

Shortening Assembly time by Identifying its Components and their Relationships

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Abstract: The Assemble-to-Order (ATO) strategy has been widely used by different business organizations to quickly deliver customized products that are cost-effective. Certain levels of inventory of manufactured parts are stored until specified orders from the customers are received. The assembly process begins upon the receipt of customer order and ends with the “customized” mix of the pre-assembled parts.

Given that the parts are readily available when the order is received, the main concern in satisfying its customers would be to have a short product assembly time. Thus, minimizing the assembly time becomes critical.

This research aims to shorten the assembly process through: (1) the identification of component of the Total Time required in assembling the product, (2) identifying the relationship among these components and (3) determining the effect of factors, specifically distance between the worker and the visual display, on the components of assembly time and their relationships with one another. In acquiring information from the experiment, this research uses Real Time Setup using an eye-mark tracking system and Post Experiment Investigations through interviews and surveys from its respondents.

The research has found that Reaction Time, Gaze Time, and Handwork Time are the components of the Assembly Time and sequential and overlapping relationships are identified among these components. Distance also has a corresponding effect on the relationship, specifically in overlapping relationship.

Given these findings, this research concludes that assembly time may be shortened by maximizing possible overlaps among these components of the assembly time and this may be done by shortening the distance between the instruction display and the worker.