ABSTRACT

Laborers, employees, or clerks have the highest percentage of jobs in Indonesia (37.66%). Employees, especially in the information technology and administration sectors, are known to use computers and mouse in their daily work. A mouse is a tool that can facilitate work, especially work using a computer or laptop. However, incorrect use of a mouse can lead to the risk of health problems, namely Carpal Tunnel Syndrome (CTS).

This research focuses on designing Mouse Wrist Pad products using Quality Function Deployment (QFD) and Reverse Engineering (RE) methods to reduce the risk of CTS. The Quality Function Deployment method is used to determine product specifications based on customer needs, while reverse engineering is used to create product designs based on existing products.

Reverse engineering in this study is used in the redesign process of existing products. RE is used because the product concept has a shape that is difficult to design manually. The RE method can facilitate the product design process by performing 3D scanning of existing products so as to produce designs with a high level of accuracy with the concept.

The wrist pad product is designed to reduce the risk of CTS by detecting pressure and movement using the Internet of Things (IoT) system. The designed IoT system consists of 3 main functions, namely pressure detection system, motion detection system, and pressure and motion monitoring system. The analysis results show that this product can detect movements and loads that are considered a risk of CTS with an accuracy rate of 95-100%. So that this product design can be used as a solution for mouse users who are at risk of CTS.

Keyword: *Mouse, Wrist Pad, Internet of Things, Carpal Tunnel Syndrome, Quality Function Deployment, Reverse Engineering*