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Estimating Product Assembly Cost in a Multinational Contract Manufacturing Firm Using an Activity-Based Costing Approach

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Abstract: As a result of globalization, manufacturing industries have undergone many changes in the recent past. Increasing competition is forcing firms to provide products to customers at the least possible costs and in a timely fashion. To be in close proximity to the customers in different areas, many firms are having multiple facilities at various locations. This will reduce transportation costs, but costs of labor, facility, and energy will vary to a great extent. These costs will also vary based on automation level. To make a decision, such as regarding introducing an assembly line, firms will need to consider the effect on costs as a result of facility location and automation level. For this, an accurate cost estimation tool will have to be in place. Quick and simple cost estimations will be needed by firms to get an overview of costs of the system. Conventional costing methods will provide cost estimations based on production or labor hours. The Activity-Based Costing method will provide costs based on individual activities, and will provide costs based on resource utilization by activities. This research provides a methodology to estimate costs based on the Activity-Based Costing approach. Assembly costs at three different multinational locations for three different automation levels were estimated and sensitivity analysis was performed to analyze the effects of variations in labor and energy costs.

Keywords: Activity-Based Costing, Product Assembly Cost, Cost Estimation, Sensitivity Analysis, Contract Manufacturing, Multinational Manufacturing Strategy, Outsourcing, Automation Level, Resource Utilization, Cost of Idle or Surplus Capacity