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THE IMPORTANCE OF THE QUALITY MANAGEMENT SYSTEM IN THE MANAGEMENT OF TEXTILE ENTERPRISES

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Abstract: The article analyzes the current state of the management system of textile enterprises and the importance of the quality management system in improving production efficiency. It examines quality management processes in enterprises, the level of implementation of international standards, and the key factors affecting production activities.

Keywords: Quality, textile enterprises, enterprise management, quality management system, ISO 9001 international standard, product quality, production efficiency, quality control.

Introduction

The textile industry occupies a leading position in the economy of the Republic of Uzbekistan, as it is a sector that produces a wide range of consumer goods. Uzbekistan's textile industry has centuries-old traditions of cotton fiber processing. The Great Silk Road passed through the territory of Uzbekistan, and products manufactured by Uzbek artisans, particularly silk brocade and atlas fabrics, were well known throughout the world.

Today, considering the growing global demand for products made from natural fibers, it should be emphasized that Uzbekistan is one of the countries capable of supplying the global market not only with raw cotton but also with a wide range of finished textile, garment, knitwear, and other light industry products.

Currently, the Association "Uztextileprom", which brings together textile enterprises across the Republic, comprises 448 textile enterprises, 6 machinery manufacturing enterprises, and 1,522 garment and knitwear enterprises. The Association itself serves as a link between Uzbek textile manufacturers, foreign investors, companies, and importers, facilitating the establishment of international relations and the development of cooperation with other countries in the textile and garment industries. The Association also includes companies providing services in export activities, obtaining international standards and certifications, marketing and advertising, design, and other related areas.

In accordance with Resolution No. PQ-4453 of the President of the Republic of Uzbekistan dated September 16, 2019, comprehensive measures are being implemented to develop the light industry sectors, including textiles, garment and knitwear, leather and footwear, and fur industries; expand the range and assortment of finished products; and provide comprehensive support for investment and export activities in the sector [1].

Literature Review

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The concept of product quality is multifaceted and multidimensional in nature. The understanding of this concept has evolved and been continuously updated throughout different stages of human society's development, acquiring particular significance in each historical period.

Numerous examples of this can be found in historical sources. One such example is reflected in a decree signed by Peter I on January 11, 1723. According to the decree, Kornil Beloglazov, the owner of the Tula factory, was sentenced to serve in a church for supplying the state with products unsuitable for use. The historical source also records that Frol Fuchs, a state-appointed quality inspector, was exiled to Azov for placing quality marks on defective weapons [2].

Throughout different periods and stages of human civilization, various scholars have provided different definitions of the concept of quality. The great ancient Greek philosopher Aristotle explained quality as “the differences between objects, distinguishing them through the characteristics of good and bad.” According to the encyclopedic scholar Ibn Sina (Avicenna), “quality is based on experience, analysis, synthesis, and generalization.” Alisher Navoi, in turn, considered the concept of quality in connection with such notions as “knowledge and wisdom” [3].

Unlike earlier scholars, Philip Crosby proposed an approach to quality based on comprehensive management and continuous improvement. According to his definition, quality means “conformance to agreed requirements” [4].

Another prominent specialist in quality management, J. Harrington, emphasized that quality is the ability to satisfy consumers' needs by providing products and services that they wish to use at the time they need them and at a price they consider acceptable [5].

A. V. Feigenbaum put forward the approach that quality represents value. According to his viewpoint, quality does not necessarily imply an absolute meaning of being the best. Rather, it means being good in relation to the specific requirements and conditions of a particular product consumer.

In addition to D. Garvin's definition, the approach that quality represents excellence is also reflected in the Oxford University Press dictionary (1990). This dictionary defines quality in terms of excellence and authenticity [6].

The German philosopher G. W. F. Hegel stated that quality primarily expresses the essential nature of a particular thing and its definite existence. Once an object loses its quality, it also loses its identity [7].

Based on the above-mentioned multifaceted scholarly approaches, we propose the following definition of the concept of quality: Quality is the extent to which the needs and expectations of consumers are reflected in products and services provided by manufacturing enterprises and service providers.

Research Methodology

The research employed empirical analysis, systematic and comparative analysis, comparison, classification, and survey methods.

Analysis and Results:

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ISO 9001 is an international standard for Quality Management Systems (QMS), aimed at standardizing enterprise processes, increasing customer satisfaction, and ensuring continuous improvement. Research findings indicate that the implementation of ISO 9001 in textile enterprises affiliated with the “Uztextileprom” Association increased sales volume by 50% during 2020–2024, primarily due to strengthened positions in export markets.

The Quality Management System was implemented in textile enterprises through the following stages:

1. Initial diagnostic stage. At this stage, the existing quality management and control systems of the enterprise were analyzed, and existing problems and shortcomings were identified.

2. Planning stage. The enterprise's quality policy and objectives were developed, while the implementation program and responsible personnel were identified.

3. Process documentation stage. All primary and supporting processes, regulations, guidelines, and standard operating procedures within the enterprise were developed and documented.

4. Employee training stage. The qualifications and professional competencies of managers and specialists were enhanced in accordance with international quality standards.

5. Implementation stage. The system was introduced into spinning, weaving, dyeing, finishing, sewing, and packaging departments, while quality indicators were regularly monitored.

6. Internal audit and evaluation stage. The effectiveness of the system was assessed through internal audits, and identified non-conformities were addressed.

7. Improvement stage. Based on audit results and customer feedback, the system was continuously improved.

These stages enabled the systematic integration of the Quality Management System into the operations of textile enterprises and ensured its effective functioning.

To determine the impact of the Quality Management System on enterprise performance, an online survey was conducted among specialists of enterprises affiliated with the “Uztextileprom” Association. The research covered “LUKBO TEKSTIL” Limited Liability Company, “BIRYUZA GROUP” Foreign Enterprise Limited Liability Company, and “CHUST TEXTILE” Limited Liability Company, which were selected as the research objects.

A total of 197 specialists participated in the survey as respondents. Since the respondents represented enterprises with different organizational statuses and various textile product assortments, it was considered appropriate to identify the types of textile products manufactured by these enterprises and determine their areas of specialization (Figure 1).

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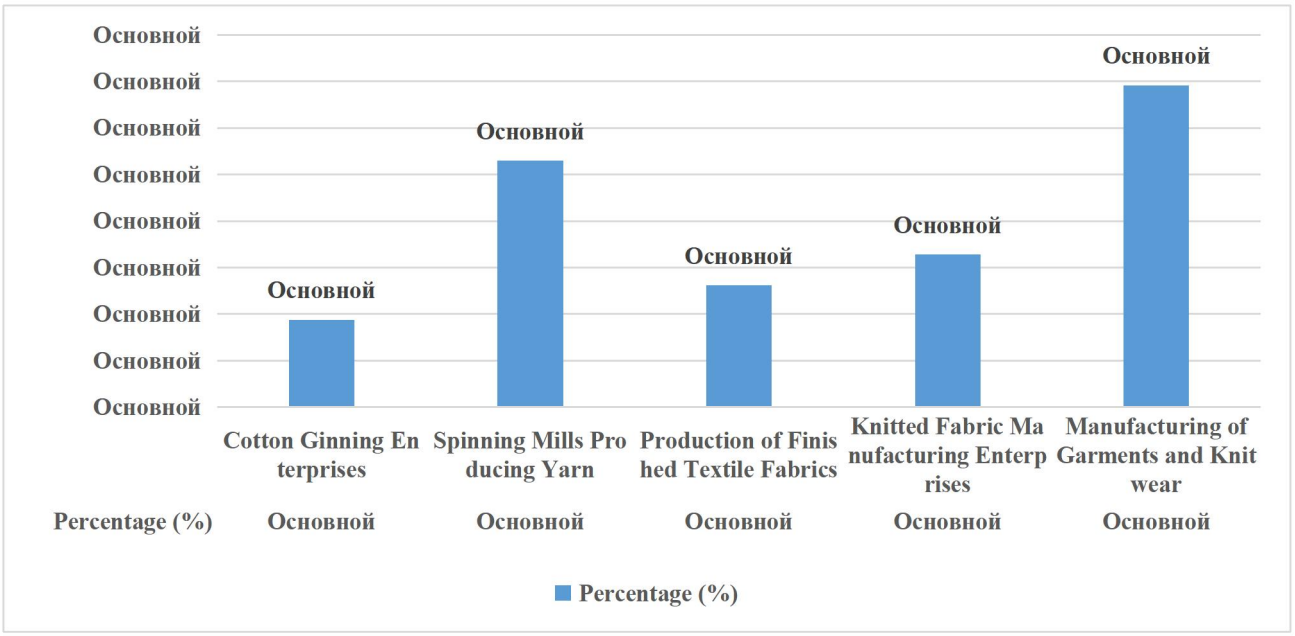

Figure 1. Areas of Specialization of the Enterprises Represented by Survey Respondents

According to the survey results, specialists from cotton ginning enterprises accounted for 9.4%, specialists from spinning enterprises producing yarn accounted for 26.5%, enterprises manufacturing finished textile fabrics represented 13.1%, enterprises producing finished knitted fabrics accounted for 16.4%, while specialists from enterprises manufacturing finished garments and knitted clothing represented 34.6%.

The challenges encountered during the implementation of the Quality Management System play an important role in ensuring its effectiveness. According to the respondents, 24.6% identified the low qualification level of employees, 31.3% reported a lack of financial resources, 13.1% indicated organizational problems, 9.6% cited insufficient time, while 21.4% of respondents identified other factors as the main obstacles (Figure 2).

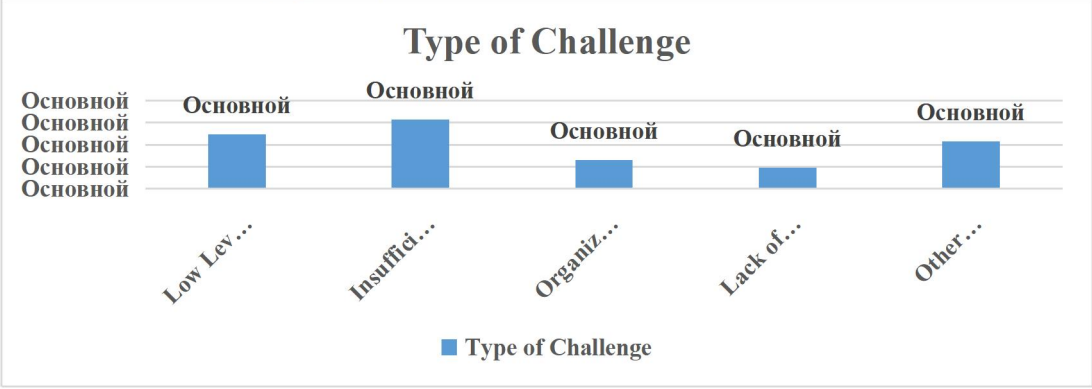

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Figure 2. Challenges Encountered During the Implementation of the Quality Management System

The data presented in Figure 2 indicate that the lack of financial resources represents the most significant challenge. According to the respondents, certification and maintenance of the system involve substantial costs, with approximately USD 80,000 required annually for audits, training, and documentation activities. In addition, the shortage of qualified personnel is considered one of the major problems. Hiring two specialists to manage the Quality Management System requires additional annual expenditure averaging USD 50,000.

Bureaucracy is also a significant obstacle to the implementation of the Quality Management System, as documentation activities account for approximately 10% of employees' working time, which has led to dissatisfaction among staff. Dependence on exports, instability in international markets, and fluctuations in exchange rates also create additional risks.

In assessing quality-related factors that contribute to improving enterprise performance, it is equally important to examine the key benefits of implementing ISO 9001 (Figure 3).

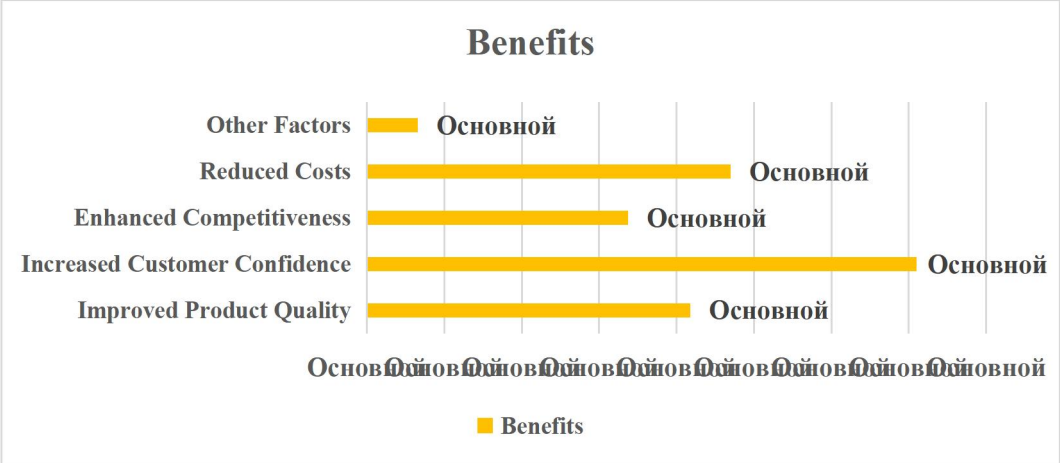

Figure 3. The Key Benefits of Implementing ISO 9001

In response to the question regarding the key benefits of implementing ISO 9001, 20.9% of respondents identified improved product quality as the main benefit, 35.5% pointed to increased customer confidence, 16.87% highlighted enhanced competitiveness, and 23.5% considered cost reduction to be the primary advantage. The remaining 3.3% of respondents identified other factors as the main benefits.

In our research, we also considered it important to analyze the impact of implementing the Quality Management System on the operational efficiency of the enterprises selected as research

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objects. Following the implementation of the Quality Management System at "LUKBO TEKSTIL" LLC, the audit observations revealed the following results.

ISO 9001 requires the regular analysis of customer feedback. Accordingly, a customer satisfaction assessment system based on the Net Promoter Score (NPS) methodology was introduced at the enterprise. As a result, the NPS increased from 60 to 78, representing a 30% improvement. This development strengthened customer confidence in export markets, particularly in Germany and Türkiye. Furthermore, sales volume in 2023 increased by 81,600 units compared to 2022 (1,327,000 – 1,245,400 = 81,600), creating opportunities for additional revenue generation.

Table 1

The Impact of Quality Management System Implementation on Enterprise Management Efficiency in 2023–2025

No	Indicators	LUKBO TEKSTIL LLC			
		2023-yil	2024-yil	2025-yil	Moliyaviy ta'siri
1	Customer Satisfaction Level (NPS)	60%	71%	78%	Sales Volume Increased by USD 12 Million
2	Product Quality Consistency	15 Sales Contracts	19	25 Sales Contracts	Export Contracts Increased
3	Number of Defective Products	18%	11%	4%	USD 500,000 Saved
4	Export Volume	9346,8 Thousand USD	9713,2 Thousand USD	105,06,4 Thousand USD	Increased by USD 1.16 Million
5	Number of New Customers	50	63	70	Export Volume Increased by USD 600,000
6	Production Costs	73%	67%	65%	USD 326,000 Saved
No	Indicators	BIRYUZA GROUP LLC			
1	Logistics Efficiency	72%	77%	85 %	Customer Satisfaction Level Increased by 20%
2	Employee Competence	9 % (Errors)	6% (Errors)	5 % (Errors)	Quality Control Effectiveness Increased by 15%
3	Number of Internal Audits	-	2 per Year	3 per Year	Process Efficiency Increased by 10%
4	Decision-Making Speed	45 Day	37 Day	30 Day	Time to Market Reduced by 0.5%
5	Number of Customer Complaints	68per year	55per year	41per year	Customer Confidence Increased by 15%
6	Number of Certifications	-	ISO 9001	ISO 14001 GOTS	Export Market Confidence Increased by 20%
7	Resource Utilization Efficiency	205 Tons	193 Tons	186 Tons	USD 800,000 Saved
No	Indicators	CHUST TEKSTIL LLC			
1	Production Capacity	705 Tons	678 Tons	846 Tons	Increased by 15% per Month through the Weaving Department
2	Increase in Export Prices	5 USD/kg	5,7 USD/kg	6,25 USD/kg	In the Italian Market
3	Market Share	8%	9%	12%	Polsha bozorida +2%
4	Participation in Tenders	1	3	6 Participated, 3 Won	3 mln USD (Contract with Turkey)
5	Compliance with Environmental Standards	-	ISO 14001	GOTS, ISO 14001	Demand for Organic Fabrics
6	Employee Satisfaction Level	15% Employee Turnover	8% Employee Turnover	5 % Employee Turnover	Wages +10%
7	Financial Stability	4 mln USD (Net Profit)	5,1 mln USD (Net Profit)	6 mln USD (Net Profit)	Liquidity Increased by 20%

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In accordance with ISO 9001 requirements, quality control processes were standardized, and regular inspections of finished product manufacturing processes were conducted. As a result, 100% compliance of products with OEKO-TEX Standard 100 requirements was achieved, increasing the number of export contracts from 15 to 25, representing a growth rate of 66%. Due to the consistent quality of knitted fabrics supplied to the German market, the contract period was extended.

ISO 9001 requires the identification and elimination of nonconforming products. Therefore, an automated inspection system was introduced at the enterprise to detect defective products. In our opinion, a Quality Management System should not only enable enterprises to identify defective products but also prevent the production of nonconforming products.

As a result, the proportion of nonconforming products decreased from 18% to 4%, representing a reduction of approximately 78%. This created an opportunity to save USD 500,000 annually in raw material costs. These savings were primarily achieved by preventing color instability during the fabric dyeing process. Specifically, following the implementation of these measures, the defect rate decreased from 18% to 4%.

ISO 9001 certification enhanced the enterprise's competitiveness in international markets and increased customer confidence. As a result, export volume increased from USD 9,346.8 thousand in 2023 to USD 10,506.4 thousand in 2025, representing a growth of 12.4%. This also facilitated access to new markets, including Italy and Poland. Exports of knitted fabrics worth USD 1,160 thousand annually were launched.

Obtaining international certification and ensuring high product quality attracted new contracts. Consequently, the customer base expanded from 50 to 70 customers, representing a 40% increase, which contributed to an additional USD 600 thousand in export revenue. In particular, a contract worth USD 600 thousand was signed with an Italian clothing brand.

The implementation of the process-based approach optimized production processes and reduced energy and raw material consumption. As a result, production costs decreased by 12%, generating annual savings of USD 326 thousand.

At the foreign enterprise “BIRYUZA GROUP” LLC, the implementation of the Quality Management System (QMS), supported by audit inspections, improved logistics efficiency, enhanced supply chain management, and shortened delivery times. As a result, on-time delivery compliance increased from 72% to 85%, while export customer satisfaction rose by 20% (Table 1).

According to ISO 9001, all employees are required to be involved in the quality management process. Employees received training in quality management, with two training sessions conducted annually. This contributed to an improvement in their professional competencies. Consequently, the rate of nonconformities and errors attributable to employees decreased from 9% to 5%, representing a 56% reduction, while the effectiveness of quality control increased by 15%. In the weaving department, the proportion of nonconforming and defective fabrics decreased by 3%.

ISO 9001 also requires organizations to conduct internal audits. To ensure continual improvement, the enterprise conducted three internal audits annually, promptly eliminating 85% of the

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identified deficiencies and improving processes by 10%. In particular, all errors identified in the quality control process were fully rectified within two months.

Following the implementation of ISO 9001, documented processes enabled managers to make decisions more quickly. As a result, the time required to adapt to market demands decreased from 45 to 30 days. In particular, the time required to introduce a new fabric design to the market was reduced from two months to one and a half months.

Following the implementation of ISO 9001 standards, confidence in product quality increased, quality assurance was strengthened, and the number of customer complaints decreased. A complaint management system was introduced at the enterprise, and a Customer Relationship Management (CRM) system was installed. As a result, the number of complaints decreased from 68 to 41 per year, strengthening customer confidence.

The number of certifications obtained by the enterprise also increased. In addition to ISO 9001, the enterprise obtained ISO 14001 and GOTS certifications. Consequently, the enterprise's reputation and credibility in export markets improved. The GOTS certification contributed to a 10% increase in exports of organic fabrics.

The implementation of an international standards-based Quality Management System helped prevent unnecessary operations, excessive activities, and additional costs. It also reduced the number of defective products and created opportunities to introduce resource-efficient technologies, thereby improving resource utilization efficiency. Through the optimization of dyeing and coloring processes, resource consumption decreased by 10%, generating annual savings of USD 800,000.

The implementation of the Quality Management System at “CHUST TEXTILE” LLC, one of the enterprises selected as an object of this study, enabled the enterprise to increase its production capacity (Table 1).

Following the implementation of ISO 9001 standards based on the process approach to management, improvements in process efficiency contributed to an increase in production output. The production capacity for knitted fabrics increased from 705 to 846 tons, which, in turn, led to an increase in the production volume of finished garments and knitwear products.

The implementation of ISO 9001 standards is based on the Deming Cycle, which emphasizes continuous improvement and ongoing enhancement. Continuous improvements in product quality, in turn, contributed to higher export prices. Higher-quality products could be sold at premium prices. As a result, export prices were 25% higher than domestic market prices. In particular, the price per kilogram of fabric increased from USD 5 to USD 6.25.

The market share of “CHUST TEXTILE” LLC also increased. The enterprise's share in foreign markets rose from 8% to 12% (+50%), including an increase in its share of the Polish market from 5% to 7%. ISO 9001 certification enabled the enterprise to participate in international tenders. In 2023, the enterprise participated in six international tenders and won three of them. In particular, a contract worth USD 3 million was signed as a result of winning a tender in Turkey.

Today, environmental protection is one of the most important and pressing global challenges. Compliance with environmental standards provided the enterprise with a competitive advantage in

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export markets. The enterprise obtained GOTS and ISO 14001 certifications, resulting in a 25% increase in customer interest. Demand for organic cotton fabrics increased by 15%. Employee training and improved working conditions also contributed to higher employee satisfaction. As a result, the employee turnover rate decreased from 15% to 5%. In addition, wages for workshop employees increased by 10%, which further strengthened their work motivation.

One of the key indicators determining the operational efficiency of an enterprise is its financial stability. The implementation of ISO 9001 standards reduced costs, which, in turn, increased revenue and strengthened the enterprise's financial stability.

The enterprise's net profit increased from USD 4 million to USD 6 million. Increased export revenues and cost savings contributed to a 20% improvement in liquidity.

Considering the wide range of factors driving the widespread implementation and certification of quality management systems in textile enterprises in accordance with ISO 9000 requirements, these factors can be classified and examined systematically. They include improving the enterprise's efficiency and productivity, as well as the influence of government authorities on the surrounding business environment.

In this context, an officially approved document—the quality management system certificate—serves as an instrument of influence. In our opinion, obtaining a quality certificate based on ISO standards does not guarantee that a product is of high quality; rather, it provides assurance that the product has been manufactured in accordance with the requirements of the relevant standards.

Conclusions and Recommendations:

Based on the analytical findings and survey results, the following scientific and practical recommendations have been developed to improve management efficiency and enhance the Quality Management System (QMS) in textile enterprises.

The analysis of the current development status of textile enterprises and the factors contributing to improved operational efficiency has led to the following conclusions:

1. Profit and profitability are the key indicators characterizing the management efficiency of textile enterprises. Production processes in garment and knitwear enterprises, which represent one of the leading segments of the textile industry, are largely mechanized. Innovation plays a significant role in increasing enterprise profits and profitability.

2. A survey was conducted among specialists working at textile manufacturing enterprises. The challenges encountered during the implementation of a Quality Management System are important factors affecting its successful implementation. According to the respondents, 24.6% identified the low level of employee qualifications as a major challenge, 31.3% cited insufficient financial resources, 13.1% pointed to organizational problems, 9.6% indicated a lack of time, and 21.4% identified other factors.

3. In response to the question concerning the key benefits of implementing ISO 9001, 20.9% of respondents identified improved product quality, 35.5% highlighted increased customer confidence, 16.87% emphasized enhanced competitiveness, and 23.5% identified cost reduction as the main benefit. The remaining 3.3% considered other factors to be the most significant.

4. To address the main challenges identified during the implementation of the Quality Management System, it is proposed that textile enterprises regularly improve employees' professional qualifications, organize specialized training programmes and workshops on the requirements of the

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ISO 9001 international standard, plan financial resources in stages, and establish a dedicated organizational unit responsible for quality management.

6. To ensure the continuous improvement of the ISO 9001 implementation process in textile enterprises, it is proposed to apply a quality management model based on the PDCA (Plan–Do–Check–Act) cycle.

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