



SMART MODULAR GARMENT CURRENT SCENARIO OF NEED OR SOLUTION

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Abstract

As the public aesthetic continues to improve and people's self-awareness about clothing grows, unique and diversified clothing is progressively becoming the norm in the market. Enterprises need to reduce the garment design and manufacturing cycle, maximize the design goal value, optimize design resources, and increase the rate at which they utilize innovative aspects of clothing in order to get greater living space. The modular design of clothing creates directed design standards for the design of different clothing components by streamlining the design process, which significantly increases the flexibility and productivity of clothing production. The current inventive development of the garment market is significantly influenced by the modular mode, spanning from design approach to application procedure. As a result, this study investigates the viability of modular garment design in the marketplace, as well as its potential for growth and future directions for this emerging trend in clothing design.

Keywords: sustainability, modular garment design and market innovation

1. Introduction

The rising complexity of modern technology has made modularity—which provides a very broad set of guidelines for handling complexity—even more crucial. According to the literature, modularity is the process of assembling larger, more complicated products or processes from smaller, independently designed subsystems that yet work as a unit.

Since they have the ability to change out individual modules, modular clothing has drawn more attention as a sustainable design approach. This has the potential to transform consumer behavior and business models by extending the lifespan of clothing. Despite the growing interest in modular clothing, it is still unclear exactly what is meant by "modular garments," and it may not be the same as modular fashion. In actuality, modularity may be viewed from three different angles: **production, organization, and design modularity**. Numerous industry sectors have seen a significant increase in interest in these kinds of modularity. Despite the fact that modularity as a concept and application has been the focus of research for the past ten or so years, a number of authors have highlighted the need for more advancement in this area.

Interactive modular design is an evolving approach in various fields such as software development, product design, and architecture. It involves creating systems or products using interchangeable, self-contained modules that can be combined or reconfigured to meet specific needs. Here's an overview of its current scenario, including its necessity and the solutions it offers:

2. Need for Interactive Modular Design

2.1. Customization and Personalization:

- **Customer Demand:** Consumers increasingly seek products tailored to their specific needs and preferences. Modular design allows for easy customization.
- **Flexibility:** It provides the flexibility to adapt products quickly without the need for a complete re design.

2.2. Efficiency and Speed:

- **Rapid Prototyping and Development:** Modules can be developed and tested independently, speeding up the overall development process.
- **Ease of Maintenance:** Modular systems are easier to maintain and upgrade because individual modules can be replaced or updated without affecting the entire system.

2.3 Cost-Effectiveness:

- **Reduced Production Costs:** By reusing standard modules across different products, companies can reduce production costs.
- **Scalability:** It allows for efficient scaling of products and solutions, both up and down.

2.4. Sustainability:

- **Eco-Friendly:** Modular design can lead to more sustainable products as it often involves less waste and allows for easier recycling and repurposing of modules.

3. Solutions Offered by Interactive Modular Design

3.1 Enhanced User Experience:

- **Interactive Interfaces:** In software and digital products, modular design can create more interactive and user-friendly interfaces.
- **Adaptability:** Users can modify and adapt the product to fit their specific requirements, enhancing overall satisfaction.

3.2 Innovation and Creativity:

- **Encourages Experimentation:** Modular design encourages innovation by allowing designers to experiment with different combinations of modules.
- **Cross-Industry Applications:** It can be applied across various industries, from tech to manufacturing to healthcare, fostering creative solutions.

3.3 Improved Collaboration:

- **Interdisciplinary Teams:** Different teams can work on different modules simultaneously, improving collaboration and efficiency.
- **Standardization:** Use of standard interfaces and protocols facilitates better communication and integration between different modules and teams.

3.4 Future-Proofing:

- **Easier Upgrades:** Systems and products can be easily upgraded by swapping out old modules for new ones.
- **Longevity:** Products have a longer lifecycle as they can evolve and adapt to new technologies and user needs.

4. Real-World Examples on Product Design:

- Examples include modular smartphones like Google's Project Ara or modular furniture from companies like IKEA.
- One recent example of modular fashion is the collaboration between London-based designer Feng Chen Wang and Nike, which is "breaking all conventions of garment construction to reimaging

sportswear staples as highly functional mashups of disparate culture and design elements” (Nike, 2023).

5. Conclusion

Interactive modular design is both a need and a solution in today’s fast-paced, ever-evolving market. It addresses the growing demand for personalized, flexible, and sustainable products while offering solutions that enhance efficiency, innovation, and user experience. As technology advances, the role of modular design is expected to become even more significant, driving future trends in various industries. It is determined that modular clothing design can improve product types, accomplish mass customization as a design aim, and boost product competitiveness. Consequently, the creation of garment module branches and, in the end, the integration of resources to optimize the advantages can optimize the garment market.

6. Spotlights

- The lack of agreement on what constitutes modular fashion, even as interest in and knowledge about it grow.
- Examining what "modularity" means and setting it apart from related notions in order to define modular fashion.
- Developing a theoretical framework for modular fashion, using modular outerwear as an illustration.
- Fostering cooperation and communication between business and academia around modular fashion using the same language
- Outlining a theoretical framework for upcoming studies on modular fashion as a sustainable fashion solution.

References

1. Liu L (2017) Research on the Application of Modular Design Method in Fashion Design [J]. *Industrial Design*, 12: 57-58.
2. Liu D, Gao WQ (2019) Design Practice of Sharing Clothes Retail Space Base on Modularization. *Packaging and Design* (3): 108-109.
3. Wang Q (2013) Research on the Application of Modular Design in Clothing Mass Customization. *Art and Design* 10: 110-112.
4. Chen Y, Li M (2018) Modular Design in Fashion Industry. *Journal of Arts and Humanities* 7(3): 27-32.
5. Wang Q (2018) Design Method of Clothing Cyclic Utilization Based on Modularization. *Wool Textile Journal* 46(6): 83-85.
6. Yoon J, Lee Y (2014) The Expressive Characteristics of Modular System in Contemporary Fashion Design. *Journal of the Korean Society of Costume* 64(7): 156-171.
7. Chen CJ (2019) The Exploration of Geometric Modular System. *Textile and Apparel Design*: 1-3.