Manpower Planning and Assessment in a Textile Mill - Part I

Tanaji Kadam*, Vijay Gawde, Vijay Shirole, Sammed Murchite
The Bombay Textile Research Association, LBS Marg, Ghatkopar (W), Mumbai 40086, India.

Abstract
Textile industry being a major employment consuming industry in the country and also it has different activities across the value chain of fibre to fashion and their interlinking also is complex depending upon the business model used by various entrepreneurs.The manpower availability with right skills and its planning becomes critical and important forthe human resource department in a textile mill.The objectives, key steps, tools and techniques used in the process of manpower planning and assessment are explained in this paper. Also, this paper throws the light on work force behavioral aspects impacts on it and the challenges faced by the HR department in this process are discussed in this paper series part 1.

Key words:
HR department, manpower planning, skills, productivity, efficiency, machine utilization, operational goal, behavior, tools and techniques, assessment, time motion study,

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1. Introduction:

As all of us are well aware that the textile industry is one of the large scale industry in our country and majorly provide the employment in the large extent. The both types of workforce i.e. skilled and unskilled are required throughout the various stages of textile production. The employment is depending on various factors like mill size, product type being manufactured, type and technology in machines, technology upgradation, automation on the machine and production rate etc. Manpower planning is essential in a textile mill to ensure that the right quantity of manpower with right skill set is available as and when needed. For the cost optimization or control, along with machine utilization optimization, productivity improvement the man power optimization is also an important factor. Particularly, large scale factories need to understand the manpower requirement with proper Skill availability to sustain the business in this competitive market. The industry also faces challenges related to skilled manpower shortages and the impact of technological advancements on employment in industry 4.0.The industry 4.0 is the continuous computerization of conventional assembling and modern works utilizing presently available brilliant innovations[1] The present paper series , particularly this part 1 focuses on the aspects like the purpose of manpower planning in a textile mill, main steps in manpower planning, the sections or departments typically covered in a textile mill, different tools and technique used for monitoring and assessment and the challenges faced by textile sector for manpower availability and planning. In the upcoming next part , the existing manpower assessment methodology will be addressed.

*Corresponding author,
E-mail: tsd@btraindia.com

2. Manpower planning purpose in a textile mill

The purpose or objective of the manpower planning in typical textile mill can be listed as below;

a) To ensure sufficient or optimum manpower across all departments like warehouse, production, engineering, quality assurance ,inspection and packing etc so that the activities in this departments runs smoothly.

b) To match workers and staff skills with operational requirements. For example, ring frame spinning , warping and sizing, loomshed, dyeing ,printing, maintenance and ETP operations requires a particular and typical set of skills.

c) To anticipate future demand and hence expansion and automation possibilities and accordingly to have approximate manpower anticipated estimation.

d) To minimize the labour cost by proper allocation defining combination of skill sets and workforce optimization

e) To ensure and improve target productivity, efficiency and utilization of machines and other related resources are achieved.

f) To identify the skill gaps and training needs. This will create a skilled and motivated workforce pool available in the mill.

g) To develop the second and third line workforce in the case of retirement and resignations.

h) To ensure adherence to safety, compliance and regulatory requirements.

i) To evaluate and plan for manpower requirements for futuristic automation and newer and advanced technology adoption through the technology driven training modules.

j) To minimize turnover and absenteeism

3. The various departments to be covered:-

The following table no.1 shows the various departments or functions in a typical textile mill.

Table 1 - Major categories in the various departments in a typical textile mill

Sr. No.	Department name	Type of workforce involved
1	Spinning	Supervisors, quality checkers
1.1	Fibre warehouse	Sorters, loaders , store keeper
1.2	Blow room	Blow room operators and helpers
1.3	Carding	Carding operators and helpers
1.4	Drawing	Draw frame operator and helpers
1.5	Combing	Comber and helpers
1.6	Speed frame department	Speed frame operator, helper and doffer
1.7	Ring frame department	Ring frame operator, helper and doffer
1.8	Winding	Winding operator, helper and doffer /package carriers
1.9	Packing and bale pressing	Packing operator helpers and loading / unloading persons
2	Weaving	Supervisor, quality checkers
2.1	Yarn godown	Loading / unloading persons, store keeper
2.2	Weaving preparatory	Warper, winder, sizer, size cooker, beam loader,
2.3	Weaving	Weaver, checker, designer, weft boy, Cloth doffer, Beam gaiter, knotting persons, jobber, bobbin/reel maker
2.4	Grey inspection	Mending person, fabric inspector, quality checker, roll organiser
2.5	Packing and dispatch	Roller/folder, packer, forklift operator.
3	PPC department	Planner, PPC executive, data entry operators
4	Wet processing	Supervisors, dyeing master, printing master
4.1	Bleaching	Machine operators, helpers, material handlers
4.2	Dyeing	Machine operators, helpers, shade matchers, material handlers, colourman, colourist, chemical store keeper
4.3	Printing	Designer, screen maker, screen expos ure printers, helpers, shade matchers or colour makers or mixers, chemical store keeper
4.5	Finishing	Machine operators, helpers, Kanji man
4.6	Folding/inspection department	Fabric inspectors, packers, rollers, folding machine operators , helpers, chindi sorters, labeler, data entry operator, forklift operators
5	Quality assurance	QC inspectors, lab technician, Testers, process control monitors, colorist, data entry operator,
6	ETP	ETP operator, sampler, water analyst, data entry operator
7	Utility and maintenance	Engineers, fitters, oilers, electricians, compressor operators, boiler operators, mechatronics
8		Data Entry Operator,

4. Main steps of the manpower planning

There are certain sequential main steps in the process of manpower planning in a textile mill those the HR (Human Resource) department should follow for successful and effective planning.

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Evaluating the organization objective i.e. understanding the production and or operational goal and future expansion plans and accordingly to align the manpower requirement against short term and long term business goals.

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Anticipating and estimating the manpower demand for future considering production schedules, new machinery additions or expansions in product line and automation etc.

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Analyse the existing available man power with respect to rolewise/ category wise number, skill set, age , retirement projections, existing production levels and absenteeism. Thus shortages or surplus manpower along with skill mismatches can be evaluated. This may be done by a third party audit called Time motion study which will be discussed majorly in part II of this paper series.

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After this gap analysis, the HR can plan for action to fulfill the same through the recruitment, training and skill development and re-deployment and or readjustment for departmental requirement and skill set matrix.

The above action plan before implementing should be discussed by HR with various department heads, production managers to roll out recruitment and training

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The planned and implemented manpower matrix should be periodically monitored for its effectiveness. During the evaluation again consider production changes as per current demand, labour turnover and new technology available at that time and process change required as per quality and customer demand.

5. Manpower behavioral aspects and Skill

In a textile mill, not only machines and raw material influences the productivity and quality, but also, operator behavior, skill and motivation makes an impact on them. This section explains the various aspects of operator behavior and skills. These aspects are as below mentioned

i. Work discipline, timely joining the duties and attendance of the work force becomes important as the production and shift schedule is tight in a textile production mill. However, certain organizations like educational institutes, research institutes and government related institutes such at ype of flexibility in behavior may be observed.

ii. The team work in certain departments like folding and packing, dyeing and printing, finishing , laboratory, weaving becomes important as the activities are interdependent and hence the communication, collaboration and team-work among these workforce is a must.

iii. Workforce must adopt the automation, new machine addition in the plant, as the resistance to these things may delay the implementation and reduce the efficiency

iv. Motivation has an impact on productivity and quality. However, some higher motivation may cause a burn out effect due to higher and restless workload. The motivation can be achieved by job recognition, incentive schemes and good supervisory skill. Here good supervisory skill need not means less discipline and control over the workforce.

v. Safety , good work environment (means work environment without politics and favoritism among the subordinates) , cultural and social sensitivity impacts the workforce significantly.

vi. By considering the above mentioned aspects of the manpower behavior in a textile mill, the HR department can plan the skill or skill set upgradation programs for the workforce to maintain the competitiveness and to meet the quality standards.

vii. Skill can be technical skills, soft skill/personality development, safety and compliance skills etc.

viii. There are various methods/options of skill available like; on job training, inhouse class room training, training by outside expert, apprenticeship, certification courses by outside agencies, and to create the flexible work force the multi-tasking skill etc.

ix. All these skill programs should be aligned with organization and production goals. The HR department may use behavioural data to improve training and HR interventions.

x. All the skill programs should be finally evaluated and certified regularly.

6. Different tools and techniques used for manpower planning and assessment.

6.1 Tools and techniques used for manpower power planning

The HR department generally uses the tools to forecast the manpower planning depending upon the organization work culture and MIS capability. The various tools and techniques used for workforce planning and assessment are mentioned below;

a) Quantitative Manpower Planning and Forecasting Tools :-Based on the available data from MIS and statistical models, the manpower planning can be done. These are trend analysis or ratio analysis to understand historical production against no. of workers and staff, seasonal or cyclic demand trend of workforce, In the ratio analysis you can consider for example no. of loom per worker, no.

of spindles per worker , staff to worker ratio etc. Furthermore, quantitatively activity mapping may be done and based on these standards the total labour hours and or machine shifts can be estimated for certain production. This can be extended further productivity per worker per shift, machine utilization etc.

b) Qualitative Manpower Forecasting Tools :- The qualitative tools used for manpower forecasting are judgement, analysis of qualitative information like skill inventory, job analysis, opinion of a group of experts and past experience of department heads etc.

c) Strategic Workforce Assessment Tools (SWOT Analysis):- The qualitative analysis may also include SWOT analysis i.e. strength (skill and technology, low absenteeism), weakness (high turnover in the difficult and hazardous task like spinning , chemical storage area), Opportunities (Govt training schemes) and Threat (automation and labour unrest, competitor may use your ready made trained manpower by tempting them for higher salary)

6.2 Tools and techniques used for manpower power assessment

To monitor the performance of the workforce via qualitatively and quantitatively the different tools and techniques are used by an experts and the HR department, which are listed below;

i. Performance appraisal system to identify and reward the high performer. This is generally yearly done activity.

ii. Training needs evaluation is done as and when required based on a daily feedback system.

iii. Employee survey and feedback is taken to understand the work culture, management behavior, level of motivation, job satisfaction and understanding training needs.

iv. Gap analysis for all the above aspects discussed so that corrective measures are taken timely.

v. Work load analysis or time motion studies by third party. This we will discuss in part -II in a more detailed manner.

HR needs to be more digitally focused. HR specialists need to keep up with technology trends to stay ahead of the competition [2]To do quantitative data analysis for both manpower planning and evaluation, the mill can use advanced software tools and digital platforms , applications, like ERP software, Time attendance system, skill mapping matrix software or application , workforce scheduling software etc.

HR needs to be more digitally focused. HR specialists need to keep up with technology trends to stay ahead of the competition.

7. Challenges faced by Textile sector for manpower availability and planning

Textile industry is facing the issue of manpower availability and hence the planning is becoming quite a difficult and uncertain task for HR on a day to day basis. The various reasons can be listed as below;

a) The industry many times struggles for availability of workers or technicians for the specific tasks in the modern textile mills. where advancement, work accuracy and customer demand is high. For example; shade matching expert in dyeing and printing process, warper and sizer, peaching machine operator etc

b) It is also observed that many textile mill operators are near retirement and there's a lack of younger workers interested in the textile field. This may be due to availability of opportunities in other fields like computers/IT, Mall culture and online application based platform services. Also consistency, integrity, reliability and loyalty seems to be inadequate.

c) The emerging “fast fashion, sustainability and eco-friendly products require a specialized knowledge and skilled workforce.

d) Other countries with cheaper labour availability and favorable trade agreement are creating global competition for business and hence pressure on Indian textile manufacturers for innovation and efficiency improvement.

e) During our various studies and visits to textile companies, it was noticed that at many places textile workforce lacks formal training making it challenging to implement new technologies and improve overall productivity. Many time existing manpower tries to resist the new technology implantation and automation due to fear of job displacement or losses and lack of awareness and training for the subject.

f) Promoting and complying with gender equality some time becomes critical in the case of heavy work load, night shift working restrictions, safety concerns, provision of maternity leaves etc. Also, stricter work environment complaisance by legal authorities, safety related aspects, waste and sustainability management needs additional work force and specialized training to them periodically to achieve compliance level.

g) To attract and retain talent is quite challenging for the textile industry due to factors like lower wages compared to competitors and working environment comparison.

h) Among the unskilled and contract basis workers, there is chance of high attrition, and labour turnover problem, uncertain social, economic, environmental and technological developments, Unavailability of funds to meet desired recruitment and training programmes[3]

and also everyday workforce changes so production disturbance occurs and also increases short term training cost.

8. Conclusion and way forward

Man power planning is critical and major role of HR in the textile mill. Depending on production trend, technology updatation, automation, seasonal changing demand from market, the behavioral aspect of existing manpower and skill gap analysis and training needs, the HR department plans for manpower deployment. The HR department should review the manpower deployed in the mill against the defined set of production on a monthly basis. There are certain tools used by the HR department to implement and review the planned manpower. Also, atleast at every five years this should be verified with third party by conducting time motion study audits of the workforce and the work being carried out. The same will be discussed in this paper coming part II,

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