



Performance Assessment Of Apparel Industries: Process And Tools For Enhancing Competitiveness



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Study by

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Commissioned by

German Technical Cooperation, SME Financing and Development Project, New Delhi,
in association with Okhla Garment and Textiles Cluster (OGTC)

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SMALL AND MEDIUM ENTERPRISES FINANCING AND DEVELOPMENT PROJECT

Project

To enhance the competitiveness of Small and Medium Enterprises (SMEs) in India, SIDBI is implementing a multi donor Project for the Financing and Development of Small and Medium Enterprises under the aegis of Ministry of Finance, Govt. of India. The Project is a sector wide programme jointly designed and financed by DFID, GTZ, KfW, and World Bank. **The key objectives of the overall Project are:**

- i. To strengthen growth and competitiveness of micro, small and medium enterprises (MSME);
- ii. To make a paradigm shift in the banking sector's approach towards providing credit and financial services to MSMEs by turning MSMEs into an attractive and viable customer group; and
- iii. To improve MSMEs access to market-oriented financial and business development services thereby fostering MSME growth, competitiveness and employment creation.

The programme has two main components of Business Development Services (BDS) and Financial Services. Supplementing technical cooperation provided by GTZ and the UK Government's Department for International Development (DFID), financial assistance for SME development is provided by the World Bank and the German Development bank to Small Industries Development Bank of India (SIDBI).

GTZ

India has been a partner country of German Development Cooperation for nearly 50 years. For almost all of this time, GTZ – Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) GmbH – has been active in India on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Established in 1975, GTZ is organized as a private company owned by the German Federal Government. The BMZ is its major client. The company also operates on behalf of other German Ministries, partner-country governments and international clients such as the European Commission, the United Nations and the World Bank, as well as on behalf of private enterprises. It provides viable, forward-looking solutions for political, economic, ecological and social development in a globalised world.

To address India's development priorities of sustainable and inclusive growth, GTZ's joint efforts with the partners in India currently focus on three priority sectors: Energy, Sustainable Economic Development and Environmental Policy, Conservation and Sustainable Use of Natural Resources.

SIDBI

SIDBI is the principal financial institution for the promotion, financing and development of industry in the small scale sector and to co-ordinate the functions of the institutions engaged in the promotion and financing or developing industry in the small scale sector and for matters connected therewith or incidental thereto.

SIDBI is the implementing agency for the SME Financing and Development Project. SIDBI has set up a project management division in New Delhi charged with smooth implementation of the project.

■ FOREWORD (GTZ)

Textiles and Garment Industry fulfils a pivotal role in the Indian Economy. It constitutes for 14% of total industrial production of the country and is the second largest employer after agriculture in India. It provides direct employment to around 35 million people and another 56 million are engaged in allied activities. Therefore, competitiveness of this sector plays an important role in employment generation and poverty alleviation.

At present India accounts for about 4% of world trade in Textile and Apparel. This highlights the fact that not only is the sector of great importance to the Indian economy but also that it has great potential to grow in the global scene and become one of the drivers of the Indian economy. The dismantling of the quota regime marks a watershed event as it has provided a totally competitive environment in the international market for textiles and clothing wherein the success is being determined solely by factors like quality, prices, design, adherence to delivery schedules, marketing skills, etc. So, in the changed global business environment, there is constant pressure on lead time and pricing and the industry is facing constant erosion in their competitiveness.

Supporting efforts to enhance the competitiveness of SMEs under multi donor SME Financing and Development Project, GTZ, on behalf of the Federal Ministry for Economic Development (BMZ) is working at four locations, i.e NCR, Hyderabad, Indore and Dehradun. Apparel sector is one of the identified area where GTZ is engaged in various support activities.

National Capital Region is one of the largest sources in India for different types of Readymade Garments and furnishing items supplied to the world. There are approximately 1100 SMEs comprising of manufacturers, fabricators, embroidery and other supporting units.

Prior to design and initiation of intervention in NCR, GTZ carried out a diagnostic study of the sector in NCR and consulted all key stakeholders, and a stakeholder workshop was organized on 21st June 2007. Based on the understanding developed from the diagnostic study and interaction with stakeholders, it was felt that there is huge improvement opportunity available within the firm. Therefore, developing proper understanding amongst the entrepreneurs and top management of SME would enable them to work towards enhancing their competitiveness.

Against the above background, GTZ in association with OGTC, commissioned out an extensive firm level study to analyse current systems and advise ways to improve overall competitiveness of the firm. Study was conducted by the team of M/s Method Consultancy, led by Mr. Roger Thomas.

With the objective of analysing the needs of the industry regarding production systems and people, investigating the shortcomings in each production related department in the industry, highlighting shortcomings, making recommendations to improve, establish the level of equipment being used and where possible suggesting improvements, reporting on the shortcomings in management and supervisors and to advise operational and financial impacts based on above recommendation, this study has come with very useful and practical findings.

On behalf of GTZ, we sincerely thank our partner OGTC and their members who took keen interest in the study and provided their full support to the expert team. We are also grateful to Apparel Export Promotion Council for their guidance and continued support.

Though this study has been done in NCR but we are of the opinion that the findings of the study would be of immense value to all apparel manufacturing SMEs in India and members/stakeholders of the apparel industry.

Kjell Olsen
Principal Adviser
GTZ – SME Financing And Development Project

■ FOREWORD (OGTC)

The Okhla Garment and Textile Cluster facilitated by Ministry of MSME, MSME DI and Textile Committee is into existence since May 2004 with the mission to enhance competitiveness and change status quo by thinking outside the box.

During the last few years OGTC has been facilitating various programmes in the member SME factories. The basis of these activities has been ad hoc assessment by the Senior Managers. It was observed that by and large this assessment was greatly influenced by the pressing issues of the individual factory. Hence the activities were not having long lasting impact. It only provided awareness to the issues and to the limited extent the problems of the period. During the training activities, it was also observed that the participants showed deficiencies in many related areas and also emphasized the need for more broad based understanding of the entire manufacturing process.

Against this background, OGTC sought the assistance of GTZ. During the consultation process, idea of conducting a detailed firm level survey cum study was mooted by GTZ. After detailed discussion amongst OGTC members, it was decided that GTZ in association with OGTC would commission a study to Mr. Roger Thomas of M/s Method Workshop. The study covered the entire manufacturing operations covering Raw Material and Trim Store, Cutting Room, Sewing Floor, Finishing Department, Mechanics, and Quality Department, etc.

We are happy to record that study was highly educative and useful. The member companies have by and large accepted the evaluation as realistic. The judgment is based on the observations of senior OGTC members who studied the reports and commented that differences in the ratings by consultant for different factories were visible in the working of these factories also.

Another noticeable impact was that in number of factories the process of improvement started right while data was being collected. OGTC members have collectively also discussed these reports and have started three-pronged action:

1. Areas of layout and material handling where managerial decisions were required;
2. Recording of lost time and its analysis and action thereof; and
3. Training of the personnel in the areas of deficiencies.

Areas of software and technological changes are being discussed by a specially constituted three-member committee of owner members as these involve high capital costs.

Overall the survey was useful and provides a base for logical action plan. We are confident that it will facilitate better understanding and provide a scientific roadmap for all other stakeholders including apparel manufacturers.

R.C. Kesar
Director
Okhla Garment and Textiles Cluster

■ PREFACE

The apparel industry plays a major role in Indian Economy, Apparel exports have approximately 9% share in India's total exports with apparel exporters directly employing 2.5 million people. The combined textile and apparel sector directly and indirectly employ 35 million people; this makes it the 2nd largest employer in the country.

The year 2005-06, witnessed a major increase in apparel exports of 28%, however, the future growth seems to be very difficult. The abolition of quota opened the world markets and there is a direct competition from many countries to retain the existing global market share and for future growth, Indian apparel industry has to work on many fronts. The scope of improvement available within the average firms is immense and its imperative that proper attention is given to many basic aspects to improve overall productivity as a first step.

This study has been undertaken by M/s Method Apparel Consultancy India Pvt. Ltd. and was commissioned by German Technical Cooperation (GTZ) in association with OGTC. We are grateful to GTZ for giving us the opportunity to study the existing systems and practices prevalent in apparel firms and thus outline the scope of improvement and training needs.

Our sincere thanks go to OGTC and its members for their commitment towards the assessment. The firms not only provided the support in terms of data etc. but at times facilitated the team to understand the latent issues.

It is important to note that there is a wide variation in the level of competency in the factories. The major contributors to this variation are lack of work study, mismanagement in the finishing departments and a general lack of systems to establish performance levels. So there is no way that they can establish the efficiency levels they are performing at. The production and cutting departments are operating at a score of 52-53% compared to an acceptable international benchmark of 75%.

The result of the study is based on the findings of 10 firms in National Capital Region wherein the entire manufacturing operations and training needs have been critically evaluated. Findings are very relevant for enhancing the growth and competitiveness of the apparel manufacturing industry. It aims to show manufacturers the areas where they can improve performance and return to the levels of profitability previously achieved if corrective steps are taken in time.

On behalf of M/s Method Apparel Consultancy India Pvt. Ltd., we are hopeful that this publication will enable companies to take a hard look at their inefficiencies and be motivated to work towards enhanced efficiencies, future growth and higher profitability.

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Message from AEPC

Message from SIDBI

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CHAPTER-1

1. EXECUTIVE SUMMARY

Introduction

India is looked upon as an important contender in the world apparel market. However, export orders in 2007 have declined since India is not sufficiently competitive. It is high time that the industry realizes the need to compete and starts to work to increase productivity.

It is defiantly a buyer's market! Garment prices are not following inflation. In the last two years estimates say that prices are on a downward trend which varies from 7% to 15% in some product groups (KSA study). This has been exacerbated during 2007-08 by the increase in the input cost due to inflation, rising minimum wage rates by as much as 40% in Haryana and reducing drawbacks.

With manufacturing efficiencies running between 28% and 45%, as per the survey findings, the time taken per piece in the finishing department and repair rates are at an unacceptably high level, which apparently shows that there is plenty of scope for improvement.

The major improvement initiatives required by the garment industry to remain competitive are:

- Introduction of work study techniques,
- Establishment of standard times and efficiency monitoring systems from the cutting department to dispatch,
- Fabric control, reconciliation and cutting room improvements,
- Reorganisation of finishing floor,
- Quality system review and restructuring,
- Properly structured management meetings with comprehensive targets and task allocation.

An extensive survey was commissioned by the German Technical Cooperation (GTZ) in association with Okhla Garment and Textile Cluster (OGTC), and Methods Apparel Consultancy was chosen to analyze current systems and advise ways to improve overall competitiveness.

Objectives

This study aims to show manufacturers the areas where they can improve performance and regain some of the lost profitability by:

- Analysing current production and management systems,
- Investigating and highlighting the shortcomings in each department,
- Making recommendations for improvement,
- To provide solutions and the potential savings that would accrue.

Methodology

An extensive survey was conducted in the NCR Region in the months of November and December 2007. The firms selected covered a

wide range of products and fall within the following parameters.

- Orders in excess of 2000 pieces,
- 200 to 1000 operators,
- Have some operators on the company payroll,
- Willing to share management cost information.

The survey included an analysis of the production department, the personnel involved and potential savings in an average factory.

All the key departments were analyzed and rated keeping the world-class standard as a benchmark. All the managers and supervisors were assessed and rated to establish where training would be most effective.

Priorities

Based on the data collected during the survey, it can be said that the following major areas require immediate attention:

1. Technical skills availability,
2. The need for first-time quality,
3. A reduction in throughput time,
4. Lower WIP,
5. Better management and supervision,
6. Development of team work,
7. Lower absenteeism,
8. Lower labour turnover,
9. Innovation and technology upgradation.

Potential Savings in an Average Factory

To illustrate the improvement in value terms, an average factory has been created as an example and the potential savings are shown herewith

Assumptions for an Average Factory	
No of machinists.....	300
Total employees.....	600
Fabric.....	100% Light Weight
Cotton fabric price.....	Rs 55 per metre
Garments.....	Ladies blouses
CMP.....	Rs 55 per garment
Order size.....	3000 units
Consumption.....	1.5 metres
Standard time.....	20 minutes
Performance.....	40%
Production per month.....	74,880 units
Fabric used per month...	1,12,320 metres

Potential Savings

Work Programme	Potential Improvement	Investment	Implementation Period	ROI
Production Control Systems in Sewing and Finishing floor	15% Productivity	Rs.7,20,000 (if accepted by AEPC; the cost will be Rs.4,80,000 rest will be paid by AEPC)	2 months	+/- 4 months
Fabric Reconciliation and production controls in cutting room	2-3% increase in fabric utilisation and 15% labour saving	Rs. 8,80,000	2 months	+/- 7 months (This is calculated on fabric saving only)
Finishing Reorganisation	An average reduction of 17 people	Rs. 3,00,000	1 month	+/- 3 months
Quality Improvements	10% Productivity			

Conclusion

The industry needs to spend money on the people: Caring and training are the main factors to improve factory performance from a mere 35 to 45% efficiency level to at least 60 to 65% level. And to achieve these objectives the industry has to lay emphasis on implementing better systems. It is known that the companies understand the need to improve their performance levels but this will not happen unless management broadens their view of the people. We must accept that people are not “born with knowledge”, they have to learn, unlearn and re-learn again and need to be treated with respect and understanding.

This is the reason why the suggestions outlined in the report are the basic fundamentals required and there has been no suggestion to improve equipment in this report. It is a pointless direction since the industry is performing at low efficiency levels; new and more sophisticated machinery will not produce the required effect.

In the last few months the industry has taken a considerable beating. If it has to survive these changes, then the thinking must change to accommodate the demands that have been forced upon the industry. These changes will require that the industry start **using control mechanisms that will provide the information needed to manage more effectively.**

There are new challenges, improved productivity is the order of the day, many companies will have to change direction and realign their priorities to be able to accept the changing scenario.

Recommendations

Recommendations have been included within the report under each section.

The following list is a general summary of what is required:

1. Training and development of Managers, Supervisors and Operators,
2. Introduction of a more proactive personnel department which is responsible for both absenteeism and labour turnover,
3. Properly constructed management meetings,
4. Implementation of standard times and monitoring control systems in the Cutting, Sewing and Finishing departments,
5. Layout improvements in Cutting and Finishing,
6. Comprehensive fabric reconciliations,
7. The Establishment of “Cost per Minute”,
8. Establishment of “Cost of Quality”,
9. Introduction of SOP’s and their proper use,
10. Establishment of in-house Operator Training Schools,
11. Sustained and constant improvement.

CHAPTER-2

2. PRESENT SITUATION OF APPAREL FIRMS

Poor planning is a major reason for poor efficiency, orders being split over many lines to meet the delivery date, lots of overtime to achieve the delivery and top managers spending much of their time chasing orders to achieve unplanned delivery promises.

A productivity improvement throughout this report is targeting at 15%. But if the starting efficiency is 40%, then this means that you only have to reach 46% to achieve this target. This is still not an acceptable competitive level, but once attained is the beginning.

Average Factory Score: 53%

There is a wide variation in the scores achieved by the surveyed factories. Some of the major contributors to this variation is lack of workstudy, absence of production control and mismanagement in finishing.

Most of the companies have no systems to measure their performance, workstudy and

finishing departments show the lowest levels of performance, production and cutting departments score around 52-53%. With all the major departments scoring less than 55% which reflects the huge scope for improvement is evident.

The section below analyses each department separately and highlights priorities that need attention to chart out a future success path.

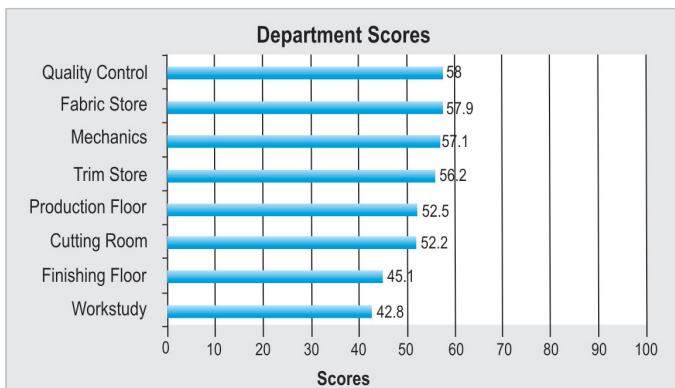
2.1. Workstudy

In today's environment the need to improve productivity is essential. The manufacturers must realize the importance of using scientific ways to analyse how best garments can be made and how manufacturing procedures can be improved. Workstudy is one of the most important tools that can be used for this purpose.

Seven of the 10 factories visited do not know their performance levels, and although the labour portion of the cost is around 25% there are great opportunities for improved profitability through improved practices and better methods.

Garment factories will not survive in the future without well-organized measurement techniques; they must know their performance levels and constantly work to improve them.

The introduction of workstudy techniques into the industry is relatively new, and the problem has been considerable shortage of good industrial engineers and the need for accelerated training in the techniques is important. Most companies do not have IE /



workstudy departments and are losing a huge potential for improvement. They have no means of measuring their performance and are unaware of their competitive status.

Standard Time and Target Setting

Many companies do not use standard time systems; target setting is based on guesswork and experience. Operator efficiency monitoring is not done. So companies have no means to establish their performance against an international standard, hence their efficiency levels are at best a guesswork only. Establishment of standard times and the development of the best method of manufacture is of vital importance to improve productivity. Every company that wishes to compete in the future has to realize this.

Method Analysis

Most of the companies are using poor methods. Operators are left to establish best way to do the job, decide on the number of bursts of stitching, folding and unfolding of parts, unnecessary matching and additional handling. All of these motions add to the time it takes to manufacture the garment and should be eliminated.

Method study can be implemented in any type of production system whether it is in-house or on a contract basis. **Proper method analysis can improve productivity by at least 15%.**

Workplace Layout

The management can fit as many machines in the factory as possible, reducing the scope for methods improvement. The space between machines is insufficient in many cases.

A good workplace layout will eliminate unnecessary motions and fatigue resulting in substantial increase in the efficiency of the operator.

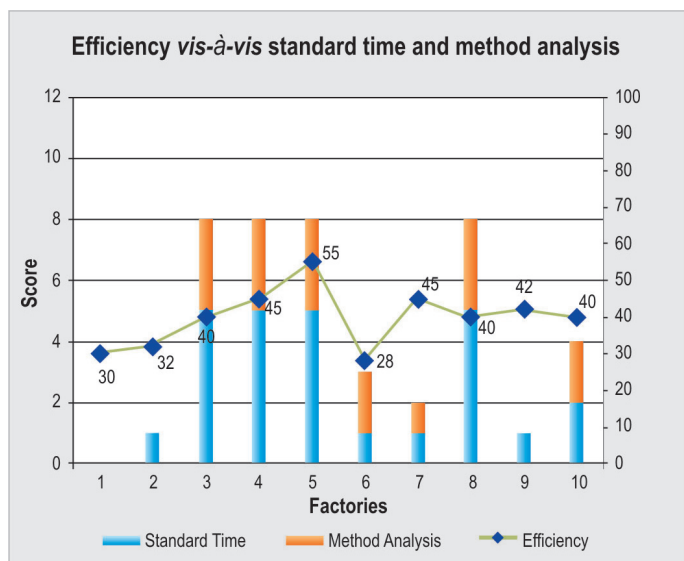


Cramped space reduces efficiency

Operation Sequence, Work Aids and Cycle Checks

Some of the production departments work without a properly planned or written operation sequence. Use of work aids and attachments is insufficient.

None of the companies perform cycle checks, this simple technique is aimed at establishing operator potential against their actual performance and is a great aid to improving productivity.



The chart clearly illustrates the benefits to factory efficiency if standard times and well developed methods are used.

Recommendations

1. Workstudy departments must be introduced in all companies,
2. Standard Times must be established,
3. Operator efficiency monitoring is essential,
4. All new operations must have a written method and the operator must be instructed in that method. This should also be used for training new operators,
5. Poor performers guided to improve their efficiency,
6. Investigations must be done to explore new attachments and folders,
7. Regular management meetings to establish the way forward and the month on month progress towards these aims carefully monitored.



available on the production floor. The tables and forms used by the examiners are satisfactory although the collected data could be better utilized if the information was shared between the end-line and roving quality personnel. PP meetings are held in most factories, not as a factory requirement but as the buyer’s requirement. Many times PP meetings are held after the fabric has been cut or even after production has started.

Repairs

Repair rates are frightening giving a mixed picture varying from 5% to 60% on the production floor. In some companies it was found that the repair rate in production was 5% and in the finishing department it was 40%.

It is important for us to understand that though the product quality is being maintained for the customer, it is being done at a huge price to the manufacturer. The check, repair, re-check and repair can be reduced by simply improving effective communication between quality team of different departments.

Repairs should always be given to the person who caused them, else the responsible person has no incentive to improve.

Roving Quality Control

Roving quality control procedures are either non-existent or done incorrectly.

“Work Study Department Assessment Score Averaged 43%”

2.2. Quality Department

Quality must be built-in; it cannot be examined into the product, this is a most important lesson and should be clearly understood. Although there is a 100% quality check in the sewing floor, an excessive number of faults find their way into finishing. Operators do not fix their mistakes but leave them for examiners to find resulting in a high repair level. None of the companies surveyed are aware of the “Cost of quality”.

The emphasis placed on quality of the product is good; spec sheets and PP samples are

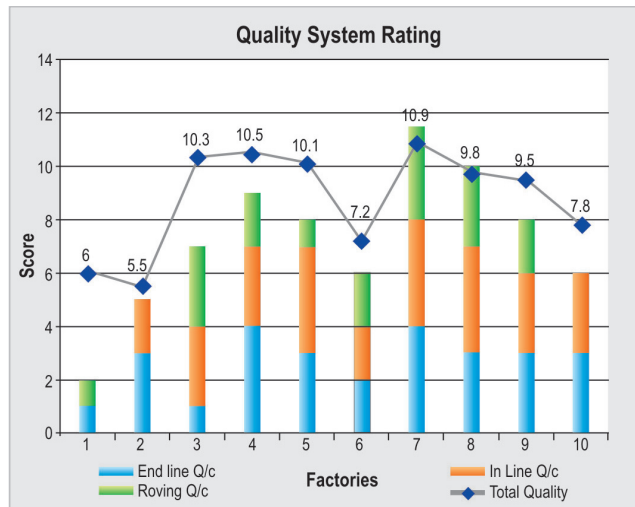
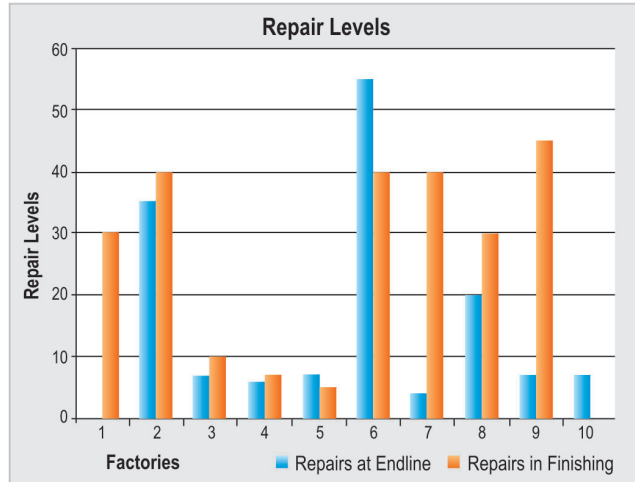
Wherever roving quality procedures are being used the quality levels indicate a reduced repair level. If this system is followed, the outgoing quality of production will be improved and the high level of repairs and rejections in finishing room can be reduced.

Quality Team

Quality Teams are not completely independent of the production department, it is important to have clear reporting procedures and to keep the quality team independent of production management. Checkers in the line are also a part of the quality team. The Supervisor is responsible for the output but quality decisions must be made by the quality management team.

Recommendations

1. Properly organized roving quality procedures must be implemented,
2. Regular quality meetings with all concerned and its reports should be shared and analysed,
3. Quality team should be independent of production department,
4. Investigations must be made into the amount of repairs found in finishing department,
5. A co-ordinated effort must be made to reduce repair rates,
6. The cost of quality must become a major management information tool.



2.3. Fabric Stores

The major areas where the investigation focused are fabric handling, control systems, inspection procedures and transportation systems. Inspection procedures and quality systems are satisfactory but fabric handling control and transportation systems are inadequate and require considerable improvement.

Storage / Transportation

Generally there is lack of adequate racking. Fabric is stored on pallets wasting volume

“Quality Department Assessment Score Averaged 58%”

CASE STUDY 1: Dead Stock in Factory

It was observed that approximately 10,000 metres of fabric was collected in the fabric store in the last 2 months of which 50% was liability fabric and rest was surplus from the production.

Monthly fabric consumption of the factory was 50,000 metres.

Dead stock collected in one month owing to production surplus was 2,500 metres.

This is 5% of monthly fabric consumption of the company.

In the "Average Factory" this loss amounts to Rs. 16,50,000 per annum.



space, materials handling and transportation equipment is virtually non-existent. Almost all of the factories use manual labour to move fabrics from one department to another.

Dead stock is prevalent and takes up storage space and in some of the companies the amount of greige fabric stock is excessive.

CASE STUDY 2: Fabric Purchasing in Factory

The fabric purchasing in factory XYZ is being done as follows:

1. A 2 or 4 body single size marker is made and an average consumption figure is established.
2. A further 10% is added and the cost of garment is established.
3. After alterations, required by the buyer, a new 4 body single or double size marker is made, this is compared to the original costing.
4. An additional 4% is added to the final consumption marker.
5. Another 6-7% is added to the fabric consumption this is to cover the following:
 - a. Additional garments that could be sent to the buyer.
 - b. Rejects.
6. A further 6% shrinkage factor is added. This amounts to 16.5% extra fabric ordered.

Record Keeping

Many of the stores use computerized stock control systems, however many of these do not have accurate data due to poor data entry. Computer records do not match the quantity in stock. There are no stock cards! Therefore actual stock checks are not possible. None of the companies do random stock checks. **The fabrics should be stored with proper stock cards which have complete details regarding the quantity of the fabric lot.**

Fabric Width Measurement and Usage

Fabric width is measured in most of the companies but none of them record it on roll into tickets nor do they segregate different widths. Thus fabric is issued to cutting without width segregation and the markers are made on the narrowest width. **The rolls should be grouped by width and the information forwarded to the CAD department to make markers to maximize fabric utilization.**

Fabric Purchasing

The fabric purchasing system needs a thorough review and the percentages of additional fabric ordered should be investigated since it was found that in some cases several departments add additional quantities which finally end up as dead stock or gets lost in the factory. The cumulative additions can be as high as 15-18%.

Fabric Returns

Excess fabric is returned to the fabric store after the order is completed but the returns are considered as waste and are not recorded. This makes accurate fabric reconciliation impossible.

Recommendations

1. Dead Stock must be eliminated.
2. Stock cards must be used and updated after each transaction,
3. Fabric widths must be segregated and information given to the CAD department to make most efficient markers,
4. Fabric must be issued by width,
5. Storage and material handling equipment must be improved,
6. Random Stock Audits and Stock Checks must be part of regular schedule,
7. Fabric reconciliations must be done for each order,
8. Stock holding of greige fabric should be reduced,

“Fabric Store Assessment Score Averaged 58%”

2.4. Trim Stores

The trim stores have been evaluated on the same parameters as the fabric stores.

The stores are clean, well laid and have adequate space. Racks and shelves are satisfactory. All items are inspected upon receipt and some companies have dedicated quality control personnel. **However, stock cards are not maintained.** None of the companies have systems for stock checks and dead stock removal.

Trims are issued all at once for an order or as requested by production/finishing departments. Returns are considered as waste in many cases and not recorded resulting in discrepancies in trim reconciliation.

Recommendations

1. Dead stock should be removed,
2. Stock cards should be properly maintained,
3. Random stock audits and stock checks should be a regular schedule,
4. Trim reconciliation should be done for each order,
5. Trims should be issued according to the cut quantities.

“Trim Store Assessment Score Averaged 56%”

2.5. Cutting Department

There is gold on your cutting floor

The Cutting room is one of the most important departments in the factory; it scored a low of 48-50%. The staff in many of these departments is not sufficiently “Fabric Conscious”. **An improvement of 2-3% in utilisation efficiency can make a huge difference to bottom line profitability.** Comprehensive fabric reconciliation is essential; it is disappointing to see that most companies do not include this vital aspect in their controls.

Machinery

Machinery is generally well maintained. Fusing machines have proper maintenance schedule in place but regular temperature checks are not done. Many cutting tables are of poor quality and not properly maintained. End cutters are not used as much as they should be.

Layout, Fixtures and Transportations

The floor layout is poor and work flow is unsystematic. Fusing machines and band knife machines are put in corners. Fabric transportation is manual in most companies. Storage of work is improper and under-tables are untidy.



Marker Planning and Fabric Utilisation

Marker planning could be improved in some of the factories and as orders get smaller this becomes a vitally important feature in fabric utilisation and cutting room productivity. Markers are being made on the narrowest width resulting in width losses in excess of 2-3 cms in many lays. End losses are not well-managed and were seen to be as much as 5-7 cms in some cases. The average marker efficiency was seen to be around 85%.



CASE STUDY 3: Benefit of Fabric Width Utilisation in Factory

Style No: ABC

Width variation found in the fabric 147 cm to 150 cm.

The marker was made on minimum width 145 cm

The markers were remade on a wider width and this resulted in 2.76% fabric consumption gain.

In our “Average Factory” this saving amounts to Rs. 20,46,021 per annum.

Fabric Reconciliation

The majority of the companies do not have a properly managed fabric reconciliation system. This is a fundamental aspect of control in garment manufacturing systems which tells management what happens to every inch of issued fabric that is essential.

Numbering

The numbering system and number clarity is good. However, the position of numbering can be improved. A poorly positioned number sticker causes problems for the sewing operator since they have to remove and replace the sticker before completing the operation, wasting sewing time.

CASE STUDY 4: A Check on Fabric Reconciliation in Factory

Order Quantity: 500

Actual achieved consumption as per marker (including end losses) 1.32 metres

Actual quantity of Processed Fabric required 500×1.32 660 metres

Quantity including 2% extra (allowed to ship) $500 + 10$ 510 pieces

Initial estimated consumption at the time of costing 1.40 metres

Total fabric required 510×1.40 714 metres

Plus 5% for cutting wastage, $714 + (0.05 \times 714)$ 751.58 metres

Plus 3% for shrinkage, $751.6 + (0.03 \times 751.6)$ 774.82 metres

The merchandiser was informed that 350 metres of processed fabric was in stock so of processed fabric was ordered. 401.58 metres

Processed fabric received 419 metres

Hence the total stock of processed fabric should be $350 + 419$ 769 metres

Total Fabric issued to cutting department 735 metres

Therefore, total fabric that should be left in stock $769 - 735$ 34 metres

The records of stock room show that the quantity in stock is 54 metres

(The store had given incorrect information of 350 metres in stock to the merchant)

The actual quantity in stock upon physical measurement was found to be 71 metres

71 metres of fabric ends up as dead stock. This is 10% of the order quantity.

Total Fabric received for this order $735 + 71$ 806 metres

Fabric that was used 510×1.32 673.2 metres

Fabric that was wasted or lost in the factory $806 - 673.2$ 132.8 metres

16.5% of fabric was either lost, wasted or ended up as dead stock in the store

Operator Monitoring

There is no operator efficiency monitoring in any of the cutting departments as the score boards are not properly maintained.

Recommendations

1. Accurate Fabric reconciliations to be completed for each order,
2. Standard times for each process must be established,
3. An operator monitoring system needs to be introduced,
4. Cutting room layout and the workflow can be improved,
5. End pieces and remnants should be properly managed,
6. Markers should be made as per the fabric width.
7. Work transportation trolleys and other work aids should be introduced,
8. Simple laying up aids introduced.

“Cutting Department Assessment Score Averaged 52%”

2.6. Mechanics

Companies allocate one mechanic for every 100 to 120 machines. The service provided by the mechanics is good and prompt. The mechanics are only expected to fix machines and not contribute further by offering advice on attachments and equipment.

The machines are well serviced and oil reservoirs are clean and well-maintained. A maintenance schedule is in place in most companies but is not followed.

None of the companies have adequate mechanics or workshops, and if ever, space is provided for them it is inadequate and inaccessible.

The storage space for spare parts is small and holds very few spares; spare parts are ordered when required. Most companies do not have proper machine moving trolleys.

Recommendations

1. A regular maintenance schedule must be adhered to,
2. There should be increased involvement with the IE for the usage of attachments and folders,
3. The mechanics department should have sufficient space allocated for proper workshop,
4. Spare parts store should be adequately stocked,
5. Machine moving trolleys should be provided.

“Mechanics Department Assessment Score Averaged 57%”

2.7. Production Department

No Measurement = No Management

Current Production Managers are generally working with outdated systems, they are reluctant to learn new techniques and have little or no knowledge or interest in what is available to help them improve. Even if few who are aware, are reluctant to pass on their knowledge to trainees. They are doing what has always been done and repeating the same mistakes.

Production problems and bottlenecks are solved by adding additional labour instead of solving the problem that has caused the bottleneck. In some cases the management thinks that the louder you shout the more you will produce, this of course is not an answer. The major focus is to ensure that the order is delivered on time and not the efficiency that is required to remain competitive. The most skilful people in the organization are spending their time chasing orders and not problem solving.

The average industry efficiency is between 35-45% and certainly is not competitive in the world market.

Bundle System

Most companies do not have bundle systems and have additional operators matching parts. Companies that do have bundle systems have poor bundle disciplines; in many cases the bundle quantity does not match ticket quantity.

Line Layout and Workflow

Line size is generally large comprising of 40-50 people. Line layout is poor, helper and ironing stations are often placed outside the lines. The operators are not placed in a proper sequence resulting in improper workflow and unnecessary helpers.

WIP and Line Balancing

The lines are not properly balanced in most of the companies. Due to paucity of proper work study procedures line balancing and WIP management is far behind acceptable standards. **Average balance efficiency was around 60-65%. Line balance efficiency should be 80% or more.**



Repair Handling

Repairs are done within 30 minutes of their detection although in many cases repairs are not given to the person who caused them there were separate people to handle repairs this is not a good practice since those responsible have no incentive to improve.

Meetings and Reports

Reports are generally inaccurate due to improper data collection. Most factories have informal meetings on requirement basis only. There is a great need for formal supervisory meetings on a regular basis with an agenda and action requirement.

Production Monitoring and Control

Production boards are not present in many cases and wherever present are placed in inappropriate locations. Only those companies who have work study and operator management systems are properly able to monitor production and efficiency.

Clippers

All the companies except one had operators working with huge scissors. Many operators trim pieces of fabric from garment panels that do not fit properly. If garment parts don't fit this indicates two possible problems: (A) The garments have been poorly cut; or (B) The patterns are wrong. It is essential that this activity is eliminated; operators should not be allowed to trim garment parts under any circumstances.



CASE STUDY 5: M/A Ratio Study in Factory

This is a study to establish what the operators are capable of:
M = Measured (Timed)

We timed each operation for 3-5 cycles to get the time taken by the operator.

The measured time = 23.3 minutes
 + 20% allowances = **28 minutes**

An allowance of 20% was added to the measured time for all contingencies.

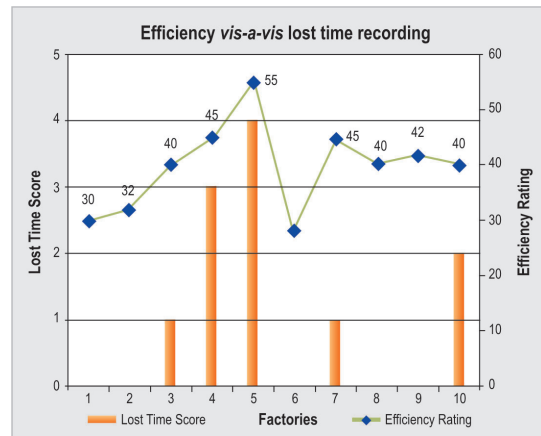
A = Achieved. This is the average time taken to produce the garment.

Total no. of people working on the style: 39, working 8 hours a day, the production output per hour=50 pieces. Therefore, the actual time taken to make a garment is **47 minutes**.

The M/A ratio is $28 / 47 \times 100 = 59.5\%$

40.5% of the operator time is lost, some of the reasons being:

- Poor line balancing resulting in waiting time,
- Poor work flow, and
- Poor supervisory control.



Factory No 5 reaping the benefit from monitoring lost time

Please note that the efficiencies displayed on this chart are the measurement of "Section Efficiency" this means that lost time has been excluded from the calculations.

Lost Time

Lost time is described as "Time lost by operators for which they are not responsible". It can be used to monitor the effectiveness of line balancing, service by mechanics, and all other delays that cause the operator to lose productivity. None of the companies utilize this tool adequately.

Two out of ten factories have attempted to record lost time; one factory has been able to reap substantial benefits from monitoring lost time and identifying areas of improvement. Though, it still needs to refine its systems to achieve the full potential.

Recommendations

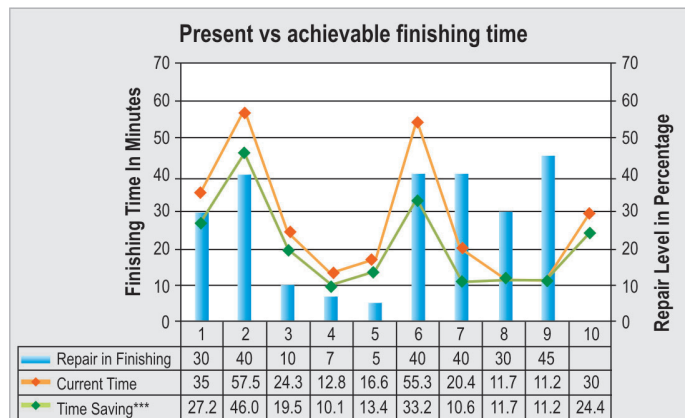
1. Bundle control systems with adequate bundle disciplines to be introduced,
2. Proper standard times and operator monitoring procedures to be established,
3. The supervisors need training to manage WIP levels,
4. The supervisors need training to do proper production monitoring and control,
5. Method Improvement procedures should be introduced,
6. Production monitoring systems should be introduced,
7. Production studies must be completed wherever poor performance is observed,
8. Lost Time information must be collected analysed and acted upon,
9. Repair handling procedures must be revised,
10. Large inappropriate scissors must be eliminated,
11. Operators should not be allowed to trim garment parts.

2.8. Finishing Department

Finishing departments are over-staffed in most of the factories studied, **the time to finish a garment varied from 11.2 minutes to 57.6 minutes.**

Finishing Time

Finishing times are excessive in almost every company; and as can be seen in the chart below the time taken to finish a garment is alarming. Some of the companies are examining the garment as many as five times; this is driven by the fear of order rejection or rework. There is a great potential for improvement in this department.



“Production Department Assessment Score Averaged 53%”

Layout and Control

The layout and work flow was generally poor and disorganized. Finishing departments don't have adequate systems of control, the emphasis is only directed to delivery and not productivity, this is understandable in the present circumstances but must be re-thought since it is excessively expensive.

Repairs

Repair records show very high repair rates as much as 30-40%. Dirty marks and spots are major contributors although many of the garments have already been washed. Spotting defects are as high as 50%.

Recommendations

1. Bundle control system should be introduced, washed garments can be re-constituted and control maintained,
2. Establishment of standard times and efficiency monitoring systems are essential,
3. The process sequence and work flow to be investigated,
4. A thorough investigation of repair rates and their causes necessary,
5. Properly planned workplace layouts to be introduced,
6. The factors creating stains and spotting problems should be investigated and remedies found.

2.9. General Issues

Labour Turnover and Absenteeism are major handicaps and will cause this industry to fail in Northern India unless something is done about it. Absenteeism ranges from 10% to 18%.

The Personnel Departments are only involved in salaries and hiring people, none of the companies have an effective personnel department actively involved in the workers, welfare and motivation.

An Operator Training School should be a part of every organization building skills and operational disciplines. Only 3 out of 10 factories had training schools.

Poor Housekeeping in many companies; causing dirty garments and excessive spotting repairs.

Standard Operating Procedures (SOP). Most companies do not have formalised and written SOP's. The companies that do have them do not follow them properly.

“Finishing Department
Assessment Score
Averaged 45%”

CHAPTER-3

3. WORKSTUDY DEPARTMENT – A CRITICAL COMPONENT

In order to get an objective comparison between factories, a rating was done of the companies with and without workstudy department. The factories were categorized into two groups 'A' score (with more than 40%) and 'B' (with less than 40% score).

Looking at the comparison shown in the table it is obvious that group 'A' factories are more productive than the group 'B' factories. This fact is further strengthened when the overall factory survey results are compared. The factories in group 'A' have a combined score of 61% for overall performance whereas factories in group 'B' achieved a score of only 48%.

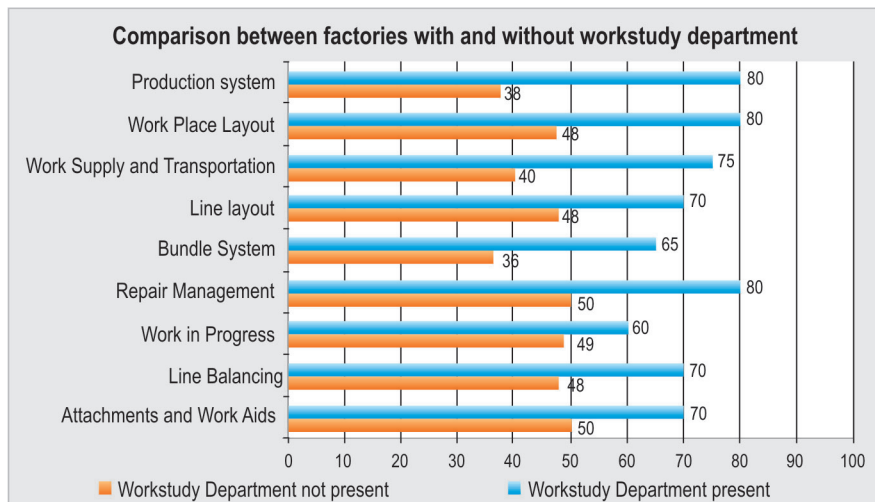
Workstudy is the need of the hour and it is high time that the industry now understands its importance and its contribution to profitability.

Status of Workstudy Department

Factory	Factory Rating (%)	Workstudy department Rating (%)	Status of Workstudy Department	Groups
1	41	10	Not present	B
2	43	16	Not present	B
3	62	61	Operational	A
4	70	66	Operational	A
5	61	54	Operational but not satisfactory	B
6	42	33	Not present	B
7	50	29	Not working properly	B
8	52	47	Being established	B
9	55	17	Not present	B
10	56	33	Not present	B

The workstudy departments in factories 5 and 7 are operational but ineffective.

Different functions in a factory were analysed to show improved productivity in a Group 'A' factories with workstudy department.



Benefits of Workstudy Department

CHAPTER-4

4. TRAINING NEEDS

4.1. Management

Properly constructed and professionally run training courses are essential, although many of the managers have considerable work experience. This is not enough to move the industry where it needs to go; companies must review their management structures and the people they have in place. Management techniques are changing constantly. Are the managers fit to cope with the demands that are now being expected? If the answer is no, then you must embark on a serious move to change this.

It was astounding to note the manner in which managers overrated their colleagues indicating that they do not have sufficient performance expectations from their staff.



The training requirements for Managers should be:

1. Communication,
2. To-do list,
3. Leadership techniques,
4. Decision-making,
5. Planning and organization,
6. Garment engineering,
7. Workstudy,
8. Quality and Productivity,
9. SOPs,
10. Computer Knowledge,
11. General Industry Knowledge.

The requirement list above is covered in the following courses:

Suggested course	Statistical Analysis	Urgency**
Communication for Managers How to get the best out of your staff Conflict Management Team Building	61 Managers were evaluated 96% were unable to achieve the required level of communication skills	\$\$\$\$\$
General Management Techniques Workstudy Garment Engineering	92% need knowledge of the techniques required in today's demanding and competitive production scenario.	\$\$\$\$\$
Basic computer knowledge	Only basic computer knowledge is present with some of the Managers.	\$\$\$

**The "\$" represents the level of urgency for training. The higher the number of "\$"s the more urgent is the training requirement.

4.2. Supervisor

None of the Supervisors have professional education in garment manufacturing; their knowledge is based on their work experience. It is extremely important to teach them a more professional approach to supervision.

The training requirements for Supervisors should be:

1. Communication,
2. To-do list,
3. Motivation techniques,
4. Leadership,
5. Decision-making,
6. Planning and organization,
7. Technical expertise,
8. Workstudy,
9. Quality,
10. Cutting Room,
11. General industry knowledge.

The requirement list alongside, covers the following courses:

Suggested Course	Statistical Analysis	Urgency
<u>Supervisor's Course</u> includes Communication, Planning, Team Work, Workstudy, Garment Engineering, Quality and Productivity.	Out of 204 total Supervisors, 65% need extensive training.	\$\$\$\$
<u>Work Study/ Garment Engineering</u> These are specialized courses focusing on the vital needs of the industry.	51% out of a total of 204 Supervisors need specialized training on Workstudy and Garment Engineering	\$\$\$\$\$
<u>Cutting Room</u> Specialized training course for Cutting Room Supervisors.	Out of 38 Cutting Room Supervisors evaluated, 74% need further training	\$\$\$
<u>Quality</u> This includes invaluable inputs on quality and repair monitoring and measuring techniques	42% out of a total of 129 Quality Supervisors need specialized training	\$\$\$\$



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