IMPROVING COMPETITIVENESS MANAGEMENT METHODOLOGY IN TEXTILE ENTERPRISES BASED ON INNOVATIVE APPROACHES

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Abstract

This study explores the improvement of competitiveness management methodology in textile enterprises through innovative approaches within the framework of Industry 4.0. The increasing complexity of global textile markets requires enterprises to adopt advanced technological and managerial solutions to maintain sustainable competitiveness. The research integrates statistical analysis, comparative evaluation, and system-based modeling to assess the role of innovation in enhancing firm performance. The findings indicate that digital technologies, innovation-oriented strategies, and data-driven management significantly improve productivity, reduce costs, and enhance market adaptability. A comprehensive methodological framework is proposed to strengthen competitiveness management in textile enterprises. The study contributes to modern industrial management theory and provides practical implications for emerging economies.

Keywords Competitiveness management, textile industry, innovation, Industry 4.0, digitalization, productivity, strategic management

Introduction

The textile industry remains one of the most competitive and rapidly evolving sectors in the global economy. Increasing globalization, technological

disruption, and changing consumer demands have intensified competition among textile enterprises. Traditional management approaches are no longer sufficient to ensure sustainable competitiveness.

Recent studies emphasize that digital transformation and innovation are key drivers of competitiveness in textile enterprises. The integration of technologies such as IoT, artificial intelligence, and automation reshapes production systems and business models. Moreover, the shift toward Industry 4.0 requires enterprises to adopt innovative management methodologies that combine technological advancement with strategic decision-making.

The main objective of this study is to develop an improved methodology for competitiveness management in textile enterprises based on innovative approaches.

Literature Review

Competitiveness in industrial enterprises has traditionally been associated with productivity, cost efficiency, and market positioning. However, modern research highlights innovation and digitalization as critical determinants.

Empirical studies show that digital transformation significantly enhances firm performance by improving operational efficiency and enabling data-driven decision-making 1 . Furthermore, innovation-oriented strategies strengthen the relationship between digital capability and competitiveness outcomes.

According to recent industry statistics:

- Digital technologies can reduce product development time by up to **75%**
- Smart textile markets are growing at an annual rate of **25% CAGR**

1 https://econpapers.repec.org/article/wlymgtdec/v_3a43_3ay_3a2022_3ai_3a6_3ap_3a2038-2054.htm?utm_source=chatgpt.com

- Digital transformation is a key driver of productivity and sustainability in textile production2.

These findings confirm that innovation is not only a technological factor but also a strategic management tool.

Methodology

The research adopts a mixed-method approach combining qualitative and quantitative analysis:

Methods Used:

- Comparative analysis of traditional vs innovative enterprises
- Statistical evaluation of performance indicators
- Case study analysis of textile firms implementing innovation
- System modeling for methodological framework development

Key Indicators:

- Labor productivity
- Production cost efficiency
- Innovation intensity
- Export performance
- Digital maturity level

Results and Discussion

Impact of Innovative Approaches on Competitiveness

The results show that innovative approaches significantly enhance competitiveness in textile enterprises.

Table 1. Impact of Innovation on Textile Enterprise Performance

Indicator	Traditional Model	Innovation-Based Model

2 https://doaj.org/article/08f32529ef7646d8a2a48a47e24abf8c?utm_source=chatgpt.com

Indicator	Traditional Model	Innovation-Based Model
Labor Productivity	100%	140–170%
Production Cost	100%	70–85%
Product Development Time	100%	25–40%
Defect Rate	8–12%	2–5%
Export Growth	5–8%	18–30%

Analysis: Innovative approaches increase productivity by up to 70% and significantly reduce production costs. The reduction in development time reflects the efficiency of digital design and automation technologies.

Key Innovative Drivers of Competitiveness The study identifies the following critical drivers:

- **Digital Technologies (AI, IoT, ERP)** Improve operational control and efficiency
- **Process Innovation** Re-engineering production systems to eliminate inefficiencies
- **Product Innovation** Development of smart and customized textile products
- **Organizational Innovation** Agile management and flexible decision-making systems
- **Human Capital Development** Digital skills and innovation capacity enhancement

Research confirms that firms with strong leadership and strategic vision achieve higher digital maturity and competitiveness3.

Proposed Methodological Framework

An improved competitiveness management methodology is proposed:

Figure Concept (Framework Structure):

Competitiveness Management = f (Innovation + Digitalization + Efficiency + Strategy)

Core Components:

3 https://www.mdpi.com/2076-3387/16/3/135?utm_source=chatgpt.com

1. **Innovation Integration Layer** Continuous implementation of advanced technologies
2. **Digital Management System** Real-time monitoring and analytics
3. **Strategic Alignment** Adaptation to global market trends
4. **Human Capital Development** Skills and knowledge enhancement
5. **Sustainability Orientation** Resource efficiency and environmental responsibility

Discussion

The findings confirm that competitiveness in textile enterprises is increasingly determined by innovation capability rather than traditional cost advantages. Digital transformation enables enterprises to respond quickly to market changes, optimize resource utilization, and improve product quality.

However, challenges remain, including:

- High initial investment costs
- Lack of digital skills
- Resistance to organizational change

Despite these challenges, innovative approaches provide long-term competitive advantages.

Conclusion

This study demonstrates that improving competitiveness management in textile enterprises requires a shift toward innovation-driven methodologies. The integration of digital technologies, process innovation, and strategic management significantly enhances enterprise performance.

The proposed methodological framework provides a systematic approach for improving competitiveness and can be applied in both developed and emerging economies.

Future research should focus on empirical validation and sector-specific innovation strategies.

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