international DESIGN JOURNAL
Print ISSN 2090-9632
Online ISSN 2090-9640

An Analytical Study of the Problems and Challenges of Functional Workwear and a Future Vision for Its Development

Aya Fathy Abdel Hamid Ahmed Romyia
Lecturer, Apparel Design & Technology Department, Faculty of Applied Arts, Helwan University, Aya_fathy@live.com, aya-fathy@a-arts.helwan.edu.eg

Abstract:

This study examines functional workwear in terms of its definition, historical development, and its importance in protecting workers from environmental and health hazards, as well as its role in enhancing the performance of employees across various sectors. The research focuses on the role of design in developing this type of clothing, reviewing the diverse sectors that rely on functional workwear, such as industry, healthcare, and security services. The study explores innovation in functional workwear design by analyzing the latest technologies and modern trends, such as the use of smart fabrics and nanotechnology to improve clothing performance in terms of protection and comfort. It also discusses new standards for developing functional workwear, including applications of sustainability, ergonomics, and modern technology in design and production. Based on these themes, the study analyzes the problems and challenges facing workers' clothing, such as disregarding climatic conditions, weak resistance to environmental factors, high costs, and the unavailability of appropriate sizes, in addition to challenges related to design and sustainability. In conclusion, the research presents a future vision for developing functional workwear, including leveraging modern technology, enhancing safety and comfort standards, supporting environmental sustainability, and achieving a balance between performance and aesthetics, thereby contributing to improving worker efficiency and increasing protection levels in various work environments.

Objectives: Define the concept of functional workwear and explore its historical development to understand its significance across different eras. Analyze the role of functional workwear in protecting workers from environmental and health hazards, and its impact on their safety during work. Study the effect of functional workwear on workers' performance in various sectors, and the relationship between design and different job functions. Review the sectors that rely on functional workwear and analyze their specific requirements to ensure optimal worker performance. Evaluate the role of design in developing functional workwear and the impact of innovation and modern technology on enhancing its efficiency. Identify the problems and challenges facing functional workwear, such as weak resistance to environmental factors, unavailability of appropriate sizes, and high costs. Propose a future vision for developing functional workwear by adopting modern standards, improving the quality of materials used, and promoting environmental sustainability. Provide recommendations for applying the latest technological innovations, such as the use of smart fabrics and nanotechnology, to enhance the functions of workwear and improve workers' comfort and protection

Statement of the Problem: Despite continuous advancements in the design and manufacturing of functional workwear, many sectors still face multiple challenges related to the quality and effectiveness of these garments in meeting workers' needs. The research problem lies in the fact that many work clothes do not achieve the desired balance between protection, comfort, and functionality, which may affect workers' productivity and safety in various work environments. Some functional clothing suffers from a lack of ergonomic standards, weak resistance to environmental and industrial factors, unavailability of suitable sizes for everyone, and high costs, in addition to a lack of innovation in design and weak reliance on modern technologies such as smart fabrics and nanotechnology. There are also challenges related to environmental sustainability, as some garments are made from non-eco-friendly materials, contributing to increased industrial waste.

Significance: Enhancing Worker Safety and Protection: This research highlights the importance of functional workwear in mitigating environmental and health risks faced by workers across various sectors, such as exposure to chemicals, extreme temperatures, or mechanical injuries. Improving Functional Performance and Productivity: The study aids in understanding how the design of functional workwear can impact workers' comfort and efficiency, thereby contributing to a better work environment and increased productivity. Addressing Current Issues in Functional Workwear Design: The research provides an analysis of the problems and challenges facing functional workwear, such as weak resistance to environmental factors, unavailability of appropriate sizes, and high costs, contributing to innovative solutions for these

challenges. Promoting the Use of Technology and Innovation: The study emphasizes the importance of modern technologies, such as smart fabrics and nanotechnology, in enhancing the functions of workwear, paving the way for developing smarter and more comfortable clothing for workers. Achieving Environmental Sustainability: The research underscores the importance of using sustainable and eco-friendly materials in manufacturing functional workwear, contributing to reducing environmental pollution and promoting sustainable production practices. Providing a Future Vision for Developing Functional Workwear: Through analyzing recent developments and future trends, the study offers practical recommendations for developing new standards in functional workwear design that meet workers' needs and align with modern requirements. Assisting Designers and Manufacturers in Improving Garment Quality: The research can serve as an important reference for designers and manufacturers of functional workwear, helping them develop products that are more efficient, comfortable, and safe. Contributing to the Development of Industrial Policies and Standards: The study may assist relevant authorities in establishing new standards and regulations governing the design and production of functional workwear to ensure its quality and enhance worker safety

Methodology: Descriptive analytical method

Paper History:

Paper received January 18, 2024, Accepted March 09, 2025, Published on line May 1, 2025

Keywords:

Functional Workwear, Workers' Clothing, Clothing Design, Occupational Safety, Worker Protection, Smart Fabrics, Nanotechnology in Textiles, Innovation in Functional Clothing

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CITATION Aya Romyia (2025), An Analytical Study of the Problems and Challenges of Functional Workwear and a Future Vision for Its Development, International Design Journal, Vol. 15 No. 3, (May 2025) pp 359-369