ABSTRACT

The garment industry plays a strategic role in Indonesia's economy, particularly through its significant contributions to exports, employment, and national income. One of the main challenges is optimizing production layouts to improve efficiency and productivity. Inefficient layouts result in extended material handling distances, increased operational costs, and disrupted workflow. This study aims to optimize factory layouts using a systematic approach to enhance operational efficiency and productivity. The Activity Relationship Chart (ARC) and Computerized Relative Allocation of Facilities Techniques (CRAFT) methods were applied to optimize the production layout in the garment industry, reducing material handling costs and increasing production speed. The study was conducted in the production section of PT. ABCD. Layout improvements using the ARC and CRAFT methods successfully enhanced operational efficiency. ARC analysis identified areas that needed proximity adjustments, such as the pattern, cutting, sewing areas, and material and accessory warehouses, to improve material flow. Iterative applications of the CRAFT algorithm gradually reduced material handling costs from IDR 11,433,998 to IDR 8,205,154, while the total material handling distance decreased from 24,709 meters to 12,572 meters per month, indicating a significant reduction of 12,137 meters.

Keywords: *Layout, Facility, ARC, CRAFT, Material Handling*