A SIMULATION STUDY ON REVERSE LOGISTICS TO IMPROVE STRATEGIC PLANNING IN FOOD MANUFACTURING COMPANY

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ABSTRACT

Reverse logistics is the process involved movement of the product from the final phase and bring to forward point. The intention of the process is to capture the value or achieving the proper disposal. The product will be collected and send back to the distributed centre for sortation and disposition decision making. However, lack of strategic planning in reverse logistic process is one of the problem facing by most of the food manufacturing company. A simulation model is created to find the bottleneck in the process and improve strategic planning in the process by using what-if analysis. As a result this model will be set to increase the process performance by solve the bottleneck in the process.

INTRODUCTION

The lack of strategic planning problem in reuse water bottle process of drinking water company cause there is queue waiting time in the process. This increase the inefficient in the reverse logistics process. In this study, a simulation model which is ARENA software is used to design the reuse process model and the model is built up based on data collected from a company.

OBJECTIVE/S

The current study aims to achieve the follows objectives:

a. To develop a simulation model on reverse logistics operations in a food manufacturing company.

b. To recommend strategies to improve the reverse logistics operations in a food manufacturing company.

METHODS

❖ Data collection methods

-Interview

Interview with the production manager to know the reuse bottle process flow.

-Observation

To observe the real process and record the time of each activity of the process.

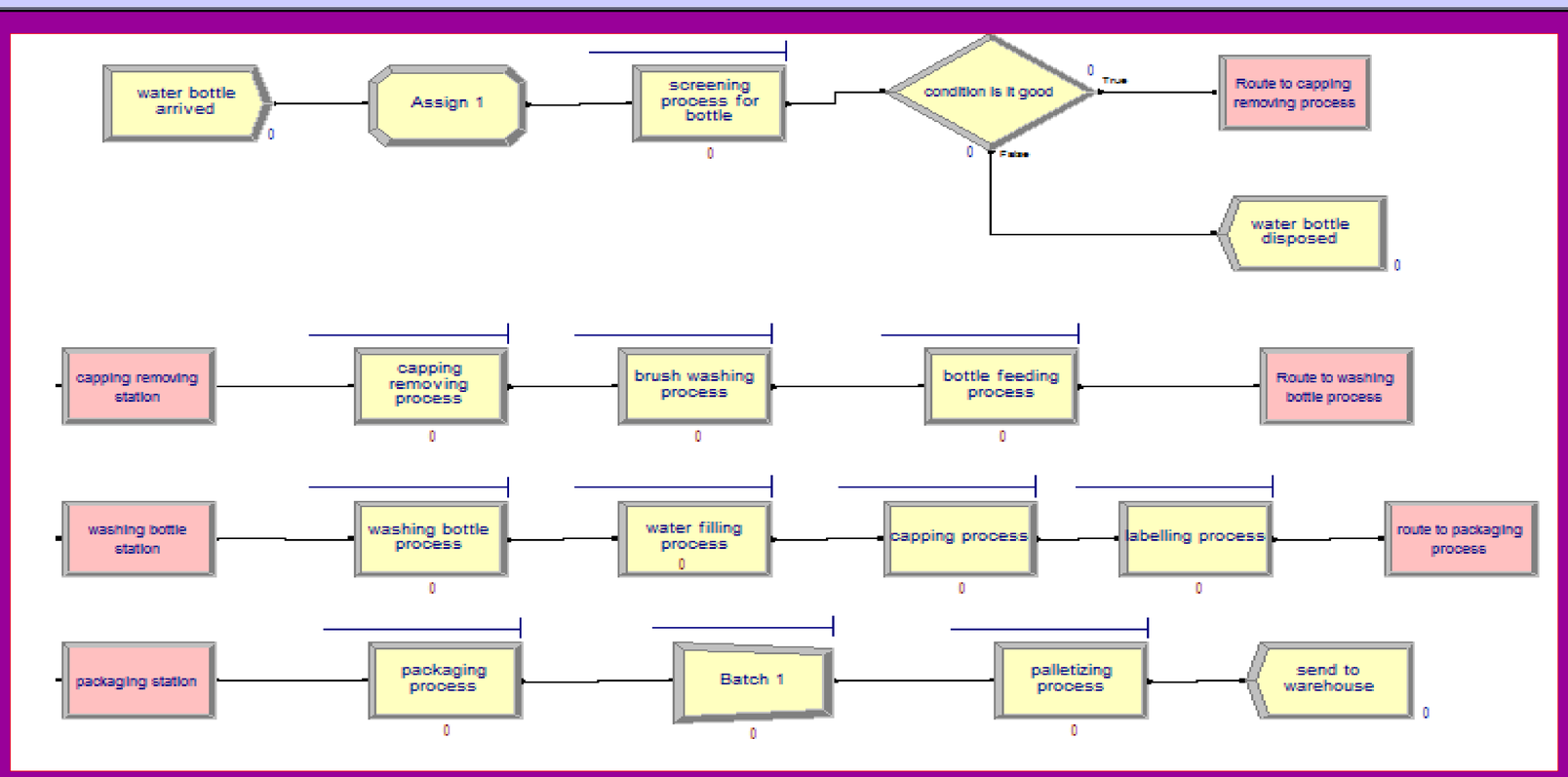
❖ Discrete event simulation

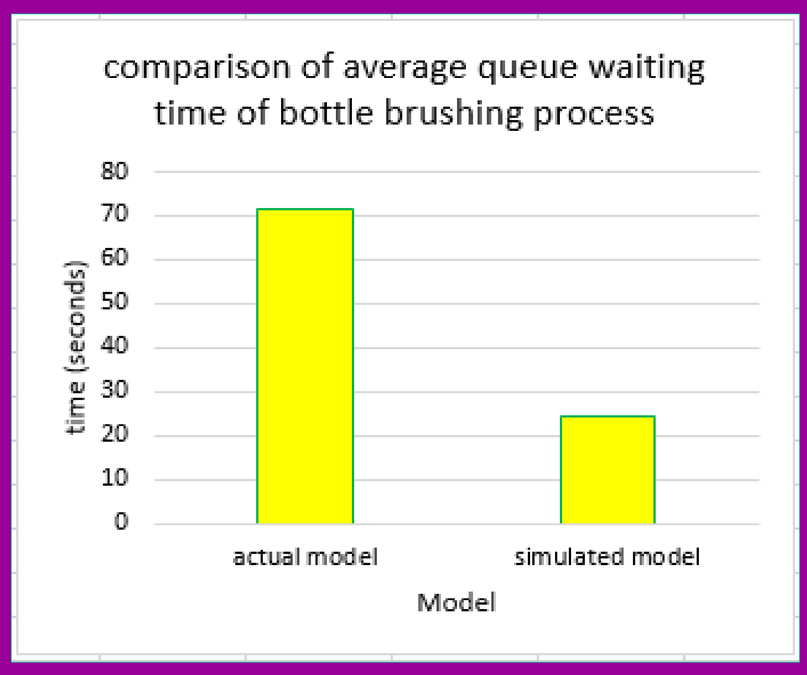
Use to develop the simulation model of the water bottle reuse process.

CONCLUSIONS AND RECOMMENDATION

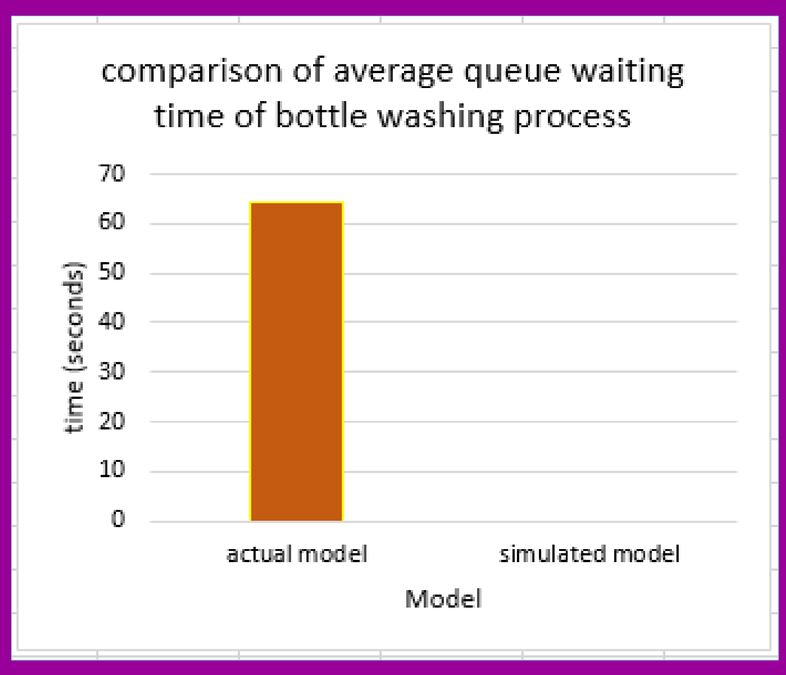
The best solution for this problem is scenario 3, which is combination of scenario 1 and scenario 2. The result show the overall entity cycle time reduced hence increase the efficiency of the process. Strategist and the planner can work together to design a good reverse logistic process flow to increase the operation performance. This is the recommendation suggested to the food manufacturing company.

RESULTS

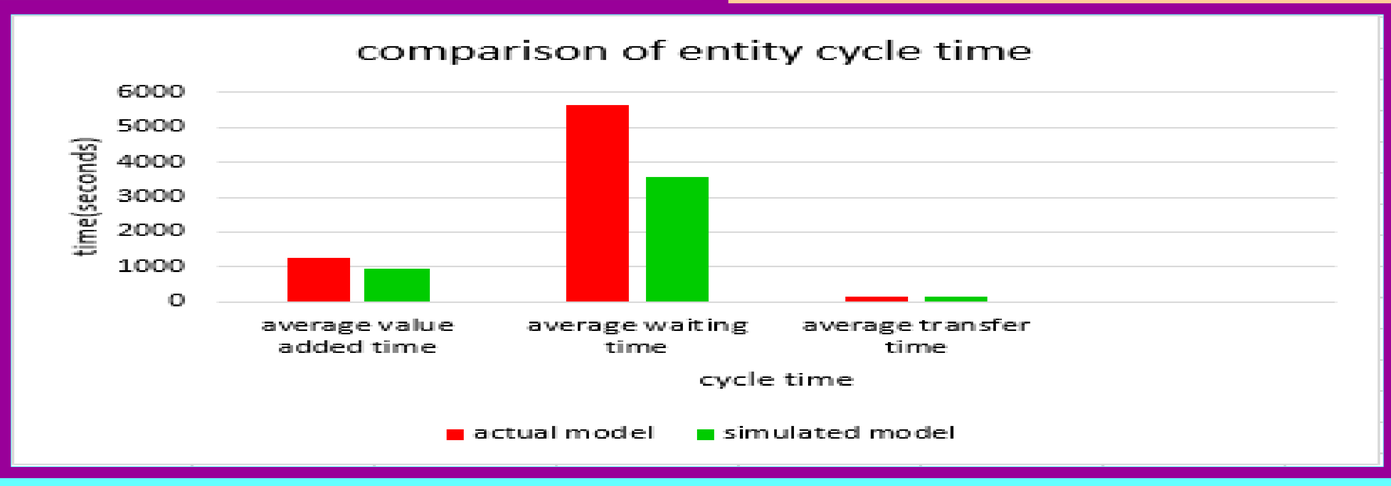




Scenario 1: What-if adding one more machine at water bottle brushing process in simulation model. The average queue waiting time reduce from actual model which is 71.43s to 24.56s for simulated model.



Scenario 2: What if adding one more machine at water bottle washing process in simulation model. The average queue waiting time reduce from actual model which is 64.50s to no queue waiting time in simulated model.



Scenario 3: Combination of scenario 1 and scenario 2 which is adding one more machine at water bottle brushing process and also one more machine at water bottle washing process in simulation model. The result show the cycle time is reduced if adding the machines in both processes.