding stone. • Splitting machine operations - adjusting the thickness, using thickness measuring gauge, proper way of feeding leather components, sharpening and changing of the grinding stone & knife, changing the upper roller as per the thickness of the leather.
Material handling	<ul style="list-style-type: none"> • Selection of leather suited for a particular product.
Hands-on-experience	<ul style="list-style-type: none"> • Proper House Keeping with safety including fire, lighting, equipment etc. • Maintenance, which includes cleaning, oiling, etc. • Maintaining a job card for the machine. • Safety precautions while operating the machine. • Checking procedure for finished products.

Modular Course on Lasting, making & finishing

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 2 weeks / 4 weeks
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Overview	<ul style="list-style-type: none"> • Introduction about lasting department. • Tools used in lasting department. • Last and types of last. • Different types of constructions and advantages. • Bottom components. • Properties of insole and types. • Properties of soles and types. • Properties of toe puff and counter stiffener and types. • Properties of heels and types. • Adhesive types of adhesive. • Mechanism of bonding. • Details about functions of individual machines. • Types of finishers and methods. • Faults and remedies. • Knowledge of quality checking procedures.
Machine operations	<ul style="list-style-type: none"> • Knife making. • Sequence of operations and flow charts of different types of constructions. • Roughing and scouring practice. • Hand lasting practice. • Machine lasting practice. • Lasting of upper.
Material Handling	<ul style="list-style-type: none"> • Leather board cutting. • Machine project.
Hands-on-experience	<ul style="list-style-type: none"> • Drafting of scrap leather toe side and seat by nails. • Preparation of upper and bottom components. • Preparation of insole and shank board. • Sole preparations. • Heel preparation and edge treatments. • In process control. • Machine maintenance. • Checking procedure for finished products.

Modular Course on Quality Assurance

- Batch Size: 25
- Qualifications: Workers/ Shop-floor employees
- Duration: 2 weeks
- Delivery Model: Classroom and practical operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Quality processes	<ul style="list-style-type: none"> • Changing environment and business needs • Knowledge of quality checking and testing method of different leather products. • Process of checking of finished products to ensure they are as per specifications. • Root cause analysis to identify specific points in the production process where defects are introduced. • Knowledge of rework procedures in order to remedy the defects. • Method of proper packaging. • Method of proper storing. • Selection of transport for the product.

Modular Course on Preventive Maintenance

- Batch Size: 25
- Qualifications: Workers/ Shop-floor employees
- Duration: 3 days
- Delivery Model: Classroom based and practical machine operations
- Infrastructure Requirements: Projector, Computer, Software, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Preventive maintenance	<ul style="list-style-type: none"> • Concept and objectives of maintenance. • Maintenance functions – Basic and managerial functions. • Types of maintenance: Breakdown – Planned. • Types of planned maintenance: Routine – Scheduled – Preventive – Corrective – Predictive. • Design for maintenance. • Reliability centered maintenance. • Benchmarking best practices in maintenance management. • Autonomous maintenance.

Modular Course on Clean Process Technologies

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 2 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Effluent management	<ul style="list-style-type: none"> • Adopting new technology and processes to reduce water consumption. • Reducing the use of polluting chemicals. • Pretreatment of effluents before release to common effluent treatment plant. • Improved technology to ensure zero discharge norms are achieved. • Up gradation of equipment to reduce energy consumption.
REACH guidelines	<ul style="list-style-type: none"> • Registration • Evaluation • Authorisation communication in supply chain • Notification • Restriction • Obligation of exporters under REACH • Procedure to achieve reach compliance

Certificate Course on Lean Manufacturing (Budgeting, Production Planning, Inventory Management)

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Lean manufacturing	<ul style="list-style-type: none"> • What is lean? • Key concepts of lean manufacturing. • Lean tools and supporting strategies. • Fourteen principles of the Toyota Way.
Waste elimination	<ul style="list-style-type: none"> • Value-added & non-value-added activities. • 3 Ms – Muri, Mura & Muda. • Seven Wastes.
Preparing enterprise for lean	<ul style="list-style-type: none"> • Introduction. • 5S & Visual Management. • Team Building.
Just in time (JIT)	<ul style="list-style-type: none"> • Introduction. • Supplier relationships. • Concept of Takt time. • Flow & Pull System. • Kanban.
Issues in implementing JIT	<ul style="list-style-type: none"> • Key issues. • Establishing Standardized Processes. • Implementing Total Productive Maintenance (TPM). • Pillars of TPM.
Manufacturing Cells	<ul style="list-style-type: none"> • Introduction to Manufacturing Cells (Cellular layouts). • Heijunka / Demand Leveling.
Creating Lean Processes across the Enterprise	<ul style="list-style-type: none"> • Value Stream Mapping • Poka-Yoke • Quick Change Over (SMED)

Certificate Course on Total Quality Management (TQM)

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 4 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Module 1	<ul style="list-style-type: none"> • Executive Briefing on TQM • Concept of Cost of Poor Quality • Creativity, Innovation & Quality Improvement • Problem Solving • Application of QC tools in problem solving • Exercises on Problem Statements & Mission Statements • Project definition & Organisation • Team Building
Module 2	<ul style="list-style-type: none"> • Diagnostic journey : Analyzing symptoms & formulating theories • Data Collection • Flow Diagram • Graphs & Charts • Brainstorming • Cause & Effect Analysis
Module 3	<ul style="list-style-type: none"> • Diagnostic journey : Validating theories and identifying root causes • Stratification • Pareto Analysis • Scatter Diagram • Histogram
Module 4	<ul style="list-style-type: none"> • Remedial Journey • Designing solutions • Addressing resistance to change • Implementation of selected solutions • Holding the gains • Checking & Monitoring control systems • Making presentation

Modular Course on Designing

- Batch Size: 25
- Qualifications: Design Staff
- Duration: 4 weeks
- Delivery Model: Classroom based with Practical exercises
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Product knowledge. • Leather grading and costing. • Finishing of leather goods. • Pattern cutting. • Market awareness (India and overseas). • Market segmentation. • International design trends.
Design principles	<ul style="list-style-type: none"> • Product and form design. • Ergonomics. • Product photography. • Foundation design drawing. • Analytical drawing. • Geometric construction. • Colour composition. • Space form and structure. • Environmental perception. • Photography illustration. • Science and liberal art. • Design concept and construction.

Marketing and Related Processes

Modular Course on Market Research and Demand Assessment

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Marketing and Sales Supervisors
- Duration: 30 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of Assessing New Markets • Relevance to existing markets • Product Performance and logistics networking
Market research	<ul style="list-style-type: none"> • Demand Side Surveys • Quantitative estimations of competition, demand, supply • Identification of effective market penetration techniques
Sales force effectiveness	<ul style="list-style-type: none"> • Importance of sales force • Channels, Media and Information gathering • Commercial databases for market information
Demand assessment	<ul style="list-style-type: none"> • Determination of accurate demand assessment models • Documentation of historical data • Demand Forecasting Techniques

Certificate Course on Marketing

- Batch Size: 30 to 35
- Qualifications: Marketing Managers
- Duration: 45 hours
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
What is marketing?	<ul style="list-style-type: none"> • Functions of Marketing • Relevance of Product, Price, Promotions and Place • Decision Making • Cost and benefits of Marketing • Developing effective marketing programs
Customer relationship management	<ul style="list-style-type: none"> • New customer development • Effective communication and marketing • Prospecting • Developing marketing collaterals. • Customer enquiry handling • Quotations, proposals and conversions • Managing customer value through CRM and lifecycle management
Website and B2B	<ul style="list-style-type: none"> • Benefits of a website • Role of internet and B2B market places • Creation of online product portfolio • Role of E-commerce and E-product catalogues • Website and Web Analytics, Ad sense

Finance and IT Related Processes

Modular Course on Financial Management

- Batch Size: 20 to 25
- Qualifications: Finance Staff
- Duration: 2 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Underlying theory	<ul style="list-style-type: none"> • Nature of financial statements • Creation of income statement & balance sheet • Creation of cash flow statement & cash conversion cycle • Interpretation of financial statement
Analytical tools	<ul style="list-style-type: none"> • Working capital management • Cost optimisation • Cost reduction & cost control • Activity based costing • Analysis of performance • Emerging business models • Keys to success
Financing schemes	<ul style="list-style-type: none"> • Information about various subsidy schemes offered by state and central agencies. • Knowledge of financial schemes targeted specifically to the leather industry. • Eligibility criteria of the above mentioned schemes. • Procedure to avail assistance under these schemes. • Knowledge of SME ratings and CGTMSE.

Modular Course on Export Procedures and Documentation

- Batch Size: 20 to 25
- Qualifications: Finance Staff
- Duration: 3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Underlying theory	<ul style="list-style-type: none"> • Procedural formalities for starting an export business • Understanding the framework of export business – impact of external environment • Understanding the framework of export import policy 2009-14. • Understanding the role of documents in export business. • Customs clearance formalities of export cargo. • Banking: foreign exchange risk management. • Marine Insurance, ECGC. • Incentives and benefits to exporters – export promotion schemes.
Practical case studies	<ul style="list-style-type: none"> • Procuring an export order and entering into a sales contract. • Appropriate use of delivery terms – INCOTERMS 2010. • Ensuring guaranteed payment using appropriate techniques. • Payment through Letters of Credit with special reference to UCP 600. • Processing of an export order.

Certificate Course on SA8000 Accounting Standards

- Batch Size: 20 to 25
- Qualifications: Finance Managers
- Duration: 1 day
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Introduction of SA8000 audit. • Key features of the standard. SA8000:2008 • Achieving compliance with SA8000. • Benefits of SA 8000 /benefits • Areas under SA8000 : Social / Environmental & Economic
Main clauses	<ul style="list-style-type: none"> • Child labour: • Forced labour: • Health and Safety: • Freedom of association and right to collective bargaining: • Discrimination: • Discipline: • Working hours: • Compensation: • Management System.

Certificate Course in IT

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: All Functional Supervisors
- Duration: 40 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, MS-Office Applications

Topic	Contents
Overview	<ul style="list-style-type: none"> • Introduction to IT • Advantages and limitations of IT • Role of IT in information age
Basic Data Processing	<ul style="list-style-type: none"> • Introduction to Excel and other data processing software like Access • Excel Formula and basic data analysis
Documentation Software	<ul style="list-style-type: none"> • Applications with MS-Word
Presentations	<ul style="list-style-type: none"> • Applications with MS-PowerPoint
Communication software	<ul style="list-style-type: none"> • Email and Internet Overview • Business Communication

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size and delivery channels. The cost of various training programs listed below would range from around ₹ 35000-45000 for the indicated batch size for production related courses. For courses under marketing and financial modules, the cost would be around ₹ 10000-15000 for the mentioned batch sizes.

Production Related Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Leather Manufacturing Process	CLRI	600 hours	30	Classroom / Practical
Modular	Stitching, Clicking, Skiving and Splitting Operations	CLRI, CFTI, IL&FS-CDI, ITCOT	240 hours	30	Classroom / Practical
Modular	Lasting, making & finishing	CLRI, CFTI, IL&FS-CDI, ITCOT	2 weeks / 4 weeks	30	Classroom / Practical
Modular	Quality Assurance	CLRI, TFSC	2 weeks	25	Classroom / Practical
Modular	Preventive Maintenance	CLRI, TFSC	3 days	25	Classroom / Practical
Modular	Clean Process Technologies	CLRI, SGS	2 days	25	Classroom
Certificate	Lean Manufacturing (Budgeting, Production Planning, Inventory Management)	TFSC, ITCOT	3 days	25	Classroom
Certificate	Total Quality Management (TQM)	TFSC, ITCOT	4 days	25	Classroom
Modular	Designing	NIFT, FDDI	4 weeks	25	Classroom / Practical

Marketing Related Training Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Market Research and Demand Assessment	TFSC, ITCOT	30 hours	30-35	Classroom
Certificate	Marketing	TFSC, ITCOT	45 hours	30-35	Classroom

Finance & IT Related Training Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Financial Management	TFSC, ITCOT	2 days	20-25	Classroom
Modular	Export Procedures and Documentation	TFSC, ITCOT	3 days	20-25	Classroom
Certificate	SA 8000 standards	SGS	1 day	20-25	Classroom
Certificate	Course in IT	ITCOT	40 Hours	30-35	Computer Lab

Delivery Channel

Ministry of Rural Development under the Special Projects for Skill Development of Rural Youths under Swarnjayanti Gram Swarozgar Yojana (SGSY) has launched a training program designed to equip the unemployed rural youths from the below poverty line (BPL) households with marketable skills, which would enable them to either secure jobs in the industry or pursue sustainable self-employment opportunities through micro enterprise. One of the industries covered under this scheme is leather. This placement linked skill development program was initiated on the public private partnership (PPP) model through selected Project Implementing Agencies (PIA). It is recommended to use the salient features of this scheme listed below as appropriate delivery mechanism for implementing the skill development scheme in the Chennai leather cluster:

- **Leverage the existing infrastructure** and facilities for operation of training centers. No new capital investments for infrastructure to be made. Existing infrastructure of industry, governments, and educational institutions will be used to set up training classrooms and workshops. In Chennai, existing classroom and related infrastructure of CLRI, CFTI, NIFT, TFSC and training centers of ILFS-CDI under SGSY scheme could be utilized.

- Arrange the requisite machinery and equipment for training from the perspective employers to the extent possible on lease/rent or as contribution / participation of employer. The institutes and agencies such as CLRI, CFTI, FDDI and training centers of ILFS-CDI under SGSY scheme could be tapped for the machines and equipment required for vocational training.
- **Design demand driven** training programs with inputs from the prospective employers from the industry to ensure that the industry employ the trained persons. The training program should be designed in consultation with industry bodies such as Council of Leather Exports (CLE), Indian Finished Leather Manufacturers & Exporters Association (IFLMEA), Pallavaram & Madhavaram Tanners Association (PTA & MTA), Indian Leather Products Association (ILPA), etc. The prime objective being providing employment to candidates, a key element of the training would be practical machine operations. In this regard, the Consultant proposes tie ups with local industry so that the participants can spend the last part of their training program, working as apprentices in actual factory environment.
- The skills imparted to the beneficiaries should allow them to earn more than the prescribed minimum wages.
- Training and course content should be in **local languages** either Tamil or Hindi (for migrant labor) so as to ensure better absorption by the target audience who may not have exposure to English.
- In addition to technical skills, soft skills are also to be imparted to training participants so that they are equipped to make the transition from an agrarian backdrop to the industry environment
- **Duration** of the training should preferably be short of up to 3 months so as to minimize the time for which the participants have to be away from productive work opportunities. The Consultant proposes that the training program timing should be kept flexible (part time, weekends, full time, etc.) keeping in mind the requirements of the target groups. In case of people who are already employed the training program should be carried out during the evening so as not to hamper their regular working schedules. A good practice would be to arrange training programs during the months when there is a slack in demand for the goods produced in the cluster. During the slack period the workers would be relatively free to attend the training programs.
- **Certification and assessment** of the trainees to be done by independent third party agencies acceptable to the industry / prospective employers so as to ensure high quality standards and employment. The Consultant proposes that a tri-partite recognition formula should be adopted involving the following members in the certification & recognition process:
 - o Training provider
 - o Industry Association
 - o MSME Ministry or the local MSME DI
- Trainees coming from remote locations to be provided boarding & lodging facilities wherever it is required. In other cases the trainees are to be provided with to and fro transport and food. The Consultant proposes that the existing hostel facilities of ITIs and other government and private institutes can be utilized for providing boarding facilities especially during the time when the regular students go for their vacations.

- For **mobilization of trainees**, appropriate awareness and publicity campaign to be conducted in local electronic/print media and meetings organized. Identification of trainees will be done on basis of preferential treatment to marginalized social groups like women, SC / ST and Handicapped persons, minorities and persons from BPL category. The Consultant proposes to leverage local bodies such as panchayat leaders, NGOs, community based organization to spread word about the training programs. Once the first batch of students complete the training and are employed, their testimonials would generate further buzz to attract more participants.
- There should be a **preliminary screening** of the candidate to assess whether he / she has the required aptitude for the trade in which training is to be imparted and also to reduce mid-course/post training dropout of the candidate before placement. The candidates would have to undergo certain tests pertaining to hand-eye coordination, finger dexterity and colour blindness.
- **Funding:**
 - o The government may meet 75% of the cost of the project and balance 25% would be met by contribution from the industry, state government or the private implementing agency.
 - o The maximum cost per trainee (for the government) to be borne through the scheme would be up to ₹ 14100/-

Feedback on skill gap mapping report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 49: List of people who have provided feedback on the report			
Name	Organisation	Designation	Feedback
Mr. D. M. Parikh	EDI	Senior Faculty & Team Leader, BDS Project Chennai	<p>The training needs matrix is highly appreciated. Areas that are identified as "Develop" and "Implement" should be initiated on priority. Some additional areas suggested for focused training programs are cost reduction tools & techniques with special focus on energy cost reduction, management development programs for entrepreneurs and maintaining accounting systems.</p> <p>As per the suggestions above, the Consultancy Agency has accordingly incorporated techniques to reduce energy consumption in the Clean Process Technologies training module. The financial management course proposed by the agency already covers the basics of financial accounting systems. This financial management course along with the marketing related training modules will provide the entrepreneur with the necessary tools to expand his / her business operations.</p>

Hyderabad: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Specialized institutes conduct specific courses directed at enhancing the existing skill sets in the industry. Specifically, certain institutes like NIPER and IICT undertake courses directly related to the pharmaceutical sector. These courses are largely of the nature of quality and laboratory orientation. However, courses on compliance, Good Manufacturing Practices etc. have been identified as the need of the hour.

Most of the institutes, private and public currently offer short term courses in productivity improvement, largely directed through quality initiatives. These institutes have designed laboratories and practice areas for clinical and analytical trials.

National Institute of Pharmaceutical Education and Research (NIPER) imparts training to the entrepreneurs and provides skill up gradation training to unskilled, semiskilled, and skilled personnel of the industry. It also gives support in research and development. The institute commenced its operations in Hyderabad a year ago and is slowly upgrading its facilities to cater the industry need. Presently the usages of its services are meager. In future, once the Institution is fully equipped and operationally geared up then there is a great scope for utilization of the facilities and services by the cluster firms.

Indian Institute of Chemical Technology (IICT) offers services including technology transfer design for plant, analytical services, trouble shooting, and process improvement quality and productivity improvement.

Export Marketing and Promotion is an important domain area in the Hyderabad Pharmaceuticals Cluster where training needs have been identified. In this connection, Pharma Export Promotion Council (Pharmexcil) has been set up for the purpose of export promotion in Pharma industry in 2004. Pharmexcil organizes trade delegations and Buyer-seller meet in India and abroad. It also organizes the seminars on exports related issues and makes suggestions to Government of India on the policy issues relating to Pharma Exports.

An important role in the Pharmaceuticals Cluster is played by the Development Institute. MSME-DI Hyderabad guides prospective and existing entrepreneurs in selection of product, process and machinery, Plant layout, Raw material selection, Modernization, Quality improvement, Product development, Energy conservation, Pollution control etc. MSME DI also conducts seminars and workshops in the field of pollution control, biotechnology, energy conservation, cleaner production, problems and prospects of specific industries, IPR, sensitizing MSME's on WTO.

MSME-Tool Room, Hyderabad (Central Institute of Tool Design) established in 1968 by the Govt. of India with the assistance of UNDP and ILO, is a pioneering Institution in the field of Tool Engineering in the Country. The Institute was initially established as a United Nations Development Programme (UNDP) Project and was executed by International Labor Organisation (ILO). The Precision machinery

and equipment was donated by UNDP and the faculty was trained abroad in the area of Tool Engineering. The UNDP Experts stayed at CITD for about 5 years and trained officers, faculty and staff of CITD in manufacture and design of tooling. The main objectives of the institute are:

- Training of the technical personnel in Designing and Manufacture of Tools, Dies and Moulds.
- Design and Manufacture of dies, jigs, fixtures and gauges, etc.
- Provision of advisory services to Small Scale Enterprises including assistance in design and developing tools for various processes.

Other private BDS providers also include GMP consultants. GMP consultants deal with the schedule – M, ISO certification, cGMP and DMF services to the Pharma Cluster. Following are the GMP consultants available in the cluster.

With respect to training programs, the consultant has identified various training providers in the private sectors. Of the major training providers, the consultant has also identified certain training vendors (enlisted below) based out of Pune and Udaipur which are currently providing training to larger pharmaceutical houses like Zydus, Cadilla etc.

- Centre for Active Learning, Guidance and Solutions (CALGS, Udaipur)
- GMP Pharma Consultants (Hyderabad)
- Pharmexil (Hyderabad)
- Clinfox (Hyderabad)
- Kanzen Institute Asia Pacific Ltd. (Hyderabad)
- Insight Systems Inc. (Pune)

To summarize, the following is the status of training infrastructure available in the Hyderabad Pharmaceuticals Cluster:

Exhibit 50: Tip Sheet: Overview Of Training Infrastructure In The Pharmaceuticals Cluster				
Indicators	Private	Colleges/ Universities	Government (MSME DI, MSME Tool Room)	Industry Associations
Indicative List of Institutes/ Organisations	GMP Pharma Consultants Pharmexil CALGS	IICT, NIPER, Hyderabad Central University	MSME DI, MSME Tool Room	Bulk Drug Manufacturing Association Organisation of Pharmaceutical Manufacturers
Courses	Production, Marketing	Production Related	Quality, Standards	Clinical Testing
Frequency of Training	Annual	Annual	Quarterly	As required
Relationship with Industry	Contacted on As-required Basis	Frequently tapped by industry	Facilities used by industry	Industry body
Fee based / non-fee based	Fee Based	Fee Based	Fee Based	Non-Fee Based for Members
Whether trained professionals are directly employable in MSMEs or need further training.	No	Yes	Yes	Only for employees of enterprises
Training Infrastructure	Basic infrastructure Certain big trainers have labs and other facilities	Fully Equipped	Fully Equipped	Programs typically held in association with MSME DI or MSME Tool Room
Sourcing of Trainers	Internal	Internal/ at times, external subject experts	External	Sourced from colleges/ universities

Industry Recognition	Not significant	Significant only for integrated courses	Only for specific diploma courses	Within organizations
Course Infrastructure (Regular / customized offerings)	Customized Offerings Modular Training	Regular	Regular	Regular
Intake (Annual)	NA	180	NA	For Members
Placement (Annual) – MSMEs / Other	NA	MSMEs, Large Industries	NA	Only for employees of enterprises

In all, the Bulk Drugs Manufacturing Association (BDMA) is the only association conducting regular training programs at its premises. However, most of these are related to clinical trials and do not relate to the direct needs like cGMP, WHO, Quality and Standards etc. that are already identified in the cluster. Further, associations like MSME Development Institute and MSME Tool Room cater to the requirements of the Hyderabad Engineering Cluster and the Pharmaceuticals Cluster needs more attention.

Curriculum Development - Overview

Definition & constituents

The following matrix relates to the various levels of training programs that are currently developed by the consultant in joint association with various private and public BMOs that are present in the cluster for training purposes.

While developing the training courses, the following sources were utilized:

- National Council for Vocational Training syllabi on chemicals industry: No direct syllabus is available for the pharmaceutical industry with the NCVT, however, related industry syllabi were referred while developing the suggested modules
- Modular Employable Skills by National Skill Development Corporation

Thus, while defining the production level training programs, the following constituents are necessary:

- Modular programs at various levels specific and targeted towards the immediate need-gap
- Refresher or certificate courses to be taken up to provide an exhaustive overview of various processes and related effective techniques

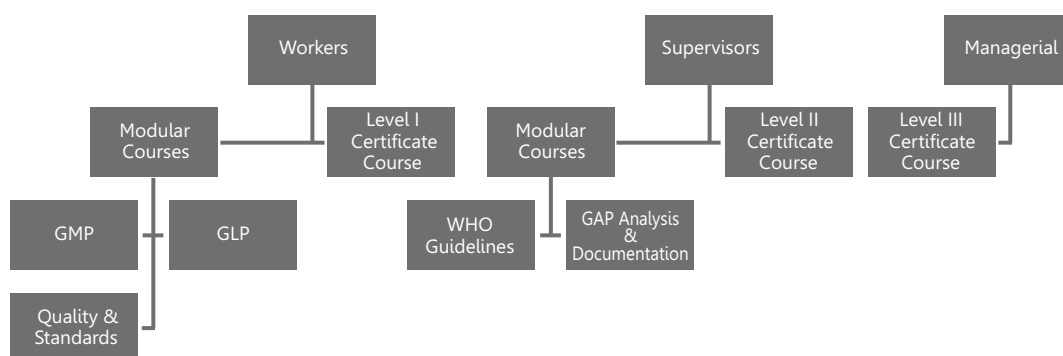
Production & Related Processes

The training matrix below is developed for "Production and Related Processes". During the initial discussions and the survey conducted by the Consultant in the Hyderabad cluster, the following needs emerged in production related areas:

- Workers are not aware of GMP or clean room principles; however, under the directions of the entrepreneur, they carry out the activities as per the GMP principles. Entrepreneurs have to rely on external GMP consultants to obtain this information
- At the supervisory level, knowledge of Schedule M, safety and quality standards is lower and training modules directed at addressing these are required
- Entrepreneurs/ managerial levels require a refresher course in latest techniques of GMP, GLP, quality and safety etc.

The consultant has taken the above into consideration while formulating the following matrix for production and related areas. There would be overlapping areas between modular courses and certificate courses. However, to eliminate high level of overlaps, the partners BMOs for modular and certificate courses are different.

Exhibit 51: Training Matrix for Production & Related Processes



Source: Consultant

With respect to production related training programs, overview and detailed curriculum with respect to the following modules is specifically required across enterprises. The findings of the survey report substantiate this:

- GMP: "Good Manufacturing Practice" or "GMP" is part of a quality system covering the manufacture and testing of pharmaceutical dosage forms or drugs and active pharmaceutical ingredients, diagnostics, foods, pharmaceutical products, and medical devices. GMPs are guidance that outlines the aspects of production and testing that can impact the quality of a product. Many countries have mandated that pharmaceutical and medical device companies must follow GMP procedures. They have created their own GMP guidelines that correspond with their legislation, basic concepts of all these guidelines remains more or less similar that is ultimate goal to safeguard the health of the patient, producing a good quality medicine or medical devices or active pharmaceutical products.

Although there are a number of them, all guidelines follow a few basic principles.

- Manufacturing processes are clearly defined and controlled. All critical processes are validated to ensure consistency and compliance with specifications.
- Manufacturing processes are controlled, and any changes to the process are evaluated. Changes that have an impact on the quality of the drug are validated as necessary.
- Instructions and procedures are written in clear and unambiguous language.
- Operators are trained to carry out and document procedures.
- Records are made, manually or by instruments, during manufacture that demonstrate that all the steps required by the defined procedures and instructions were in fact taken and that the quantity and quality of the drug was as expected. Deviations are investigated and documented.
- Records of manufacture (including distribution) that enable the complete history of a batch to be traced are retained in a comprehensible and accessible form.
- The distribution of the drugs minimizes any risk to their quality.
- A system is available for recalling any batch of drug from sale or supply.
- Complaints about marketed drugs are examined, the causes of quality defects are investigated, and appropriate measures are taken with respect to the defective drugs and to prevent recurrence.
- Schedule M and Schedule U Compliance: Schedule M deals specifically with Good Manufacturing Practices for Premises and Materials, Water Management System, Warehousing Area etc. Schedule M compliance also specifies the manner in which the quality audit needs to be conducted. It also deals with Safety, Health and Hygiene of workers – this relates to uniform, handling areas and clean room concepts. Finally, specific documentation needs to be completed in this regards in the format specified under schedule M. Since this is a complicated process, enterprises have expressed their need to be trained on the same. Other relevant schedules are Schedule U and Schedule Y. Norms on latest drug price control order is also relevant.

Marketing Related Training Programs

During the survey administered, export oriented units described their needs in undergoing marketing and compliance related training programs. These programs have to specifically address the needs of understanding various export markets and related compliance procedures, effective way of assessing demand from these territories and successfully catering to the export demand.

Other than the Export Oriented Units, the domestic units described their needs to explore new territories and expand into newer product areas.

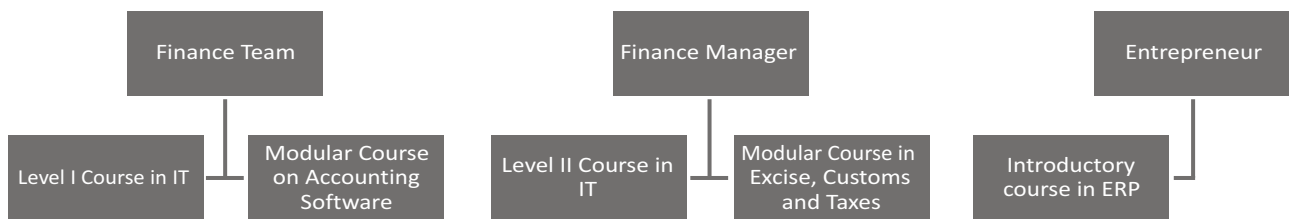
As a result, with respect to marketing, only two certificate courses are currently proposed:

- Modular Courses for Marketing Managers and Supervisors
- Level II Certificate Course for Marketing Managers

Finance & IT Related Training Programs

Finance and IT are related fields in this cluster; primarily due to the fact the computer aided manufacturing is not a feature of production in the cluster. The use of IT is largely for documentation, accounting and book-keeping. Very few firms have expressed the need for ERP Software and related training. As a consequence, the following matrix can be proposed for the cluster

Exhibit 52: Training Matrix for Finance & IT



Source: Consultant

Detailed curriculum for individual clusters

Production and Related Processes

GMP Modular Training Course

- Batch Size: 30-35
- Qualifications: Workers/ Shop-floor employees
- Duration: 2 Days
- Delivery Model: Classroom Based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	Welcome, Introduction of faculty Objective of Course Course contents, Course Manual
Quality Philosophy	ISO 9001: QMS TQM and Quality Circle
Building & Premises	Clean Room Concept Schedule M Compliance
Personnel	Health Check-up Records of Health-checkup Training Gowning Procedures Difference between procedure and SOP
Material Management	Adequate Areas Quarantine Separate Sampling Areas Records as per schedule U SOP Record RM Labeling Physical store verification, shelf life
Quality Audit	Objective Clauses Internal Audit GMP assessment

HVAC & Controlled Manufacturing Modular Training Course

- Batch Size: 30-35
- Duration: 2 Days
- Qualifications: Workers/ Shop-floor employees
- Delivery Model: Classroom Based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • About Heating Instruments • Temperature Control • Air and Humidity Standards
Heating Concepts	<ul style="list-style-type: none"> • Introduction of Heat Transfer Operation in Chemical Plant. • Importance of safety & General precautions observed while working on Heat Transfer Equipments • Importance of - Conservation of Energy. • Introduction of – Various insulating Materials such as Glass wool, Thermocol, Mica, Magnesia, Asbestos etc. • An idea about – Modes of Heat Transfer: Conduction, Convection, Radiation. An introduction about – Co-Current, Counter current Heat Exchanges
Equipment Handling	<p>Operation, dismantling, cleaning and assembling of:</p> <ul style="list-style-type: none"> • Shell & Tube Heat Exchanger • Double Pipe Heat Exchanger • Floating Head Heat Exchanger • Plate Heat Exchanger • Standard Vertical Tube Evaporator • Triple Effect Evaporator • Steam Jacketed Vat
Clean Room Concepts	<ul style="list-style-type: none"> • Clean Room Philosophy • Contamination & Protection • Mix-up and Cross Contamination • National & International Standards • Air Handling, Filters & Exhaust • Design, Monitoring
Environment Monitoring	<ul style="list-style-type: none"> • Concept • Documentation & Guidelines

WHO Guidelines Modular Training Course

- Batch Size: 30-35
- Duration: 3 Days
- Qualifications: Supervisors
- Delivery Model: Classroom Based. Some parts of the course like Equipment Validation and Water Management can be conducted on-site with field experience.
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • WHO Guidelines • Coverage and Applicability to Indian Manufacturing • Standards and Operating Conditions
Procedures and Processes	<ul style="list-style-type: none"> • Nature of Operating Environments • Clean Room Concepts • Process Validation & Documentation
Validation Procedures	<ul style="list-style-type: none"> • Analytical Validation • Statistical Sampling and Quality • Documentation
Equipment Validation	<ul style="list-style-type: none"> • Procedures, formats and processes • Documentation
Water Management	<ul style="list-style-type: none"> • Effluent Treatment • Effective Water Management • Testing and pollution control • Contamination and cross-hazards

GLP Training Modular Training Course

- Batch Size: 30-35
- Duration: 2 Days
- Qualifications: Workers/Shop-floor employees
- Delivery Model: Classroom Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Site - visit

Topic	Contents
Overview	<ul style="list-style-type: none"> • About Good Laboratory Practices • Importance and Need • Relation to certification & schedule M compliance
Operational Areas	<ul style="list-style-type: none"> • Operational Exercises on: <ul style="list-style-type: none"> Filtration Distillation Crystallization Purification • Practical on Pouring/ Transferring of Chemicals
Equipment Handling	<ul style="list-style-type: none"> • Handling of specific equipments like: <ul style="list-style-type: none"> Stirrer Hot Plates Heating mantles Oven Pump Furnace Balances Fire extinguisher Incubator
Safety Precautions	<ul style="list-style-type: none"> • Safety precautions to be observed during handling of Chemicals and glassware • Introduction & Identification of General Lab Outfit • Testing and identification of acids, basis and alkalis
Material Handling	<ul style="list-style-type: none"> • Introduction on Materials and Chemicals used in chemical lab • Testing, Identification of chemicals • Handling and up keeping materials in chemical lab • Identification & selection of certain glass wares in lab • Storage of Chemicals

Quality & Standards Modular Training Course

- Batch Size: 30-35
- Duration: 3 Days
- Qualifications: Workers/Shop-floor employees
- Delivery Model: Classroom Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Site - visit

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of quality and checks • Inter linkages between GMP, GLP and QA • Regulatory compliance and WHO Standards
QA/ QC Modules	<ul style="list-style-type: none"> • Statistical Sampling Procedures • Elements of Bio-Statistics and Pharmaceutical Statistics • Elements of probability and other statistical techniques • Clinical Trials and Testing • Laboratory Trials • Material Handling and Introduction to testing material/ media
Regulatory & Compliance Overview	<ul style="list-style-type: none"> • Schedule M Compliance • WHO Norms • ISO Norms • FDA Norms • Certification, importance and renewals
Standard Operating Procedures	<ul style="list-style-type: none"> • Error Handling • Kaizen and Reporting • Documentation • SOPs for processes, machinery, labor, material handling
Calibration & Equipment Handling	<ul style="list-style-type: none"> • Equipment Maintenance • Introduction to importance of certified machinery vendors • Preventive Maintenance • WHO Norms and Schedule M Compliance for Machinery
Customer Complaint Handling	<ul style="list-style-type: none"> • Communication • Customer Grievance Redressal
Adverse Drug Reaction Reporting	<ul style="list-style-type: none"> • Reporting • Documentation • Root Cause Analysis

Certificate Course for Workers

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Workers/ Floor Staff
- Duration: 18 Hour course over 6 days for 3 hours per day
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
QUALITY AND SAFETY	<ul style="list-style-type: none"> • Definition of quality and the importance of quality in the pharmaceutical context • Concept of change and its importance in our lives • Personal hygiene • Safety – personal, equipment and process safety • Concept of SHE and its importance
GOOD MANUFACTURING PRACTICES	<ul style="list-style-type: none"> • Definition • Importance • Written procedures • Why it is mandatory to follow? • Documentation and importance
CLEANING AND SANITATION	<ul style="list-style-type: none"> • Definition and importance of cleaning and sanitation • Methods of cleaning and sanitation • Mechanical methods
HYGIENE AND SAFETY	<ul style="list-style-type: none"> • Personal hygiene • Safety – personal, equipment and process safety • Concept of SHE and its importance
MAINTENANCE	<ul style="list-style-type: none"> • Maintenance as a tool to productivity and safety • Preventive maintenance • Schedules • Actual maintenance carried out and documentation

Certificate Course for Supervisors & Managers

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Supervisors and Managers
- Duration: 85 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
INTRODUCTION TO GOOD MANUFACTURING PRACTICES	<ul style="list-style-type: none"> • Definition and Importance • Evolution of GMP • Various regulations around the world • Salient features of GMP in any regulation • Schedule M of the drugs and cosmetics Acts • Why it is mandatory to follow? • Documentation and importance
REGULATORY REQUIREMENTS OF GMP	<ul style="list-style-type: none"> • Infrastructure • Utilities • Personnel • Documentation • Introduction to GMP
CALIBRATION QUALIFICATION AND VALIDATION	<ul style="list-style-type: none"> • Definition of calibration, importance and why it is a pre-requisite for qualification • What is equipment qualification? • What are validation and the benefits?
DESIGN OF WATER SYSTEM AND VALIDATION	<ul style="list-style-type: none"> • Components of a water system • Generation and distribution • Various methods of generation of purified water • Distribution of purified water

Topic	Contents
	<ul style="list-style-type: none"> • Loop system • Methods of reduction in inorganic and organic load • Generation of WFI (water for injection) • Validation of the water system • Microbiological support required • Semi and fully automatic systems
DESIGN OF HVAC AND CLEAN ROOMS AND VALIDATION	<ul style="list-style-type: none"> • What is HVAC? • What is a clean room? • Types of clean room used in Pharma industry • Basics of HEPA filtration • Validation of clean rooms
COMPUTER VALIDATION	<ul style="list-style-type: none"> • What is computer validation? • Hardware and software validation • Change control
GOOD LABORATORY PRACTICES	<ul style="list-style-type: none"> • Why GLP • Broad aspects of GLP – facilities – segregation of chemical, instrumentation, microbiological and animal house facilities, personnel, calibration, specifications and test procedures, suitable analytical methods and documentation
DOCUMENTATION	<ul style="list-style-type: none"> • Written procedures • Documentation skills • Documentation control and requirements
STABILITY STUDIES	<ul style="list-style-type: none"> • Why stability study? • ICH guidelines on stability • Stability conditions for APIs and formulations and other products

Topic	Contents
CHANGE CONTROL AND DEVIATIONS	<ul style="list-style-type: none"> • Need for control over deviations and changes • Documentation • What are critical deviations and Corrective and preventive actions? • Why changes need to be managed? • Changes from regulatory perspective • Regulatory and customer approval of changes
INTERNATIONAL CONFERENCE ON HARMONIZATION	<ul style="list-style-type: none"> • What is ICH • Key aspects of ICH • Introduction to ICH Q7 • Salient features of ICH Q7
LEAN MANUFACTURING	<ul style="list-style-type: none"> • What is lean manufacturing? • Importance of efficiency • A plan for lean manufacturing
SAFETY, HEALTH AND HYGIENE	<ul style="list-style-type: none"> • Importance of safety, health and hygiene • Safety of people, facilities, equipment and product • Basic hygiene practices • Video on health and hygiene - its relationship to quality
IPR, TRADE MARK AND COPYRIGHT	<ul style="list-style-type: none"> • What are IP, Trade mark, patent, and copyright? • Types of patent • Life of patent • Patents In India • Relation of IP to Pharma industry
ENVIRONMENT WASTE MANAGEMENT	<ul style="list-style-type: none"> • Importance of protection of environment • Solid and liquid waste management • Green technology • Current regulations on Environmental controls

Certificate Course for Managers

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Managers
- Duration: 36 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
PRODUCTIVITY IMPROVEMENT	<ul style="list-style-type: none"> • Tools for productivity improvement • Maintenance as a tool for productivity improvement • TPM • Reduction in wastage • Hidden costs and their influence on productivity
PRODUCT REGISTRATION	<ul style="list-style-type: none"> • Details of product registration in US and Europe - regulated markets • Product registration in non-regulated markets • What is CTD? • What is ECTD?
RISK MANAGEMENT	<ul style="list-style-type: none"> • ICH Q8
PHARMACEUTICAL PRODUCT DEVELOPMENT	<ul style="list-style-type: none"> • ICH Q9
PHARMACEUTICAL QUALITY SYSTEMS	<ul style="list-style-type: none"> • ICH Q10
PHARMACEUTICAL MARKETING	<ul style="list-style-type: none"> • Methods of marketing pharmaceutical APIs • Methods of marketing Pharmaceutical formulations • Methods of marketing OTC pharmaceutical products • SWOT analysis of methods of technical marketing • Requirements for Marketing of products outside India

Marketing related training programs

Modular Course on Export Compliance for Supervisors in Export Oriented Enterprises

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Supervisors in Export Oriented Enterprises
- Duration: 30 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Details of export compliance • Material Handling • Clean Room and relevance of cGMP
Export Geographies Identification	<ul style="list-style-type: none"> • Identifying relevant export geographies • Determine favorable parameters for export • Ascertain credit and other terms and conditions
WHO Guidelines	<ul style="list-style-type: none"> • GLP and cGMP • ISO standards, WHO Standards • Handling of Hazardous Materials • Special instructions while shipping
Importing Country Guidelines	<ul style="list-style-type: none"> • Packing Norms • Size and volume of packed goods • Packing material, media and way of transport
Ethics in Trade Compliance	<ul style="list-style-type: none"> • Warnings and clear instructions guide • Relevance of batch numbers, product expiry and caveats
Documentation	<ul style="list-style-type: none"> • Export documentation • Shipment Documentation • Invoicing (FOB, FOR, CIF etc.) • Relevance of Insurance and forms

Modular Course on Market Research and Demand Assessment

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Marketing and Sales Supervisors
- Duration: 30 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	Importance of Assessing New Markets Relevance to existing markets Product Performance and logistics networking
Market Research	Demand Side Surveys Quantitative estimations of competition, demand, supply Identification of effective market penetration techniques
Sales force effectiveness	Importance of sales force Channels, Media and Information gathering Documentation and ERP Modules for market information
Demand Assessment	Determination of accurate demand assessment models Documentation of historical data Demand Forecasting Techniques

Certificate Course on Marketing

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Marketing Managers
- Duration: 90 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of Marketing • Channels of Marketing • Difference between marketing and sales
What is Marketing?	<ul style="list-style-type: none"> • Functions of Marketing • Relevance of Product, Price, Promotions and Place • Decision Making • Cost and Benefits of Marketing • Developing effective marketing programs
Product Pricing	<ul style="list-style-type: none"> • Pricing Strategies • Profit optimization • Competitive assessment and pricing
Promotions, Advertisements	<ul style="list-style-type: none"> • Advantages of effective promotions • Channels of advertising: ATL and BTL • Importance of B2B market places • Website and Web Analytics, Ad sense
Importance of Branding	<ul style="list-style-type: none"> • Overview of Branding • Principles of Brand Development • Establishing Brand Awareness • Measuring Customer Satisfaction and Brand Loyalty
Customer Relationship Management	<ul style="list-style-type: none"> • New Customer Development • Effective communication and marketing • Prospecting • Developing Product Catalogue • Customer Enquiry Handling • Quotations, Proposals and Conversions • Managing Customer Value through CRM and Lifecycle management

Finance & IT Related Training Programs

Modular Course on Accounting Software

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Finance Managers
- Duration: 20 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, Trial Accounting software e.g. Tally

Topic	Contents
Overview	<ul style="list-style-type: none"> • Basic Accounting Software • Data Processing and Handling
Accounting Concepts	<ul style="list-style-type: none"> • Relevant accounting standards • Creating account entries and ledger management system • Double-entry book keeping system • Trial Balance and preparation of final accounts
Reporting and MIS	<ul style="list-style-type: none"> • Reconciliations and error checking • Reporting frequency • Nature, amount and levels of reporting
Physical Verification	<ul style="list-style-type: none"> • Stock taking techniques • Sample verification and validation • End of period accounting • Material consumption and usage and yield variance records

Modular Course on Excise, Customs and Other Taxes

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: Finance Managers
- Duration: 20 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Overview of relevant fiscal procedures Physical verification and stock keeping
Recent Changes and tracking	<ul style="list-style-type: none"> • Filing of returns Changing norms for Excise and Customs Awareness of DEPB and other schemes Tax holidays, Green Initiatives etc.
Compliance	<ul style="list-style-type: none"> • Assess impact on business of compliance Separate designated areas for sampling Separate designated areas for excise purposes

Level I Certificate Course in IT

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: All Functional Supervisors
- Duration: 40 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, MS-Office Applications

Topic	Contents
Overview	Introduction to IT Advantages and limitations of IT Role of IT in information age
Basic Data Processing	Introduction to Excel and other data processing software like Access Excel Formula and basic data analysis
Documentation Software	Applications with MS-Word
Presentations	Applications with MS-PowerPoint
Communication software	Email and Internet Overview Business Communication and IT Act

Level II Certificate Course in IT

- Batch Size: 30-35
- Delivery Model: Classroom Based
- Target Trainees: All Functional Managers
- Duration: 40 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, MS-Office Applications

Topic	Contents
Overview	<ul style="list-style-type: none"> • Information Management • Networking and ERP software
ERP Software	<ul style="list-style-type: none"> • Usage of ERP in production and other areas than Finance • Data recording • Regular and continuous data availability • Informed Decision Making
Website and B2B	<ul style="list-style-type: none"> • Importance of Website • Role of internet and B2B market places • Role of E-commerce and E-product catalogues
Networking and Data Architecture	<ul style="list-style-type: none"> • Servers and Data base management system • Content management and information access • Navigability and availability of information

Overview of Workshops Conducted

Initial focus discussions were held with multiple stakeholders in the cluster. In this regard, detailed interactions were conducted with MSME Development Institute, MSME Tool Room – Central Institute of Tool Design, and Bulk Drug Manufacturers Association (BDMA) by understanding the level of skill gaps that these institutes have assessed. Focused group discussion was also carried out between these institutes' directors and between select firm's directors (Versatil Pharma, Enal Drugs and Shantha Pharmaceuticals). Some key insights that were generated during this discussion were:

- Employment pattern in the industry is seasonal and faces severe problems related to casual and temporary labor
- Information on new products and related research for new molecule/ drug development is conducted only by the largest firms
- Issue of intellectual property needs to be resolved on priority basis
- Compliance and regulatory standards related to domestic market are treated casually by the enterprises and quality control is of an elementary level
- Advancements in technologies for, pulverization, drying and chemical reactor processes is limited only with the senior members in the organization
- Maintenance is done on an ad-hoc basis implying that specific steps like preventive maintenance, process documentation, SOP etc. are not followed

- Most of the enterprises are aiming to be c-GMP certified but are unaware about the different modules in GMP
- Training on quality, GMP and GLP should be undertaken for workers initially. However, a sustainable model needs to be identified to retain the trained workers.

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size, cost and delivery channels

Production Related Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Cost Of the Program	Delivery Model
Modular	GMP Training	CALGS, Udaipur	16 Hours	30-35	32,000	Classroom
Modular	HVAC & Controlled Manufacturing	CALGS, Udaipur	16 Hours	30-35	32,000	Classroom
Modular	WHO Guidelines	CALGS, Udaipur	16 Hours	30-35	32,000	Classroom/ On-site
Modular	GLP Training	CALGS, Udaipur	24 Hours	30-35	48,000	Classroom/ On-site
Modular	Quality & Standards	CALGS, Udaipur	24 Hours	30-35	48,000	Classroom/ Laboratory
Certificate	Certificate Course for Workers	GMP Pharma Consultants	18 Hours	30-35	36,000	Classroom
Certificate	Certificate Course for Supervisors & Managers	GMP Pharma Consultants	85 Hours	30-35	170,000	Classroom
Certificate	Certificate Course for Managers	GMP Pharma Consultants	36 Hours	30-35	72,000	Classroom

Marketing Related Training Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Cost Of the Program	Delivery Model
Modular	Export Compliance & Documentation	Pharmaexil	3 Days	30-35	36,000	Classroom
Modular	Market Research and Demand Assessment	TBD	3 Days	30-35	36,000	Classroom
Certificate	Certificate Course	Pharmaexil	60 Hours, 15 Day Program	30-35	90,000	Classroom

Finance & IT Related Training Modules

Type of Program	Name of Module	Duration	Batch Size	Cost Of the Program	Delivery Model
Certificate	Level I Course in IT	40 Hours	30-35	40,000	Computer Lab
Modular	Accounting Software	20 Hours	30-35	80,000	Computer Lab
Certificate	Level II Course in IT	40 Hours	30-35	40,000	Computer Lab
Modular	Excise, Customs and Other Taxes	20 Hours	30-35	40,000	Computer Lab

- **Prioritization of Training Programs:** Of the various programs indicated above, the Consultant recommends the following programs to be initiated on pilot basis for testing and evaluation:
 - Production: Certificate Course for Managers
 - Marketing: Export Compliance & Documentation
 - Finance & IT: Level I Course in IT

- **Fees and cost sharing:** The cost of the training programs is relatively lower and is expected to improve the productivity of the units in the cluster. As a result, the entrepreneurs have indicated that they would be willing to bear the cost of such training interventions. However, the following challenges have to be handled while deploying the training modules:
 - Local languages and communicating the right training programs at right hierarchical levels is important
 - Devising techniques to retain the trained staff is important. A common issue with entrepreneurs not resorting to training modules is that workers tend to switch to better paying jobs after training

- **Documentation of Pilot and Information Sharing:** Documenting the success and enterprise experience from the pilot-level training programs should be instrumental in increasing the success of the training modules

- **Delivery channels :** Primary interactions with entrepreneurs and industry association, namely Bulk Drug Manufacturing Association, the following points have to be considered while delivering the training modules:
 - The industry associations are in a position to aggregate information and further disseminate the same across industry associations. All programs that are important and require industry acceptance are currently being conducted through the industry associations. Therefore, for the success of the training modules, it is important that all training programs should be conducted under the banner of the industry association. The association should take upon the onus of marketing and communicating the training program to all its member enterprises
 - To tackle the issue of local languages, experience of the industry associations and related

partner institutes can be utilized in converting the various training modules into local languages. In Hyderabad, Telugu and Hindi should be primary languages of training

- The industry associations can offer attractive packages to the enterprises that undergo the stipulated training within a year. In this case, the following elements can be laid out by the associations for a calendar year:
 - Stipulated number of training programs to be conducted within a calendar year
 - Stipulated number of employees to be trained in the calendar year
 - The names of employees that are trained should be sent and compiled at the industry association level and in order to reduce poaching of employees; this list should be circulated amongst all cluster enterprises.
 - Further, such employees should be given a training certificate only after 6 months from the date of completion of such training. The certification from the industry association should be treated with highest degree and should improve the employability of the workers.
 - Every enterprise from amongst the trained employees should nominate one employee to an annual industry recognition and possible monetary award/ bonus at an annual event. The criteria for such nominations could be:
 - Whether the employee remains in service for one year from the date of completion of training
 - Whether such training has benefitted the organization. This report should be developed by the reporting supervisor of the employee and should be vetted by the management
 - These steps will ensure employee loyalty and also increase the validity and relevance of the training programs.
- **Electronic Delivery:** For managerial and/ or supervisory training programs, delivery of training programs can also be initiated through electronic formats. The cluster website can act as a source for such training modules. Electronic certification can also be thought to be provided to candidates that complete the program. These could be modular refresher courses, taxation updates and training related to new regulations, changes in export requirements and similar continuous improvement areas. These can be initiated on pilot basis for experimentation purposes. Typical case studies can also be video graphed for these purposes. Electronic delivery is an effective technique when it comes to geographically isolated areas. The pharmaceuticals cluster is spread over a 60 Kms. radius in and around districts of Hyderabad, Rangareddy, Medak and Nalgonda.
 - **Certifications & Recognitions:** A tri-partite recognition formula should be adopted by the industry association. In the case of Hyderabad Pharmaceuticals cluster, the following members should be involved in the certification & recognition:
 - Training provider, BMO
 - Industry Association conducting the program
 - MSME DI

Feedback on skill gap mapping report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 53 : List of people who have provided feedback on the report			
Name	Organisation	Designation	Feedback
Capt. D. Pulla Reddy	APITCO	Chief Consultant	The training needs matrix is appropriately described. Areas that are identified as "Develop" and "Implement" should be initiated on priority. At regular intervals, APITCO would be willing to partner in implementing the training areas. As suggested, the modules under "Develop" and "Implement" have been developed in details by consultant (appointed by SIDBI) for launch.
Mr. J. Sanjeeva Reddy	NDMA	Working President	Some additional areas like packaging need not be stressed much in case of bulk drugs. Training modules should be developed so as to retain the work-force in the units. As suggested above, packaging as a component under training will only be proposed for API manufacturing units.
Mr. K. V. Ranga Rao	BDMA	Executive Director	"The report has detailed the skill gaps and is specific with respect to the types of units in the cluster. Most of the areas of skill gaps are traditional and have to be related with the nature of work force in the region. Language barriers should be eliminated while training. It is proposed to identify local training vendors to overcome the linguistic barriers.

Pune: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

The Pune Fruits and Vegetables cluster is largely unorganized cluster in terms of cooperative behavior, dominant industry association and availability of common facilities center. In the same manner, availability of training infrastructure is also limited in the cluster. Most of the enterprises depend on local BDS providers and practices like clean room, GMP and Lean are not even considered by micro and small units. As a consequence, institutes or training providers that can render such services are also limited and only known to medium enterprises.

The Maharashtra Chamber of Commerce, Industries and Agriculture (MCCIA) is a premier industry association with over 2500 members from different sectors like Automotive and Auto Ancillaries, Electronics, Agribusiness, Information Technology, Bio-Technology, Environmental Technologies, Chemicals, etc. It is one of the most active Chambers of Commerce in India catering to Pune and around regions. It has been catalyst for economic development of Pune and has continuously strived to make Pune a global business destination.

MCCIA has conducted regular workshops on training the cluster enterprises. A recent list of workshops conducted at MCCIA is reproduced here from the Survey Report:

Exhibit 54: Workshops Conducted by Industry Associations

Sr.No.	Workshops Conducted	Target Attendees
1	Workshop - Importance of Website in Marketing of Agri and Food Processing	Owners/ Senior Management
2	Seminar on New Trends in Packaging of Processed Foods	Supervisors and Workers
3	Workshop on Soybean Dal Analogue	
4	Training program On Market Identification and Effective Mktg. Tools	Marketing function related employees
5	Seminar on Govt. Schemes for MSMEs in Agribusiness and Agri Processing	Owners
6	B2B Meet between Processed Fruits and Vegetable Firms and Farmers	Owners and Farmers

Other than MCCIA, National Agriculture and Food Analysis and Research Institute conducts various training programs across the food production and processing value chain. It has also established state-of-the-art testing facilities and advanced quality laboratories. The following table summarizes NAFARI's testing and service areas:

Exhibit 55: NAFARI Laboratory Service

Service Lines	Target Customer		Value Proposition	Scope of operations
	Industry	Enterprise Scale		
Product Testing	Food Processing, Raw Material Suppliers, Agri Input Suppliers	Micro, Small & Medium	<ul style="list-style-type: none"> Accreditations with all major regulators and product boards International Expertise High quality due to sophisticated equipments and in-house scientific research 	Western Maharashtra
Package Testing	Food Processing Packaging Material Suppliers	Micro, Small & Medium		Western Maharashtra
Hygiene & Sanitation Testing	Food Processing, Hospitality Sector, Medical Industry	Large & Medium		Pune Region
Soil/Water Testing	Food Processing, Agriculture, Construction	Small & Medium		Maharashtra

Source: Consultant Report for NAFARI on Business Planning

However, certain gaps exist with NAFARI's existing infrastructure which need further support as well. These gaps are reproduced from the report prepared by the consultant for SIDBI.

Exhibit 56: Infrastructure Gap

Service Lines	Existing Capabilities	Gaps that can be addressed
Product Testing	<ul style="list-style-type: none"> Limited testing infrastructure, Limited in-house scientific research capability Limited linkages/partners 	<ul style="list-style-type: none"> Sophisticated high quality equipments Accreditations from spice board, APEDA, AGMARK etc. Mobile testing laboratory
Package Testing		Customer education & awareness
Hygiene & Sanitation Testing		Accreditation from BIS for water testing
Soil/Water Testing		

Source: D&B

With respect to training infrastructure for Food and Allied activities, the following table summarizes the list of colleges available for food related training across the state of Maharashtra:

Exhibit 57: Universities in Maharashtra providing full-time courses in food-related areas	
Agri Business Management	Mahatma Phule Krishi Viswavidyalaya
Agri- Processing and Food Engineering	Mahatma Phule Krishi Viswavidyalaya
Food Microbiology	<ul style="list-style-type: none"> • University of Pune • Shivaji University • Swami Ramanand Teerth Marathwada University • Nagpur University • North Maharashtra University • Dr. Babasaheb Ambedkar Marathwada University • University of Mumbai
Biotech Engineering/Biotechnology	<ul style="list-style-type: none"> • Indian Institute of Technology, Bombay • Dr. Babasaheb Ambedkar Marathwada University • University of Mumbai • North Maharashtra University • Swami Ramanand Teerth Marathwada University • University of Pune
Chemical Technology (Oil Tech.)	North Maharashtra University
Nutrition and Dietics	<ul style="list-style-type: none"> • University of Mumbai • Marathwada Agricultural University • Shreemati Nathibai Damodar Thackersey Women's University
Dairy Engineering/Dairy Microbiology/Dairy Technology	<ul style="list-style-type: none"> • Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth • Swami Ramanand Teerth Marathwada University • Mahatma Phule Krishi Viswavidyalaya • Dr. Punjabrao Deshmukh Krishi Viswavidyalaya • Maharashtra Animal and Fishery Sciences University
Marine processing	Maharashtra Animal and Fishery Sciences University
Food Science and Quality Control	<ul style="list-style-type: none"> • Nagpur University • Marathwada Agricultural University • Mahatma Phule Krishi Viswavidyalaya • Mumbai University • Amravati University • North Maharashtra University • State Board of Technical Education
Meat and Poultry Science	Maharashtra Animal and Fishery Sciences University
Milling Technology	None
Packaging Technology	Indian Institute of Packaging
Industrial Fermentation and Alcohol Technology/Sugar Technology	None
Post-Harvest Technology and Process Engineering	Central Institute of Fisheries Education

Source: MoFPI and D&B

To summarize, the following is the status of training infrastructure available in the Pune Fruits and Vegetables Processing Cluster:

Exhibit 58: Tip Sheet: Overview Of Training Infrastructure In The Fruits & Vegetables Processing Cluster				
Indicators	Private	Colleges/ Universities	Government	Industry Associations
Indicative List of Institutes/ Organisations		Agricultural Research Institute (ARI) MIT college of Food Technology ITI Aundh	NAFARI National Horticulture Research and Development Foundation (NHRDF)	Mahratta Chamber of Commerce, Industries and Agriculture
Courses (production / designing / marketing etc.)	BDS Training Providers	Production Processes Clean Manufacturing Techniques Effective Procurement & Market Techniques Degree and Diploma Courses	Quality, Testing As Required Short Camps	As Required, typically on marketing and quality norms As required
Frequency of Training.	Lean and GMP As Required	Recognized by Pune University and Industry	High Significance, however modules and testing is termed "Expensive"	Industry body Non-Fee Based for Members
Relationship with industry	Not recognized			
Fee based / non-fee based	Fee Based	Fee Based	Fee Based	
Whether trained professionals are directly employable	Yes	Yes	Yes	Only for employees of enterprises
Training Infrastructure	Training Rooms, Centers Some BDS providers also have labs	Grading and Sorting Rooms IT Labs and Software	Modern labs Sophisticated and modern technology	Arranged at MCCIA premises where training rooms and tools available
Sourcing of Trainers	External, mostly from industry or institutes	Internal Faculty	Internal	Sourcing from University affiliated colleges (CFTRI)
Industry Recognition	Not significant	Higher for degree and diploma courses	Higher for degree and diploma courses	NA
Course Infrastructure (Regular / customized offerings)	Customized Offerings	Regular 70	Regular NA	As required For Members
Intake (Annual)	NA			
Placement (Annual) - MSMEs / Other	NA	MSMEs, Large Industries	NA	Only for employees of enterprises

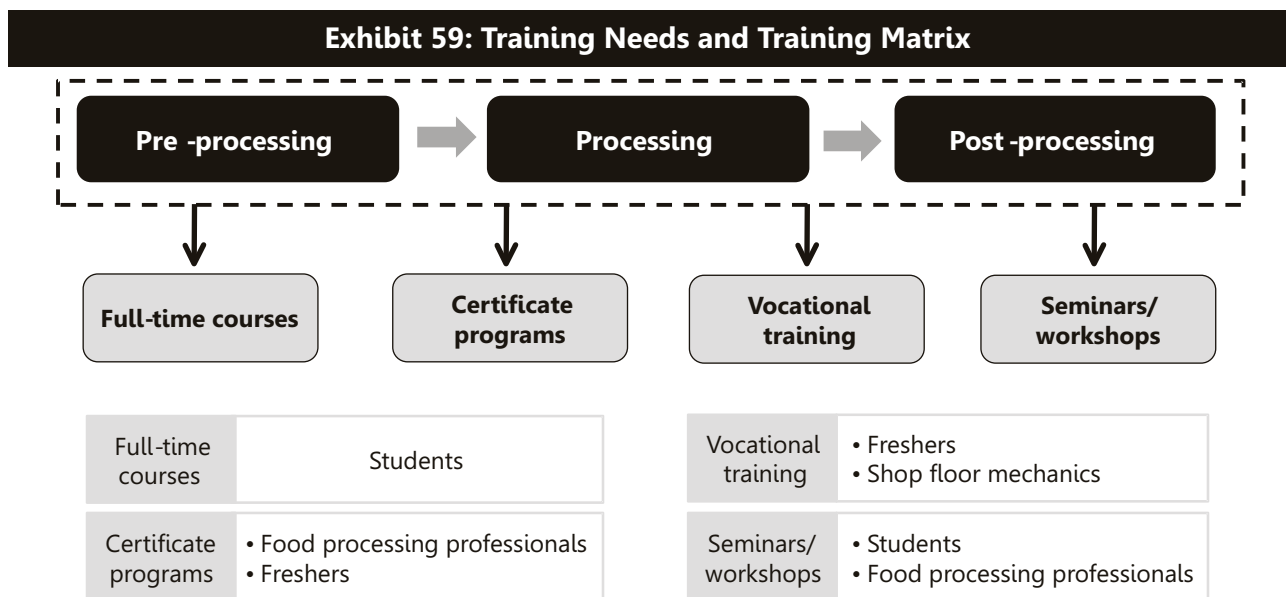
Curriculum Development - Overview

The following matrix relates to the various levels of training programs that are currently developed by the Consultant in joint association with various private and public BMOs that are present in the cluster for training purposes.

While developing the training courses, the following sources were utilized:

- National Council for Vocational Training syllabi on Food Sector: Syllabus is available for the Indian Sweets, Snack and Food Sector
- Modular Employable Skills by National Skill Development Corporation

In broader sense, the following training matrix needs to be utilized for developing the training programs in the Pune Fruits and Vegetables Cluster:



Source: D&B

Training & education service for food processing can be broadly categorized in three sub-segments - pre-processing, processing and post-processing. **Full-time courses** in food processing can include courses on agriculture business management, food processing technologies, micro-biology, storage and packaging, etc. **Certificate programs** refer to programs of short duration with approximate duration of few weeks to 6 months. These programs can be taken up by the professionals who do not have a specialized degree in the field of food and beverage industry. **Vocational training** in food processing can include practical training to the fresh talent as well as to the semi-skilled/unskilled workers. There is certain amount of overlapping amongst certificate programs and vocational training in the industry. **Seminars and workshops** with time duration of 1-3 days can assist in keeping abreast of the new technologies, regulations, certifications, etc. for students and professionals in the food-processing industry.

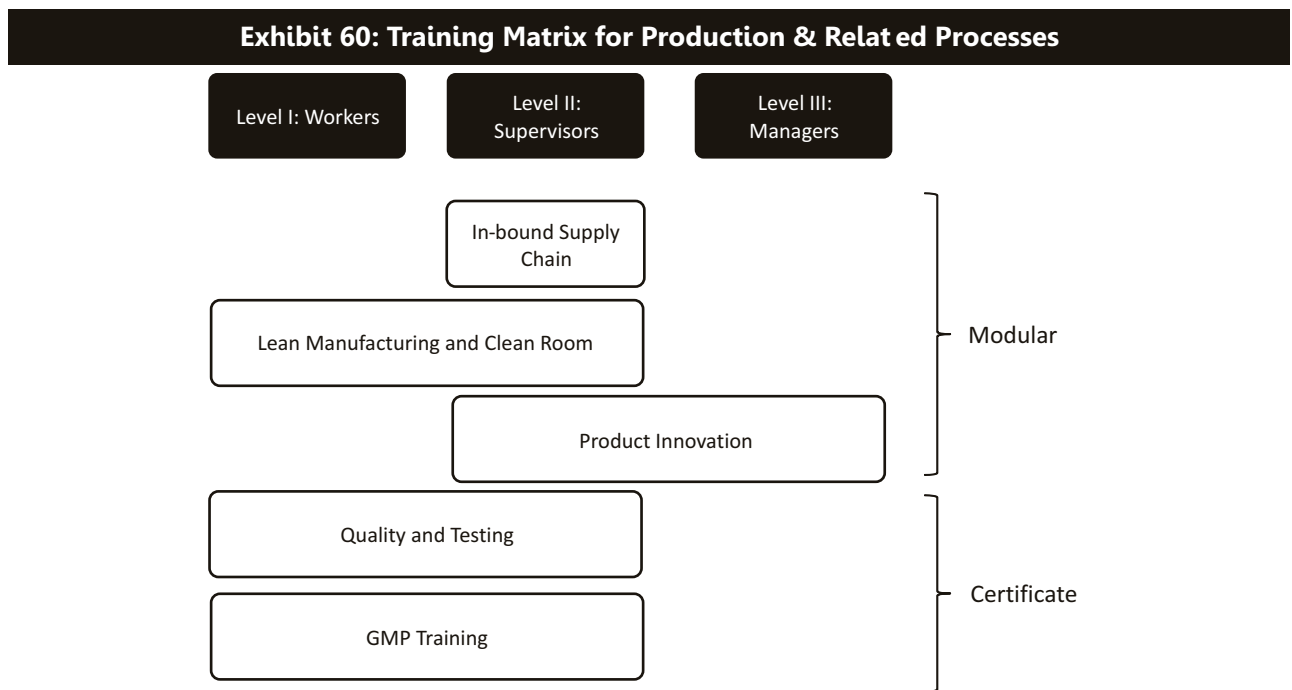
Thus, while defining the production level training programs, the following constituents are necessary:

- Modular programs at various levels specific and targeted towards the immediate need-gap
- Refresher or certificate courses to be taken up to provide an exhaustive overview of various processes and related effective techniques

Production & Related Processes

The training matrix below is developed for “Production and Related Processes”. During the initial discussions and the survey conducted by the Consultant in the Pune cluster, the following are the critical areas where training needs were highlighted by most of the cluster enterprises:

- Quality Testing methods were primary and sensory in nature. The basic reason for this is that external testing laboratories, which are government certified, are expensive or labs like NAFARI need to deliver value services by timely delivery. Hence, in-house quality testing should be upgraded through effective training
- Lean Manufacturing, awareness of GMP and clean room techniques need to be increased through structured training programs
- Grading, sorting and managing the in-bound supply chain are important aspect that requires immediate attention in the cluster. This is important since the cluster is evolving and at this stage itself, it would be ideal to explain the importance of collective and cooperative behavior.



Source: Consultant

Marketing Related Training Programs

During the survey administered by the Consultant, export oriented units described their needs for developing good marketing practices (GMarP). This specifically deals with detailed market assessment, demand forecasting, pricing, branding and marketing thus covering all facets of marketing. Hence, the Consultant recommends conducting only one training program in Marketing:

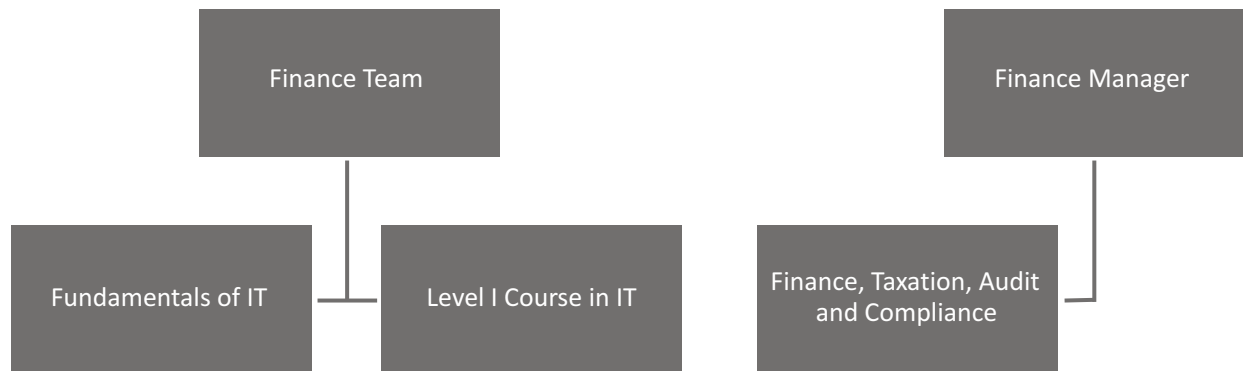
- Certificate Course for Marketing Managers
- Specific requirements can be developed in modular form using sections of the above certificate program.

Finance & IT Related Training Programs

Primary use of IT in the cluster is for records and book keeping purposes. Hence, even small firms are well equipped with accounting packages like Tally. However, cluster enterprises lack in their understanding of taxation norms, especially in tracking of impact of changes due to budget announcements, etc. External chartered accountants are typically hired to facilitate understanding. In addition, basic training in use of IT would also be required in the cluster.

Other than these, basic training in usage of IT would anyways be required in the cluster firms.

Exhibit 61: Training Matrix for Finance & IT



Source: Consultant

Detailed curriculum for individual clusters

Production and Related Processes

Modular Course on Managing In-Bound Supply Chain

- Batch Size: 30-35
- Qualifications: Workers/ Shop-floor employees
- Delivery Model: Classroom and Chemical Labs Based
- Duration: 100 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, Chemical Labs, Material and Testing Facilities

Topic	Contents
Overview	<ul style="list-style-type: none"> • Identification of various tools and equipments • Importance of grading and sorting • Value additions in grading and sorting and issue to production
Procurement and Price	<ul style="list-style-type: none"> • Understanding of market principles • Seasonality and demand behaviors • Price budgeting and negotiation skills • Importance of cooperative and collective purchasing
Grading and Sorting	<ul style="list-style-type: none"> • Grading and sorting techniques • Importance of grading and sorting • Managing multiple products and grades • Storage, contamination and holding losses • Batch sizing and mixing of grades, materials
Material Issue for Production	<ul style="list-style-type: none"> • Standard Accounting Procedures (FIFO, LIFO, WIFO etc.) • Understanding sequence of operations • Issue of materials at right time and quantity • Conflict resolution between purchase, store and production • Shelf life and shelf product quantity registers
Practical Training	<ul style="list-style-type: none"> • Hands on experience for grading various fruits e.g. apples as per price, color, texture, quality etc. • Hands on experience for material issue and accounting for price fluctuations

Modular Course on Lean Manufacturing

- Batch Size: 30-35
- Qualifications: Workers and Supervisors with at least one completed modular course on productivity or quality control
- Delivery Model: Classroom, Tool Room and Shop Floor
- Duration: 100 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall, Tool Room, Shop Floor

Topic	Contents
Overview	<ul style="list-style-type: none"> • Welcome, Introduction of faculty • Objective of Course • Course contents, Course Manual
Quality Philosophy	<ul style="list-style-type: none"> • ISO 9001: QMS • TQM and Quality Circle
Personnel	<ul style="list-style-type: none"> • Health Check-up • Records of Health -check up • Training • Gowning Procedures • Difference between procedure and SOP
Material Management	<ul style="list-style-type: none"> • Adequate Areas • Quarantine • Separate Sampling Areas • SOP Record • RM Labeling • Physical store verification, shelf life
Machine Management	<ul style="list-style-type: none"> • Preventive Maintenance • Standard Operating Procedures • Kaisers and Balanced Scorecard • KPI for Production

Modular Course on Product Patenting and Product Innovation

- Batch Size: 30-35
- Qualifications: Senior Management / Entrepreneurs
- Duration: 100 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Computer Labs

Topic	Contents
Product Patenting	<ul style="list-style-type: none"> • Compliance • Filing and Documentation • Regulations related to patenting and product trademark registrations
Product Innovation	<ul style="list-style-type: none"> • Product Designing • Innovative product and concepts • Market Trend and new concepts • Competitive assessment of products and designing

Modular Course on Quality and Testing

- Batch Size: 30-35
- Qualifications: Workers and Supervisors
- Duration: 100 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Computer Labs, Testing Materials and Chemicals

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of quality and checks • Inter-linkages between GMP, GLP and QA • Regulatory compliance and WHO Standards
QA / QC Modules	<ul style="list-style-type: none"> • Statistical Sampling Procedures • Elements of Bio-Statistics • Elements of probability and other statistical techniques • Clinical Trials and Testing • Laboratory Trials • Material Handling and Introduction to testing material/ media
Regulatory & Compliance Overview	<ul style="list-style-type: none"> • WHO Norms • ISO Norms • FDA Norms • Certification, importance and renewals
Standard Operating Procedures	<ul style="list-style-type: none"> • Error Handling • Kaizen and Reporting • Documentation • SOPs for processes, machinery, labor, material handling
Calibration & Equipment Handling	<ul style="list-style-type: none"> • Equipment Maintenance • Introduction to importance of certified machinery vendors • Preventive Maintenance • WHO Norms for machine procurement
Customer Complaint Handling	<ul style="list-style-type: none"> • Communication • Customer Grievance Redressal

Certificate Course on GMP Training

- Batch Size: 30-35
- Qualifications: Workers and Supervisors who have completed at least one module quality, lean or procurement
- Duration: 200 Hours
- Delivery Model: Classroom
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Welcome, Introduction of faculty • Objective of Course • Course contents, Course Manual
Quality Philosophy	<ul style="list-style-type: none"> • ISO 9001: QMS • TQM and Quality Circle
Building & Premises	<ul style="list-style-type: none"> • Clean Room Concept • Schedule M Compliance
Personnel	<ul style="list-style-type: none"> • Health Check-up • Records of Health-check up • Training • Gowning Procedures • Difference between procedure and SOP
Material Management	<ul style="list-style-type: none"> • Adequate Areas • Quarantine • Separate Sampling Areas • Records as per schedule U • SOP Record • RM Labeling • Physical store verification, shelf life
Quality Audit	<ul style="list-style-type: none"> • Objective • Clauses • Internal Audit • GMP assessment

Marketing Related Training Modules

Certificate Course in Product Marketing

- Batch Size: 30-35
- Qualifications: Marketing Managers / Heads
- Duration: 90 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	Importance of Marketing Channels of Marketing Difference between marketing and sales
What is Marketing?	Functions of Marketing Relevance of Product, Price, Promotions and Place Decision Making
Product Pricing	Pricing Strategies Profit optimization Seasonal and Design Based Pricing Competitive assessment and pricing Customer Need Assessment and Basis for Value Additions
Promotions, Advertisements	Advantages of effective promotions Channels of advertising: ATL and BTL Importance of B2B market places Website Trade-fairs and handloom expo / exhibitions
Importance of Branding	Overview of Branding Principles of Brand Development Establishing Brand Awareness Leveraging Product Patents Measuring Customer Satisfaction and Brand Loyalty
Customer Relationship Management	New Customer Development Effective communication and marketing Prospecting Developing Product Catalogue Customer Enquiry Handling Quotations, Proposals and Conversions Managing Customer Value through CRM and Lifecycle management

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size, cost and delivery channels. The cost of various training programs listed below would range from around ₹ 35000-45000 for the indicated batch size for production related courses. For courses under marketing and financial modules, the cost would be around ₹ 10000-15000 for the mentioned batch sizes.

Production Related Modules

Type of Program	Name of Module	Duration	Target Audience	Delivery Model
Modular	In-bound supply chain	100 Hours	Supervisors	Classroom, Chemical Labs
Modular	Lean Manufacturing and Clean Room	100 Hours	Workers and Supervisors	Classroom, Tool Room, Shop Floor
Modular	Product Innovation	100 Hours	Owners and Senior Management	Classroom
Modular	Quality and Testing	100 Hours	Workers and Supervisors	Classroom, Chemical Labs
Certificate	GMP Training	200 Hours	Workers and Supervisors	Classroom

Marketing Related Training Modules

Type of Program	Name of Module	Duration	Target Audience	Delivery Model
Certificate	Certificate Course in Marketing	90 Hours	Marketing Managers	Classroom

Finance & IT Related Training Modules

Type of Program	Name of Module	Duration	Target Audience	Delivery Model
Certificate	Fundamentals of IT and its application to Carpet Industry	240 Hours	Finance Team	Computer Lab
Modular	Level I Course in IT	40 Hours	Finance Team	Computer Lab
Modular	Finance and Taxation, Audits and Compliance	40 Hours	Finance Manager	Computer Lab

Delivery Channel through the Industry Associations

In a discussion with MCCIA, the Executive Director indicated that for industry to accept the training modules as a skill up gradation, these will have to be routed through the industry association. The following delivery mechanism should be adopted

- Ensure that the program is implemented in such a manner that incorporates wide range of skill improvement areas
- Create a trainers' pool by undertaking advanced training programmes at a cluster level. This can be further used by the association for ad-hoc programs as well
- No new capital investments for infrastructure to be made. Existing infrastructure of industry, governments, educational institutions will be used to set up training classrooms and workshops:
 - o In this regards, MCCIA has offered its existing infrastructure for classroom training
 - o For lab based training, infrastructure and programs conducted by NAFARI can be utilized
- Identification of trainees will be done on basis of preferential treatment to marginalized social groups like women, SC / ST and Handicapped persons, minorities and persons from BPL category. This is in line also with the Integrated Skill Development Scheme
- Training program will be designed based on industry demand in different segments. The emphasis will be on measurable outcomes
- Industry Associations are best placed to identify /organize members for specific trainings, source appropriate trainers, determine curriculum, conduct hand-on sessions on the shop-floor, regularly follow-up with the units, conduct audits, facilitate fund disbursements (say, those of government under the Lean Manufacturing Cluster Program) and even carry out reporting to the government.
- **Marketing** such training programs would be taken up by the industry association and hence, recognition from the industry will also be more
- **Duration of the** training shall be for a minimum of four weeks duration, and in cases where the skill sets match the MES modules, the duration shall also be as per the requirements of MES
- **Training Methodology** to ensure minimal lecturing and stress should be given on maximum hands-on-training.
- **Funding:**
 - Under the Lean Manufacturing Competitiveness Scheme (LMCS) for MSMEs, a financial support by the Government of India up to a maximum of 80% of the Consultant fees for each Mini Cluster will be provided. Remaining 20% is to be borne by the beneficiaries MSME units
- **Certifications & Recognitions:** A four-partite recognition formula should be adopted by the industry association. In the case of Pune Fruits and Vegetables Processing, the following members should be involved in the certification & recognition:
 - Ministry of Food
 - Training provider, BMO
 - Industry Association conducting the program
 - MSME DI

Feedback on skill gap mapping report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 62: List of people who have provided feedback on the report			
Name	Organisation	Designation	Feedback
Mr. Anent Sardeshmukh	MCCIA	Executive Director	<p>General agreement on the skill gaps identified. However, certain areas like grading, sorting and procurement should be separated and not to be combined as one area of skill gap. MCCIA would like to provide its infrastructure and be associated with the various initiatives that can be conducted under its banner. In terms of funding these programs, MCCIA receives grants and industry sponsorships.</p> <p>As suggested, the consultant proposes that the training needs for procurement and processes, other than procurement, will be handled separately.</p>
Mr. Vinay Oswal	NAFARI	Director	<p>NAFARI would be interested in promoting its services for testing and quality checks through various training and orientation programs at its facility. The report was largely accepted and specifics about recommendations on training for Quality related modules are largely necessary</p> <p>The Consultant has consulted NAFARI while developing the training modules for QA / QC.</p>

Chandigarh-Panchkhula-Mohali Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Central Tool Room (CTR) Ludhiana

Central Tool Room (CTR), Ludhiana has been setup under bilateral agreement on technical cooperation between Govt. of India and Govt. of Federal Republic of Germany. The role of CTR is to support the small scale enterprises by rendering technical consultancy services, common service facilities like manufacture of various types of tools, heat treatment related services. The institute offers training programs focusing on the following:

- Programming and performing various operations on CNC machines such as turning, milling, wire cutting
- Training on welding, grinding and sheet metal working
- Specialized CAD/CAM training programs
- Tool and die making training programs
- Designing of jigs and fixtures
- Skill enhancement courses focusing on Heat Treatment
- Soft skill courses focusing on labor management, communication, time management, basic computing skills etc.

CTR offers consulting services advising on design and manufacture of Moulds, Tools, Dies, Jigs and Fixtures. CTR provides rapid prototyping facilities utilizing 3D computer-aided design (CAD) model data, CT and MRI scan data and data from 3D digitizing systems.

Industrial Training Institutes (ITIs)

There are two ITIs operating in the cluster, one in Chandigarh and the other in Mohali for women. ITI Chandigarh currently offers 21 trades targeted at 10th and 12th pass students. The trades offered under mechanical group are Fitter, Turner, Machinist, Welder, Plumber, Carpenter, Tool & Die Maker and Draughtsman (Civil and Mechanical). In addition ITI Chandigarh has an Automobile center of excellence. ITI Chandigarh has well equipped labs and workshops for training. ITI Chandigarh has signed Memorandum of Understanding (MOUs) with key industry players as part of which these companies donate equipment to the institute and also students are provided the opportunity to work as apprentices in these companies. ITI Chandigarh has invested in state of the art CNC machines. ITI Mohali for women offers training programs on stitching, knitting etc. ITI Mohali is recognized as a center of excellence in Information Technology. Both the ITIs offer part time vocational modular courses under the Skill Development Initiative Scheme (SDIS).

Sam's Techno School

This is a private training institute in the engineering cluster. As part of the Implementing BDS initiative of SIDBI which is being managed by TERI, the institute offers training programs customized to the specific needs of the enterprises in the cluster. The promoters of the institute are also one of the major suppliers of CNC machines to the enterprises in the cluster. Hence the institute is able to obtain first-hand knowledge of the training needs of the cluster. The institute offers the following training programs.

- The institute as part of the Implementing BDS initiative of SIDBI offers training modules on CNC programming and operating. These are short duration courses ranging from 6 to 8 weeks with adequate stress on practical machine operations along with theoretical knowledge. The CNC operations training module mainly targets school drop outs at the class 5 and 8 level. The institute has 2 CNC machines at its Mohali center on which the students are trained.
- The promoters as part of their CNC machine supply business were finding it difficult to retain qualified maintenance staff. On many occasions customers were forced to stop production for extended periods as maintenance staff was not available. This led to the institute recently launching a course on CNC machine maintenance.
- The institute as part of an innovative approach to encourage women participation in the engineering cluster workforce has imparted basic metrology training to women. The training module concentrates on calibration and operation of basic quality checking tools such as vernier calipers, screw gauges etc. As the quality checking operations do not involve any heavy lifting work, it is quite suitable for women.

Gian Jyoti School of TQM & Entrepreneurship (GJSTE)

GJSTE is the first School of Excellence set up by Punjab Technical University. The institute offers a part time B Tech Industrial Engineering degree program and an executive MBA program targeting working professionals. The institute also offers short term certificate programs on quality, six sigma, lean manufacturing, productivity improvements, etc. The institute also provides consultancy services for improving operational efficiency and productivity.

Gian Jyoti Institute of Management & Technology (GJIMT)

GJIMT provides professional and technical education in the domain of Management and Computer Applications. GJIMT is approved by AICTE and offers Ph.D, MBA, MCA, BBA and BCA programs in affiliation with Punjab Technical University, Jalandhar. The institute also offers training and consultancy services to leading business organizations in the region in the following areas: 5-S, Selling & Marketing Skills, Communication Skills, Customer Service Orientation, Leadership & Motivation, Market Mapping & Brand Positioning, etc.

Access Consultancy Services (ACS)

ACS offers training and consultancy services to micro and small enterprises. The company is currently working as consultant on three clusters for the Micro and Small Enterprises – Cluster Development Program (MSE-CDP) scheme. The company has an association with Industries Department Haryana, extending support for its various cluster specific schemes.

International Business Certifications (IBC)

IBC provides training and consultancy services for quality management systems and ISO certifications. The company also offers third part audit, certification, product and process approvals, NABL/NABH certifications.

To summarize, the following is the status of training infrastructure available in the Chandigarh-Panchkhula-Mohali Engineering Cluster:

Exhibit 63: Tip Sheet: Overview Of Training Infrastructure In The Leather Cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Indicative List of Institutes/ Organisations	BDS Training Providers	ITI, GJSTE, GJIMT	CTR Ludhiana	Mohali Industries Association (MIA)
Courses (production / designing / marketing etc.)	Machine operations, Quality management, Lean manufacturing, Export documentation	Production and related process technologies, Machine operations, Basic cost metrology, Low cost automation, Lean manufacturing, Quality, metrology, Export documentation , Excise & taxes	Production and related process technologies, Machine operations, Production and related process technologies, Machine Maintenance, Basic operations, Basic metrology	Communication & marketing skills, Digital marketing tools, Basic computing
Frequency of Training.	As required	ITI has diploma courses and short term modular courses, GJSTE has part time courses for working professionals, and modular courses GJIMT has regular graduate and post graduate courses	Offers certificate, diploma	As required
Relationship with industry	Availed by the industry when required	Not availed by the industry regularly	Availed by the industry when required	Held as per requirement of the industry
Fee based / non-fee based	Fee Based	Fee based, however, subsidies under certain schemes may be available	Fee Based	Fee Based

Exhibit 63: Tip Sheet: Overview Of Training Infrastructure In The Leather Cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Whether trained professionals are directly employable in MSMEs or need further training.	Yes	Yes	Yes	Enterprises directly availing the service
Training Infrastructure	Basic infrastructure, Certain big agencies such as Sam's Techno School have workshops and other facilities	ITI has fully equipped class rooms and workshops	Fully equipped class rooms and workshops	Premises have conference hall for arranging training programs
Sourcing of Trainers	Internal but on need basis external faculty from industry or institutes is used	Internal Faculty, External faculty tapped on need basis by GJSTE and GJIMT	Internal Faculty	External mostly from industry or institutes
Industry Recognition	Moderate level of recognition	High for degree and diploma courses	High for diploma courses	Programs conducted as per industry needs
Course Infrastructure (Regular / customized offerings)	Customized Offerings, Modular Training	Regular, GJSTE and GJIMT also offers customized training programs	Regular	Customized workshops & seminars
Intake (Annual)	NA	NA	NA	For Members
Placement (Annual) MSMEs / Other	- Sam's Techno School pass outs are employed with enterprises in the cluster	MSMEs, Large Industries	MSMEs, Large Industries	Only for employees of enterprises

Curriculum Development - Overview

Definition & constituents

The following matrix relates to the various levels of training programs that are currently developed by the Consultant in joint association with various private and public BMOs that are present in the cluster for training purposes.

While developing the training courses, the following sources were utilized:

- National Council for Vocational Training syllabi on chemicals industry: Syllabus is available for the engineering industry directly with the NCVT, however, related industry syllabi were referred while developing the suggested modules
- Modular Employable Skills by National Skill Development Corporation

Thus, while defining the production level training programs, the following constituents are necessary:

- Modular programs at various levels specific and targeted towards the immediate need-gap
- Refresher or certificate courses to be taken up to provide an exhaustive overview of various processes and related effective techniques

Production & Related Processes

The training matrix below is developed for "Production and Related Processes". During the initial discussions and the survey conducted by the Consultant in the Chandigarh-Panchkhula-Mohali cluster, the following needs emerged in production related areas:

- The engineering enterprises in the cluster manufacturing different kinds of auto, tractor and machine components use both conventional lathe and CNC machines. There appears to be a huge shortage of skilled labor for operating these machines and also for performing other tasks such as welding, etc. The training on conventional lathe machine operations have been divided into two modules as specified below:
 - Level I: Includes lathe operations such as turning, drilling, facing, chamfering, knurling and form turning.
 - Level II: For candidates who have completed Level I training and includes advanced lathe operations such as taper turning, cutting internal and external screw threads, grinding, reaming, off-set turning, eccentric turning and knurling.

Similar to conventional lathe machine operations above, welding training program has also been split into two modules:

- Level I focusing on gas & arc welding
- Level II focusing on TIG welding

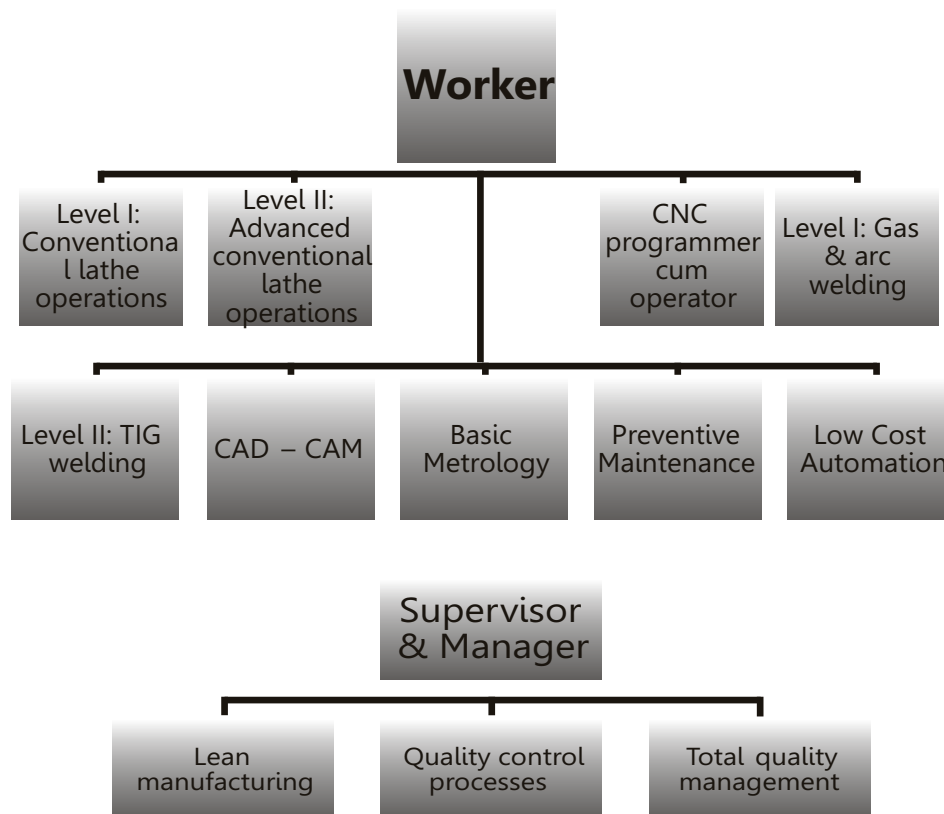
An advanced certificate course has been proposed for CNC machines which includes both the programming and operating aspects of the CNC machine.

- The adoption rates of CAD-CAM techniques being quite low; a training program has been designed focusing in this area. The entrepreneurs in the cluster can increase the accuracy and precision of their manufactured components by using these modern CAD-CAM techniques.
- The productivity of the enterprises in the cluster can be increased by using low cost automation techniques, thus a training program focusing on this area has been proposed.

- A training program focused on preventive maintenance and basic metrology procedures has been designed to augment the skills of the workers in the cluster.
- As majority of the firms in the cluster directly or indirectly cater to the OEMs, ensuring end product quality is of critical significance for the firms. Hence training programs focusing on six sigma and total quality management has been designed for supervisors and managers in the cluster.
- The people in the cluster have a very low awareness about lean manufacturing. They lack knowledge about specific facets of the lean manufacturing process such as just in time (JIT) inventory management, preventive maintenance, equipment reliability (preventive maintenance) and cellular manufacturing. The supervisory and managerial staffs need to be made aware of these techniques as this will ultimately help in improving their operational efficiency.

The Consultant has taken the above into consideration while formulating the following matrix for production and related areas.

Exhibit 64: Training Matrix for Production & Related Processes

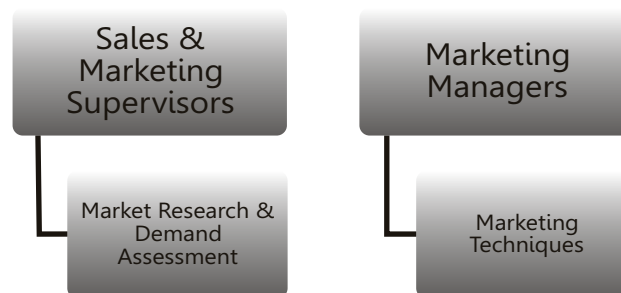


Source: Consultant

Marketing Related Training Programs

The units in the cluster either directly or indirectly cater to the demand of large original equipment manufacturers (OEMs) located in the nearby areas. Among the vendors, there is tremendous competitive pressure to offer the lowest prices without compromising on the quality or delivery schedule. It was observed that most of the enterprises set the price of the product according to their competitors. The enterprise owners have not made any efforts to invest in brand building activities which would allow them to charge a premium price for their products. Hence there is an urgent need for training program for identifying potential markets and customers, developing appropriate marketing strategies through effective branding and promotions. Thus, with respect to marketing, the following courses have been proposed:

Exhibit 65: Training Matrix for Marketing & Related Processes



Source: Consultant

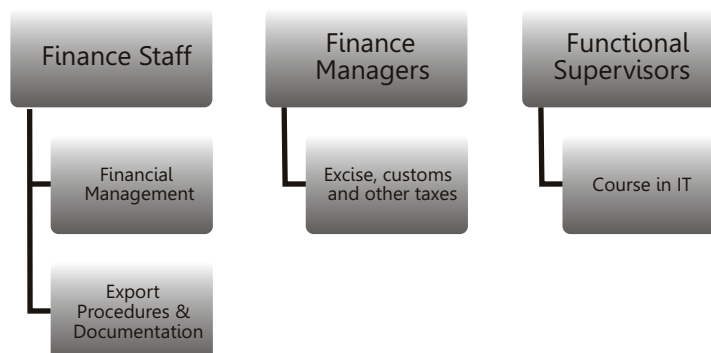
Finance & IT Related Training Programs

Effective financial management is one of the key success factors for an enterprise; hence a training module focusing on best practices in the field of finance has been designed for finance staff in the cluster.

For entrepreneurs who want to break into the export market there is a huge gap in understanding of export regulations and other information. A specific training module covering export rules and documentation has been proposed for finance staff in the cluster. A certificate course focusing on excise, customs and other taxes has been proposed for finance managers.

In today's world basic IT skills such as MS office, email communication, etc. is an urgent need for all staff in the cluster.

Exhibit 66: Training Matrix for Finance & IT



Source: Consultant

Detailed Curriculum for Individual Clusters

Production and Related Processes

Level I: Modular Course on Conventional Lathe Machine Operation (includes tooling)

- Batch Size: 12 to 15
- Qualifications: Workers/ Shop-floor employees
- Duration: 210 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Underlying Theory	<ul style="list-style-type: none"> • Safety precaution specific to turning on conventional lathe. • Principles workshop layout. • Purpose of turning. • Principle of the measuring instruments: <ul style="list-style-type: none"> ○ Micrometer: internal, external, depth. ○ Vernier: Caliper, depth, height. • Different types of lathe tools and their usage. • Geometry of the lathe tool including tool angles and its effect on turning for roughing and finishing operation. • Type of cutting fluids & properties. • Simple machining calculation. • Calculation of speed, feed & depth of cut using chart. • Basic method of work holding devices such as 3 jaw chuck, 4 jaw chuck, face plate, collet chuck etc. • Basic methods of supporting work such as fixed steady, traveling steady. • Types of Lathe – constructional features and functions. • Lathe operations - turn, drill, face, chamfer, knurl, thread, taper and form turn. • Different types of drills and taps used. • Classification of steels, alloy steels and effect of alloying elements. • Identify the turning fault & remedies. • Demonstrate the use of safety devices on metal cutting machines. • Demonstrate the use of work holding devices on metal cutting machines. • Use and store of materials in a safe manner. • Preparation of process planning sheet. • Using micrometers and verniers to check measurements of components / machined parts. • Check roundness of components using dial test indicator and vee blocks.

Topic	Contents
Practical operations	<ul style="list-style-type: none"> • Practice on faceplate balancing. • Re-sharpen plain turning tool on pedestal grinder and inspection. • Practical on work alignment, facing, turning, drilling, tapping, chamfering, and parting off. • Carry out general turning between centers, such as stepped shafts using fixed and traveling steadies. • Practical on taper turning by compound slide method. • Use sine bars and sine centers to set up and check tapers. • Cut and chase screw threads. • Simple form turning using manual feed. • Practical on knurling.

Level II: Advanced Modular Course on Conventional Lathe Machine Operation (includes tooling)

- Batch Size: 12 to 15
- Qualifications: Workers/ Shop-floor employees
- Duration: 240 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Underlying Theory	<ul style="list-style-type: none"> • Safety precaution specific to turning on the lathe. • Significance of surface roughness, description of its symbols and its influence on the function of a component. • ISO specification on carbide tools. • Basic knowledge of different tool materials (including their temperature ranges) in use. • Calculation of spindle speeds, feeds & depth of cut for different material and the respective lathe operations such as roughing, finish turning, grinding etc. • Types and uses of taper, calculation on taper turning. • Methods of taper turning-compound slide, tailstock off-set, forming tool, taper turning attachment and their merits and demerits. • Methods of taper inspection-by taper plug gauge and ring gauge. • Types of threads, forms of thread and its depth calculation. • Methods of producing internal and external screw threads of different types such as single start, multi start.

Topic	Contents
	<ul style="list-style-type: none"> • Methods of carrying out drilling, grinding and reaming operations. • Off-set turning techniques, eccentric turning and knurling. • Calculation of speed, feed & depth of cut for cutting different types of thread on ferrous and nonferrous metals. • Precautions while turning nonferrous & non-metals especially for material like Magnesium etc. • Introduction to Special purpose lathe – capstan, turret, copying, and spinning. • Heat treatment process – uses and types. • Identify turning fault & correction.
Practical operations	<ul style="list-style-type: none"> • Selection of tools, general cleaning and maintenance and safe storage of tools applicable to workshop tasks. • Check measurements with inside, outside, pitch micrometers. • Turning of non-ferrous metal & non-metals such as plastic, polypropylene etc. • Produce jobs with different diameters within the permissible concentricity. • Check prepared specimens for limits and fits. • Turn an angular surface – by offset method. • Turning of Morse taper on the lathe. • Use sine bars and sine centers to set up and check tapers. • Set a grooving tool & perform an undercutting operation for threading • Set a threading tool to cut different types of “V” thread (external). • Cutting different types of threads like square, knuckle, buttress etc. • Cutting double triple start threads. • Practical on centering, pilot drilling, counter drilling, and chamfering. • Perform boring operation. • Cut “V” thread (internal). • Perform under cut inside the bore on a required length. • Use of four-jaw chuck and setting the same. • Cutting eccentric jobs. • Drilling eccentric holes.

Level III: Certificate Course on CNC Programmer cum Operator

- Batch Size: 12 to 15
- Qualifications: Workers/ Shop-floor employees
- Duration: 240 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Underlying Theory	<ul style="list-style-type: none"> • Safety precautions. • Safe handling of tools, equipment & CNC machines. • State the types of CNC machines. • Describe Machine tool elements, feed drives and spindle drives. • CNC interpolation, open loop & close loop control systems. • Co-ordinate systems and Points. • Identify the CNC machine control unit Organisation. (keys & menus) • Explain working principle of CNC machines. • Carry out zero off sets and tool off sets. • Feedback devices for CNC control. • Importance of tool nose radius compensation (TNRC). • Identify cutting tool materials for CNC turning. • Identify ISO codes for carbide indexable inserts and tool holders for turning. • Describe the tooling systems for CNC turning centers. • Selection of cutting parameters and process planning. • Tools layout and process sheet preparation. • Using sub programs & cycles in the main program. • Blue print programming / direct dimension programming. • Part features identification and process selection. • Processes sequencing. • Tool path planning. • Carry out work -piece zero points and ISO / D IN G and M codes for CNC. • Describe the stock removal cycle in CNC turning for OD / ID operation. • Describe tooling system for turning and tooling strategies for CNC turning machines. • Carryout drilling / boring cycles in CNC turning • Grooving / threading Tools, processes and tool selection. • Programming for grooving / threading on OD/ID in CNC turning. • Tool wear on CNC turning. Tool wear • Patterns and optimization of cutting parameters. • Identify factors affecting quality and productivity. • Tapping / rigid tapping on CNC turning.

Topic	Contents
Practical operations	<ul style="list-style-type: none">• Personal and Industrial Safety.• Study of CNC machine, key board & specifications.• Demonstrate machine starting & operating in reference point, JOG, and incremental modes carry out• Co-ordinate system points, assignments and simulations.• Carry out absolute and incremental programming assignments and simulations.• Demonstration of machine over travel limits and emergency stop.• Demonstrate work and tool setting.• Carry out part program preparation, simulation & automatic mode execution for the exercise on simple turning & facing (step turning).• Carry out linear and circular interpolation assignments and simulations on software.

Level I: Modular Course on Gas and Arc Welding

- Batch Size: 15
- Qualifications: Workers/ Shop-floor employees
- Duration: 180 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Underlying Theory	<ul style="list-style-type: none"> • Reading of fabrication drawing. • Safety precautions. • Types of welding processes and application • Nomenclature of fillet and groove welds. • Welding terms, symbols and definitions. • Operating procedures of oxy -acetylene welding with special focus on regulators. • Maintenance of oxy-acetylene welding blow pipes. • Types of oxy-acetylene flames and their uses. • Filler rods and fluxes for brazing. • Welding & brazing techniques. • Principles and techniques of manual metal arc welding (MMAW). • Basic electricity applicable to welding. • Arc welding power source, AC transformers, DC welding rectifier, DC generators. • Welding electrodes and selection. • Coding of MMAW electrodes • Welding defects causes and remedy. • Distortion and methods of control. • Inspection & testing of welds.
Practical operations	<ul style="list-style-type: none"> • Safe working practice to be observed during welding. • Identification of tools and accessories used for gas and arc welding. • Setting up of gas welding plant. • Lighting and adjustment of oxy-acetylene flame & operation. • Beading practice on MS sheet with and without filler rod. • Produce oxy -acetylene gas welded joints in mild steel sheets. <ul style="list-style-type: none"> ○ Edge joint. ○ Square butt joint. ○ Fillet joint. • Practice brazing with oxy-acetylene flame on MS Sheets. • Practice tube joint by oxy-acetylene welding / brazing. • Setting up Arc Welding plant.

Topic	Contents
	<ul style="list-style-type: none"> • Striking an arc and depositing straight & wearing beads on MS in flat position. • Preparation of joints, edge operations. • Produce arc welded joints in mild steel in flat position. <ul style="list-style-type: none"> ○ Fillet Lap & T joints. ○ Inside corner joint. ○ Square butt joint. ○ Single "V" but joint. • Identification of defects by visual inspection & correction of defects.

Level II: Certificate Course on Tungsten Inert Gas (TIG) Welding

- Batch Size: 15
- Qualifications: Workers/ Shop-floor employees
- Duration: 90 hours
- Delivery Model: Classroom and practical machine operations
- Infrastructure Requirements: Projector, Computer, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Underlying Theory	<ul style="list-style-type: none"> • Introduction to TIG welding & its application. • Advantages of TIG welding process. • Power source – types, polarity and application. • Accessories - HF unit and DC suppressor. • Tungsten electrode - types, sizes, and uses. • Type of shielding gases. • Advantages of root pass welding of pipes by TIG welding. • Purging methods. • Tables related to TIG welding. • Types of weld defects, causes and remedy. • Inspection and testing of welds.
Practical operations	<ul style="list-style-type: none"> • Setting up of AC and DC TIG welding plant. • Beading practice on MS and aluminum sheet. • Execute TIG welding jobs: <ul style="list-style-type: none"> ○ Square butt, T and corner joint ○ Welding with back purging technique. ○ Single V butt joint. • Identification of defects by visual inspection & correction of defects.

Certificate Course on CAD-CAM Operator cum Programmer

- Batch Size: 12 to 15
- Qualifications: Workers/ Shop-floor employees
- Duration: 24 weeks
- Delivery Model: Classroom based and practical machine operations
- Infrastructure Requirements: Projector, Computer, Software, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Underlying Theory	<ul style="list-style-type: none"> • Introduction to AutoCAD. • Study of UCS co-ordinate system. <ul style="list-style-type: none"> ○ Actual Cartesian System. ○ Relative Cartesian System. ○ Actual Polar System. ○ Relative Polar System. • Knowledge of Menu commands such as Draw, Modify, Dimensioning, Editing, View and Formatting. • Knowledge of drafting settings such as Snap, Grid, Ortho, etc. • Isometric drawings – concept of isoplane, isocircle. • Concept of 3D and solid modelling. • Knowledge of commands to create 3D solids such as Extrude, Revolve, Union, Subtract, Intersect. etc. • Layout and paper settings for plotting • Familiarisation with the MasterCam interface and the various commands. • Knowledge of levels and attributes. • Basics of G -view. C -plane, construction depth and wire frame modelling. • Fundamentals of surface modelling. • Knowledge of solid modelling commands such as extrude, revolve, sweep, loft, fillet, chamfer, etc. • Machine definition and control definition. • Knowledge of commands such as facing, contour, pocket, drilling, etc. • Back plotting, solid verification, program generation. • Preparation of part program for turning, milling & EDM wire cut, etc. • To draw H, L, S, T, C, etc. shapes using UCS systems. • Drawing complex orthographic figures and dimensioning them properly using the various Menu commands. • Inserting different designs in drawings. • Practice to draw isometric drawings. • Practice to draw 3D solid models. • Plotting 2D and 3D drawings.

Topic	Contents
Practical operations	<ul style="list-style-type: none">• Open and save files in MasterCam. Import and export files in MasterCam.• Creating box shape & creating different shapes in all the 6 faces.• Exercise in wire frame modeling.• Creating various surfaces such as flat, lofted, revolve, sweep and net. Editing and trimming of surfaces.• Drawing solid shapes. Convert solid to surface & surface to solid• Setting up a job.• Addition and modification in tool paths.• Practice on part programming by actual data transfer from computer to CNC machine.• Feedback from actual result, analysis of outcome & correction

Modular Course on Basic Metrology

- Batch Size: 25
- Qualifications: Workers/ Shop-floor employees
- Duration: 3 weeks
- Delivery Model: Classroom based and practical machine operations
- Infrastructure Requirements: Projector, Computer, Software, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Engineering drawing	<ul style="list-style-type: none"> • Knowledge of engineering drawing. • Conventional section for materials.
Basic concepts of measurement and measuring instruments	<ul style="list-style-type: none"> • Introduction to fundamentals & significance of measurement. • Measuring scales: <ul style="list-style-type: none"> ○ British standard. ○ Metric standard. • Metrology – Classifications – Terminology. • Elements of measuring system (Sensor – Transmitter – Display). • Features of measuring system (Least count – Precision – Repeatability - Reproducibility – Accuracy – Zero error). • Commonly used principles for improvement of least count. • Errors in measuring instruments.
Measuring instruments	<ul style="list-style-type: none"> • Scale, Micrometer, Vernier caliper, Try square, Height gauge, Bevel protector, Dial indicator, Gauges and Slip gauges. • Measurement of motion: Displacement, velocity, acceleration – Vibration, shock. • Measurement of force – Hydraulic system. • Measurement of mechanical power – Dynamometers. • Measurement of pressure – Barometers and manometers. • Measurement of temperature: Thermometers, thermocouples – RTD – Thermistors – Pyrometers. • Measurement of level: Direct & Indirect methods – Ultrasonic measurements.
Management of measuring instruments and calibration	<ul style="list-style-type: none"> • Monitoring and servicing of instruments. • Calibration. • Types of calibration labs – In house labs, third party labs.

Modular Course on Preventive Maintenance

- Batch Size: 25
- Qualifications: Workers/ Shop-floor employees
- Duration: 1 weeks
- Delivery Model: Classroom based and practical machine operations
- Infrastructure Requirements: Projector, Computer, Software, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Preventive maintenance	<ul style="list-style-type: none"> • Concept and objectives of maintenance. • Maintenance functions – Basic and managerial functions. • Types of maintenance: Breakdown – Planned. • Types of planned maintenance: Routine –Scheduled – Preventive – Corrective – Predictive. • Design for maintenance. • Reliability centered maintenance. • Benchmarking best practices in maintenance management. • Computers in maintenance management. • Autonomous maintenance.

Certificate Course on Low Cost Automation

- Batch Size: 30
- Qualifications: Workers/ Shop-floor employees
- Duration: 30 hours
- Delivery Model: Classroom based and practical machine operations
- Infrastructure Requirements: Projector, Computer, Software, Conference Hall, Machines, Equipment, Raw Material

Topic	Contents
Turning	<ul style="list-style-type: none"> • Special Jaws for holding and orientation of job, for normal/off centre/profile specific turning. • Tail Stock function with lever or with hydraulic cylinder for doing rough drilling. • Component loaders for heavy jobs.
Drilling	<ul style="list-style-type: none"> • Job positioners (jigs and fixtures) • Quick Tool changers • For continuous component flow: Chutes and Vibrators
Milling	<ul style="list-style-type: none"> • Job Positioners (Fixtures): Standard, Quarter Turn and Hydraulic Clamps • Cutters for specific size maintenance • Fixtures to save component Clamping and De-clamping time • Rotary Table for continuous machining
Boring	<ul style="list-style-type: none"> • Job Holding (Fixtures): Standard and Quarter Turn Clamps
Special purpose machines	<ul style="list-style-type: none"> • For Boring: Double ended, multiple spindle double ended and multiple spindle multiple axis boring • For Milling: Same as for boring
Cylindrical grinding	<ul style="list-style-type: none"> • Auto size measurement during operation: Cylindrical Grinding & Boring operation
Sheet Metal	<ul style="list-style-type: none"> • Fast Press Tool Change -Tool change time minimum (Reduction) • Sheet feeders – Automatic sheet feeder Mechanical/Pneumatic • Job rotation in press line – for multi-operation jobs
Sheet metal assembly parts	<ul style="list-style-type: none"> • Assemble Fixtures: Standard Clamps and Toggle Clamps
Mechanical Parts Assembly	<ul style="list-style-type: none"> • Assemble Tools for making fast and accurate assemblies.
Inspection	<ul style="list-style-type: none"> • Fixtures for component checking in mass production

Certificate Course on Lean Manufacturing

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Lean manufacturing	<ul style="list-style-type: none"> • What is lean? • Key concepts of lean manufacturing. • Lean tools and supporting strategies. • Fourteen principles of the Toyota Way.
Waste elimination	<ul style="list-style-type: none"> • Value-added & non-value-added activities. • 3 Ms – Muri, Mura & Muda. • Seven Wastes.
Preparing enterprise for lean	<ul style="list-style-type: none"> • Introduction. • 5S & Visual Management. • Team Building.
Just in time (JIT)	<ul style="list-style-type: none"> • Introduction. • Supplier relationships. • Flow & Pull System. • Kanban.
Issues in implementing JIT	<ul style="list-style-type: none"> • Key issues. • Establishing Standardized Processes. • Implementing Total Productive Maintenance (TPM). • Pillars of TPM.
Manufacturing Cells	<ul style="list-style-type: none"> • Introduction to Manufacturing Cells (Cellular layouts). • Heijunka / Demand Leveling.
Creating Lean Processes across the Enterprise	<ul style="list-style-type: none"> • Value Stream Mapping • Poka-Yoke • Quick Change Over (SMED)

Certificate Course on Quality Control Processes (Six Sigma)

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 5 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Module 1	<ul style="list-style-type: none"> • Introduction to Six Sigma. • Six Sigma Organization. • Six Sigma DMAIC Model. • Six sigma Define: Determining CTQs, Project Charter, SIPOC.
Module 2	<ul style="list-style-type: none"> • Measure Phase – Developing Process Maps, Finalizing CTQs, Planning for Data Collection • Basic Statistics, Concept of Variation • Histogram, Run Chart • Concept of Normal Curve.
Module 3	<ul style="list-style-type: none"> • Validate measurement system. • Quantifying current performance – Process Capability & Stability (Variable data). • Process Capability & Stability (Attribute Data). • Computing Process Sigma. • Exercises.
Module 4	<ul style="list-style-type: none"> • Analyze Phase - Identifying sources of variation, Cause & Effect Diagram. • Why-2 Analysis. • Prioritization of Causes. • Control Impact Matrix. • Cause & Effect Matrix. • Validation of possible root causes. • Correlation & Regression Analysis.
Module 5	<ul style="list-style-type: none"> • Improve Phase- Solution development methods. • Piloting the implementation. • Counter measure matrix. • Control Phase- Preparation & Implementation of Control Plan. • Types of Control Chart. • Control Charts for Variable. • Control Charts for Attribute Chart.

Certificate Course on Total Quality Management (TQM)

- Batch Size: 25
- Qualifications: Supervisors and Managers
- Duration: 4 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Module 1	<ul style="list-style-type: none"> • Executive Briefing on TQM • Concept of Cost of Poor Quality • Creativity, Innovation & Quality Improvement • Problem Solving • Application of QC tools in problem solving • Exercises on Problem Statements & Mission Statements • Project definition & Organisation • Team Building
Module 2	<ul style="list-style-type: none"> • Diagnostic journey : Analyzing symptoms & formulating theories • Data Collection • Flow Diagram • Graphs & Charts • Brainstorming • Cause & Effect Analysis
Module 3	<ul style="list-style-type: none"> • Diagnostic journey : Validating theories and identifying root causes • Stratification • Pareto Analysis • Scatter Diagram • Histogram
Module 4	<ul style="list-style-type: none"> • Remedial Journey • Designing solutions • Addressing resistance to change • Implementation of selected solutions • Holding the gains • Checking & Monitoring control systems • Making presentation

Marketing and Related Processes

Modular Course on Market Research and Demand Assessment

- Batch Size: 30-35
- Qualifications: Supervisors and Managers
- Target Trainees: Marketing and Sales Supervisors
- Duration: 30 Hours
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of Assessing New Markets • Relevance to existing markets • Product Performance and logistics networking
Market research	<ul style="list-style-type: none"> • Demand Side Surveys • Quantitative estimations of competition, demand, supply • Identification of effective market penetration techniques
Sales force effectiveness	<ul style="list-style-type: none"> • Importance of sales force • Channels, Media and Information gathering • Commercial databases for market information
Demand assessment	<ul style="list-style-type: none"> • Determination of accurate demand assessment models • Documentation of historical data • Demand Forecasting Techniques

Certificate Course on Marketing

- Batch Size: 30-35
- Qualifications: Marketing Managers
- Target Trainees: Marketing and Sales Supervisors
- Duration: 45 hours
- Delivery Model: Classroom based with case studies
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Importance of Marketing • Channels of Marketing • Difference between marketing and sales
What is marketing?	<ul style="list-style-type: none"> • Functions of Marketing • Relevance of Product, Price, Promotions and Place • Decision Making • Cost and benefits of Marketing • Developing effective marketing programs
Promotions, Advertisements	<ul style="list-style-type: none"> • Advantages of effective promotions • Channels of advertising: ATL and BTL • Benefits of a website • Role of internet and B2B market places • Creation of online product portfolio • Role of E-commerce and E-product catalogues • Website and Web Analytics, Ad sense
Importance of Branding	<ul style="list-style-type: none"> • Overview of Branding • Principles of Brand Development • Establishing Brand Awareness • Measuring Customer Satisfaction and Brand Loyalty
Customer relationship management	<ul style="list-style-type: none"> • New customer development • Effective communication and marketing • Prospecting • Developing product catalogue • Customer enquiry handling • Quotations, proposals and conversions • Managing customer value through CRM and lifecycle management

Finance and IT Related Processes

Modular Course on Financial Management

- Batch Size: 20 to 25
- Qualifications: Finance Staff
- Target Trainees: Marketing and Sales Supervisors
- Duration: 2 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Underlying theory	<ul style="list-style-type: none"> • Nature of financial statements • Creation of income statement & balance sheet • Creation of cash flow statement & cash conversion cycle • Interpretation of financial statement
Analytical tools	<ul style="list-style-type: none"> • Working capital management • Cost optimisation • Cost reduction & cost control • Activity based costing • Analysis of performance • Emerging business models • Keys to success
Financing schemes	<ul style="list-style-type: none"> • Information about various subsidy schemes offered by state and central agencies. • Knowledge of financial schemes targeted specifically to the leather industry. • Eligibility criteria of the above mentioned schemes. • Procedure to avail assistance under these schemes.

Modular Course on Export Procedures and Documentation

- Batch Size: 20 to 25
- Qualifications: Finance Staff
- Duration: 3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Underlying theory	<ul style="list-style-type: none"> • Procedural formalities for starting an export business • Understanding the framework of export business – impact of external environment • Understanding the framework of export import policy 2009-14. • Understanding the role of documents in export business. • Customs clearance formalities of export cargo. • Banking: foreign exchange risk management. • Marine Insurance, ECGC. • Incentives and benefits to exporters – export promotion schemes.
Practical case studies	<ul style="list-style-type: none"> • Procuring an export order and entering into a sales contract. • Appropriate use of delivery terms – INCOTERMS 2010. • Ensuring guaranteed payment using appropriate techniques. • Payment through Letters of Credit with special reference to UCP 600. • Processing of an export order.

Certificate Course on Excise, Customs and Other Taxes

- Batch Size: 30 to 35
- Qualifications: Finance Managers
- Duration: 20 hours
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	<ul style="list-style-type: none"> • Overview of relevant fiscal procedures. • Physical verification and stock keeping.
Recent Changes and tracking	<ul style="list-style-type: none"> • Filing of returns. • Changing norms for Excise and Customs. • Awareness of DEPB and other schemes. • Tax holidays, Green Initiatives etc.
Compliance	<ul style="list-style-type: none"> • Assess impact on business of compliance • Separate designated areas for sampling • Separate designated areas for excise purposes

Certificate Course in IT

- Batch Size: 30 to 35
- Delivery Model: Classroom Based
- Target Trainees: All Functional Supervisors
- Duration: 40 Hours
- Infrastructure Requirements: Projector, Computer, , Conference Hall, MS-Office Applications

Topic	Contents
Overview	<ul style="list-style-type: none"> • Introduction to IT • Advantages and limitations of IT • Role of IT in information age
Basic Data Processing	<ul style="list-style-type: none"> • Introduction to Excel and other data processing software like Access • Excel Formula and basic data analysis
Documentation Software	<ul style="list-style-type: none"> • Applications with MS-Word
Presentations	<ul style="list-style-type: none"> • Applications with MS-PowerPoint
Communication software	<ul style="list-style-type: none"> • Email and Internet Overview • Business Communication

Overview of Workshop Conducted

A workshop was organized with active participation of enterprise owners, TERI officials, training institutes and quality consultants. In order to increase the supply of workers to the cluster it was proposed to target school dropouts even at class 5 level and above and train them on basic machine operations. The target students coming from the weaker sections of the society would not be able to pay any fees for attending these training programs. Hence it was suggested that the entrepreneurs in the cluster need to be tapped to provide funds to meet the expenses of running this training program. The prospective students hailing from the remote areas would be provided residential facilities along with a minimum stipend during the training period so that the student is able to meet his food and other expenses. In order to increase the appeal of the training program, it was suggested that the OEMs in the cluster could also be roped in.

The training program would be designed with active participation from industry representatives so that the students after successfully completing the course can be employed by the firms in the cluster. In this regard, it was proposed that industry associations play a key role in evaluating the training participants at the end of the course and give their approval that the individual after successful completion of the training module possess the required skills to be employed by the firms in the cluster. The training program would focus on practical machine operations in addition to theoretical knowledge. In addition, the training program would also provide some basic communication and writing skills training to the participants. A suggestion was made that the existing infrastructure of the both government and private training institutes in terms of hostel facilities, machinery and teaching staff could be utilized for carrying out this training program.

In order to surmount the social bias against women working on the shop floor, it was proposed that the services of NGOs can be enlisted to convince the families of prospective female employees about the safety and security of their daughter. These NGOs would be visiting remote rural areas and conduct a door to door to awareness campaign among the villagers sensitizing them about the prospect of women getting gainful employment in the engineering cluster.

Group Discussion with Stakeholders in Progress in Chandigarh



Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size and delivery channels. The cost of various training programs listed below would range from around ₹ 35000-45000 for the indicated batch size for production related courses. For courses under marketing and financial modules, the cost would be around ₹ 10000-15000 for the mentioned batch sizes.

Production Related Modules

Type of Program	Name of Module	Recommended Training Provider	Duration	Batch Size	Delivery Model
Modular	Level I: Conventional lathe machine operations	CTR Ludhiana, ITI, ACS	210 hours	12-15	Classroom / Practical
Modular	Level II: Advanced conventional lathe machine operations	CTR Ludhiana, ITI, ACS	240 hours	12-15	Classroom / Practical
Certificate	CNC programmer cum operator	CTR Ludhiana, ITI, Sam's Techno School	240 hours	12-15	Classroom / Practical
Modular	Gas & arc welding	CTR Ludhiana, ITI	180 hours	15	Classroom / Practical
Certificate	TIG welding	CTR Ludhiana, ITI	90 hours	15	Classroom / Practical
Certificate	CAD-CAM operator cum programmer	CTR Ludhiana, ITI, Sam's Techno School	24 weeks	12-15	Classroom / Practical
Modular	Basic metrology	CTR Ludhiana, ITI, Sam's Techno School	3 weeks	25	Classroom / Practical
Modular	Preventive maintenance	CTR Ludhiana, ITI, GJSTE	1 week	25	Classroom / Practical
Certificate	Low cost automation	GJSTE	30 hours	30	Classroom / Practical
Certificate	Lean manufacturing	GJSTE, IBC, ACS	3 days	25	Classroom
Certificate	Quality control processes (six sigma)	GJSTE, IBC	5 days	25	Classroom
Certificate	Total quality management	GJSTE, Sam's Techno School	4 days	25	Classroom

Marketing Related Training Modules

Type of Program	Name of Module	Duration	Batch Size	Delivery Model
Modular	Market Research and Demand Assessment	30 hours	30-35	Classroom
Certificate	Marketing	45 hours	30-35	Classroom

Finance & IT Related Training Modules

Type of Program	Name of Module	Duration	Batch Size	Delivery Model
Modular	Financial Management	2 days	20-25	Classroom
Modular	Export Procedures and Documentation	3 days	20-25	Classroom
Certificate	Excise, customs and other taxes	20 hours	30-35	Classroom
Certificate	Course in IT	40 Hours	30-35	Computer Lab

Delivery Channel

Ministry of Rural Development under the Special Projects for Skill Development of Rural Youths under Swarnjayanti Gram Swarozgar Yojana (SGSY) has launched a training program designed to equip the unemployed rural youths from the below poverty line (BPL) households with marketable skills, which would enable them to either secure jobs in the industry or pursue sustainable self-employment opportunities through micro enterprise. One of the industries covered under this scheme is Engineering. This placement linked skill development program was initiated on the public private partnership (PPP) model through selected Project Implementing Agencies (PIA). The Consultant recommends using the salient features of this scheme listed below as appropriate delivery mechanism for implementing the skill development scheme in the cluster:

- Leverage the existing infrastructure and facilities for operation of training centers. No new capital investments for infrastructure to be made. Existing infrastructure of industry, governments, and educational institutions will be used to set up training classrooms and workshops. In the engineering cluster, existing classroom and related infrastructure of ITI, Sam's Techno School, GJSTE, etc. could be utilized. In addition CTR Ludhiana also has the required infrastructure and hostel facilities so that candidates from the tri-city area can stay and attend the training programs.
- Arrange the requisite machinery and equipment for training from the prospective employers to the extent possible on lease/rent or as contribution / participation of employer. The institutes and agencies such as ITI, Sam's Techno School, CTR Ludhiana and GJSTE could be tapped for the machines and equipment required for vocational training.
- Design demand driven training programs with inputs from the prospective employers from the industry to ensure that the industry employ the trained persons. The training program should be

designed in consultation with industry bodies such as Mohali Industry Association (MIA) and also large OEMs such as Mahindra & Mahindra, Rail Coach Factory Kapurthala, Hindusthan Machine Tools, etc. The OEMs would be able to identify the key areas that should be given priority while designing the training programs. The prime objective being providing employment to candidates, a key element of the training would be practical machine operations. In this regard, the Consultant proposes tie ups with local industry so that the participants can spend the last part of their training program, working as apprentices in actual factory environment.

- The skills imparted to the beneficiaries should allow them to earn more than the prescribed minimum wages.
- Training and course content should be in local languages either Punjabi or Hindi (for migrant labor) so as to ensure better absorption by the target audience who may not have exposure to English.
- In addition to technical skills, soft skills are also to be imparted to training participants so that they are equipped to make the transition from an agrarian backdrop to the industry environment
- Duration of the training should preferably be short of up to 3 months so as to minimize the time for which the participants have to be away from productive work opportunities. The Consultant proposes that the training program timing should be kept flexible (part time, weekends, full time, etc.) keeping in mind the requirements of the target groups. In case of people who are already employed the training program should be carried out during the evening so as not to hamper their regular working schedules. A good practice would be to arrange training programs during the months when there is a slack in demand for the goods produced in the cluster. During the slack period the workers would be relatively free to attend the training programs.
- Certification and assessment of the trainees to be done by independent third party agencies acceptable to the industry / prospective employers so as to ensure high quality standards and employment. D&B India proposes that a recognition formula should be adopted involving the following members in the certification & recognition process:
 - Training provider
 - Industry Association
 - OEMs
 - MSME DI
- Trainees coming from remote locations to be provided boarding & lodging facilities wherever it is required. In other cases the trainees are to be provided with to and fro transport and food. D&B India proposes that the existing hostel facilities of ITIs and other government and private institutes can be utilized for providing boarding facilities especially during the time when the regular students go for their vacations.
- For mobilization of trainees, appropriate awareness and publicity campaign to be conducted in local electronic/print media and meetings organized. Identification of trainees will be done on basis of preferential treatment to marginalized social groups like women, SC / ST and Handicapped persons, minorities and persons from BPL category. D&B India proposes to leverage local bodies such as panchayat leaders, NGOs, community based Organisation to spread word about the training programs. Once the first batch of students complete the training and are employed, their testimonials would generate further buzz to attract more participants.

- There should be a preliminary screening of the candidate to assess whether he / she has the required aptitude for the trade in which training is to be imparted and also to reduce mid-course/post training dropout of the candidate before placement. The candidates would have to undergo certain tests pertaining to hand-eye coordination, finger dexterity and colour blindness.
- Funding:
 - The government will meet 75% of the cost of the project and balance 25% would be met by contribution from the industry, state government or the private implementing agency.
 - The maximum cost per trainee (for the government) to be borne through the scheme would be up to ₹ 14100/-

Feedback on skill gap mapping report

The following exhibit indicates the stakeholders in the cluster who have provided feedback on the skill gap mapping report

Exhibit 67: List of people who have provided feedback on the report

Name	Organisation	Designation	Feedback
Mr. Upinder S. Dhingra	TERI	Research Associate, Chandigarh	The report was quite comprehensive in identifying in detail the skill gaps relevant to the units in the cluster. He agreed with the identified skill gaps in the report both at operator and managerial level.

Bhadohi: Training Infrastructure Assessment



Overview of Training Infrastructure Assessment

Bhadohi Floor Coverings Cluster experiences a dearth of training infrastructure with respect to recognized training institutes and colleges. The only recognized institute in the area is Indian Institute of Carpet Technology.

The Indian Institute of Carpet Technology Bhadohi, was set up to provide support to the carpet industry in the area of human resource development, research and development and common facility services.

Human Resource Development: HRD is done through academic courses, which the institute undertakes. These include :- 1) Short term certificate courses of 4 Months in CAD Designing, Dyeing and Computer Accountancy 2) Distance learning diploma programme of 3 years (IDLP) in weaving, carpet manufacturing, chemical processing, carpet designing and maintenance of carpet 3) B.Tech in carpet technology of four years duration. These courses will cover training in computer aided designing color matching, physical and chemical testing of various parameters of various types of yarn used in manufacture of carpets and floor covering, standardization of dyeing techniques including vegetable dyes. Standardization of washing and finishing technique and weaving on improved looms. The institute conducts research work in the areas of blending of fibers for different quality yarns, color matching and standard recipes for different colors/shades, dyestuff and ecofriendly dyes, types and systems of weaving and different knots included improvement in looms, modern systems of carpet finishing/ washing/ standardization of technology and development work on designs.

Common Facility Services: The institute provides common facility services to the industry in the following fields:-

- Testing of various parameters of fibers and yarns
- Testing of various parameters of carpets and floor covering
- Color matching and recipes of dyes, sale of designs, color shade cards,
- Testing of ecofriendly dyes
- Provide documentation and library facilities including creation of museum of carpet and floor coverings
- Arrange lectures of national and international specialties.
- Inviting foreign designers, experts, professionals for continuous flow of exchange of knowledge and expertise.

At present the services rendered by IICT for Bhadohi cluster is mainly testing and HRD for Merchant Export firms and few Manufacturing Export firms. The cost of the services rendered by IICT is borne by the users and there are no grants/ subsidies involved. There is a good demand for testing, short term courses of in CAD/ CAM designing of 3 months duration, dyeing and finishing and R&D services, offered by IICT in the cluster.

The local MSME – DI is located at Varanasi. The services offered by MSME-DI are conducting Market Surveys, financial support for infrastructure development and Common Facilities Centers. The quantum of grant varies from 40 to 60% based on size of the firms and nature of facilities required. The Tiny Manufacturing Firms and weavers lack in linkages with MSME-DI. There is good scope for availing grant for any Common Facilities Centre proposed to be established under MSECDP Scheme.

APITCO (Andhra Pradesh industrial & technical consultancy organization limited) is the cluster implementing agency for the Bhadohi cluster. APITCO provides a complete range of solutions that help establish MSME & is promoted jointly by all-India financial institutions (IDBI, IFCI, and ICICI), industry development corporations in Andhra Pradesh (APIDC, APSFC) and Commercial Banks (Andhra Bank, Indian Bank, SBI). APITCO also offers a wide range of consulting services, especially to SMEs in project identification, project counseling, pre-feasibility reports, detailed project feasibility studies, infrastructure planning, market assessment, expansion, diversification and turnaround strategies, energy audits, waste minimization, environment impact assessment, valuation of fixed assets, skill development etc.

APITCO has a strong base of Accredited Trainer Motivators who regularly conduct training to diverse target groups on wide ranging subjects. Organizing Skill Development Programs and capacity building for candidates selected under different government schemes, Conducting Management Appreciation Programs for SSIs & upgrading skills of middle and senior level executives through management development programs.

However, the availability of training infrastructure is also limited in the cluster. Only IICT has NABL¹ certified laboratories for chemical and physical testing. Other private BDS providers have necessary infrastructure in terms of training rooms etc. but lack production and tool room centers. This reduces the exposure of trainees to programs associated with technology improvement, new designing and testing. Yarn making centers are also limited within ITI at Varanasi and IICT at Bhadohi.

¹ National Accreditation Board for Testing and Calibration Laboratories

To summarize, the following is the status of training infrastructure available in the Bhadohi Floor Coverings Cluster:

Exhibit 68: Tip Sheet: Overview Of Training Infrastructure In The Floor Coverings Cluster

Indicators	Private	Colleges/ Universities	Government	Industry Associations
Indicative List of Institutes/ Organisations	BDS Training Providers	Indian Institute of Carpet Technology, ITI Varanasi	MSME DI Branch	All India Carpet Manufacturers Association
Courses (production/ designing / marketing etc.)	Lean and GMP	Production and Related Processes, Maintenance, Machine Operations, Computer Aided Design	Quality, Standards	As Required, typically on marketing and cooperative behavior
Frequency of Training.	As Required	Short Term, MES Courses	Annual	As required
Relationship with industry	Not recognized	Only major training provider	Not known to the industry	Industry body
Fee based / non-fee based	Fee Based	Fee Based, however, Subsidies under certain schemes may be available	Fee Based	Non-Fee Based for Members
Whether trained professionals are directly employable in MSMEs or need further training.	Yes	Yes	Yes	Only for employees of enterprises
Training Infrastructure	Training Rooms only, no specific labs, tool rooms etc.	NABL and Non-NABL certified labs Tool Room Hand and Power Loom	IICT owned labs are used Internally do not have any infrastructure Common facilities center being developed	Large enterprises are used as training centers for on-the-job training
Sourcing of Trainers	External, mostly from industry or institutes	Internal Faculty	Sourcing from BHU, IICT	Within the industry

Industry Recognition		Higher for degree and diploma courses	Only if done through IICT	NA
		Increasing awareness of MES modules		
Course (Regular / customized offerings)	Infrastructure / customized offerings			
	Regular	Recognized by the U.P. Technical University, Lucknow & AICTE	Regular	Regular
Intake (Annual)	NA	70	NA	For Members
Placement (Annual) MSMEs / Other	NA	MSMEs, Large Industries	NA	Only for employees of enterprises

Curriculum development - overview

Definition & constituents

The following matrix relates to the various levels of training programs that are currently developed by the Consultant in joint association with various private and public BMOs that are present in the cluster for training purposes.

While developing the training courses, the following sources were utilized:

- National Council for Vocational Training syllabi on chemicals industry: Syllabus is available for the floor coverings/ carpet industry directly with the NCVT, however, related industry syllabi were referred while developing the suggested modules
- Modular Employable Skills by National Skill Development Corporation
- IICT: Indian Institute of Carpet Technology also implements the programs prescribed by the NCVT and DGET (Directorate General of Employment & Training) directly. All 33 modules prescribed are available at the IICT.

Thus, while defining the production level training programs, the following constituents are necessary:

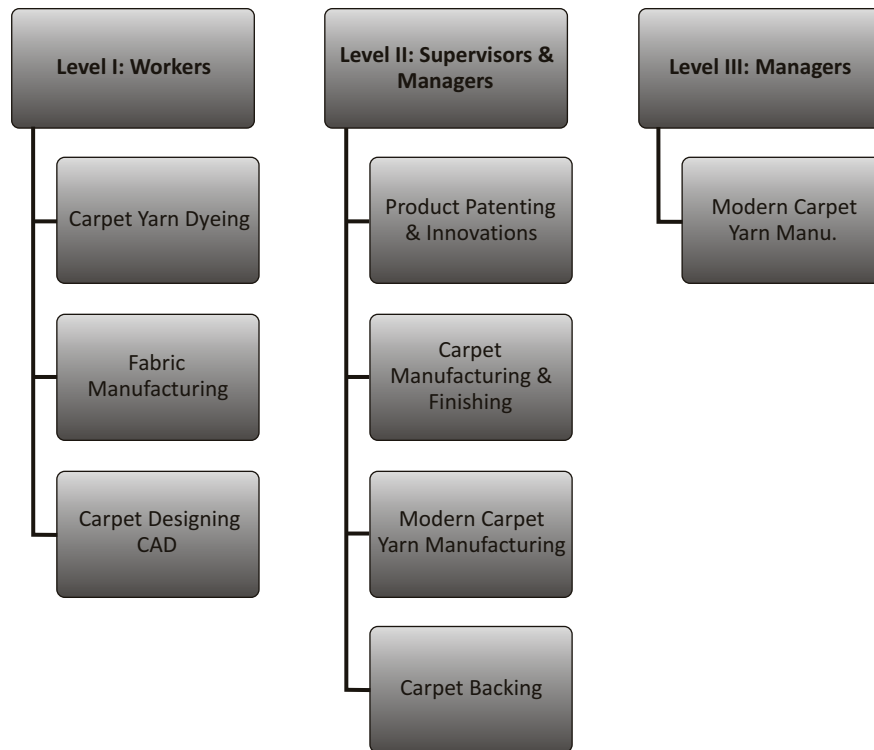
- Modular programs at various levels specific and targeted towards the immediate need-gap
- Refresher or certificate courses to be taken up to provide an exhaustive overview of various processes and related effective techniques

Production & Related Processes

The training matrix below is developed for "Production and Related Processes". During the initial discussions and the survey conducted by the Consultant in the Bhadohi cluster, the following needs emerged in production related areas:

- Dyeing, Knotting and Weaving is a major skill gap amongst the firms in the cluster. The major reason for this is that these activities are handled by worker levels in the Organisation. However, the work force is heavily mobile and hence, a gap is created
- At the supervisory and managerial level, innovative and more productive techniques of manufacturing need to be explained. IICT constantly innovates on new techniques and machinery that would increase the speed of manufacturing carpets multi-fold
- Carpet Designing also needs to be conducted through computer aided modules.

The Consultant has taken the above into consideration while formulating the following matrix for production and related areas. There would be overlapping areas between modular courses and certificate courses. However, to eliminate high level of overlaps, the partners BMOs for modular and certificate courses are different.

Exhibit 69: Training Matrix for Production & Related Processes

Source: Consultant

Marketing Related Training Programs

During the survey administered by the Consultant, export oriented units described their needs in undergoing marketing and compliance related training programs. The trade in exports is presently channelized through business houses which buy from small and micro enterprises and then in turn export the products. However, in this process, the small and micro units have expressed exploitation and at the same time, the desire to coordinate orders and design processes with export buyers directly. Therefore, these units require training in identifying potential markets and customers, developing appropriate marketing value chain through effective branding and pricing and thereby reap more profits than the current scenario.

Other than the Export Oriented Units, the domestic units described their needs to explore new territories and expand into newer product areas.

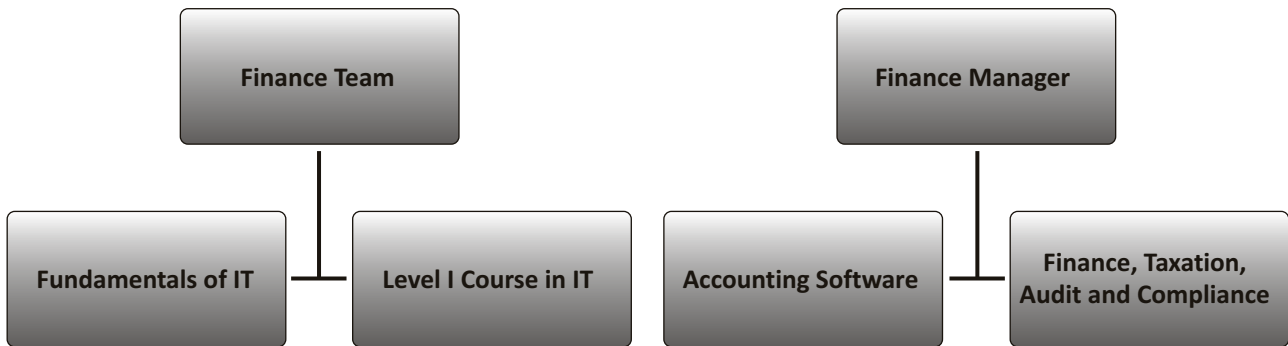
As a result, with respect to marketing, only two certificate courses are currently proposed:

- Level I Certificate Course for Sales Force
- Level II Certificate Course for Marketing Managers

Finance & IT Related Training Programs

Computer aided designing and computer aided manufacturing is now being promoted by Indian Institute of Carpet Technology in the cluster. However, the investments initially installing these are huge and hence, most of the small and micro firms are not implementing these at their enterprises. Some units which have bulk orders tend to get the computer designing, and at times even manufacturing, done through the IICT. The institute, thus in a way also acts as a BDS provider to the cluster.

Exhibit 70: Training Matrix for Finance & IT



Source: Consultant

Detailed curriculum for individual clusters

Production and Related Processes

Modular Course on Carpet Yarn Dyeing

- Batch Size: 30 to 35
- Qualifications: Workers/ Shop-floor employees
- Duration: 240 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Chemical Labs, Material and Testing Facilities

Topic	Contents
Overview	<ul style="list-style-type: none"> • Identification of various tools and equipments • Safe Working Practices • Wool/ Silk/ Art identification
Machine Handling	<ul style="list-style-type: none"> • Different types of machines used for carpet yarn dyeing • Operation of dyeing machine • Knowledge of spares and maintenance • Regular monitoring and wear and tear
Material Handling	<ul style="list-style-type: none"> • Dye-stuffs identification • Color fasteners, washers etc. • Shade Matching • Functions of Dyes, Chemicals and Auxiliaries
Hands-on-experience	<ul style="list-style-type: none"> • Practice of Dyeing of Wool • Practice of Dyeing of Silk

Modular Course on Manufacture of Fabric Related to Carpet

- Batch Size: 30 to 35
- Qualifications: Workers/ Shop-floor employees
- Duration: 150 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Power loom, Handloom

Topic	Contents
Overview	Identification of various tools and equipments Safe working practices Knowledge of machines
Loom Handling	Parts of the loom and its functions Machine and loom handling and maintenance Difference between handloom and power loom Motion of the loom and its function
Hands-on experience	Practice of loom setting Practice of repairing of thread Practice of design setting

Modular Course on Carpet Designing: CAD

- Batch Size: 30 to 35
- Qualifications: Workers/ Shop-floor employees
- Duration: 240 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Computer Labs, CAD Software

Topic	Contents
Overview	Development of color wheel Use of crayons, color pencil, sketch and water color
Designing	Carpet Designing: Kimran, Herati, Tabriz, Prayer Rug, Mir, Tufted and Modern
CAD	Different tools of CAD Software Application for textile and carpet designing System practice on CAD

Modular Course on Product Patenting and Innovations

- Batch Size: 30 to 35
- Qualifications: Supervisors and Managers
- Duration: 240 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Computer Labs, CAD Software

Topic	Contents
Patenting	Compliance Filing and Documentation Regulations related to patenting and product trademark registrations
Product Innovation	Product Designing Innovative product and concepts Market Trend and new concepts Competitive assessment of products and designing

Modular Course on Carpet Backing

- Batch Size: 30 to 35
- Qualifications: Supervisors and Managers who have completed at least one module on carpet manufacturing or loom manufacturing
- Duration: 240 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Carpet Backing System, Brush, Scrapper, Testing Kit, Tensile Tester, Tuft Withdrawal Tensometer, Moisture Meter Software

Topic	Contents
Overview	Introduction to backing system Introduction to backing techniques Overview of machines and tools Relation to quality and standards
Process Modules	Identification of various tools and equipment and materials Safe Working Practices Analysis of latex and / or adhesive material Analysis of backing fabrics Measurement and monitoring of drying and adhesion Setting of backing process Testing for delamination and tuft withdrawal force
Materials Modules	Study of sequence of operations Study of backing materials including latex and / or adhesive materials Study of overall backing system including quality assurance tools

Certificate Course on Carpet Manufacturing and Finishing

- Batch Size: 30 to 35
- Qualifications: Supervisors and Managers who have completed at least one module on carpet manufacturing or loom manufacturing
- Duration: 100 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Shearing Machines, Frames, Needles, Embossing Scissors, Gas Torch

Topic	Contents
Overview	Overview of finishing techniques Study of tools and machines used for carpet finishing Safe working practices
Components of Finishing	Overview of components of finishing Quality assurance and quality control Testing techniques Washing, Singeing, Shearing etc.
Quality and monitoring	Monitoring and control of residual moisture content Monitoring and control of neutralization Identification of various tools and equipment and material
Practice for finishing techniques	Practice of washing of hand knotted woolen carpet using chemicals and herbal products Practice of washing of hand tufted woolen carpet using chemicals and herbal products Practice of after wash process like drying
Defect Modules	Recipes Functioning of all ingredients Defects of carpets and their remedial measures Eco-friendly tools and techniques
Packaging	Study of sequence of operations Study of basics of packaging of carpets

Certificate Course on Modern Carpet Yarn Manufacturing

- Batch Size: 30 to 35
- Qualifications: Supervisors and Managers who have completed at least one module spinning of cotton yarn / woolen yarn
- Duration: 120 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall, Calculator, Wrap Wheel, Weighing Balance, Microscope, Pick Glass, DREF² or such machine, Stroboscope

Topic	Contents
Overview	Overview of finishing techniques Study of tools and machines used for yarn manufacturing Safe working practices
Machine Modules	Study of sequence of operations Study of process and machine parameters involved Identification of different parts of DREF 2000 or such machine
Practice Modules	Practice to produce woolen or such yarn on DREF 2000 or such machine Measurement and control of count of yarn
Materials Modules	Fibers and its uses Types of fibers including wool fiber for DREF machine Technique of manufacturing yarn through DREF or such machine

² DREF Spinning is a textile technology that allows very heavy count yarns and technical core-wrapped yarns to be manufactured

Marketing Related Training Modules

Modular Course on Market Research and Demand Assessment

- Batch Size: 30 to 35
- Qualifications: Marketing Supervisors, Field Supervisors
- Duration: 30 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	Importance of Assessing New Markets Relevance to existing markets Product Performance and logistics networking
Market Research	Quantitative estimations of competition, demand, supply Identification of effective market penetration techniques
Sales force effectiveness	Importance of sales force Channels, Media and Information gathering Documentation and ERP Modules for market information
Demand Assessment	Determination of accurate demand assessment models Documentation of historical data Demand Forecasting Techniques

Certificate Course in Product Marketing

- Batch Size: 30 to 35
- Qualifications: Marketing Managers / Heads
- Duration: 90 Hours
- Delivery Model: Classroom and Chemical Labs Based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Overview	Importance of Marketing Channels of Marketing Difference between marketing and sales
What is Marketing?	Functions of Marketing Relevance of Product, Price, Promotions and Place Decision Making
Product Pricing	Pricing Strategies Profit optimization Seasonal and Design Based Pricing Competitive assessment and pricing Customer Need Assessment and Basis for Value Additions
Promotions, Advertisements	Advantages of effective promotions Channels of advertising: ATL and BTL Importance of B2B market places Website Trade-fairs and handloom expo / exhibitions
Importance of Branding	Overview of Branding Principles of Brand Development Establishing Brand Awareness Leveraging Product Patents Measuring Customer Satisfaction and Brand Loyalty
Customer Relatio Management	New Customer Development Effective communication and marketing Prospecting Developing Product Catalogue Customer Enquiry Handling Quotations, Proposals and Conversions Managing Customer Value through CRM and Lifecycle management

Overview of Workshops Conducted

Detailed study was done by visiting APITCO, Marketing Consortia, Purvanchal Designers Association, AICMA (All India Carpet manufacturers Association), CEPC (Carpet Export Promotion Council), IICT (Indian Institute of Carpet Technology), MSME DI by understanding the level of skill gaps that these institutes have assessed. Focused group discussion was also carried out between these institutes' directors.

The local SIDBI office at Varanasi was also tapped to gather inputs and insights on the cluster. Focus group discussions were conducted with training center, APITCO and Marketing consortia.

Exhibit 71: Visit to MSME DI Varanasi



At the MSME DI at Varanasi, group discussion was held with the director, cluster in-charge and training officer to understand the specificities of the cluster. It was also discovered that while the main MSME DI is located at Allahabad, the MSME DI in the Bhadohi area was not responsible for Bhadohi cluster until February 2011. This situation has now changed and MSME DI at Varanasi is responsible for Bhadohi cluster development as well.

The Survey Report has been discussed with the relevant stakeholders and their comments and feedback was considered while developing the training modules.

Module Delivery Channels – Consultant Recommendations

For the various training modules listed above, the following tables provide details on ideal batch size, cost and delivery channels. The cost of various training programs listed below would range from around ₹ 10000-15000 for the indicated batch size for production related courses. The cost is lower for training in production modules since most of the necessary infrastructure and faculties are available with the IICT. For courses under marketing and financial modules, the cost would be around ₹ 5000-10000 for the mentioned batch sizes.

Production Related Modules

Type of Program	Name of Module	Duration	Target Audience	Delivery Model
Modular	Carpet Yarn Dyeing	240 Hours	Workers	Classroom, Chemical Labs
Modular	Manufacture of fabric related to carpet	150 Hours	Workers	Classroom, Workshops, Tool Room
Modular	Carpet Designing CAD	240 Hours	Workers	Classroom, Chemical & Computer Labs
Modular	Product Patenting & Innovations	100 Hours	Supervisors & Managers	Classroom
Modular	Carpet Backing	240 Hours	Supervisors & Managers	Classroom, Workshops, Tool Room
Certificate	Carpet Manufacturing & Finishing	100 Hours	Supervisors & Managers	Classroom, Workshops, Tool Room
Certificate	Modern Carpet Yarn Manufacturing	120 Hours	Supervisors & Managers	Classroom, Workshops, Tool Room

Marketing Related Training Modules

Type of Program	Name of Module	Duration	Target Audience	Delivery Model
Modular	Market Research and Demand Assessment	30 Hours	Marketing Supervisors	Classroom
Certificate	Certificate Course in Marketing	90 Hours	Marketing Managers	Classroom

Finance & IT Related Training Modules

Type of Program	Name of Module	Duration	Target Audience	Delivery Model
Certificate	Fundamentals of IT and its application to Carpet Industry	240 Hours	Finance Team	Computer Lab
Modular	Level I Course in IT	40 Hours	Finance Team	Computer Lab
Modular	Finance and Taxation, Audits and Compliance	40 Hours	Finance Manager	Computer Lab
Modular	Accounting Software	40 Hours	Finance Manager	Computer Lab

Delivery Channel through the Integrated Skill Development Scheme

Ministry of Textile has launched Integrated Skill Development Scheme that seeks to make interventions in the textile sector including handicrafts and handlooms to meet the skill gaps in the manpower requirement. The salient features of the scheme are reproduced here from the guidelines of Ministry of Textiles. The Consultant recommends using the same as appropriate delivery mechanism for implementing the skill development scheme in the Bhadohi Carpet Cluster:

- The scheme would train approximately 26.75 lakh persons over a five year period (2009-10 to 2014-15)
- Increase the employability of residents of the target areas through imparting skills in areas of textiles and associated industries
- Ensure that the scheme is implemented in such a manner that incorporates wide range of skill improvement areas
- Create a trainers' pool by undertaking advanced training programmes at cluster level
- No new capital investments for infrastructure to be made. Existing infrastructure of industry, governments, educational institutions will be used to set up training classrooms and workshops
- Identification of trainees will be done on basis of preferential treatment to marginalized social groups like women, SC / ST and Handicapped persons, minorities and persons from BPL category
- All facets of skill development will be covered e.g. basic training, skill up gradation, advanced modern training in emerging technologies, training of trainers, managerial skill, entrepreneurship development
- Private sector participation will be ensured and outcomes will be strengthened by incentivizing training where the trainees get employed / self-employed after training is imparted
- Training program will be designed based on industry demand in different segments. The emphasis will be on measurable outcomes
- **Duration** of the training shall be for a minimum of four weeks duration, and in cases where the skill sets match the Modular Employable Skills (MES) modules, the duration shall also be as per the requirements of MES

- **Training** Methodology to ensure minimal lecturing and stress should be given on maximum hands-on-training. Infrastructure of IICT can be used to maximum for such cases

- **Funding:**
 - The government will meet 75% of the cost of the project and balance 25% would be met from fee / industry contribution
 - However, where it is not possible to raise the private contribution, the decision making committee will be empowered to increase the limit of government contribution
 - The average cost per trainee (for the government) to be borne through the Scheme would be approximately ₹ 7300/-

- The Indian Institute of Carpet Technology (IICT) has been proactive in identifying the training needs in the Bhadohi Carpet Cluster and associate training modules in line with this scheme. The following points were highlighted by Dr. Goswami, Director, IICT:
 - Identification of skill gap phase on an overall level for Handicraft Cluster is available. IICT is also open to using the specific report on Skill Gap in the Bhadohi Carpet Cluster developed independently by the Consultant in the current project
 - Development of Course Curricula for Short Term Courses based on Modular Employable Skills (MES): This document is prepared under the chairmanship of Director, IICT and is available on the website of DGET
 - Identification in gap in terms of modular employable skills is yet to be provided by stakeholders
 - For implementation of the scheme, the industry has to come forward and take advantage of the support schemes.

- **Certifications & Recognitions:** A four-partite recognition formula should be adopted by the industry association. In the case of Bhadohi Floor Coverings Cluster, the following members should be involved in the certification & recognition:
 - Ministry of Textiles
 - Training provider
 - BMOs/ Industry Association conducting the program
 - MSME DI

Soft Skills Training Modules

Exhibit 65 depicts the training module matrix of soft skills. The matrix depicts the soft skills training needs of employees at various levels in the firm. The colour in each cell indicates the orientation of training program for each attribute of soft skill. For example, the green colour in communication skills at supervisor level represents that at supervisor level, a training program will be organised on communication skills with more emphasis on written communication. The contents of the training curriculum also vary along with for employees at different levels in the organisation. Accordingly three different training modules have been designed as listed below:

- Module I: Workers and other support staff.
- Module II: Supervisory level staff.
- Module III: Proprietors and managerial staff.

Exhibit 73: Training modules matrix					
Management cadre	Training programs				
	Communication skills	Employee attitude	Personality traits	Leadership skills	
Module I - Operators / Workers					
Module II - Supervisors					
Module III - Managers / Proprietors					

Colour indicates the orientation of training program towards the skill

Communication skills
<input type="checkbox"/> Listening
<input type="checkbox"/> Presentation
<input type="checkbox"/> Written communication

Employee attitude
<input type="checkbox"/> Innovation
<input type="checkbox"/> Pro active
<input type="checkbox"/> Focus

Personality traits
<input type="checkbox"/> Team player
<input type="checkbox"/> Result orientation,
<input type="checkbox"/> Organizational citizenship behavior
<input type="checkbox"/> Constant learner
<input type="checkbox"/> Grooming

Leadership skills
<input type="checkbox"/> Employee motivation
<input type="checkbox"/> Conflict resolution
<input type="checkbox"/> Stress management
<input type="checkbox"/> Future planning

The following exhibits indicate the training course and curriculum for all the three modules.

Exhibit 74: Module I Soft Skills Training Curriculum		
Sl. No.	Practical competency	Underlying theory
1.	Listening	
	<ul style="list-style-type: none"> Stress on accent, clarity, voice modulation etc., so as to effectively express oneself. Role playing exercises to improve feedback & questioning techniques: Study of different pictorial expression of non-verbal communication and its analysis. 	<ul style="list-style-type: none"> Components of effective communication such as conviction, listening, confidence and enthusiasm. Knowledge about communication barriers – unorganized thought, wrong interpretation, ignoring the context, impatient listener, perception, etc. Nuances of non-verbal communication such as facial expression, posture, gesture, eye contact, etc.
2.	Employee innovation	
	<ul style="list-style-type: none"> Brain storming sessions to generate innovative ideas. 	<ul style="list-style-type: none"> Creative thinking and creative process
3.	Employee focus and pro activeness	
	<ul style="list-style-type: none"> Develop productive and effective work habits. Initiate action without having to be supervised. 	<ul style="list-style-type: none"> Prioritizing the list of activities. Effective strategies for overcoming procrastination.
4.	Team building skills	
	<ul style="list-style-type: none"> Building trust through group exercises, games, etc. Handling criticism from other team members. Asking for help or advice from other team members. 	<ul style="list-style-type: none"> Importance of giving and receiving regular feedback among team members. Learning to commit to common goals. Do's and don'ts of behavior in the workplace
5.	Personality traits	
	<ul style="list-style-type: none"> Practical tips on how to look and dress appropriately for a specific workplace Apply oneself to a task independently with self-motivation. Receptive to new ideas or methods at the workplace. 	<ul style="list-style-type: none"> Self-motivation techniques to recognize the primacy of Organisation goals and achieve them. Ability to learn from mistakes. Ability to deal with changes at the workplace.

Exhibit 75: Module II Soft Skills Training Curriculum

Sl. No.	Practical competency	Underlying theory
1.	Listening	
	<ul style="list-style-type: none"> • Stress on accent, clarity, voice modulation etc., so as to effectively express oneself. • Role playing exercises to improve feedback & questioning techniques: • Study of different pictorial expression of non-verbal communication and its analysis. 	<ul style="list-style-type: none"> • Components of effective communication such as conviction, listening, confidence and enthusiasm. • Knowledge about communication barriers – unorganized thought, wrong interpretation, ignoring the context, impatient listener, perception, etc. • Nuances of non-verbal communication such as facial expression, posture, gesture, eye contact, etc.
2.	Written communication	
	<ul style="list-style-type: none"> • Formulation of correct sentences and structuring paragraphs. 	<ul style="list-style-type: none"> • Focus on the 7Cs of effective communication – Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy and Correctness. • KISS (keep it short & sweet) concept to compose effective messages.
3.	Employee innovation	
	<ul style="list-style-type: none"> • Practical ideas on how to leverage the ability to think “outside the box” and apply the results to real on-the-job challenges • Brain storming sessions to generate innovative ideas. 	<ul style="list-style-type: none"> • Creative thinking and creative process • Idea-generation facilitation skills
4.	Employee focus and pro activeness	
	<ul style="list-style-type: none"> • Develop productive and effective work habits. • Initiate action without having to be supervised. 	<ul style="list-style-type: none"> • Identify and focus on the most important priorities. • Effective strategies for minimizing interruptions as well as overcoming procrastination.
5.	Team building skills	
	<ul style="list-style-type: none"> • Building trust through group exercises, games, etc. • Handling criticism from other team members. • Asking for help or advice from other team members. 	<ul style="list-style-type: none"> • Understanding team dynamics. • Exchanging of regular feedback with team members. • Motivating people to commit to common goals. • Do’s and don’ts of behavior in the workplace

Exhibit 75: Module II Soft Skills Training Curriculum

Sl. No.	Practical competency	Underlying theory
6.	<ul style="list-style-type: none"> • Personality traits 	
	<ul style="list-style-type: none"> • Practical tips on how to look and dress appropriately for a specific workplace • Apply oneself to a task independently with self-motivation. • Receptive to new ideas or methods at the workplace. 	<ul style="list-style-type: none"> • Self-motivation techniques to recognize the primacy of Organisation goals and achieve them. • Ability to learn from mistakes. • Persuasion skill to overcome workers' resistance to change.
7.	Leader ship skills	
	<ul style="list-style-type: none"> • Hone the leadership skills through role playing and games. • Remaining calm and interpreting verbal and non -verbal communication when dealing with conflicts. • Avoiding disrespectful words and actions when dealing with stressful situations. • Giving negative feedback and handling disciplinary issues. 	<ul style="list-style-type: none"> • Knowledge about motivating techniques such as positive feedback, recognizing achievement of team members, treating people with respect, etc. • Successful conflict resolution by obtaining the viewpoints of all parties concerned, arriving at a common perception of the problem, brainstorming possible solutions and finally negotiating a solution. • Manage stressful situations at work by prioritizing tasks, delegating responsibility, improving communication channels among team members, avoiding knee jerk reactions, etc.

Exhibit 76: Module III: Soft Skills Training Curriculum

Sl. No.	Practical competency	Underlying theory
1.	<ul style="list-style-type: none"> Written communication 	
	<ul style="list-style-type: none"> Formulation of correct sentences and structuring paragraphs. 	<ul style="list-style-type: none"> Focus on the 7Cs of effective communication – Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy and Correctness. KISS (keep it short & sweet) concept to compose effective messages.
2.	Presentation skills	
	<ul style="list-style-type: none"> Clear delivery of presentation. Maintaining confidence and controlling nervousness. Eliminating monotone and boredom. Effectively using visual aids. Creating an interactive, question friendly atmosphere. Concluding the presentation. 	<ul style="list-style-type: none"> Understanding your listener(s). Organizing content from the listener's point of view. Use storyboards to build on your presentation. Selection of proper channel / medium Controlling questions & answers. Dealing with tricky questions.
3.	Employee innovation	
	<ul style="list-style-type: none"> Practical ideas on how to leverage the ability to think “outside the box” and apply the results to real on-the-job challenges Brain storming sessions to generate innovative ideas. 	<ul style="list-style-type: none"> Creative thinking and creative process Encourage employees to think out of the box and take risks. Frame problems in a way that maximizes the probability for innovative solutions that deliver business results
4.	Employee focus and pro activeness	
	<ul style="list-style-type: none"> Develop productive and effective work habits. 	<ul style="list-style-type: none"> Design incentives to encourage people to be more proactive. Effective strategies for minimizing interruptions as well as overcoming procrastination.
5.	Personality traits	
	<ul style="list-style-type: none"> Apply oneself to a task independently with self-motivation. Receptive to new ideas or methods at the workplace. 	<ul style="list-style-type: none"> Techniques to create a sense of ownership among staff. Strategies for accepting and dealing with changes at the workplace.

Exhibit 76: Module III: Soft Skills Training Curriculum

Sl. No.	Practical competency	Underlying theory
6.	Leadership skills	
	<ul style="list-style-type: none"> • Hone the leadership skills through role playing and games. • Effectively communicating the Organisation goals to team members. • Remaining calm and interpreting verbal and non-verbal communication when dealing with conflicts. • Avoiding disrespectful words and actions when dealing with stressful situations. • Giving negative feedback and handling disciplinary issues. 	<ul style="list-style-type: none"> • Information about leadership characteristics of successful leaders. • Understand the three facets of leadership which includes role as manager of the business, change leader and human asset leverage. • Goal setting and preparing a plan to achieve them. • Knowledge about motivating techniques such as positive feedback, recognizing achievement of team members, treating people with respect, providing growth opportunities etc. • Successful conflict resolution by obtaining the viewpoints of all parties concerned, arriving at a common perception of the problem, brainstorming possible solutions and finally negotiating a solution. • Manage stressful situations at work by prioritizing tasks, delegating responsibility, improving communication channels among team members, avoiding knee jerk reactions, etc.

Knowledge Transfer Mechanism



Defining Knowledge Transfer

The process of knowledge transfer with respect to training and program implementation is an integral step in skill development process for the MSME clusters. This section details out the knowledge transfer mechanism for the 8 identified clusters for the study.

Argote & Ingram (Argote and Ingram: 2000) define knowledge transfer as "the process through which one unit (e.g., group, department, or division) is affected by the experience of another"³

Many national and international governments are attaching importance to knowledge transfer and knowledge absorption process in MSMEs. In this context, **the Consultant defines Knowledge Transfer Mechanism as** a process by which skill development takes place through identification of skill gaps, development of training modules and further, transferring these modules to the cluster enterprises in a specified and regulated manner.

The Process of Knowledge Transfer

The mechanism or the process of knowledge transfer involves multiple sub-processes and stakeholders to jointly collaborate and substantiate the efforts of one another. The roles of all stakeholders in the MSME ecosystem in knowledge transfer should be clearly delineated to ensure the success of such programs.

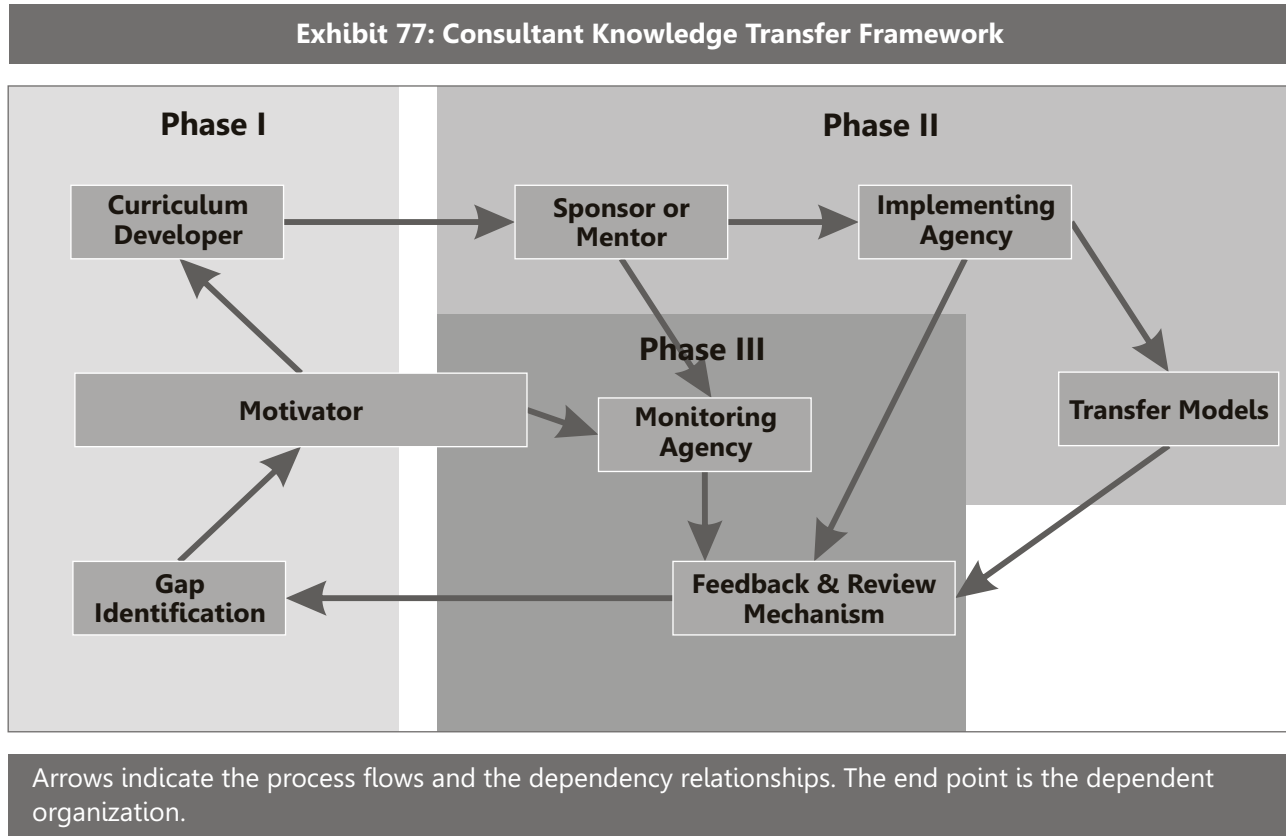
The following steps would constitute the broad knowledge transfer mechanism:

- **Identifying the knowledge holders within the clusters:** These would ideally be integrated training providers, domain experts, universities and government training centers (MSME DI etc.). The roles and responsibilities of these would also require to be determined whilst formulating the knowledge transfer architecture.
- **Motivating them to share:** Other than financial motivation, it is commonly observed across the 10 clusters in this study that participation in training programs is limited from the enterprises. Therefore, it is important to design a scheme to keep the knowledge holders motivated through ensuring adequate participation from the enterprises.
- **Designing a sharing mechanism to facilitate the transfer:** This will be developed through the training related to the Consultant Knowledge Transfer Framework detailed below.
- **Executing the transfer plan:** This involves the actual implementation of knowledge transfer plan
- **Measuring to ensure the transfer:** The last piece in knowledge transfer process is devising a framework to evaluate and measure the success of training programs and level of skill development that can be attributed to the training programs and knowledge transfer.

³ Argote, L. et al. (2000). "Knowledge Transfer in Organizations: Learning from the Experience of Others", *Organizational Behavior and Human Decision Processes*, 82(1) (May): 1–8

Consultant Knowledge Transfer Framework

On the basis of requirements for skill development and the developed training modules, the Consultant recommends the usage of its proprietary framework for knowledge transfer to capture and detail the process steps involved (mentioned above):



The roles and responsibilities of each of the stakeholders mentioned above would constitute the detailed knowledge transfer process:

PHASE I

- **Gap Identification:** Currently, for the present 8 MSME clusters on the basis of which this framework has been developed, the gap identification role was conducted by Dun and Bradstreet India. Going forward, the following should be considered while conducting this phase:
 - o The process of gap identification should be conducted externally to a MSME cluster. This implies entrusting this activity with an agency or an institution which is external to the MSME cluster. This would ensure unbiased and dispassionate views on the current levels of skill development in a cluster
 - o The broad parameters that can be used to measure the extent of skill gaps are:
 - Nature and complexity of organizational process
 - The level of qualifications and skills necessary to conduct a particular process / job

- The level of qualifications and skills desired by the management to conduct a particular process / job
 - The level of capability and skill sets of the management
 - Inter-linkages between process (internal) and cluster enterprises (external)
 - o Ensuring this would provide directional inputs on processes and requirements within the identified cluster.
- **Motivator:** As indicated above, the role of the motivator is an integral part in all the three phases of knowledge transfer mechanism. In the current context, **the role of local NGOs, labor bodies, industry associations,** trade unions and civil society should be recognized with utmost importance. These bodies would be instrumental in identifying the relevant need and keep other members of the MSME ecosystem motivated to conduct the training modules. The role of the motivator on broad levels would be:
 - o Ensure that the gaps identified in the existing skill sets are actionable and if implemented, would be beneficial and critical for the progress of the enterprises contained within a cluster. This can be ensured by developing demand driven courses. The assessment of requirement and demand is a continuous activity that should be a part of the motivator's profile.
 - o Identify a prioritized set of training modules that can be implemented
 - o Define schemes and incentivize enterprises to participate in such training programs
 - o Ensure quality and management of these programs
 - o Obtain documented information and circulate amongst the relevant stakeholders as a part of learning and best practices from a training program each calendar year

Ideally, the motivator has the onus of identifying the right type of training program and its relevance and thereby communicating it further to the enterprise level. This broadly would therefore also cover the marketing and communication of the training modules.

- Curriculum Developer: The curriculum developer takes on the role of aggregating the training needs identified in the cluster. It develops relevant course curriculum and frameworks necessary for training aimed at bridging the set of identified gaps in the cluster. Typically, its activities can range within the following scope:
 - o Identification of the need of training
 - o Designing the specifics of the training program – modular, certificate, short term etc
 - o Developing the detailed course curriculum
 - o Identifying the right set of training providers. These could be local universities, regional ITIs, local MSME DI etc.
 - o Coordinating with the motivator and finalizing the right institution that would conduct the training programs

The thrust should be put on strengthening the local government machinery through providing necessary material and information via the training content developer. Various schemes of the

government, Ministry of Labor, Directorate General of Employment and Trade (DGET), National Council for Vocational Training, etc should be considered. The existing machinery through autonomous training institutions of the MSME Ministry, namely the NIMSME, NIEBUD, IIE and NSIC are well placed to develop these curricula. The focus should also be on developing modules on the lines of Modular Employable Skills (MES) under the Skill Development Initiative (SDIs) of the DGET. The broad policy framework of the National Skill Development Policy should be used while generating these modules.

PHASE II

- **Sponsor or Mentor:** This ideally would be the **Ministry of MSME** and most of the training modules should be conducted and implemented under several of its schemes at initial stages. The existing machinery of the Ministry with the **MSME DI** would have the onus of motivating the enterprises and the cluster bodies for training and skill up-gradation. Relevant Public-Private Partnership modules should be identified and tested for long term sustainability. These partnerships should also be evaluated and finalized in light of the operating guidelines of the National Policy on Skill Development.
- **Implementing Agency:** Of the various members of the MSME ecosystem, (namely the MSME DI, the local industry association, the cluster development agency, the local BDS providers, training institutions etc), one single implementing agency needs to be identified for taking up the onus of providing the developed training modules.

In effect, this is the first stage of knowledge transfer where the content developer transfers the developed modules and knowledge to the implementing agency with the sign-off and supervision of the motivator. The following can be used as recommended guidelines on identifying right implementing agency

- **Government Machinery:** This relates to the local **MSME Development Institute or the MSME Tool Room**. The **Product and Process Development Centres**⁴ (PPDCs) can also be tapped to provide the relevant training under their scope of work. The following conditions would be necessary if the MSME DI needs to be regarded and entrusted the work of knowledge transfer to the end-user – the cluster enterprises:
 - The MSME DI must be regarded as an important development promoting institute
 - Its strategic importance must be understood and accepted by all the cluster enterprises
 - The cluster is a strong and an evolved cluster or has requirements that are scalable and constant across enterprises
 - Infrastructure and training facilities are available at the local MSME DI
 - Strong networks with training providers and local universities etc exist
- **Local Industry Association:** In areas where cluster is new or being set up, the local industry association can play a crucial role of implementing the training programs. A major reason for this is acceptability of the association by the enterprises, since the association is formed by representatives from within the cluster. As the cluster evolves in

⁴ There are six PPDCs functioning at Kannauj (Fragrance & Flavour Industry), Firozabad (Glass Industry), Meerut (Sports goods industry), Agra (Foundry Industry), Ramnagar (Electronics Industry) and Mumbai (Electrical Measuring Instruments Industry)

size and growth, the government machinery can then take over. However, during this take over phase, it is imperative that the local industry association makes concerted efforts to transfer the knowledge to strengthen the government machinery.

- **Cluster Development Agency:** The cluster development agency should be involved only when mission critical training has to be provided and implemented across all the units in the cluster. A good example is implementation of GMP and GLP related modules across the Hyderabad Pharmaceuticals cluster as a matter of regulation.
 - **Local BDS Providers** should be used only as aggregators and to fill in the gaps where the MSME DI, local industry association and cluster development agency are not able to identify the right set of training providers.
- **Transfer Models:** The following transfer models are available while executing knowledge transfer mechanism. These also constitute the international best practices while executing knowledge transfer:
 - **Narrative transfer** – This is the easiest of the models that can be adopted in knowledge transfer to the MSMEs. This involves classroom training and syllabus-based approach.
 - **Mentorship** – This relates to the process of informal knowledge transfer. A local expert firm can be nominated as a mentor for providing training and sharing of its best practices. Adequate incentives for this local firm to engage into knowledge sharing need to be identified and developed. The primary members and the Secretariat of local industry associations can be entrusted with this responsibility. In most of the clusters, it is observed that they are owners or proprietors and hence they can be leveraged for this initiative.
 - **Guided experience** – This relates to on-site and on-the-job training where an industry person directly from the shop-floor is recruited to conduct the training program. Along with the tabulated and indicated course curriculum, this industry person would be in a position to provide his hands-on experience during the various modules being developed.
 - **Simulation** – This involves practice and simulations of real world working environments. In clusters such as textiles, carpet manufacturing, etc, this would hold higher relevance since the training and actual environments can be made indistinguishable.
 - **Guided experimentation** – This involves conducting simulation models and creating environments with the aid of an expert from the industry. This is a combination transfer model of guided experience and simulation models.
 - **Paired work** – This is similar to the train the trainer approach, which can involve formation of small tactic groups. These tactic groups can be regarded as knowledge holders in their respective organizations. Such models can work where training is an incentive to remain loyal to an Organisation leader and paired work is incentivized for the knowledge transfer.
 - **Community of practice** – This involves sharing of knowledge amongst people with similar skills, groups, etc. Typically, such knowledge transfer can be promoted through newsletters, discussion forum, social networking, etc and the local industry association or the cluster implementing agency can take the lead in circulating the knowledge through quarterly (or periodic) **knowledge sharing sessions**. This should concentrate on bringing people together with same skill sets across organizations.

PHASE III

This phase largely deals with the progress and success monitoring of the entire knowledge transfer mechanism. Two broad steps involved here would be:

- **Monitoring Agency:** National and Ministry level monitoring of the quality and success of the training program is critical for increasing the overall effectiveness of the training program and the skill development initiative. Under this scope, it is important that the current framework of the MSME Ministry is used extensively in the monitoring process. At the national level, therefore, the **DC MSME through its constituent MSME DIs** in the relevant industry clusters should form a working committee for overall monitoring of training activities. However, the on-ground monitoring through a detailed feedback and review mechanism is detailed in the following paragraph. This recommends a framework where the individual industry associations are tapped as **monitoring implementation agencies**. The **Presidents** of these industry associations and the **Directors of the cluster level MSME DI** can form a suggested working committee which jointly reports the evaluation of the training programs to the DC MSME, and hence, to the MSME Ministry. This will ensure that industry level feedback is documented and at the same time, the activities are conducted as per the overall vision and mission of the MSME Ministry with respect to Skill Development.
- **Feedback and Review Mechanism:** A detailed reporting and documentation of the training program should be developed by the agency implementing the training program. The Consultant would be providing the feedback and review mechanism for the clusters and training modules that are a part of the current study. A more general format can be developed depending upon the current process. An important aspect highlighted by the National Skill Development Policy guidelines requires that 'database of trained persons may be created and linked to job exchange to give the benefit of training to the trainees and the industry'⁵. In this connection, it is important that the feedback and review mechanism incorporates an element of database generation of trained employees and the nature of certification that they carry. The constituents of this database could broadly be:
 - o Name of the scheme under which the training program was conducted
 - o Nature of the training program – certificate, modular, diploma etc, duration, cost and training provider
 - o Employee and Employer feedback on the training program

Such a database should be maintained and updated frequently by the local industry association as the on-ground implementation agencies for monitoring. The reporting for this would be conducted as per the monitoring framework suggested above. This is to ensure effectiveness of skill development policies and avoid duplication of training programs conducted by various ministries for skill development.

Knowledge Transfer Mechanism for the 8 identified clusters

With the information gathered by the Consultant during the current project across 8 MSME clusters, the following presents the implementation for the Knowledge Transfer Framework mentioned above. The information has identified roles and responsibilities for all stakeholders in the knowledge generated and to be transferred.

⁵ National Skill Development Policy

Gap Identification: Consultant has conducted the initial skill gap identification. This would, however, be updated and refined as and when feedback from trainers, trainees and other cluster stakeholders is analyzed and incorporated. The process of gap identification should be conducted externally to a MSME cluster. This implies entrusting this activity with an agency or an institution which is external to the MSME cluster. This would ensure unbiased and dispassionate views on the current levels of skill development in a cluster.

Motivation / Coordination: The MSME Development Institutes (**MSME-DIs**) and District Industries Centers (**DICs**) in each of the MSME Clusters are best placed to act as the primary motivator. They can work along with local NGOs, labor bodies, industry associations, trade unions and civil society towards coordinating and motivating the MSMEs to take up skill trainings.

Curriculum Development: The Consultant has carried out the initial training module identification and course curriculum development as part of the project. In this, it has taken into consideration the courses standardized by the Ministry of MSMEs and Modular Employable Skills (MES) under the Skill Development Initiative (SDIs) of the DGET. However, this would have to be refreshed, refined and updated on the basis of changing industry requirements and feedback. It is also important to detail the individual modules and provide the course content for each sub-module.

Sponsor: MSME Ministry will be the primary sponsor. However, the costs of training implementation will be borne by all stakeholders, including the end beneficiaries of the training programmes – MSMEs employers and employees. The option of availing a line of credit from a multi-lateral / bi-lateral agency for this all-important initiative may also be explored.

Implementation: The existing infrastructure and the framework for training managed by **DC-MSME through the MSME-Development Institutes (MSME-DIs)** will have to be employed for training curriculum/content development, training implementation, feedback evaluation and training improvement.

Efforts of the Ministry of MSMEs would have to be supplemented by local industry-specific research and training institutions, **Industrial Training Institutes (ITIs) and BDS providers**, both in the public and private domains. Participation by the local Industry Associations would be critical for motivating MSMEs to take up these trainings and for ensuring that the curriculum is relevant for their respective clusters.

Cluster	Training Providers (Other than MSME-DIs, ITIs in the cluster)
Ludhiana	ATDC (under the aegis of AEPC) for Operator and Supervisory Programmes; Private Training Institutes such as SIFT for Managerial Programmes
Tirupur	Educational Body Promoted through Industry Associations (NIFT -TEA) for Managerial Programmes; ATDC (under the aegis of AEPC) for operator and supervisory programmes
Kolkata-Shantiniketan	CLRI, NIFT
Chennai	CLRI, CFTI, NIFT, FDDI
Hyderabad	CALGS, GMP Pharma Consultants
Pune	NAFARI
Chandigarh-Mohali-Panchkula	Central Tool Room (Ludhiana); Sam's Training School
Bhadohi	Specialized Institute (Indian Institute of Carpet Technology)

Monitoring and Feedback Mechanism: The basic role of the monitoring agency would be to define a framework to conduct the training process based on the prescriptions of the motivator. Detailed reporting and documentation of the training program should be developed by the agency implementing the training program. This will be reviewed by the Monitoring Agency.

Cluster	Monitoring Agencies (Industry Associations)
Ludhiana	Knitwear club, KAMAL, FEKTA, APPEAL
Tirupur	Tirupur Exporters Association/SIHMA
Kolkata-Shantiniketan	Indian Leather Products Association (ILPA)
Chennai	Tamil Nadu Small and Tiny Industries Association (TANSTIA), ITCOT
Hyderabad	BDMA, NDMA
Pune	MCCIA
Chandigarh-Mohali-Panchkula	Mohali Industry Association (MIA)
Bhadohi	ACMA

Conclusion



The Consultant has developed the training modules for each of the clusters by taking into consideration the feedback of recognized public and private training institutes operating in the respective cluster. Once SIDBI has identified the institutes/ agencies and the training programs are carried out in the clusters, the Consultant will conduct a survey to evaluate the effectiveness of the training programs. The detailed framework for evaluation will be provided to SIDBI.



Report on Linkages, Policy Framework and Training Evaluation Framework



1. Linkages and Policy Framework

In order to ensure a planned development of skills in the identified MSME clusters, the provision of skill trainings must have as its basis, a sound and comprehensive 'Policy Framework'. While the policy should address the heterogeneous needs of the various MSME clusters, the ground rules can be more or less standard. In other words, 'there ought to be a national policy response to guide the skill development strategies and coordinated action by all stakeholders to avoid a piecemeal approach'⁶.

The objectives of the skill development programme, the operational framework as well as methods to ensure its sustainability, needs to be clearly enunciated. The policies specific to skill training in the identified MSME clusters need to be aligned with the larger policy framework formulated by the Ministry of Labor and Employment, Government of India – '**National Skill Development Policy**'. The policy was approved by the cabinet in February 2009. In addition to achieving alignment on the larger vision and mission of the umbrella policy, due recognition has to be ascribed to the recommended governance mechanism in establishing the implementation framework for skill trainings in the identified MSME clusters.

The **Ministry of Micro, Small and Medium Enterprises** is a member of the 'Prime Minister's National Council on Skill Development', which under the Chairmanship of Prime Minister, has been set up as an apex institution for policy direction and review. The Ministry of MSMEs has already been promoting the development of micro and small enterprises in the country with the objective of creating self-employment opportunities and upgrading the relevant skills of existing and potential entrepreneurs. In order to promote establishment of new enterprises and creation of new entrepreneurs MoMSME has been implementing various schemes and programmes:

- Assistance for establishment of Training Institutions/ Entrepreneurship Development Institutes (EDI), strengthening of the infrastructure of the existing EDI and for supporting entrepreneurship and skill development activities
- MoMSME has set up three National level Entrepreneurship Development Institutes namely National Institute for Micro, Small and Medium Enterprises (NIMSME), Hyderabad; National Institute for Entrepreneurship and Small Business Development (NIESBUD), Noida and Indian Institute of Entrepreneurship (IIE), Guwahati to undertake the task of entrepreneurship and skill development on a regular basis
- MoMSME has also been supporting the efforts of State Governments/ Union Territories, Industry Associations, Financial Institutions, Technical/ Management Institutions, other Non-Governmental Organisations (NGOs), etc. for establishment of new training institutions as well as strengthening of the infrastructure of existing training institutions
- The Office of DC (MSME) conducts a large number of vocational and entrepreneurship development programmes. The Entrepreneurship Development Programmes (EDPs) are conducted through MSME-DIs and other Autonomous Institutes (Tool Rooms, etc), with focus on entrepreneurial skills development coupled with specific skills relating to trades like electronics, electrical, food processing, etc, which enables the trainees to start their own ventures.

⁶ National Skill Development Policy, February 2009

Therefore the Ministry of MSMEs has a central role to play in the governance of the skill development initiative in the identified clusters. The existing infrastructure and the framework for training managed by DC-MSME through the MSME-Development Institutes (MSME-DIs) will have to be employed for training curriculum/content development, training implementation, feedback evaluation and training improvement.

Efforts of the Ministry of MSMEs would have to be supplemented by local industry-specific research and training institutions, Industrial Training Institutes (ITIs) and BDS providers, both in the public and private domains. Participation by the local Industry Associations would be critical for motivating MSMEs to take up these trainings and for ensuring that the curriculum is relevant for their respective clusters.

While the Ministry of MSMEs can be the primary sponsor of the initiative, all stakeholders will have to share the necessary costs of implementation, including the end beneficiaries of the training programmes – MSMEs employers and employees. The option of availing a line of credit from a multi-lateral / bi-lateral agency for this all-important initiative may also be explored.

The broad policy framework for skill development in the identified MSME clusters would cover the following:

- A. Alignment with national legislation and policies
- B. Scope and Objectives
- C. Stakeholders' roles in Skill Development
- D. Quality Management
- E. Delivery Mechanism
- F. Operating Guidelines
- G. Recognitions and Certifications
- H. Governance and Implementation Framework

The following sections would aim to detail this policy framework for the study clusters.

A. Alignment with National Policies: The policy framework for Skill development across MSME clusters should be aligned with the National Skill Development Policy, its preamble, its scope and objectives. The following table summarizes the linkages and alignment of the proposed skill development guidelines with the National Policy: NSDP Guideline Adoption for Study Clusters High Inclusivity.

NSDP Guideline	Adoption for Study Clusters
High Inclusivity	<ul style="list-style-type: none"> • Ensuring participation across all hierarchies in the enterprises • Ensuring women participation and inclusion of minority and special communities • Diversity of training programs would also ensure inclusivity from various sections of skill development
Dynamic and Demand Based	<ul style="list-style-type: none"> • Regular monitoring and skill gap mapping to be conducted to evaluate demand and changing trends / technology • Success assessment framework recommended to ensure dynamism in training programs
Focus on Modular Courses	<ul style="list-style-type: none"> • In specific clusters, training modules directly to be linked to Modular Employable Skills (MES) initiatives • Course to be kept short, practical and effective
Innovative Delivery	<ul style="list-style-type: none"> • Delivery channels to vary on the basis of size, maturity and economic status of the clusters • Experimentation with delivery channels other than classroom-based narrative instruction
Stress on Government Machinery	<ul style="list-style-type: none"> • Available government machinery has been recommended to be used fully for module delivery, implementation and monitoring • Institution-based skill development including ITIs/ITCs/vocational schools/technical schools/ polytechnics/ professional colleges have been recommended
Roles and Responsibilities of Multiple bodies	<ul style="list-style-type: none"> • Roles and responsibilities of various partner bodies like private institutes, government machinery, local NGOs, civil society included in the policy framework • Thrust on optimum utilization of government machinery and exploration of PPP models to maximum extent

B. Scope and Objectives: The coverage of the current skill development guidelines include the following:

- Cluster-based skill development covering Micro, Small and Medium enterprises, across various processes and hierarchies of the enterprise
- The entire hierarchy within the enterprise (worker, supervisor / manager, proprietor /owner, etc)
- Training programs across the production, marketing and finance value chain
- Hard and soft-skills related training, vocational courses and new-age technology related courses
- Formal and informal apprenticeships and other types of training by enterprises
- Training of women, school drop-outs, adult learning and retraining of retired or retiring employees
- E-learning, web-based learning and distance learning

C. Stakeholder Roles in skill development:

- o Roles and responsibilities of Government – primarily motivating and sponsoring the training programs (MSME DI, DC MSME, Government Machinery)
 - Setting out the regulatory framework and creating an enabling environment for stakeholders in the cluster.
 - Obtaining and securing sponsorships from government funding or multilateral / bilateral organizations
 - Devising the funding mechanism, incentive structures and promotional framework
 - Capacity building of relevant cluster stakeholders
 - Setting up of monitoring and evaluation mechanisms for trainings conducted and channeling information.
 - Facilitating adoption of international best practices
 - Preparation of road maps for meeting cluster-specific skill requirements
- o Roles and responsibilities of industry associations and trade bodies
 - Taking ownership of skill development activities
 - Identification of competencies and setting up of competency standards
 - Contributing to skill demand analysis and curriculum development
 - Facilitating training of trainers
 - Participation in training, monitoring and evaluation
 - Participation in examination and certification
 - Participation in affiliation and accreditation process
 - Sharing of work place experience, machinery and equipment
 - Support by way of physical, financial and human resources
 - Facilitating employment of trained graduates
 - Supporting skill development initiatives of other public and private agencies
 - Implementing apprenticeship schemes
 - Investing in skill development activities
- o Roles and responsibilities of civil society organizations
 - Raising awareness about skill development plans and activities among the public.
 - Facilitate improving status of VET trained graduates
 - Implementing skill development programs of the Government
 - Assist in course designing, examination and certification.
 - Promoting dignity of labor among the public.
 - Sharing experience of learning with others

D. Quality Management

Quality and relevance of skill development are key factors for improving India's global competitiveness and an individual's access to decent employment. For enterprises to compete in the global economy, the quality of training must reach world standards and be relevant to the needs of national and international markets.

- Quality Management should be based on five key functions⁷:

⁷ These key functions are also reiterated in the National Skill Development Policy

- Validation of Qualifications for ensuring that qualifications reflect market needs and workplace requirements and are expressed in the form of competencies with clear assessment criteria
 - Validation of Training Process for ensuring that proper tools, techniques, methodologies and material, as suggested in the curriculum/standards are used by the resource persons
 - Quality Assured Assessment of Learners for ensuring that assessment is based on national standards (competencies) and uses valid and reliable assessment methods
 - Accreditation of Training Providers and Training Institutions for ensuring that training is delivered by competent and qualified trainers in well-resourced and managed institutions
 - Research and Information for linking the supply of skilled workers to trends in well-researched Labor Market Information (LMI) covering both the organized and unorganized sectors of the economy.
 - Quality Infrastructure
 - Extensive use of Information & Communication Technology should be promoted for learning or increasing the impact of learning.
 - Optimum use of existing physical infrastructure should be ensured in multiple shifts or otherwise.
 - Enterprises should be encouraged to provide their spare capacity to supplement skill development activities.
 - Physical infrastructure should be created, expanded and upgraded according to skill requirement of specific sectors of economy.
- **Quality of Trainer:**
 - Innovative ways of recruiting trainers should be adopted including the employment of former trainees who have gained workplace experience and of practitioners of a craft, trained as master craft persons.
 - Innovative skill development schemes, in which trainees acquire theoretical learning at the institution while obtaining practical skills in the workplace, should be devised.
 - Award and incentive mechanisms, including reward and career progression systems, should be reviewed and institutionalized to improve the status of trainers.
 - A system of granting Accredited Trainer Status for a limited period, to all vocational trainers of programmes, leading to National Vocational Qualifications should be developed.
 - Special efforts should be made to improve the gender balance among trainers
 - Adoption of the **National Vocational Qualifications Framework (NVQF)** would facilitate nationally standardized and acceptable, international comparability of qualifications. Under the national vocational qualifications framework, all training courses and associated certifications would be standardized for national level comparability across training and vocations.

E. Delivery Mechanism

- On the job training during off-time hours should be encouraged
- Train the trainers programs

- o Women Participation: Skill development for employability will be used as an agent of change in promoting women's employment. Women face a multitude of barriers in accessing skills and productive employment, remaining on the job due to effect of globalization or otherwise and advancing to higher level jobs, as well as returning to the labor market after a period of absence spent, for example, in raising children.
- o Ensuring Inclusivity: This can be done through including higher number of vocations, all levels of hierarchies in the Organisation etc. Stress should also be given on border, hilly and difficult areas and address the regional imbalance in vocational skill development. To increase inclusivity, focus should also be laid on including disadvantaged groups – scheduled castes, scheduled tribes, other backward classes, minorities etc

F. Operating Guidelines

- Addressing of entry barriers like educational qualification is necessary in the current framework. While the structured training modules may require education as an entry barrier, such barriers should be introduced only for intermediate and advanced courses, and only if necessary. Stress should be given on conducting the training programs using local languages and in a format that is easier for workers to comprehend. This will also ensure inclusivity.
- Publicize rating and outcome information on training institutions: A framework of accreditation and infrastructure for information dissemination around measurable criteria on institutions will be created. Ratings of public and private institutions would be put on public domain.
- Separate financing from delivery: Traditionally, government funds have been available only for government delivery. However, the thinking on this aspect is changing within the government, with the recognition of the need for scaling up vocational training. National Skill Development Corporation (NSDC) is designed to support private skill development initiatives.

The following financing options can be explored:

- o Link financing to outcomes: Today public and private training is financed largely on inputs viz. number of courses, number of students, faculty, etc. Efforts would be made to move towards Government financing linked to placement ratios and outcomes.
- o Focus funding on candidates: The focus would be on funding the candidates rather than institutions to create choice. This could be structured as a scholarship, skill voucher, outcome based reimbursement, etc.
- Focus of modular courses, open architecture and short term courses: With fast changing skills in the labor market, focus would be on short, relevant and effective courses that would get candidates into the workplace. They will be welded through NVQF to maintain dynamism and open to feedback.
- States as key actors: The States being the key actors in Skill Development would set up overarching integrated framework for action for Skill Development through State level Skill Development Missions.
- Expand formal employment: Formal employment is not only fiscally attractive but more amenable to financing innovations. This will require a review of existing State and Central legislations which encourage informal and unorganized employment.

- School drop-outs (leaving the schools before completing XII standard), child labor and out-of-school youth need to be given alternative education coupled with skill development opportunities to bring them into the economic and social mainstream.

G. Recognitions and Certifications

Under the ambit of **National Vocational Qualifications Framework (NVQF)**, standardization of training programs and certifications would ensure national level comparability across all vocations and training programs. The following factors should be considered in the certifications regime:

- Acceptability of such certifications should be increased through concentrated efforts from the industry associations. These should encourage the usage of training certifications as an entry or qualification criterion for job application or a job change. These vocational training certifications should then be regarded as equivalents for educational qualifications.
- Increased perceived value of such certifications and recognitions would be forthcoming from the industry if these are standardized and follow the norms of the NVQF, TVET or NSDC. This attaches more credibility for the training certificates.

H. Governance and Implementation Framework:

The proposed implementation framework is depicted in the illustrative chart below. The Planning commission has constituted a working group on MSME Growth for the 12th Five Year Plan (2012-17), under which a Sub Group II on Skill Development and Training has been constituted. The main aims of this sub-group are to

- Make skill development activities of Ministry of MSME more effective in promoting self employment/job employment in the country specifically for MSMEs, by focusing on recommendations of the PM's Task Force on skill development and training
- Fine-tuning of existing skill development/entrepreneurship development programmes
- Training of trainers
- Putting thrust on strategies like Public Private Partnership (PPP) and Industry linkages
- Review of old schemes and suggesting new schemes
- Defining milestones to be achieved in 12 five year plan

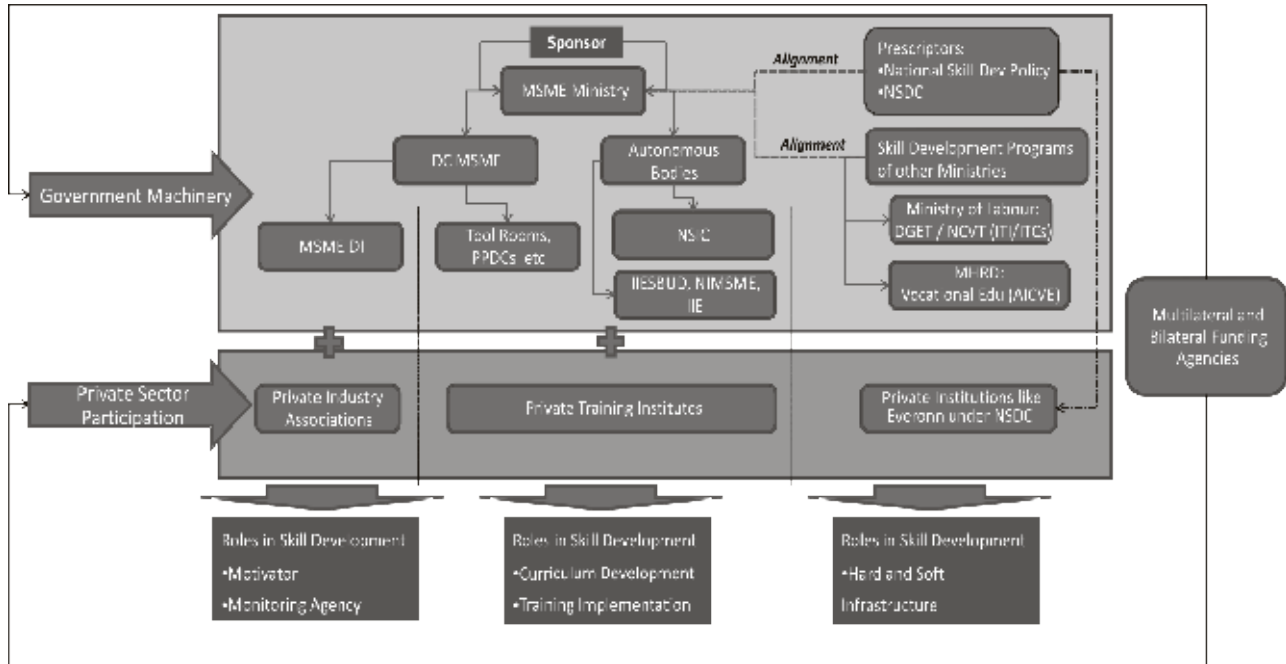
The sub group lays emphasis on the following factors under the Skill Development initiative of the Prime Minister's task force on skill development:

- Available Government machinery should be used and scaled up to its full potential in imparting skill training
- To ensure no duplication of training programs, alignment of various ministry schemes to the schemes of MSME skill development
- Outsourcing: Presently all training programmes (except BSDP, which are only for final year engineering/management students) are conducted by MSME DIs. It is proposed to outsource at least 50% of MDP/EDP/ESDP training during 2011-12 and 70%-90% in 2012-13 and 2013-14. Autonomous institutions like NSIC, NIESBUD, NIMSME and IIE will be given priority in skill development⁸

⁸ Report of the Sub Group II under the working group for MSMEs for Planning Commission, 12th Five Year Plan (2012-2017)

- Standardization of training programs and quality program implementation
- Certifications and recognitions should preferably be through a single certifying body so that equivalency of training / certificate is established
- Database of trained people must be maintained and updated, with frequent periodic reporting to the DC MSME and the MSME Ministry to identify gaps in the training

The following is the proposed governance mechanism for the skill development initiative in the identified clusters:



- **Ministry of MSME as Sponsor:** Ministry of Micro, Small & Medium Enterprises (MSME), has a network of **30 MSME-DIs**, **28 Branch MSME-DIs**, 4 Regional Testing Centres (RTCs), 7 Field Testing Stations (FTSs), 18 Autonomous bodies which include **10 Tool Rooms (TRs)**, 6 Product-cum-Process Development Centres (PPDCs), 2 Central Footwear Training Institutes (CFTIs), and 3 Entrepreneurship & Business Development Institutes spread all over the country.
- **MSME DI and DC-MSME as Motivators and Monitoring Agencies:** The existing infrastructure and the framework for training managed by **DC-MSME** through the MSME-Development Institutes (MSME-DIs) will have to be employed for training curriculum/content development, training implementation, feedback evaluation and training improvement. Efforts of the Ministry of MSMEs would have to be supplemented by local industry-specific research and training institutions, **Industrial Training Institutes (ITIs) and BDS providers**, both in the public and private domains. Participation by the local Industry Associations would be critical for motivating MSMEs to take up these trainings and for ensuring that the curriculum is relevant for their respective clusters.
- **Framework for Training Implementation and Curriculum Development**
 - **National Small Industries Corporation:** NSIC provides technical support to SSIs through 'NSIC Technical Services Centers' and a number of extension and sub-centers spread across the country. The range of technical services provided through these centres include training in Hi-Tech as well as conventional trades, testing, common facilities, toolkits, energy audit, environment management etc. In addition to this, access to latest

information in connection with technology up-gradation and its transfer is provided to SSIs through the 'Technology Transfer Centre' at New Delhi. Various Technical Services Centers in are offering training courses in India along their area of specializations.

- Autonomous Institutions under MSME Ministry:** The Ministry has set up 3 Entrepreneurship and Business Development Institutes viz. National Institute for Entrepreneurship & Small Business Development (**NIESBUD**), NOIDA, UP, National Institute for Micro, Small and Medium Enterprises (**NIMSME**), Hyderabad, and **Indian Institute of Entrepreneurship**, Guwahati with an aim to provide training, research and consultancy services to MSME sector focusing on Entrepreneurship & Business Development. These institutes are engaged in Entrepreneurship Development and Management Development Programs for the MSMEs. NIESBUD has been assisting state level EDIs by training their trainers, preparing syllabus and providing training modules. The Institute has been instrumental in preparing trainers in entrepreneurship and skill development and setting up of micro enterprises. The Institute can be a nodal point for training of trainers and preparation of syllabus for different Skill Development Programmes. The current framework lays stress on leveraging this machinery in the skill development.
- Other Government / Private Training Providers:** The following is a list of identified training providers in the study clusters that can be leveraged for the current skill development program through a thrust on PPP.

Cluster	Training Providers (Other than MSME-DIs, ITIs in the cluster)
Ludhiana	ATDC (under the aegis of AEPC) for Operator and Supervisory Programmes; Private Training Institutes such as SIFT for Managerial Programmes
Tirupur	Educational Body Promoted through Industry Associations (NIFT-TEA) for Managerial Programmes; ATDC (under the aegis of AEPC) for operator and supervisory programmes
Kolkata-Shantiniketan	CLRI, NIFT
Chennai	CLRI, CFTI, NIFT, FDDI
Hyderabad	CALGS, GMP Pharma Consultants
Pune	Industry Association (Maharatta Chambers of Commerce and Industry Association - MCCIA) / NAFARI
Chandigarh-Mohali-Panchkula	Central Tool Room (Ludhiana); Sam's Training School
Bhadohi	Specialized Institute (Indian Institute of Carpet Technology)

- Private Industry Associations and Monitoring Role:** National and Ministry level monitoring of the quality and success of the training programs is critical for increasing the overall effectiveness of the training programs and the skill development initiatives. Under this scope, it

is important that the current framework of the MSME Ministry is used extensively in the monitoring process. At the national level, therefore, the **DC MSME through its constituent MSME DIs** in the relevant industry clusters should form a working committee for overall monitoring of training activities. However, the on-ground monitoring through a detailed feedback and review mechanism is detailed in the following paragraph. This recommends a framework where the individual industry associations are tapped as **monitoring implementation agencies**. The **Presidents / Secretariats** of these industry associations and the **Directors of the cluster level MSME DI** can form a working committee, which jointly reports the evaluation of the training programs to the DC MSME, and hence, to the MSME Ministry. This will ensure that industry level feedback is documented and at the same time, the activities are conducted as per the overall vision and mission of the MSME Ministry with respect to Skill Development. For the identified study clusters, the following is a list of available **private industry associations**.

Cluster	Monitoring Agencies (Industry Associations)
Ludhiana	Knitwear club, KAMAL, FEKTA, APPEAL
Tirupur	Tirupur Exporters Association/SIHMA
Kolkata-Shantiniketan	Indian Leather Products Association (ILPA)
Chennai	Tamil Nadu Small and Tiny Industries Association (TANSTIA), ITCOT
Hyderabad	BDMA, NDMA
Pune	MCCIA
Chandigarh-Mohali-Panchkula	Mohali Industry Association (MIA)
Bhadohi	ACMA

- Prescriptors and Sponsoring Agencies:** The overall sponsoring agency would be MSME Ministry for all programs related with Skill Development and training. The overall implementation of the training programs would be under the prescriptions of National Skill Development Policy (NSDP). Even under the prescriptions of NSDP, thrust is given on Public-Private Partnerships. PPP would enable the government machinery to scale-up the current levels of operations and thereby also achieve full capacity utilization of the existing machinery.

Thrust on Public- Private Partnership: A case of NSDC-Everonn tie-up for Skill Development

As an example, the National Skill Development Corporation has entered in to an agreement with a private player – Everonn for scaling up training and infrastructure in order to enable achievement of the target of training 150 million people by 2022. NSDC is a not-for-profit company set up by the Ministry of Finance as the first PPP initiative with the mandate to skill 150 million people by 2022 in 21 focus sectors. This is part of the government’s overall target to train 500 million people by 2022 to meet the global skills shortage. Everonn’s wholly owned Skill development subsidiary, Everonn SKILL development Ltd. has been mandated by NSDC to train 15 million people (10% of NSDC’s overall target of 150 million) by 2022. NSDC will invest 27% as equity in the wholly owned Skill development subsidiary of Everonn Education Ltd. i.e. Everonn Skill development Limited (ESDL). The total investment required for setting up 271 multi skill development centers all across the country would be ₹ 153.76 crore. The NSDC will subscribe to 27% equity in Everonn Skill Development Ltd. (ESDL) for ₹ 14.15 crore. In addition, the NSDC would also provide a loan of ₹ 101.34 crore to ESDL. ESDL will be investing ₹ 38.27 crores, as its contribution in the venture.

- Multilateral and bilateral agencies for funding: The current framework assumes that the funding for the proposed skill development initiatives can be obtained either through the MSME Ministry as core sponsor or through funding from multilateral and bilateral funding agencies like JICA, GIZ, DFID etc. that can aid the process of skill development. Innovative delivery channels therefore need to be worked out while providing such training modules.

2. Training Program Evaluation Framework

A good training evaluation should be able to prove that the program:

- Is aimed at important and worthwhile organizational benefits
- Operates smoothly and effectively and is enjoyed by participants
- Achieves important skills, knowledge and attitude objectives
- Uses the best available and most cost-effective designs
- Is used effectively on the job; and
- Provides valuable and cost-effective organizational benefits.

Training evaluation can be analyzed at least at two levels: project level and organizational level. Project level concerns to the training program as a whole while organizational level concerns to the people involved in the training and the effects on the Organisation. In the current context, the Consultant proposes to provide a training evaluation framework at both these levels:

- I. **Training Evaluation at Project Level:** This can be broadly accomplished using three variables:
 - a. **Program Definition**

b. Program Implementation and

c. Program Effectiveness

For evaluating each of these, the following table is proposed:

Program Definition	Objective Operationalisation	The level in which the objectives of the training project are specified.
	Distribution of Responsibility	The level in which the training Organisation carries responsibility for attaining the results.
	Condition Registration	The delivery conditions about which agreements have been made between the client Organisation and the training Organisation.
Program Implementation	Total Satisfaction	This is the satisfaction about the total project handling, the preparation of the program.
	Condition - Realization Consistency	The delivery reliability of the training Organisation.
	Condition - Realization Satisfaction	The level of satisfaction about the performance of the training organizations with respect to the possible delivery conditions.
Program Effectiveness	Expectation Realization	The level in which the project results meet the expectations of the client Organisation.
	Objective Realization	The level in which the intended objectives of the training project are achieved.
	Success Attribution	The level in which the training Organisation has been responsible for attaining the intended objectives.

I. Training Evaluation at Organisation Level (Kirkpatrick Training Evaluation Model):

Kirkpatrick created his model in 1959 but it is still the most used and accepted evaluation training model. His model focuses on “what” must be evaluated. Kirkpatrick (1998) has identified four levels of outcomes of training which are hierarchically ordered:

- a. **Reaction:** This can be further evaluated using three broad parameters:
 - i. **Emotional Reaction:** “I found this training program to be enjoyable”. The reactions focus on how trainees view a program as enjoyable.
 - ii. **Usefulness of training (perceived value)** – “What level of values does the training content have for your job? —This kind of reaction attempts to ascertain the perceived utility value, or usefulness, of training for subsequent job performance.
 - iii. **Difficulty of Training:** “I found the issues taught in training difficult to understand”. These reactions cover the cognitive and emotional effort required to perform well in the training.

- b. **Learning:** This level aims to measure the amount of learning that results from training and determines how much behavior can change back on the job. Three types of learning from training would be evaluated:

- i. **Cognitive outcomes** – An evaluation of cognitive outcomes must focus on trainee knowledge and the processes of knowledge acquisition, Organisation and application. Usually assessed by multiple choice questions, open-ended responses, listing of facts, or similar methods. Knowledge checks such as these will be very similar to tests used in schools to assign grades. Measures of cognitive outcomes can be assessed immediately after training or later to assess knowledge retention over time.
 - ii. **Skill-based Outcomes** – These outcomes are typically measured by requiring that participants demonstrate their new skills in the training environment. Skill-based outcomes are not the same as behavior-change outcomes (level 3) that occur in the work environment. Learning outcomes that focus on skills only measure participants' ability to demonstrate the skills.
 - iii. **Attitudinal outcomes** – these measures focus on how participants feel or think about the training content. They have implications for participants' motivation to use the training, their confidence for using the skills, and their ability to reach goals.
- c. **Behavior:** This level aims to measure the degree of transfer from what was learned to how the trainee behaves on the job, which in turn determines how much organizational impact the training can have. This assessment would be based on the objectives of the course and these assessed through tests, observations, surveys, and at times interviews with co-workers and supervisors.
- d. **Results:** This level is a measure of organizational and business impacts of the training. Some assess this measurement by tracking business measurements, others assess it by observations, some by surveys and still others assess by qualitative measures. Examples of might include: productivity, customer satisfaction, efficiency, morale, and profitability. The Consultant proposes to conduct this assessment through metrics or performance indicators depending on the nature of the training program.



Report on Sample Review and Evaluation of Training Programme



Introduction



Background

SIDBI is implementing a multi-agency / multi activity Project on Financing and Development of MSMEs (MSMEFDP). The Project is aimed at making MSME lending an attractive and viable financing option as also facilitate increased turnover and employment in the sector. In order to achieve its aims, the Project, besides upgrading direct flow of credit to MSMEs, addresses demand side issues of credit and streamlining access to qualitative financial and non-financial enterprise oriented services.

One of the components of the project is on 'Strengthening the policy/legal/regulatory framework and its enforcement for MSMEs. It envisages a role to the project to influence policy making for MSMEs by enabling a facilitating framework under MSME Financing and Development.

Given the widespread recognition of the importance of Skill Development for the MSME Sector within the 'Prime Minister's Task Force for the MSME Sector' as well as within the MSME Ministry, SIDBI has taken up all the important task of conducting a Skill Gap Analysis among MSMEs in eight industrial clusters in India. The analysis enabled the development of cluster specific training modules as well as a policy framework for implementation of the training programs. A specific training module was then implemented in the Chandigarh-Mohali Panchkula Light Engineering Cluster on a pilot basis to gather feedback, create an evaluation framework as well as evaluate the conducted training program.

Detailed reports on the Skill Gap Analysis, Training Infrastructure Assessment, Training Module Development and the Policy Framework for Implementation have been submitted. The current report provides a summary review and evaluation of the training programme conducted at one of the cluster forming part of study i.e. Chandigarh.

Project Objectives

The primary objectives of the 'Study on Skill Development among MSMEs in India were to assess skill gaps in the industry sector(s) of MSMEs and recommend policy action to address the issue(s) emerging thereof.

The Skill-gap assessment in the above-mentioned industry sector(s) will aid in addressing the following sector needs:

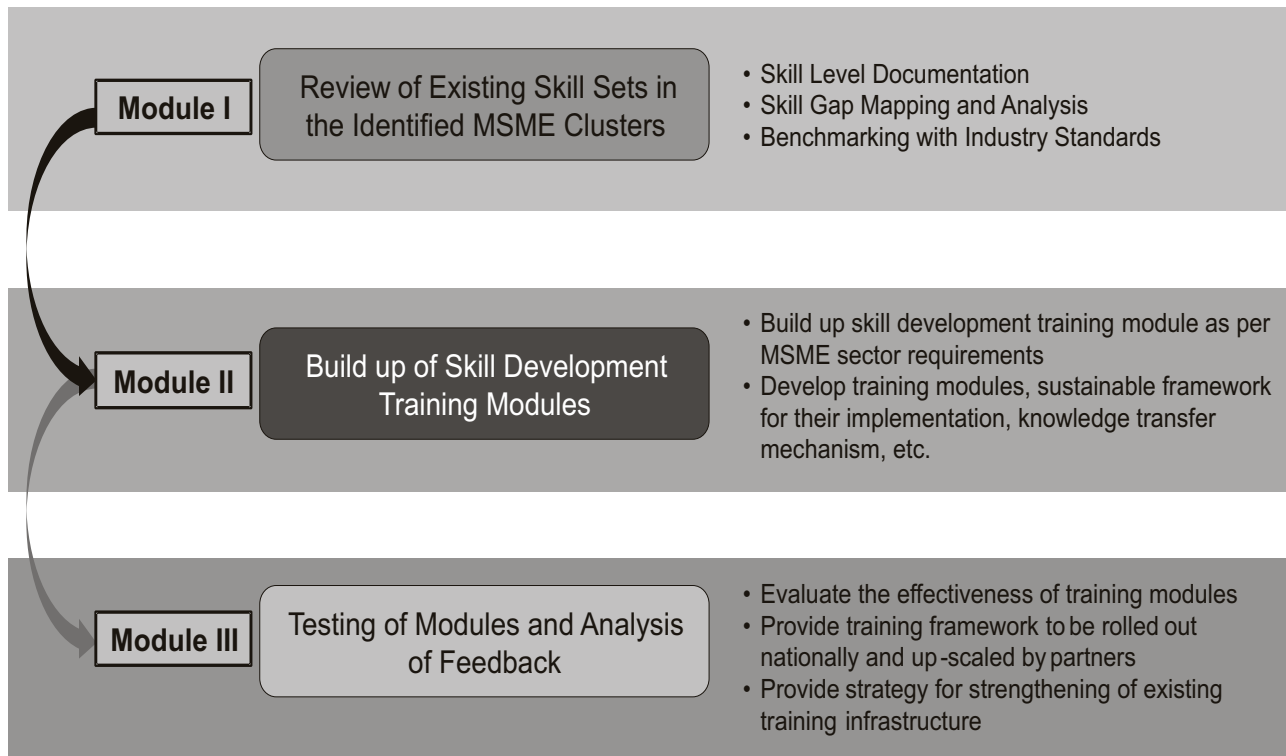
1. Enhancing the competitiveness of identified industry groups by way of increased productivity through skill up-gradation
2. Generating employment opportunities for the unskilled persons, while addressing the issue of urban unemployment among the educated youth
3. Enhancing the skill level of semi-skilled and underemployed persons leading to their self-employment and setting up of new enterprises

Project Methodology

The Consultant is in the process of utilizing its strengths in select domains such as MSME cluster analysis, benchmarking techniques, training and education to achieve the project objectives. Accordingly, the Consultant has been executing the assignment under following three broad modules:

1. Module I – Review of existing skill sets in the identified MSME clusters
2. Module II – Buildup of skill development training programs / modules
3. Module III – Testing of modules and analysis of feedback

Exhibit 78: Training needs identification matrix



The 'Skill Gap Assessment' (Module I) in the identified clusters was done in a phased manner. The broad functional areas that were covered for mapping the skill gaps were:

- Production including storage, distribution, handling and logistics
- Finance
- Marketing and Sales

A survey was carried out in two phases – Qualitative and Quantitative. A number of stakeholders in each of the eight identified clusters were met with during the qualitative phase. This included officials working with the respective Cluster Development Agencies, Industry Associations, Government / Private Training Institutes and MSMEs. An understanding of internal processes, interactions among the various stakeholders, challenges faced and training required was critical for preparing the questionnaire that was used for the large sample survey among MSMEs in each of the clusters.

The quantitative survey was done in the identified 8 clusters and the sampling of MSME's was done based on the type of product and category of MSME. It was ensured that representation across micro,

small and medium enterprises and also firms under different product categories were taken into account while developing the sample plan.

The following table provides the list of Clusters selected for the sample survey:

Cluster	Sector
Ludhiana	Knitted Apparel
Tirupur	Knitted Apparel
Kolkata – Shantiniketan	Leather
Chennai	Leather
Hyderabad	Pharmaceuticals
Pune	Fruit & Vegetable Processing
Chandigarh – Panchkhula – Mohali	Engineering
Bhadohi	Floor Covering

After the exhaustive qualitative and quantitative surveys in the identified clusters, a training needs identification matrix was developed to capture the skill gaps and corresponding training requirements. The matrix was generated based on two important aspects of skill development:

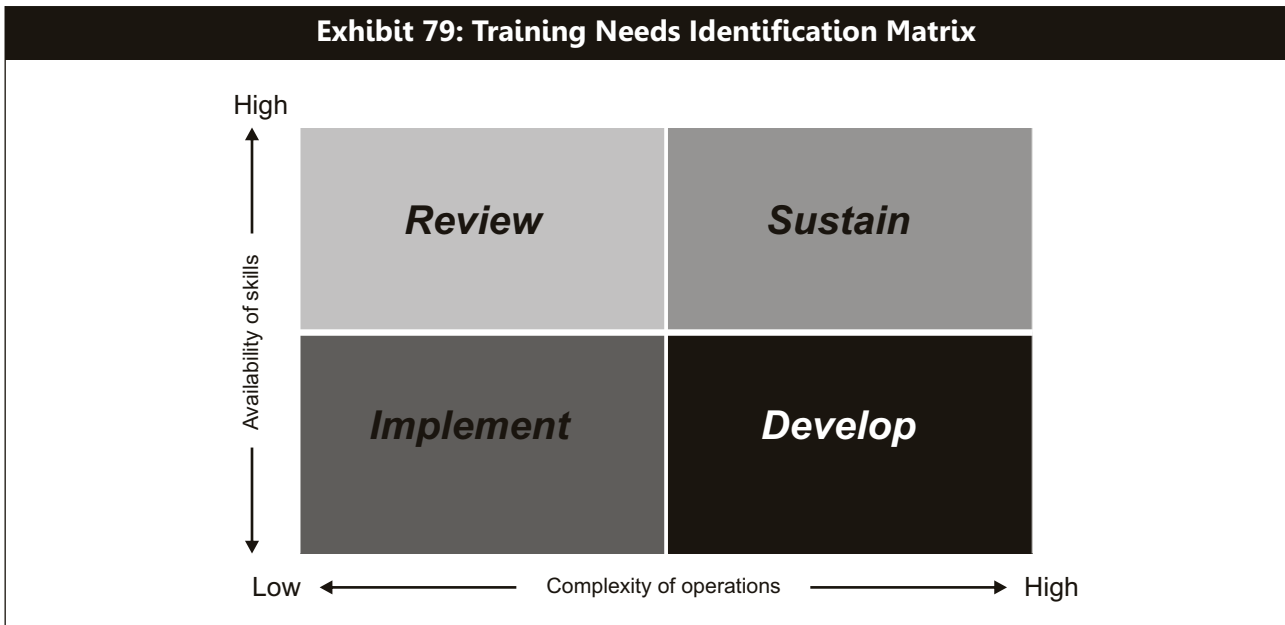
- Complexity of operation of a particular process
- Availability of skill sets to operate

The matrix represents the areas related to the degree of complexity of operation vis-a-vis the required skill set of the workers. Based on the matrix the training needs and the priority that needs to be given for the implementation for training programs can be identified. The following exhibit indicates the template that has been used for all the identified clusters as the basis for the identification of training needs.

The template sets the prioritisation scheme for the identified skill gaps and training needs. The following explains the training needs identification matrix.

- **Review:** This refers to the skills with respect to existing industry standards and practices. It indicates the critical processes where the skills required to perform a job are high whereas the complexity levels of such processes are low. In such cases, manpower planning and review of skill sets is required.
- **Sustain:** This represents the skills that needs to be improved on a continuous basis to keep pace with the industry and improve practices. For processes where the complexity of operations and available skill sets are both high, sustaining these is a challenge and training programs targeting sustainability of processes and skills are required.
- **Develop:** This is the most crucial of all the needs and also it indicates the trainings that are not offered by the industry/cluster. The complexity of operations is high while the skills required to perform are low, hence the need to develop through structured training programs in order to enhance the employable skills of the employees. These can relate to critical production areas where acute shortage of skilled manpower is a common problem

- Implement:** This refers to the areas/ processes in an Organisation where the complexity of process is low and the available skills to perform the processes are also low. Training programs are required to be initiated as soon as possible since this is the simplest way to upgrade.



Summary Report – Skill Gaps and Training Curriculum

Identified Training Needs in the Chandigarh-Mohali-Panchkula Light Engineering Cluster

Assessment of skill set with respect to complexity of operations of the particular process was conducted to obtain insights on key areas where training is critical. The complexity of operations was assessed with the sample respondents to obtain an idea of the level of complications involved in the process. The available skill sets were rated on the scale of sufficiency as perceived by the owner. The following matrix highlights the key areas where training requirements can be seen:

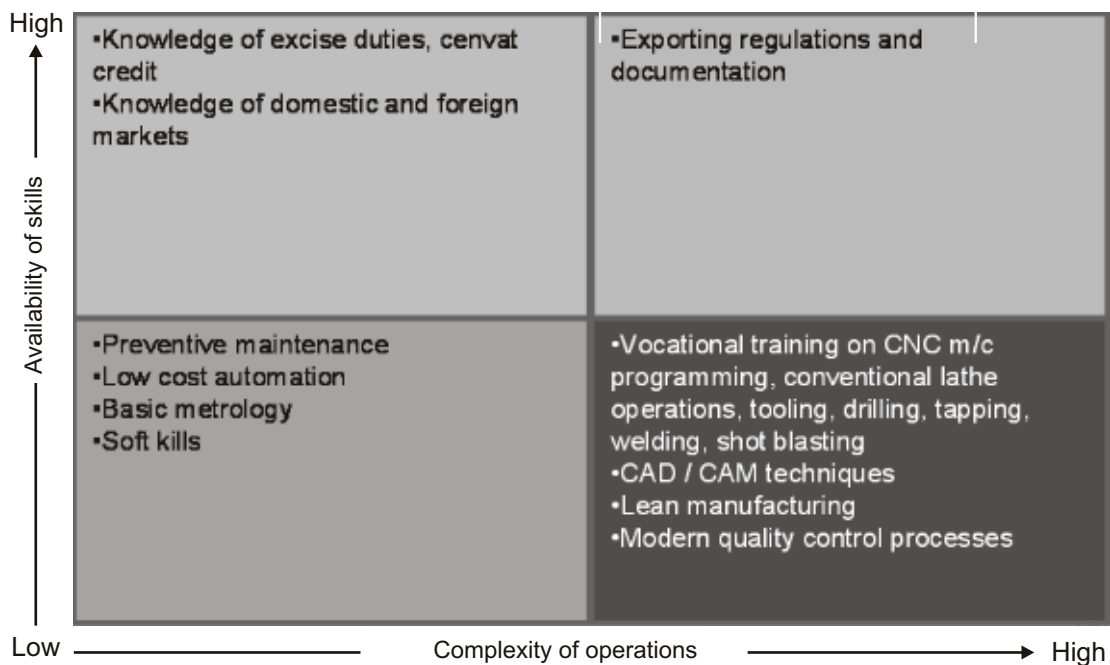


Exhibit 80: Identified training Needs

Development Area	Worker/ Supervisory Training	Management Level Training
Production	<ul style="list-style-type: none"> Productivity improvement / Lean Techniques Usage of proper tools and fixtures Vocational training on conventional lathe operations, CNC m/c programming, tooling, drilling, tapping, welding and shot blasting 	Low cost automation techniques Knowledge of CAD / CAM Demand forecasting Lean manufacturing Energy audits
Quality control	Calibration and operation of basic quality checking tools Defect tracking techniques	Implementation of quality control processes – TQM, Six Sigma etc. Achieving OEM quality norms
Equipment Maintenance	Machine knowledge	Preventive and predictive maintenance
Sales & Marketing	Export documentation and regulations knowledge	Modern marketing / branding Knowledge of domestic / foreign markets
Finance	Knowledge about excise duties, cenvat credit	Information about factoring services and SME ratings

Production Function Tip Sheet

Chandigarh	Production				
Production Processes	Conventional machine operations	CNC machine operations	Maintenance operations	Quality control processes	Modern manufacturing techniques
Sub Processes	Tooling, drilling, tapping, welding	CNC machine programming	Preventive maintenance techniques	Basic metrology, advanced techniques such as six sigma	Lean manufacturing, just in time inventory, equipment reliability, cellular manufacturing, total quality management
Type of Skill Requirement (Semi-skilled / Skilled)	Semi-Skilled	Skilled	Semi-Skilled	Semi-Skilled / Skilled	Skilled
Availability of Manpower (Low /Medium / High)	Low	Medium	Medium	Low	Low
Skill Gap (Low/ Medium/ High)	High	Medium	High	High	High
Training needs (Review /sustain /implement /Develop)	Implement / Develop	Implement / Develop	Implement / Develop	Review / Develop	Sustain / Develop
Available Training Courses	ITI Chandigarh offers training in various trades as well as short term modular courses. CTR, Ludhiana provides training on CAD/CAM, welding, grinding, die making, fixture design, etc.	CNC programming and operating courses offered by Sam's Techno School. In addition CTR, Ludhiana provides short duration training programs on CNC operations.	CNC machine maintenance courses offered by Sam's Techno School	Basic metrology course conducted by Sam's Techno School	Mahindra & Mahindra is planning to organize training on modern quality processes such as six sigma, 5S, etc. for its vendors.
Available Training Institutes	Industrial Training Institute (ITI), Chandigarh Central Tool Room (CTR) Ludhiana Sam's Techno School				

Overview of Training Conducted

A two-day pilot training program in 'Lean Manufacturing' was conducted in Chandigarh over 21st and 22nd of October 2011, on the basis of the curriculum recommended by the Consultant. The survey conducted by the Consultant demonstrated that the Awareness of 'Lean Manufacturing' concepts was low in the 'Light Engineering' cluster and was hence chosen for the pilot training.

The program was conducted by International Business Certifications (IBC) – a team of certified quality professionals and business consultants. International Business Certifications (IBC) was formed in 1999 with a vision to become a global consultant for manufacturing and service industries in every aspect of business. IBC started with consultancy services for implementation of Quality Management Systems and ISO 9001 and 14000 certifications. Over the year, the scope of IBC has evolved into various certifications, training and consultancy services.

The **primary objectives of conducting the pilot training program** in the Chandigarh-Mohali-Panchkula Light Engineering cluster were:

- Testing the appropriateness of the curriculum developed
- Testing the delivery mechanisms recommended
- Obtaining first-hand feedback from training participants and their employers on how the training can be best delivered and what challenges can be potentially faced in making the program a nationwide success
- Test the Training Evaluation Framework

Trainee Profiles

The recruitment of participant employees for training programmes is a key challenge in most MSME clusters across India. Employers often overlook the potential longer-term benefits of encouraging their employees to participate in training programs. The time spent by employees in such trainings is typically perceived as production time lost. Moreover, since labor is scarce in many clusters and employee attrition is high, employers may not reap the benefits of training their own employees. Therefore, the importance of having to motivate employees to take up the training, as realized and noted in the Knowledge Transfer Mechanism and implementation framework recommended by the Consultant.

It was suggested that the efforts of the Ministry of MSMEs would have to be supplemented by local industry-specific research and training institutions, Industrial Training Institutes (ITIs) and BDS providers, both in the public and private domains. Participation by the local Industry Associations was also stated to be critical for motivating MSMEs to take up these trainings and for ensuring that the curriculum is relevant for their respective clusters.

The on-ground monitoring through a detailed feedback and review mechanism was deemed to be central to the success of the programme. A framework where the individual industry associations are tapped as monitoring implementation agencies was envisaged. It was suggested that the Presidents of these industry associations and the Directors of the cluster level MSME-DIs can form a suggested working committee which jointly reports the evaluation of the training programs to the DC MSME, and hence, to the MSME Ministry. This will ensure that industry level feedback is documented and at the same time, the activities are conducted as per the overall vision and mission of the MSME Ministry with respect to Skill Development.

The Mohali Industries Association (MIA) played the role of the motivator in the case of the 'Lean Manufacturing Awareness' program for the Light Engineering cluster. The support of the Cluster

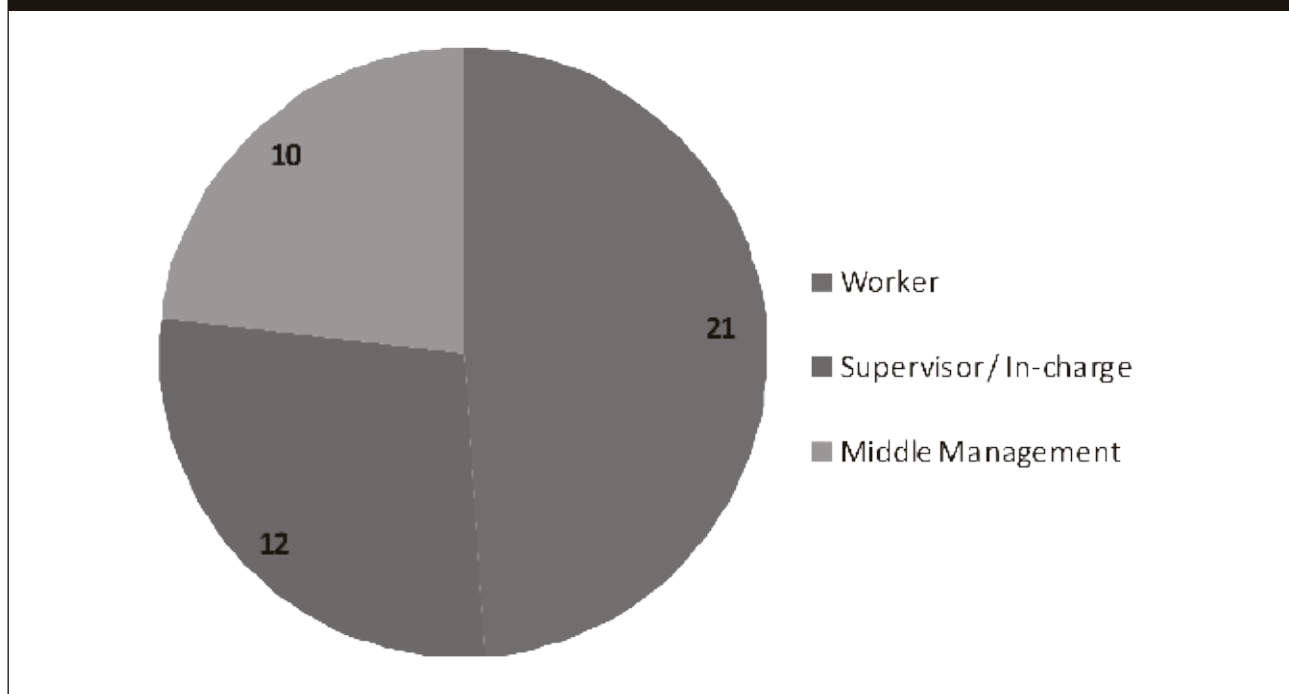
Implementation Agency – TERI – was also elicited, especially to identify and appoint a well-known and effective Business Development Service (BDS) for implementing the training. The support of the Secretariat of the Screws Manufacturing Association (SMA) and senior banking officials from local public sector banks was also sought.

The above measures to motivate and mobilize MSME employees for the training met with success. A total of 43 MSME employees attended the two-day training in Chandigarh.

The training was primarily directed at workers and supervisors working in various capacities within the light engineering MSME units in the cluster.

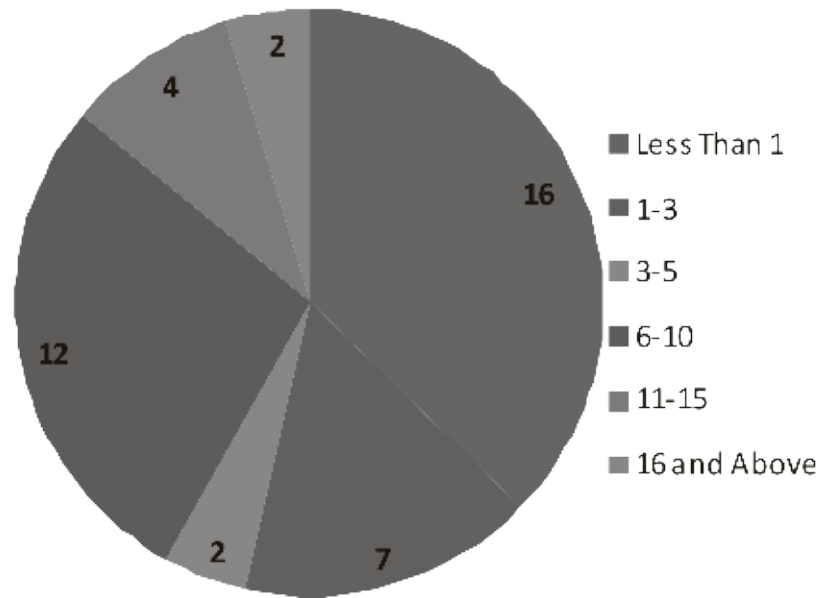
- 21 trainees were workers
- 12 of the trainees were employed as supervisors or shop-floor in-charge
- 10 of the trainees were from the middle-level management, predominantly relatives of promoters or proprietors

Exhibit 81: Current Job Role of Training Participants



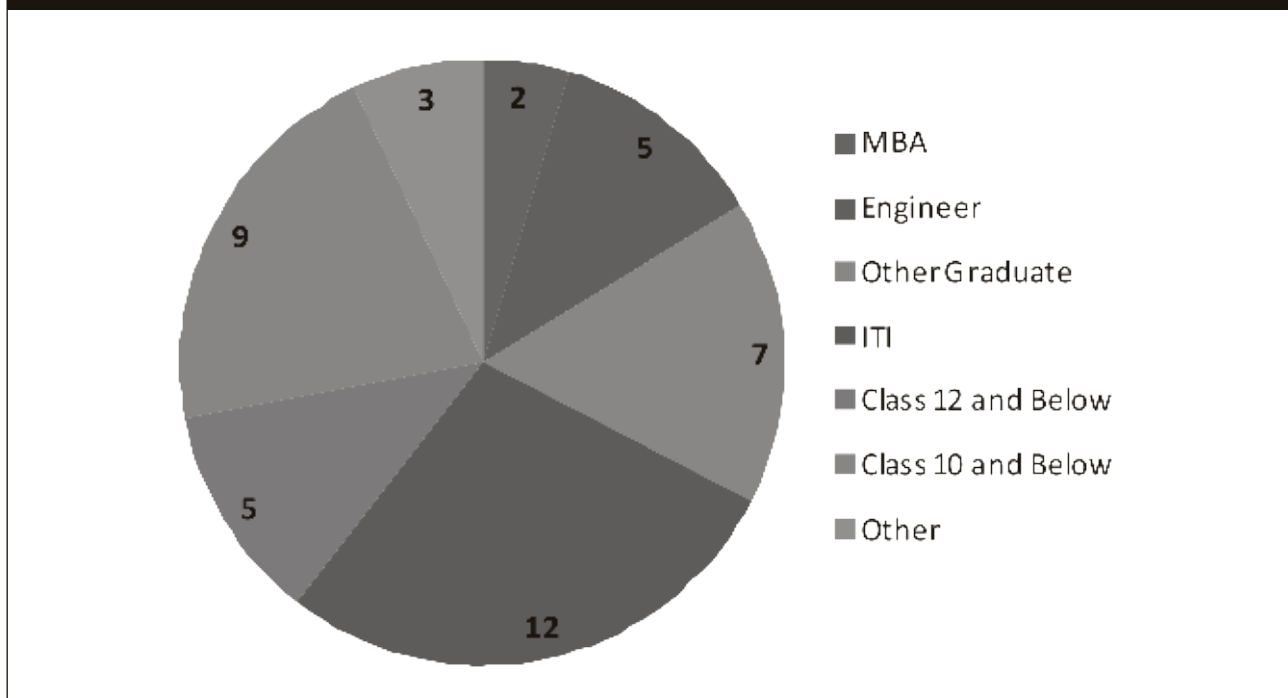
The training participants came with varying years of experience.

- More than 50% of the trainees (23 participants) came with less than 3 years of experience
- A significant number of employees with 6-10 years of experience (mostly, supervisors and shop-floor in-charge) also attended the training
- There were 6 participants with 11 or more years of experience, mostly those who joined as workers with little educational qualification and grew within the ranks to being supervisors as they accumulated years of experience

Exhibit 82: Work Experience of Training Participants (in years)**Training on 'Lean Manufacturing' in Progress at Chandigarh (21st and 22nd October, 2011)**

The training participants also came with varying educational qualifications. This demonstrates the typical challenge faced by trainers in MSME clusters. Trainers have to ensure that participants with varying levels of initial understanding are accommodated and engaged to ensure effectiveness.

- 19 of the 43 participants were either educated at Industrial Training Institutes (ITIs), engineers or possessed an MBA
- 7 of the participants possessed a basic college degree in a non-technical field
- A significant chunk (17 participants) did not possess any form of formal college education and had education up to Class 12 or less. 9 of these participants belonged to 'Class 10 or Less' category

Exhibit 83: Educational Qualifications of Training Participants

Curriculum Delivered in Pilot Training Programme

The Consultant aggregated the training needs identified in the cluster and carried out the initial training module identification and course curriculum development as part of the project. In doing this, it took into consideration the courses standardized by the Ministry of MSMEs and Modular Employable Skills (MES) under the Skill Development Initiative (SDIs) of the Directorate General of Employment and Trade (DGET). The broad policy framework of the National Skill Development Policy (NSDP) was also referred to while generating these modules.

The recommended implementation framework placed emphasis on strengthening the local government machinery through providing necessary material and information via the training content developer. Various schemes of the government, Ministry of Labor, Directorate General of Employment and Trade (DGET), National Council for Vocational Training, etc were considered. It was also noted that the existing machinery through autonomous training institutions of the MSME Ministry, namely the NIMSME, NIEBUD, IIE and NSIC are well placed to develop these curricula.

The specific training curriculum chosen for the Pilot Training implementation in Chandigarh was for an 'Awareness Program on Lean Manufacturing Concepts'. The details of the curriculum for a 'Certificate Course on Lean Manufacturing' are provided below: (Please see Annexure 3 for the Course Schedule)

- Batch Size: Minimum of 25
- Roles: Workers, Supervisors and Managers
- Duration: 2-3 days
- Delivery Model: Classroom based
- Infrastructure Requirements: Projector, Computer, Conference Hall

Topic	Contents
Lean manufacturing	<ul style="list-style-type: none"> • What is lean? • Key concepts of lean manufacturing. • Lean tools and supporting strategies. • Fourteen principles of the Toyota Way.
Waste elimination	<ul style="list-style-type: none"> • Value-added & non-value-added activities. • 3 Ms – Muri, Mura & Muda. • Seven Wastes.
Preparing enterprise for lean	<ul style="list-style-type: none"> • Introduction. • 5S & Visual Management. • Team Building.
Just in time (JIT)	<ul style="list-style-type: none"> • Introduction. • Supplier relationships. • Flow & Pull System. • Kanban.
Issues in implementing JIT	<ul style="list-style-type: none"> • Key issues. • Establishing Standardized Processes. • Implementing Total Productive Maintenance (TPM). • Pillars of TPM.
Manufacturing Cells	<ul style="list-style-type: none"> • Introduction to Manufacturing Cells (Cellular layouts). • Heijunka / Demand Leveling.
Creating Lean Processes across the Enterprise	<ul style="list-style-type: none"> • Value Stream Mapping • Poka-Yoke • Quick Change Over (SMED)

Training Period and Duration: The training was arranged over Friday and Saturday, with sufficient prior planning to ensure minimum disruption of production activity at the MSME units. The duration of the training on each of the days did not exceed five hours. Moreover, the session on Saturday coincided with a power cut in many MSMEs. This ensured that employers were more than willing to let their employees attend the training.

Language for Training Delivery: The training and the course content was delivered in local languages (Hindi and Punjabi) so as to ensure better absorption by the target audience who may not have had exposure to English (Please see Annexure 2 for an extract of the presentation used for the training).

Training Venue and Infrastructure: The training was conducted in a spacious, well-lit and airy conference room. All gadgets (including a projector) required to make the learning experience effective, were incorporated.

Management Game: The classroom-based training sessions were followed up with management games that help reinforce concepts such as 3M, VA, NVA and 5S. Parallels were drawn so that the participants could relate to the common challenges faced at their respective work places.

Management Games to Teach 'Lean Manufacturing' Concepts (End of Day 2)



Evaluation of Training and Feedback Received

Suggested Evaluation Framework

While a detailed qualitative and quantitative survey formed the basis for the skill gap assessment and training curriculum development, an evaluation of trainings on a pilot basis was deemed necessary to test the appropriateness of the curriculum and the training delivery. Moreover, the evaluation of first-hand feedback and suggestions from the training participants can enable fine-tuning of the recommended training curriculum and delivery methods.

Elements of the 'Kirkpatrick Training Evaluation Model' were adapted in conducting the evaluation. Kirkpatrick created his model in 1959 but it is still the most used and accepted evaluation training model. His model focuses on "what" must be evaluated. Kirkpatrick (1998) had identified four levels of outcomes of training which are hierarchically ordered:

- a. **Reaction:** This can be further evaluated using three broad parameters:
 - i. **Emotional Reaction:** "I found this training program to be enjoyable". The reactions focus on how trainees view a program as enjoyable.
 - ii. **Usefulness of training (perceived value)** – "What level of values does the training content have for your job? —This kind of reaction attempts to ascertain the perceived utility value, or usefulness, of training for subsequent job performance.
 - iii. **Difficulty of Training:** "I found the issues taught in training difficult to understand". These reactions cover the cognitive and emotional effort required to perform well in the training.

- b. **Learning:** This level aims to measure the amount of learning that results from training and determines how much behavior can change back on the job. Three types of learning from training would be evaluated:
 - i. **Cognitive outcomes** – An evaluation of cognitive outcomes must focus on trainee knowledge and the processes of knowledge acquisition, Organisation and application. Usually assessed by multiple choice questions, open-ended responses, listing of facts, or similar methods. Knowledge checks such as these will be very similar to tests used in schools to assign grades. Measures of cognitive outcomes can be assessed immediately after training or later to assess knowledge retention over time.
 - ii. **Skill-based Outcomes** – These outcomes are typically measured by requiring that participants demonstrate their new skills in the training environment. Skill-based outcomes are not the same as behavior-change outcomes (level 3) that occur in the work environment. Learning outcomes that focus on skills only measure participants' ability to demonstrate the skills.
 - iii. **Attitudinal outcomes** – these measures focus on how participants feel or think about the training content. They have implications for participants' motivation to use the training, their confidence for using the skills, and their ability to reach goals.

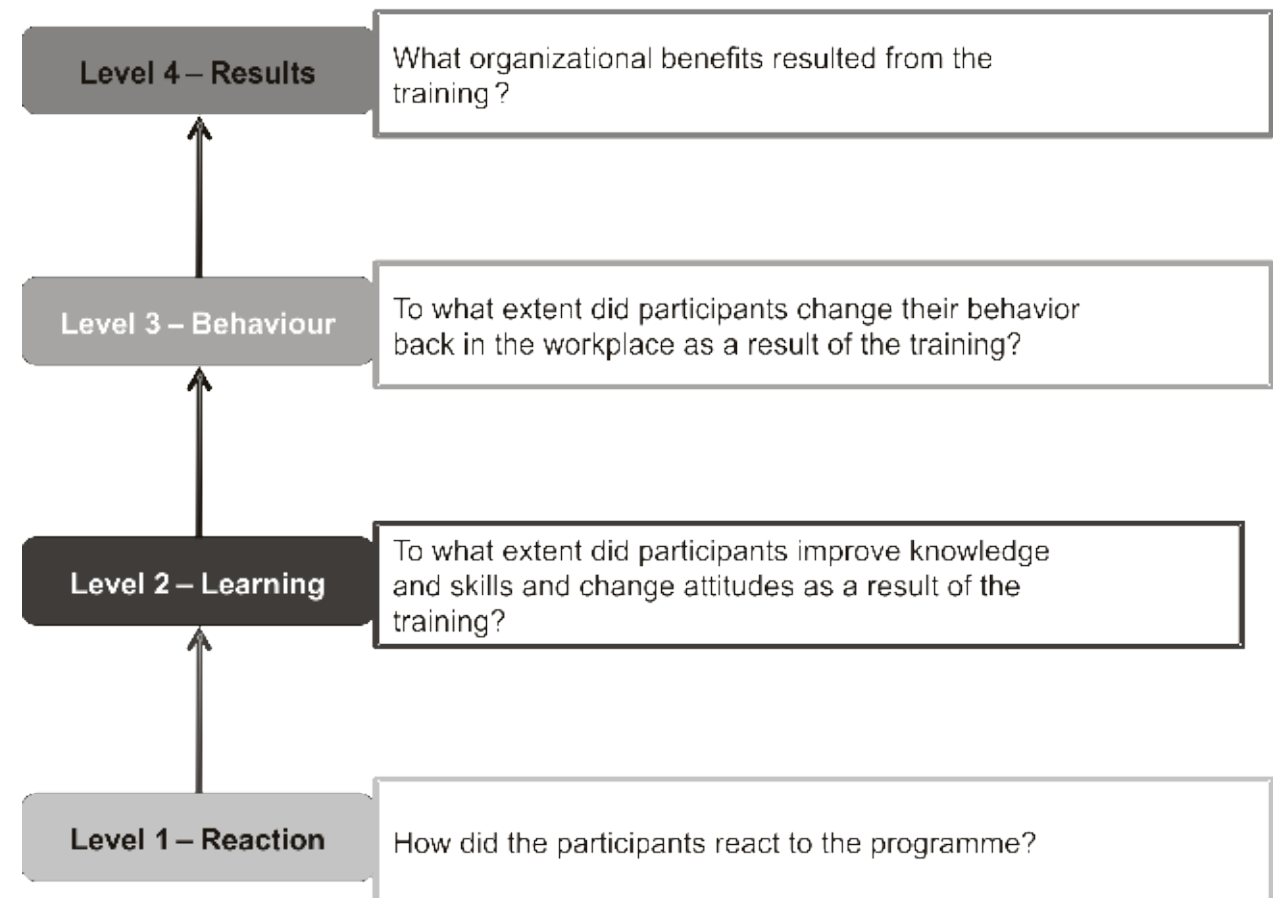
- c. **Behavior:** This level aims to measure the degree of transfer from what was learned to how the trainee behaves on the job, which in turn determines how much organizational impact the training can have. This assessment would be based on the objectives of the course and these

assessed through tests, observations, surveys, and at times interviews with co-workers and supervisors.

- d. Results:** This level is a measure of organizational and business impacts of the training. Some assess this measurement by tracking business measurements, others assess it by observations, some by surveys and still others assess by qualitative measures. Examples of might include: productivity, customer satisfaction, efficiency, morale, and profitability. The Consultant suggests that this assessment be conducted through metrics or performance indicators depending on the nature of the training program.

The Consultant recommends the use of this Training Evaluation Framework for the evaluation of all future trainings conducted under this initiative.

Exhibit 84: Kirkpatrick Model for Training Evaluation



The following section describes how the 'Kirkpatrick Training Evaluation Model' was adapted to evaluate the success of the training program on 'Awareness of Lean Manufacturing Concepts'.

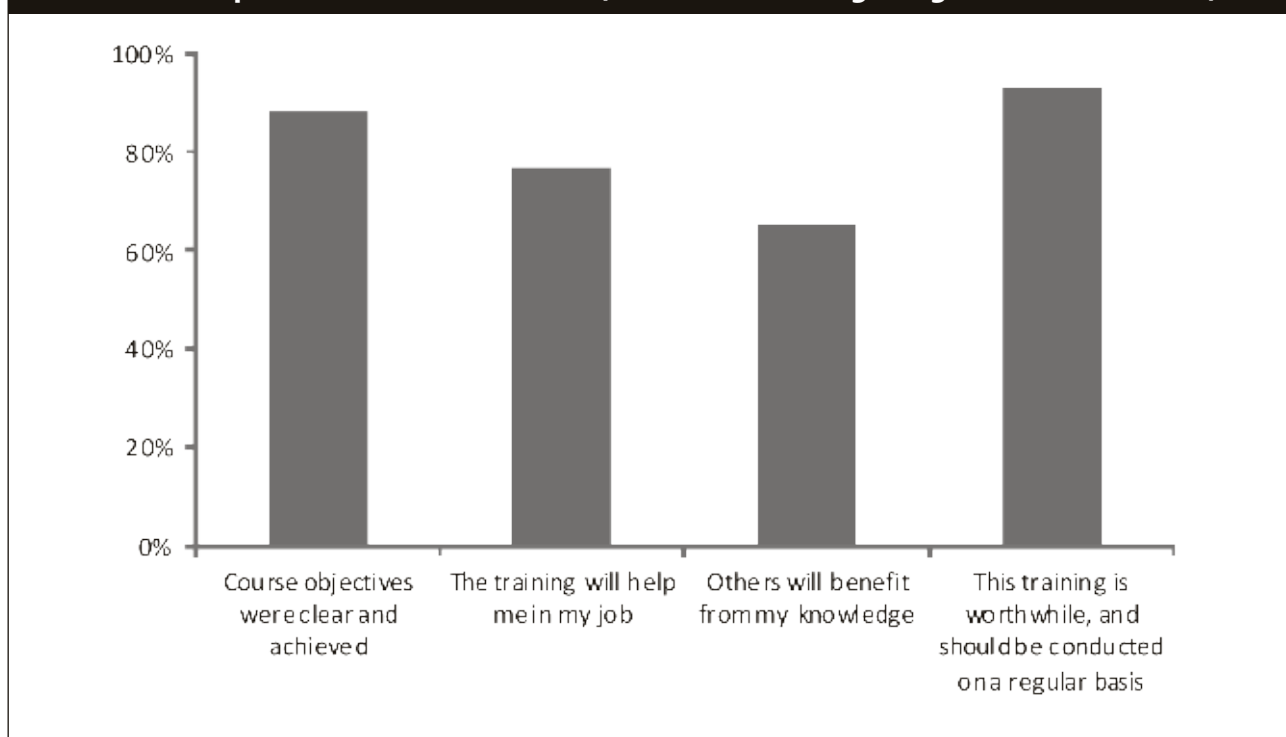
Analysis through Training Evaluation Forms and Classroom Observation

Not all of the above outcome levels can be evaluated during and immediately after the trainings. While 'Reaction' and 'Learning' can be tested through post-training feedback questionnaires and tests, 'Behavior' and 'Results' are longer-term and are expressed in the actual work environment of the workers, supervisors and engineers.

- 'Reaction' was assessed through the analysis of 'Training Evaluation Forms' filled by the training participants and from a Group Discussion among the Consultant representatives, training organizers, training providers and the training participants (Please see Annexure 1 for the 'Training Evaluation Form' used).
- 'Learning' was reinforced and evaluated on the basis of a post-training test and management game that enabled the trainees to apply their conceptual learning to real-world productivity and efficiency issues faced at the work-place (Please see Annexure 4 for the Participation Sheets used for the game).

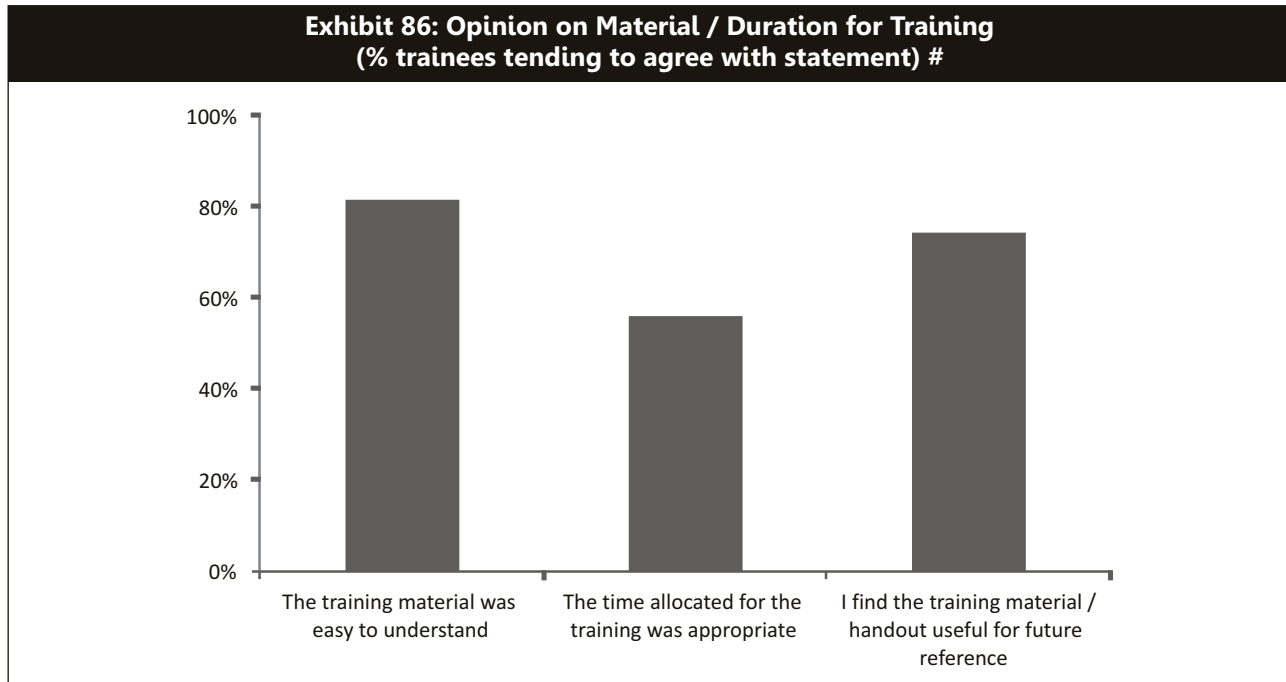
The 'reaction' of the participants was largely 'positive', with 93% of the participants indicating that the training was worthwhile and they should be conducted on a regular basis. The trainees were also clear on the objectives that were sought to be achieved through the training. While 77% of the participants felt that the training will help them in their job, 65% felt that others will benefit from their knowledge.

Exhibit 85: Opinion on Course Content (% trainees tending to agree with statement) #



Percentage respondents answering either 4 or 5, where '1' is 'Disagree' and '5' is 'Agree'

The training material handed was not only considered easy to comprehend, but was also deemed to be useful as a reference for the future (Please see Annexure 2 for an extract of the training material used). However, a significant proportion of the trainees (44%) felt that the time allocated for the training was not appropriate. They were of the opinion that the sessions should have been spread over a higher number of days and that the length of sessions should not have been more than 2-3 hours each.



Percentage respondents answering either 4 or 5, where '1' is 'Disagree' and '5' is 'Agree'

Classroom observations were also conducted by the consultants while the training course on 'Lean Manufacturing' was being delivered. The observation exercise involved presence of D&B consultants in the classroom with a view to identify any intangible impact. The exercise sought to assess:

- Attentiveness of trainees to draw inferences on effectiveness of classroom-based training
- Comprehension by trainees and ability to relate conceptual training to real-world issues faced
- Extent of class participation, especially considering the heterogeneous set of trainees
- Method of handling classroom interaction by the trainers

The challenges of handling training for MSME employees in industrial clusters came to the fore, in the course of the classroom observation. While the attendance was encouraging, not all employees were able to be present for the training sessions at the appointed time, thereby delaying the start of the session. The attention span of some participants was also found to be short, especially because they were not used to sitting in a classroom setting for long. Some trainees seemed to be able to assimilate the concepts more effectively than others. Those with an ITI or Engineering background were more adept at relating to the concepts, than others. The importance of making the sessions as interactive as possible was re-emphasized during the management game, when many reticent training participants demonstrated greater enthusiasm in the course of the game.

Feedback from Group Discussion

A separate session was set aside on the second day of the training for a Group Discussion among D&B representatives, training participants, training organizers and training providers (IBC). The objectives of the project being undertaken by SIDBI was discussed and a summary of the skill gap analysis and training curriculum development carried out by the Consultant was presented. The discussion, the primary purpose of which was to gather feedback and ideas for up-scaling the training programme, was thrown open to the larger gathering. A snapshot of discussion points and ideas that emerged is presented below:

Feedback on Training Course

The training participants acknowledged the effectiveness of the training program on 'Awareness on Lean Manufacturing Concepts'. The participants stated that the course objectives were well-stated and clear. The knowledge gained was deemed to be implementable at their work place. The participants revealed that more such courses were required and suggested that they be conducted on a regular basis.

The delivery of the training and the availability of the training material in local languages (Punjabi and Hindi) were considered critical reasons for the success of the program.

It was felt that the training program was slightly intensive. It was suggested that the duration of the training on any particular day should not exceed 2-3 hours and that the training should be spread over a number of days, enabling participants to conduct self-study. It was suggested that the training can be conducted before and after work-hours or on weekends and holidays.

The Consultant infers that the training program timing should be kept flexible (part time, weekends, full time, etc.) keeping in mind the requirements of the target groups. In case of people who are already employed the training program should be carried out during the evening so as not to hamper their regular working schedules. A good practice would be to arrange training programs during the months when there is a slack in demand for the goods produced in the cluster. During the slack period the workers would be relatively free to attend the training programs.

Post Training 'Group Discussion' in Progress



Motivation to Attend Training

It was clear that skilled labor shortages were acute in the cluster and that there is an urgent requirement to bridge the skill gap to ensure a steady supply of skilled employees for the MSME units. Active participation by the Industry Associations was sought in encouraging the MSME entrepreneurs to send their employees for training. Employers often overlook the potential longer-term benefits of encouraging their employees to participate in training programs. The time spent by employees in such trainings is typically perceived as production time lost. Moreover, since labor is scarce and employee attrition is high, employers may not reap the benefits of training their own employees.

To overcome the above issue, it was suggested that a minimum employment lock-in be put in place through active intervention by the Industry Association. The lock-in will enable employers to retain the employee for certain duration post-training. Incentives in the form of provision of certificates on successful completion of training by the government, industry association, etc was also suggested by the participants

Course Design Refinement

To ensure that the training programs remain demand-driven and relevant to industry requirements, inputs for refining course curriculum / content should continually be sought from the prospective employers from the industry to ensure that the industry eventually employs the trained persons. Refinements to the training program design should be made on an ongoing basis in consultation with industry bodies such as Mohali Industry Association (MIA) and also large OEMs such as Mahindra & Mahindra, Rail Coach Factory Kapurthala, Hindusthan Machine Tools, etc. The OEMs would be able to identify the key areas that should be given priority while suggesting changes to the design of training programs. Given that the prime objective is providing employment to candidates, a key element of the training would be practical machine operations. In this regard, tie ups with local industry were proposed so that the participants can spend the last part of their training program, working as apprentices in actual factory environments.

Training Infrastructure

It was suggested that the existing infrastructure and facilities be leveraged for operation of training centers. No new capital investments for infrastructure would be required. Existing infrastructure of industry, governments, and educational institutions should be used to set up training classrooms and workshops.

It was also suggested that the requisite machinery and equipment for training be arranged by the prospective employers to the extent possible on lease/rent or as contribution / participation of employer.

Trainees coming from remote locations indicated that boarding and lodging facilities were required for them to attend trainings seamlessly. Additionally, trainees also indicated that to and fro transport and food would help.



Annexure 1
Making Market Work for MSMEs

'An innovative approach to cross cutting themes with thrust on Skill Development'



Annexure 2 Training Evaluation Form

'Awareness Program on Lean Manufacturing Concepts'



Trainers: Er. Sunil Kr. Mallan, Er. Raja Gopal and Er. Rajesh Solanki
(International Business Certifications)

ई. सुनील कुमार मालन, ई. राजा गोपाल और ई. राजेश सोलंकी

Venue: CITCO, MICC, Phase 1, Industrial Area, Chandigarh

Your Name (नाम)	Experience (तजुर्बा) _____ Years
Company Name:	Industry Type / Product Manufactured:

Please check (☐) the box that best represents your profile / opinion regarding the following questions:
कृपया नीचे दिये गये सवालों के संबंध में उस बॉक्स को चेक करें जो आपकी प्रोफाइल/राय को सबसे अच्छे से बताता है।

TRAINEE PROFILE

1. What best describes your role in the organization?

संस्था में आपकी भूमिका की सबसे बेहतर व्याख्या कौन सा वाक्य करता है?

- Worker, Supervisor / In-charge, Middle Management, Top Management / Owner
 वर्कर, सुपरवाइजर/इन्चार्ज, मिडल मैनेजमेन्ट, टॉप मैनेजमेन्ट/मालिक

2. Your Educational Qualification आपकी शैक्षिक योग्यता

- MBA, Engineer,
 एमबीए, इंजीनियर,
 Other Graduates (BCom, BA, BSc, etc), ITI / Vocational Training / Diploma
 अन्य ग्रेजुएट्स (बीकॉम, बीए, बीएससी आदि) आईटीआई/वोकेशनल ट्रेनिंग/डिप्लोमा

- Class 12 and below, Class 10 and below, Other _____
 कक्षा 12 और कम, कक्षा 10 और कम, अन्य

COURSE CONTENT (कोर्स सामग्री)

Agree Disagree
सहमत असहमत
12345

1. Course objectives were clear and achieved
कोर्स के उद्देश्य स्पष्ट थे और प्राप्त हुए
2. The training will help me in my job and accomplishment of goals
ट्रेनिंग ने मेरी नौकरी में और लक्ष्यों को प्राप्त करने में मेरी मदद की
3. Others will benefit from my knowledge
अन्य लोगों को मेरे ज्ञान/जानकारी से फायदा मिलेगा
4. This training is worthwhile, and should be conducted on a regular basis
यह ट्रेनिंग लाभकारी है, और नियमित तौर पर की जानी चाहिए

TRAINING STRUCTURE ट्रेनिंग ढांचा

Agree Disagree
सहमत असहमत

5. The training material was easy to understand
ट्रेनिंग सामग्री समझने में आसान थी
6. The time allocated for the training was appropriate
ट्रेनिंग के लिए दिया गया समय उपयुक्त था
7. I find the training material / handout useful for future reference
मुझे ट्रेनिंग सामग्री/हैन्डआउट भविष्य के रेफरेंस के लिए उपयोगी मिला

TRAINER ट्रेनर

Poor

Excellent

खराब सर्वोत्तम
12345

8. Trainer's knowledge of subject matter
ट्रेनर का ज्ञान विषय के बारे में मायने रखता है
9. Presentation Skills of the Trainer
ट्रेनर की प्रस्तुतिकरण कुशलता
10. Trainer was able to communicate concepts and ideas.
ट्रेनर कॉन्सेप्ट्स और आयडिया का वर्णन करने के योग्य था

11. Trainer was able to answer questions clearly and concisely

ट्रेनर सवालों के जवाब स्पष्टता संक्षेप में देने के योग्य था

--	--	--	--	--

12. Trainer was able to make the sessions interactive.

ट्रेनर सेशन को संवादात्मक बनाने में योग्य था

--	--	--	--	--

What was the Most Useful and Least Useful part of the training? Why?

ट्रेनिंग का सबसे उपयोगी और सबसे कम उपयोगी हिस्सा कौन सा था? क्यों?

Other Comments: (Classroom infrastructure, training day/time, venue, distance, duration, challenges, etc)

अन्य टिप्पणी: (क्लासरूम के आधारिक आवश्यक तत्व, ट्रेनिंग का दिन/समय, वेन्यू, दूरी, अवधि, चुनौतियां आदि)

Finally, if one of your friends asked you to tell them one benefit of attending the course, what would you say?

अंत में, यदि आपका कोई दोस्त आपसे कोर्स में भाग लेने का एक फायदा बताने के लिए कहता है, आप क्या कहेंगे?

Thank You,
Please return the completed form to the instructor

Annexure 3 Extract of Presentation Used for Training

Training Notes on

'Awareness Program' on Lean Manufacturing Concepts

Conducted basis curriculum recommended in the D&B Report
on '**Study on Skill Development in the MSME Sector**'
prepared for SIDBI.

Pilot Testing



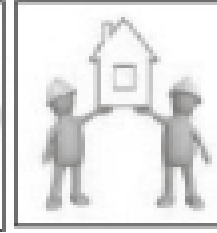
Team Led by:
Er. Sunil Kumar Mallan
(International Business Certifications)
www.abc9001.com 8140 96353

International Business Certification (IBC)
Amritsar, Chandigarh
Web: www.abc9001.com,
Email: abc9001@gmail.com



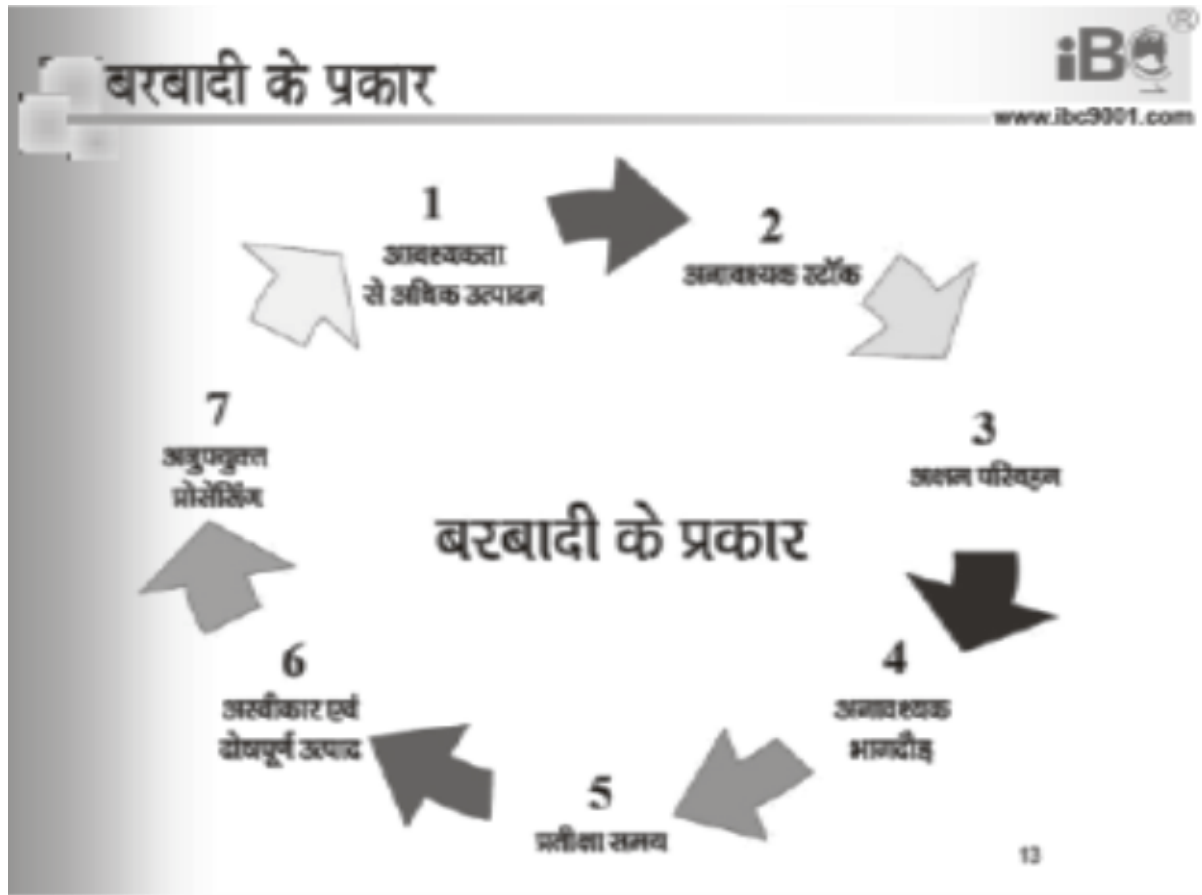
International Business Certifications

Awareness Program : Lean Manufacturing Concepts




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5S औद्योगिक गृह व्यवस्था द्वारा बरबादी से बचाव




औद्योगिक गृह व्यवस्था का उद्देश्य (Purpose)




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▶ खराब एवं लचर पधर रख रखाव दुर्घटना को निम्न प्रकार दावत देता है ।






- यहां वहां फैले पड़े खुले सामान [जोड़ी] [प्रिंटेफार्म] [फ्लोर] को असुरक्षित बनाते है ।
- यह टुकड़े ऊपर से किसी कर्मचारी पर गिरकर दुर्घटना का कारण बनते है ।
- फिल्टरन भरे गीले चिपचिपे फर्श से कर्मचारी चोट खा सकता है ।
- बेतरतीब रखे सामान को खोने और ढूंढने में व्यय होने वाले समय का दुरुपयोग ।
- कर्मचारी को चोट पहुंचना [जो कि नुकीली कील] [लोहे की पत्ती] से हो सकती है ।





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5S कार्यस्थल प्रबन्धन

S1 : SEIRI	S2 : SEITON	S3 : SEISO	S4 : SEIKETSU	S5 : SHITSUKE
सही घयन	सुव्यवस्था	स्वच्छता	मानकीकरण	अनुशासन
				
कार्य क्षेत्र से आवश्यक व अनावश्यक वस्तुओं को अलग अलग करना व अनावश्यक वस्तुओं को हटाना	संपेक्ष वस्तु के लिए जगह निर्धारित करना और वह वस्तु उही जगह पर रखना	कार्यक्षेत्र की अच्छी तरह सफाई करना और उसे स्वच्छ रखना	हर चीज का मानकीकरण बनाना तथा उसका पालन करना	5S के नियमों को एक जायत के तौर पर बनाए रखना



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5S कार्यस्थल प्रबन्धन



1. सही घयन

2. सुव्यवस्था

3. स्वच्छता

4. समानांतरीकरण

5. स्व:अनुशासन

फेक्ट्री : सामान्य तौर पर



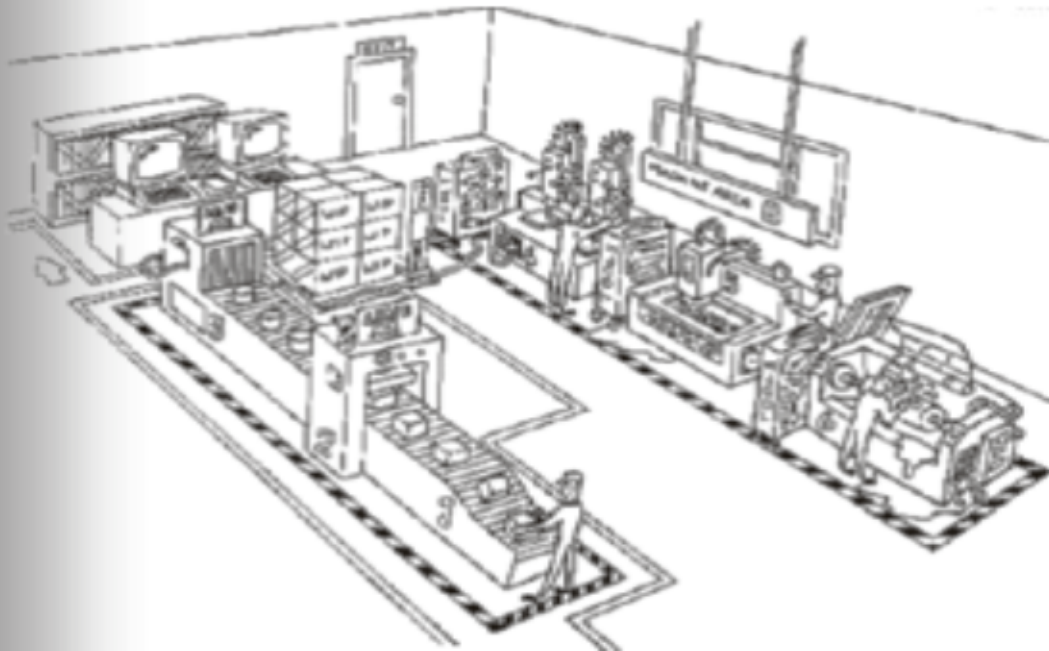
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फेक्ट्री : सुव्यवस्था के बाद



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चतुर्थ चरण



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- ▶ उपयोगी वस्तुओं को सही स्थान पर सम्भाल कर रखना व थियरन कार्ड लगाना।



अनावश्यक वस्तुओं को देखने की टेबल



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देखें	अनावश्यक फर्नीचर	स्टोर वाली जगह में
<ul style="list-style-type: none"> • फर्श • रास्ते • कार्यक्षेत्र • छोटे कक्ष • ऑफिस • अलमारी के अंदर 	<ul style="list-style-type: none"> • केबिनेट • बेंच , टेबल • कुर्सी • ट्रॉली 	<ul style="list-style-type: none"> • शेल्फ • रेक्स • दरारों में • शेड में

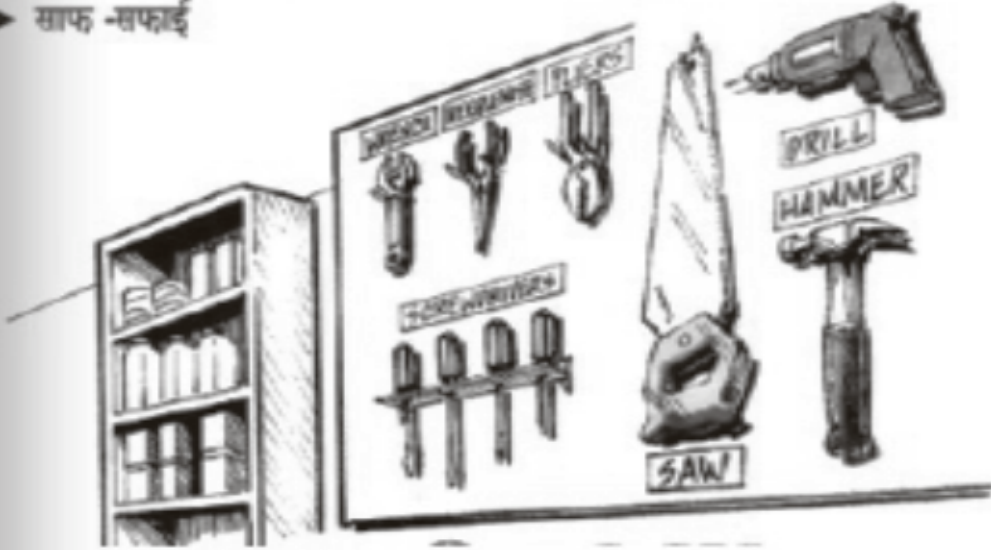


S2 – व्यवस्थित क्रम में रखना



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- ▶ प्रत्येक वस्तु का एक निश्चित स्थान हो व हर वस्तु अपने निश्चित स्थान पर हो।
- ▶ साफ -सफाई



Annexure 4 Course Schedule



TIMINGS	Topics	Faculty
1400 – 1500 hrs 21 Oct 11	Inaugural Session	Er Sunil Kumar Mallan
1500-1730 hrs 21 Oct 11	Muri, Muda, Mura and 8 Wastes	Er Sunil Kumar Mallan
1730-1900 hrs 21 Oct 11	Introduction to lean	Er Raja Gopal
Saturday, 22 Oct 2011		
1000-1200 hrs 22 Oct 11	5 – S system	Er Sunil Kumar Mallan
1200-1300 hrs 22 Oct11	Kaizen	Er Rajesh
1300 to 1330	Lunch	All
1330-1430 hrs 22 Oct11	Kanban	Er Raja Gopal
1430-1500 hrs 22 Oct11	Feedback From Filling & Closing Note by D&B	All
1500-1700	Recapitulation Management Game	All

Note: This program is designed for shop floor People i.e. Operators, Supervisors and Engineers.

Annexure 5

Class Participation Sheets

Sheet No. 1

Name:

Designation:

Date:

Pen down at least two examples each for the following wastes from your own processes:

Over Production:

- 1.
- 2.

Over Processing:

- 1.
- 2.

Excess Inventory:

- 3.
- 4.

Waiting:

- 5.
- 6.

Transportation:

- 7.
- 8.

Defects:

- 9.
- 10.

Sheet No. 2

Name:

Designation:

Date:

- List down each activities operator performs in this clip
- Mention what of activity it was (VA, NVA, RNVA)
- Note timing of value added activity
- Calculate what percentage it was adding value

Sl. No.	Activities	VA/NVA/RNVA	Time

SUMMARY

1.	Total clip time	110 sec
2.	Value Added time	
3.	Non Value Added time	
4.	Percentage value addition	



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