CHAPTER 6
CONCLUSION

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It can be conclude that both objectives of this project were achieved. From the results it shown that three-dimensional computational fluids dynamics simulation tools was able to analyse the temperature and air flow distribution inside solar dryer greenhouse. The average percentage difference between the measured and simulation data is within 5.5%. For inside and outside air temperature difference, the maximum difference between the simulation and measured data is within 1.5^{o}C. The new design of the solar dryer greenhouse was found to be more efficient compared to the current design. From the result, the air temperature inside the proposed solar dryer greenhouse was increased by up to 28.4% and the air velocity was increased up to 64.7% especially at the chimney area compared to the current design. Another conclusion that can be made from the results is that the internal climate of the solar dryer greenhouse was highly influenced by the environment conditions**.** Higher temperature difference occurs when the intensity of the solar radiation is higher. From the simulation and measured data, when the side opening is closed higher temperature difference between inside and outside air but lower air velocity at the chimney is observed. Higher air velocity but lower temperature difference was observed when both the roof and side openings is opened.

6.1 Future Work.

For the current study, the simulation was done only for steady state condition for selected time in a day. In the future, further study should be carried out to simulate the internal climate of the solar dryer greenhouse continuously for certain period of time especially at day time where the drying process takes place. This can be done by analysing using the transient type of analysis. Continuous simulation for certain period of time can be used to study the effect of weather to the internal climate of the solar dryer more accurately.

Although data from this study can be used as a basis to study on the drying rate for specific crop or product when using the solar dryer greenhouse, to get more accurate prediction or analysis, another aspect that can be explored in the future is to incorporate humidity factor in the study and to simulate how the internal climate of the solar dryer changed when there is crops or product that need to be dry is placed inside it. From here the drying rate of the product when dried using the solar dryer greenhouse can be analyse more accurately.