

## CHAPTER VI

### CONCLUSION AND SUGGESTION

This chapter contains conclusions from the research objectives that have been made and suggestions for future research.

#### 6.1 Conclusion

The research has led to the development three alternative product designs that can be implemented at Yanna Bakery. The three product design alternatives were compared to the four performance criteria: stress, strain, displacement, and safety factor. Based on the four performance criteria, the third alternative is an alternative with a stress value lower than the yield stress value and the highest factor of safety value among the three design alternatives. Then, the first alternative is the one with the smallest displacement value among the three design alternatives. For strain values, all three design alternatives have the same value, which is 0.

The operator must bend when loading and unloading the pan from the trolley based on the operator's posture on the current trolley. In comparison, the proposed trolley operator eliminates the need to bend over while loading the pan onto the trolley and unloading the baking sheet from the trolley because the trolley's base is adjustable. Furthermore, because the current trolley is made of bearings, it has high wheel friction toward the floor, which can cause damage to the floor, lengthen transportation time, and require more energy. On the other hand, the proposed trolley has less wheel friction on the floor due to its rubber design, resulting in no floor damage, a shorter transportation time, and less energy spent. The current trolley's cost is then defined using the market trolley's price range of Rp7,855,628 to Rp51,731,880 and the proposed trolley's price range of Rp550,000 to Rp1,100,000.

The proposed alternative design of the trolley can increase the efficiency and effectiveness of workers at work. The productivity of Yanna Bakery increased from 77.5 kg to 100 kg for one transport. It did not make repetitive motions in transporting the trolley when carrying the pans, indicating an increase in effectiveness. While the increase in efficiency can be seen from the time of the trolley transportation activity, carrying the baking sheet is shorter than before and requires less energy in trolley transportation activities compared to the recent trolley.

## 6.2 Suggestion

The researcher's suggestion for further research is to consider mechanical and electrical aspects by applying industrial automation science so that it can be used in a larger scope.

