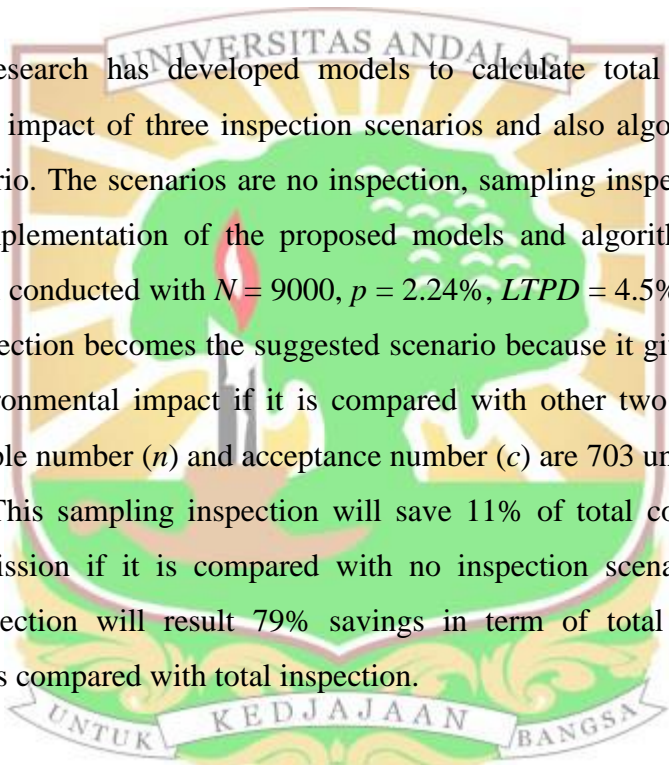# CHAPTER VI
CONCLUSION

This chapter covers the conclusion of this final project and suggestion for the future research.

6.1 Conclusion

This research has developed models to calculate total cost and total environmental impact of three inspection scenarios and also algorithm to obtain the best scenario. The scenarios are no inspection, sampling inspection, and total inspection. Implementation of the proposed models and algorithm into a case study has been conducted with $N = 9000$, $p = 2.24\%$, $LTPD = 4.5\%$, and $\beta = 10\%$. Sampling inspection becomes the suggested scenario because it gives lowest total cost and environmental impact if it is compared with other two scenarios. The proposed sample number (n) and acceptance number (c) are 703 units and 24 units respectively. This sampling inspection will save 11% of total cost and 16% of total CO_2 emission if it is compared with no inspection scenario. Moreover, sampling inspection will result 79% savings in term of total cost and CO_2 emission if it is compared with total inspection.

Furthermore, to see the effect of changes in defect proportion p and lot size N, sensitivity analysis has been conducted. When p is modified, the models suggest to implement no inspection scenario when $0\% \leq p \leq 1.75\%$; However, when $1.75\% < p \leq 2.75\%$, the sampling inspection gives the lowest total cost and environmental impact. No inspection is suggested again when $2.75\% < p < 6\%$. The $AOQL$ of the proposed sampling inspection is 2.41% and it happens when p equal to 2.73%. When N is modified, no inspection is suggested to be used when $0 \leq N < 6500$. Nevertheless, sampling inspection is suggested to be used when $N \geq 6500$.

6.2   Suggestion

Future research may construct model that considers other quality performance such as acceptable quality limit (*AQL*) or integrating some quality performances into a single mathematical model. Moreover, this model is only for product flow after production, but it may be possible if the flow is from production activities until the product is received by consumer.