European Journal of Emerging Technology and Discoveries
ISSN (E): 2938-3617
Volume 2, Issue 12, December - 2024

PROSPECTS FOR IMPROVING PRODUCT QUALITY

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Abstract
This article discusses the factors and necessary measures to improve product quality, develop competitive products, and achieve success in the market. Various factors such as innovative new equipment and technologies, improvement of materials and raw materials, employee training, and quality control are discussed in detail.

Keywords: Product, quality, technologies, certification, efficiency.

Introduction

Product quality has always been a crucial factor in achieving market success. However, in today's competitive environment, companies are seeking new methods to enhance product quality. This article explores the prospects and innovative approaches to improving product quality. High-quality products help gain customer trust, enhance brand reputation, and expand market share. Quality products are repeatedly purchased by customers, positively affecting a company's revenue. Moreover, high-quality products differentiate the brand from competitors and ensure long-term success.

Innovative Technologies: Modern technologies, including artificial intelligence (AI), machine learning (ML), and big data, play a significant role in improving product quality. AI and ML enable automation of production processes, monitoring product quality, and early detection of defects. Additionally, big data analysis helps better understand customer needs and adapt products accordingly. Introducing new equipment and production technologies can significantly enhance product quality. High-performance machinery and automated systems ensure precise and quality production. This approach reduces production costs and minimizes errors.

Improvement of Materials and Raw Materials: The most critical factor in improving product quality is the quality of materials. The performance, durability, functionality, and appearance of a product largely depend on its components. Selecting high-quality raw materials determines the overall performance of the product. Poor-quality materials can lead to product failure, wear, or problems during processing. To ensure high product quality, the materials used must also be of high quality. High-quality materials have the following advantages:

ISSN (E): 2938-3617
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- **Durability and Long-Term Use:** Materials must be strong and durable to ensure the product's longevity. For instance, high-quality materials in furniture, automobiles, or electronics guarantee long-term service.

- **Operational Efficiency:** Enhancing material quality can extend the product's lifespan and improve its efficiency. Advanced electronic products or machinery, for example, use high-quality materials to enhance their performance and technical characteristics.

Training and Skill Development: Employee knowledge and skills are crucial for effectively addressing production issues, implementing innovations, and improving product quality. Employees are one of the most valuable resources of a company, as they are directly involved in production, quality control, and problem-solving. Therefore, improving their professional qualifications, updating their knowledge, and preparing skilled personnel can be very effective in enhancing product quality. Employee knowledge updates should be a continuous process during the quality improvement journey. Changing consumer demands, market conditions, new technology implementations, and process improvements require employees to update their knowledge. New technologies are a critical tool for improving product quality. To effectively utilize these technologies, employees must learn and enhance their skills. It is essential to explain production process changes and optimizations to employees. Training materials, videos, and practical exercises should be provided to help employees quickly adapt to new processes and methods. Enhancing employee skills plays a vital role in improving overall company efficiency and product quality. Skilled and professional employees can quickly and effectively solve production issues. Training employees and improving their qualifications can significantly enhance their work efficiency. In organizing this process:

- **Practical Training:** Conduct practical sessions and training to teach employees how to address potential production issues. This helps them quickly and correctly resolve problems.

- **Certification Programs:** Establish special certification programs to enhance employee qualifications. Certifications not only validate employee skills but also provide the company with highly qualified personnel.

Continuous quality control must be implemented in the production process to improve product quality. Quality control should be established at every stage, from raw material selection to final product delivery. The primary goal of quality control is to detect errors early and take immediate corrective actions.

1. Main Tasks of Quality Control:

Quality control performs the following tasks in the production process and final stage of the product:

- **Error Detection:** Identify and correct errors early in the production process. This involves analyzing and reprocessing errors to quickly restore the production process.
- **Ensuring Compliance with Quality Standards:** Ensure that product quality meets company or industry standards. Quality control ensures the required features and functional capabilities of the product.

• **Process Optimization:** Improve production processes based on errors and issues identified during quality control to enhance product quality.

Stages of Quality Control:

• **Raw Material Inspection:** Inspect the quality of raw materials or components before production begins. Laboratory tests may be conducted at this stage to verify compliance with standards.

• **Process Control:** Monitor quality during the production process. Every step of the process, such as processing, assembly, or installation, is checked for quality.

• **Final Inspection:** Evaluate the quality of the finished product. All functions, appearance, and performance are assessed. Products that pass final tests are considered high-quality.

Detecting and correcting errors in the production process is crucial. Undetected errors can ultimately lead to decreased quality, production halts, or significant costs. Errors must be identified and corrected early in the production process through quality control. This requires specific quality inspection methods, tests, and monitoring systems. Once errors are detected, appropriate measures should be taken to resolve them promptly without interrupting the production process. This often involves reprocessing the product, optimizing the process, or implementing new technologies. Today, the use of digital technologies in quality assessment is becoming increasingly popular. Digital technologies facilitate more efficient and faster quality control in the production process. Digital testing and simulation processes are essential for detecting errors at various stages and resolving them. Digital Quality Management Systems (QMS) enable monitoring and managing quality control across all production stages. These systems automate all quality inspections and help quickly detect errors. QMS centralizes production process data and allows real-time management.

Conclusion

The process of improving product quality is crucial for enhancing overall company efficiency, strengthening competitiveness, and ensuring customer satisfaction. Effective methods such as continuous quality control, using high-quality raw materials and components, updating employee knowledge and skills, and a systematic approach must be considered to improve quality. Collaborative work and systematic approaches are essential in the quality improvement process. Effective cooperation, teamwork, and knowledge sharing among employees, managers, and quality control specialists lead to improved product quality.

References

1. W. Edwards Deming "Out of the Crisis" and "The New Economics for Industry, Government, Education"
2. Yusupov, A., Bobojanov, H., Yusupov, S.,Yo‘ldoshev, M., & Jurayeva, M. (2022). Improvement of Yarn Quality by Placing an Additional Compacting Device Between the Stretching Rollers in A Ring Spinning
3. Machine. Eurasian Journal o
4. Joseph M. Juran "Quality Control Handbook"
5. Kaoru Ishikawa "Fishbone", "What is Total Quality Control?"
6. Philip Crosby "Quality is Free" and "Zero Defects"

ISSN (E): 2938-3617
Volume 2, Issue 12, December - 2024

7. Michael Hammer "Reengineering the Corporation"
8. Abdujabbor o'g'li, Y. A. (2022, April). Improving the quality of yarns by installing an additional compactor on the spinning machine. In E Conference Zone (pp. 280- 282).
9. Eliyahu M. Goldratt "The Goal: A Process of Ongoing Improvement"
10. Shigeo Shingo "A Study of the Toyota Production System"
11 Abdujabbor o'g'li, Y. A., & Abdujabborovich, Y. S. (2022, May). Scientific research of improving the quality of yarns on a spinning machine. In E Conference Zone (pp. 19-21).