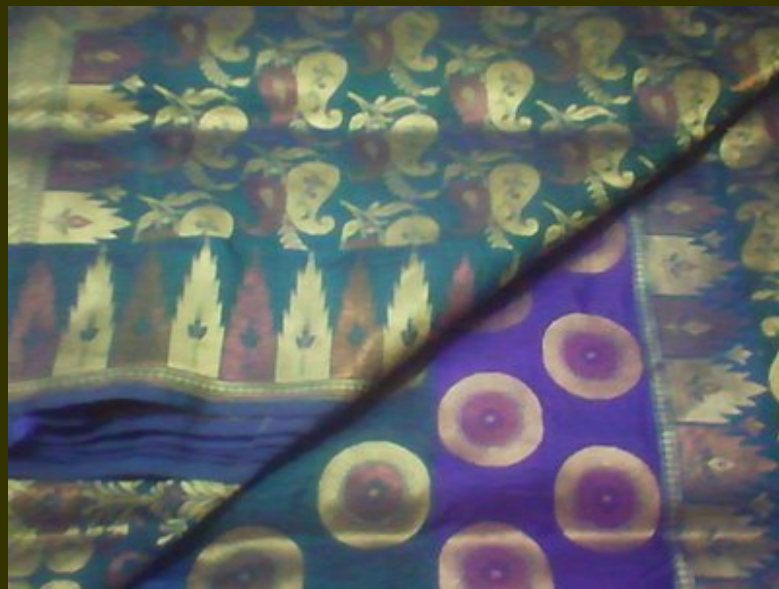


Application of Management Techniques Knowledge for Weavers of Varanasi Silk Industry for better profit



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This article focuses on some of the management tools required in Varanasi for people engaged in silk weaving (hand loom, power loom and shuttle less looms) industry who needs some knowledge about management Philosophy's/tools (Total quality management, Six Sigma, Kaizen, Lean Manufacturing, 5s) for further making profit as well as to become organized sector for better competition across globe. Visits across areas of Varanasi shows that weavers are busy in their production with either handloom, power loom or Chinese made rapier looms though they are working in a better way and earning better profit. By training them/qualified people with the following Philosophy's tools and techniques of Management they may show much better performance, they are as follows;

Total Quality management (TQM)

TQM focuses on continuous improvement of the quality of products and processes. It functions on the responsibility of everyone who is involved with the creation or consumption of the products or services offered by an organization. It shows the involvement of management, workforce, suppliers, and even customers, in order to meet or exceed customer expectations. The identified the nine common TQM practices as cross-functional product design, process management, supplier quality management, customer involvement, information and feedback, committed leadership, strategic planning, cross-functional training, and employee involvement.

Six Sigma

Six Sigma is Motorola's drive towards reducing defects by minimizing variation in processes. This technique improves the quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes. It uses a set of

quality management methods (such as statistical methods) and creates employees of Black Belts, Green Belts etc. who are experts in these methods. Each Six Sigma project carried out within an organization follows a defined sequence of steps and has quantified financial targets toward cost reduction or profit increase.

The term Six Sigma originated from terminology associated with manufacturing process is one in which 99.99966% of the products manufactured are statistically expected to be free of defects (3.4 defects per million).

Six Sigma projects follow two project methodologies inspired by Deming's Plan-Do-Check-Act Cycle. These methodologies, composed of five phases each of DMAIC and DMADV.

- DMAIC is used for projects aimed at improving an existing business process.
- DMADV is used for projects aimed at creating new product or process designs.

DMAIC

The DMAIC project methodology has five phases:

Define the problem of the project/customer need and the project goals.

Measure key aspects of the current process and collect relevant data.

Analyze the data to investigate and verify cause-and-effect relationships.

Improve or optimize the current process based upon data analysis using techniques such as design of experiments, Poka yoke or Mistake proofing, and standard work to create a new, future state process.

Control the future state process to ensure that any deviations from target are corrected before they result in defects. Implement control systems (SPC), visuals at workplaces, and continuously monitor.

DMADV or DFSS

The DMADV/DFSS (**D**esign **F**or **S**ix **S**igma) features five phases:

Define design goals that are based on customer demands and the enterprise strategy.

Measure and identify CTQs (characteristics that are Critical to Quality), product capabilities, production process capability, and risks.

Analyze to develop and design alternatives, create a high-level design and evaluate design capability to select the best design.

Design details, optimize the design, and plan for design verification.

Verify the design, set up pilot runs and implement in the production process.

Quality management tools and methods used in Six Sigma

DMAIC or DMADV project, Six Sigma utilizes many established quality-management tools within phases following main methods used.

5 Whys	Histograms
Analysis of variance	Pareto chart
ANOVA Gauge R&R	Process capability
Business Process Mapping	Quality Function Deployment (QFD)
Cause & effects diagram (also known as fishbone or Ishikawa diagram)	Regression analysis
Check sheet	Run charts
Control chart	Scatter diagram
Correlation	FMEA
Cost-benefit analysis	Design of experiments

World Class Manufacturing

Lean Manufacturing

Lean Manufacturing (also called Toyota Production System, TPS) is a production system inspired by the Japanese concept of kaizen (the strategy of continuous improvement). Unlike Kaizen, Lean has a focus not only on quality control but also on *quantity* control to eliminate waste and reduce costs.

5S (Sort, Segregate, Shine, Standard, Sustain)

“5S” or "Lean 5S" is a method to promote a safer, cleaner, and better-organized workplace often a factory, but the 5S method can be applied to almost any work environment:

- Office space, Computer or server rooms, including online files and folders as well as physical objects, Warehouses, storage sheds and outdoors storage areas

- Hospitals and health care facilities
- Textile mill, Apparel Industry, Garment manufacturing Industry as well as Spinning/Weaving/Dyeing Industries.

If an area can become messy, cluttered, disorganized, hazardous or dirty – **5S** can improve it. It is one-shot cleaning campaign. **5S** leads to a new quality standard which results in sustained improvements. It also provides the methodology and discipline to live up to the new standards.

5S effect on profits.

- Lead to a reduction in lost time, compensation, and scrambles to train workers to cover for colleagues
- Less time spent searching for misplaced tools or parts means higher productivity
- Cleaner equipment may mean less downtime for repairs or maintenance, and also savings on replacement parts
- Optimized workflow leads to higher productivity due to time savings
- Optimized workflow leads to higher productivity by reducing process errors and re-work
- A cleaner workplace may result in cost savings.
- Obsolete equipment or parts may be sold
- Reduced inventory – whether equipment, spare parts, or raw materials – may result in reduced warehouse costs

All the above tools would definitely help silk industries located in Varanasi/any other State in India to improve better quality of the product or satisfy or exceed customer expectations/cost reduction/profit and would definitely make much organized industries (for e.g., Fig 1.a & b) as knowledge about these tools are lacking for better competition across globe.



Fig 1.a Weaving shed at Varanasi



Fig 1.b Weaving shed (Expected) after implementation of Management tools

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