

# A General Study on Production Process and the Impact of ISO Certification on Product Quality and Operational Efficiency in the Furniture Manufacturing Industry

Deeksha<sup>1</sup>, Mrs. Rekha Shetty<sup>2</sup>

<sup>1,2</sup>*Alva's College (Autonomous) Moodubidire.*

**Abstract**—The furniture manufacturing industry plays a vital role in producing essential products used in residential, commercial, and institutional spaces. The present study focuses on understanding the production process followed in the furniture manufacturing industry and examining the impact of ISO certification on product quality and operational efficiency. The production process includes various stages such as raw material procurement, sawing, size selection, planing, carpentry work, machine operations, fittings, polishing, and finishing, which collectively contribute to the transformation of raw wood into finished furniture products. The study is based on secondary data collected from books, journals, articles, and other published sources. It highlights how efficient production practices and proper utilization of resources help in reducing wastage and improving productivity. The study also examines how ISO certification supports standardized procedures, improves quality control, reduces defects, and enhances consistency in production. Further, it emphasizes that ISO implementation contributes to better operational efficiency through improved coordination, reduced rework, and increased productivity. Overall, the study concludes that the adoption of systematic production processes along with ISO certification leads to improved product quality, operational efficiency, and customer satisfaction in the furniture manufacturing industry.

**Index Terms**—Process, Raw Material Procurement, Quality Control, ISO Certification, Product Quality, Operational Efficiency, Waste Reduction, Standardization, Customer Satisfaction

## I. INTRODUCTION

The furniture manufacturing industry is an important sector in the manufacturing economy that produces a wide range of products used in homes, offices, institutions, and commercial establishments. The

industry involves various production activities such as raw material procurement, sawing, cutting, planing, carpentry work, machine operations, fittings, polishing, and finishing. A well-organized production process is essential for maintaining product quality, reducing wastage, improving productivity, and meeting customer requirements effectively.

Production process management plays a significant role in the furniture manufacturing industry because every stage of production directly affects the quality and durability of the finished product. Proper planning, efficient utilization of raw materials, skilled workmanship, and systematic production methods help organizations maintain smooth workflow and operational efficiency. Effective production processes also support timely completion of work, cost control, and better utilization of resources.

In the present competitive business environment, maintaining consistent product quality and improving operational efficiency have become major priorities for manufacturing organizations. ISO certification is considered an important quality management tool that helps organizations follow standardized procedures, improve quality control, reduce defects, and enhance productivity. This study focuses on understanding the production process followed in the furniture manufacturing industry and examining the impact of ISO certification on product quality and operational efficiency.

## II. REVIEW OF LITERATURE

Terziovski, M., & Samson, D. (1999). The link between total quality management practice and organisational performance. This study examined how Total Quality Management (TQM) practices affect organizational performance. The study found that

proper quality management practices help improve product quality, operational efficiency, and overall organizational performance. It also highlighted that systematic quality control and standardized procedures support better productivity and customer satisfaction. This study is related to the present study because ISO certification also focuses on quality management and operational improvement in manufacturing organizations.

Purnawan Adi Wicaksono & Choirunisa Ahmad Kadafi – The Improvement of Production Process Impact in Furniture Industry toward Circular Economy This study analysed the environmental impact of production processes in the furniture industry. The study found that certain production materials and processes create higher environmental impact, while improved production methods help reduce waste and support sustainable manufacturing practices. The study also emphasized the importance of efficient production systems in the furniture industry. This study is related to the present study because it focuses on production processes and operational improvement in furniture manufacturing organizations.

### III. RESEARCH METHODOLOGY

The study is mainly based on secondary data collected from books, journals, research articles, websites, and other published sources. The collected information was analysed to understand production activities, and the role of ISO certification in improving operational efficiency and product quality.

### IV. OBJECTIVES OF THE STUDY

- To study the Production Process in the Furniture Manufacturing Industry.
- To study the Impact of ISO Certification on Improving Product quality and Operational Efficiency.

### V LIMITATIONS OF THE STUDY

1. The study is limited to the furniture manufacturing industry only.
2. The study is based mainly on secondary data collected from books, journals, and websites.

## VI. PRODUCTION PROCESS

### 1. Raw Material Procurement

- Plot Purchase

In this method, wood is obtained from purchased plots containing trees. This helps maintain raw material availability, quality control, and reduces dependency on suppliers.

- Purchase from Other Sawmills

When immediate raw materials are required or specific wood types are unavailable, wood is purchased from other sawmills to continue production without interruption.

Sawing Process (Band Saw and Re-saw)

- Sawing Using Band Saw and Re-saw Machines

Wood logs are cut into required sizes and thickness using band saw and re-saw machines. During this process, wood waste and dust are generated and collected separately for sale or reuse.

- Firewood as By-product

Excess wood pieces generated during sawing are used as firewood and sold to customers.

- Wood Dust as By-product

Wood dust generated during processing is collected and sold for various uses, reducing wastage.

- Size Selection (Patty)

After sawing, wood pieces are sorted and cut into required sizes for different furniture components. Proper size selection ensures uniformity and reduces wastage.

- Planing

Planing smoothens the wood surface and maintains uniform thickness. Wood dust generated during the process is collected separately.

Carpentry and Machine Work

- Carpentry (Design and Carving)

Skilled carpenters shape and carve wood according to design requirements. This stage adds detail and customization to furniture.

- CNC Machine Operations

CNC machines are used for accurate cutting and carving work. They help maintain precision and consistency in production.

- Drilling (Holes)

Holes are drilled in wooden parts for fixing screws, hinges, and fittings during assembly.

- Spindle Work

Spindle machines are used to shape decorative and round furniture components such as legs and rails.

- Fittings

Hardware components such as hinges, handles, screws, and locks are fixed to furniture parts during this stage.

- Polishing

Polishing improves the appearance, smoothness, and durability of the furniture and gives the product a finished look.

- Finished Product

After inspection and polishing, the finished furniture is packed, stored, or delivered to customers.

#### Small Wood Process

- Size Selection

Small wood pieces are separated and sorted based on size and quality to reduce wastage.

- Finger Joint Process

Small wood pieces are joined together using finger joint technology to create larger usable sections.

- Planing

The joined wood is smoothened and leveled for further processing.

- Carpentry Work

Carpenters shape and prepare the wood according to design requirements.

- CNC Machine Operations

CNC machines provide accurate cutting and design work.

- Hole Making and Spindle Work

Holes and decorative spindle work are completed for assembly purposes.

- Fittings

Necessary hardware fittings are attached to the product.

- Polishing

Furniture is polished to improve finish and appearance.

- Finished Product

After quality inspection, the product is stored or supplied to customers.

## 2. Customer Order Process – Customized Furniture Production

- Order Received

Customer orders are recorded after estimate approval and advance payment confirmation.

- Wood Selection

Customers select wood types such as Acacia, Teak, Bhogi, Jack, Wild Jack, and Dhoopa based on preference and requirement.

- Size Selection

Wood is sorted according to required sizes. Small pieces may undergo finger jointing to reduce wastage.

- Planing

Wood surfaces are smoothened and prepared for production.

- Carpentry Work

Wood is shaped and carved according to furniture design.

- Hole Making and Spindle Work

Drilling and spindle operations are completed for proper assembly.

- Fittings

Handles, hinges, screws, and other fittings are attached.

- Polishing

Furniture is polished to improve surface finish and appearance.

- Finished Product

After inspection, the completed furniture is delivered or displayed.

## 3. Customer Order for Job Work

- Order Received

Orders are recorded after customer confirmation and advance payment.

- Sawing

Wood is cut into required sizes using sawing machines.

- Planing

Wood surfaces are leveled and smoothened.

- Turning

Lathe machines are used to shape round and decorative furniture parts.

## 4. Customer Order for Timber Purchase

- Timber Purchase

Customers can purchase raw or processed timber based on size and quality requirements.

- Firewood

Unused wood pieces are separated and sold as firewood.

- Wood Dust

Wood dust generated during processing is collected and sold for other uses.

#### Challenges Faced During the Production Process

- **Fluctuation in Raw Material Availability**  
Irregular availability of wood can affect production continuity and delivery schedules.
- **Increase in Raw Material Cost**  
Frequent changes in timber prices increase production expenses.
- **Material Wastage During Processing**  
Sawing and cutting operations generate wood waste and dust.
- **Machine Maintenance and Breakdown**  
Machine failures may interrupt production activities and delay work.
- **Skilled Labour Shortage**  
Lack of skilled workers can affect product quality and productivity.
- **Quality Control Issues**  
Maintaining consistent product quality throughout production can be difficult.
- **Inventory Management Difficulties**  
Improper storage and stock management may cause shortages or excess inventory.
- **Dust and Waste Management**  
Wood dust and waste materials create workplace cleanliness and safety issues.
- **Transportation and Logistics Issues**  
Transportation delays may affect raw material supply and product delivery.
- **Environmental and Safety Concerns**  
Production activities require proper safety measures and waste management practices.

#### VII. ISO CERTIFICATION ON QUALITY AND OPERATIONAL EFFICIENCY

ISO certification plays an important role in improving product quality and operational efficiency in manufacturing organizations. ISO standards provide systematic guidelines for quality management, process control, documentation, employee responsibilities, and continuous improvement. Implementation of ISO standards helps organizations maintain consistency in production activities, reduce operational errors, improve customer satisfaction, and increase productivity.

ISO certification also promotes standardization in every stage of production, starting from raw material procurement to final product delivery. Through proper

monitoring systems and quality control procedures, organizations can achieve better efficiency and improved product performance.

#### Impact of ISO Certification on Product Quality

- **Improvement in Raw Material Quality**  
ISO certification encourages organizations to follow proper supplier selection and raw material inspection procedures. This helps ensure better quality raw materials for production.
- **Better Production Accuracy**  
ISO standards help improve accuracy in cutting, sizing, drilling, and machine operations through standardized operating procedures and quality monitoring systems.
- **Reduction in Product Defects**  
Implementation of ISO quality control systems helps reduce defects during production by improving inspection procedures and monitoring activities at each stage.
- **Improved Finishing Quality**  
ISO certification supports better finishing standards in terms of polishing, smoothness, appearance, and durability of products.
- **Consistency in Product Quality**  
Standardized production procedures under ISO help organizations maintain uniform quality in finished products.
- **Increased Customer Satisfaction**  
Improved product quality, reduced defects, and better finishing contribute to higher customer satisfaction and trust.
- **Better Quality Inspection Systems**  
ISO standards encourage regular quality checks and inspection activities throughout the production process to maintain product standards.

Continuous Quality Improvement  
ISO certification promotes continuous improvement practices that help organizations regularly improve product quality and manufacturing performance.

#### Impact of ISO Certification on Operational Efficiency

- **Standardization of Work Procedures**  
ISO certification introduces standardized work procedures and operational guidelines, reducing confusion and improving workflow efficiency.
- **Improved Time Management**  
Proper planning and systematic workflow management help reduce delays and improve the speed of task completion.

- Reduction in Material Wastage

ISO implementation encourages efficient utilization of raw materials and better waste management practices, reducing production wastage.

- Better Coordination Between Departments

ISO standards improve communication and coordination between departments through clearly defined responsibilities and process integration.

- Clear Roles and Responsibilities

ISO certification helps organizations define employee duties and responsibilities clearly, improving accountability and productivity.

- Improved Documentation and Record Keeping

Systematic documentation and record maintenance improve operational control, transparency, and traceability in production activities.

- Reduction in Rework and Repair

Better quality control and process management reduce production errors, lowering the need for rework and repair activities.

- Better Machine and Process Control

ISO systems encourage regular monitoring and maintenance of machines and production processes, improving operational stability.

- Increased Productivity

Efficient production planning, reduced errors, and improved workflow management contribute to higher productivity levels.

- Continuous Operational Improvement

ISO certification promotes continuous evaluation and improvement of operational activities, helping organizations achieve long-term efficiency.

## VIII FINDINGS OF THE STUDY

The study found that the furniture manufacturing industry follows a well-structured production process involving stages such as raw material procurement, sawing, size selection, planing, carpentry work, machine operations, fittings, polishing, and finishing. Each stage plays a crucial role in converting raw wood into finished furniture products. It was observed that efficient utilization of raw materials and by-products such as firewood and wood dust helps in reducing wastage and improving cost efficiency in the production process. The study revealed that ISO certification significantly improves product quality by enhancing raw material selection, increasing

production accuracy, reducing defects, and ensuring better finishing standards.

It was found that ISO implementation contributes to operational efficiency by standardizing work procedures, improving time management, reducing rework, and enhancing coordination between different production activities. The study also highlights that ISO certification leads to improved customer satisfaction due to better product quality, consistency, and timely delivery of finished furniture products.

## IX SUGGESTIONS

The industry should follow proper quality control and standard procedures to improve product quality.

More training should be given to workers and machines should be maintained regularly to improve efficiency and reduce wastage.

## X CONCLUSION

The present study highlights that the furniture manufacturing industry follows a systematic production process involving various stages such as raw material procurement, sawing, size selection, planing, carpentry work, machine operations, fittings, polishing, and finishing. Each stage plays an important role in ensuring the quality and durability of the final furniture products while also focusing on efficient utilization of raw materials and reduction of wastage. The study also concludes that ISO certification has a positive impact on both product quality and operational efficiency. It helps in improving production accuracy, reducing defects, ensuring consistency in quality, and enhancing customer satisfaction. At the same time, ISO implementation supports better work standardization, improved coordination, reduced rework, and increased productivity, leading to overall operational improvement in the furniture manufacturing industry.

## REFERENCE

- [1] P. A. Wicaksono and C. A. Kadafi, "The improvement of production process impact in furniture industry toward circular economy," in E3S Web of Conferences, vol. 202, p. 07052, 2020.
- [2] M. Terziovski and D. Samson, "The link between total quality management practice and

organisational performance,” International Journal of Quality & Reliability Management, vol. 16, no. 3, pp. 226–237, 1999.

- [3] “ISO certification for the furniture business in 2025.” Available: <https://www.rajstartup.com/blog/iso-certification-for-furniture-business>
- [4] “Furniture manufacturing process: How furniture is made?” Available: <https://www.deskera.com/blog/furniture-manufacturing-process-how-furniture-is-made/>