1. INTRODUCTION

A process of turning creative ideas into clothing styles that create popular trends in society is the concept of Fashion Industry (Sunjoto, K. G., 2020). According to Thamrin (2019), a study by the Copenhagen Fashion Summit reveals that each year, the Earth generates a total of 92 million tons of textile waste. As reported in 2022 by the National Waste Management Information System (Sistem Informasi Pengelolaan Sampah Nasional or SIPSN) under the Ministry of Environment and Forestry (Kementerian Lingkungan Hidup dan Kehutanan or KLHK), textiles contributed approximately 2.54% to the total national waste based on its type, with an estimated amount of 1.7 thousand tons per year. In this modern era, various approaches have appeared in designing and producing clothing. The fashion industry stands as one of the globe's most substantial economic domains, exerting notable influence on both the environment and society. Despite its prominence, the fashion industry exhibits adverse effects on the environment, particularly through its significant contribution to waste. Over the years, conventional clothing production has been one of the significant contributors to textile waste and has negatively affected the global ecosystem. Generally, the industry currently employs two production approaches: the zero-waste fashion process and conventional patterns.

The main difference between Zero Waste Pattern Cutting and conventional patterns lies in the focus on fabric efficiency. In the Zero-Waste Pattern Cutting method, efforts are made to reduce textile waste by designing garments in such a way that no fabric pieces are discarded, making it more environmentally friendly. According to Rissanen, in 2016, zero-waste fashion is a pattern-making method aimed at producing clothing with less than 15% waste. In this context, Zero Waste Fashion, an innovative approach to the design and production of clothing, has emerged as a potential solution to reduce harmful environmental impacts. This method considers fashion design using efficient fabric disposal strategies (Faza & Nursari, 2021). In Zero Waste Fashion patterns, all pattern

pieces and fabric remnants have a function and can be combined and reused (Faza & Nursari, 2021). Meanwhile, Conventional Fashion Patterns are a commonly used pattern-making method in the fashion industry. The conventional method often employs simple pattern-making techniques, resulting in a lot of fabric waste during garment pattern-making (Hanantiani & Nursari, 2019). Hence, this method generates a significant amount of fabric waste. Prevention is better than cure: It is better to avoid the generation of waste than to manage it (Gertsakis & Lewis, 2003).

Textile waste is categorized into two distinct types: pre-consumer textile waste, which originates during the manufacturing processes of fibers, yarns, fabrics, and clothing, and post-consumer textile waste, which emerges from consumers in the form of discarded clothing and household textiles (Rissanen, 2013). Waste in the industry in the form of textiles is highly complex and global, with 80% of its environmental impact occurring during the production phase (Sandin et al., 2019). The Zero Waste Fashion pattern technique generates a beneficial outcome by minimizing the volume of textile waste during the production process. On the other hand, conventional pattern methods often result in more textile waste because garment patterns are not always designed with efficient fabric usage as a primary priority. This means that many unused fabric scraps become waste, negatively impacting the environment. Less efficient material usage in conventional methods also results in higher consumption of natural resources and increased ecological impact in textile factories. Townsend & Mills (2013) proves this by showing that only 80-85% of fabrics are utilised effectively.

This research aims to demonstrate the potential of zero-waste fashion patterns compared to conventional patterns in the fashion industry. This research centres on identifying environmental impacts, evaluating the efficiency of material use in both methodologies, and investigating the potential of Zero Waste Fashion patterns as a sustainable solution to address the environmental and social

challenges facing the fashion industry. The expected outcome of this research aims to increase the understanding of how the fashion industry can implement more sustainable practices and reduce its adverse impacts.