CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions
DPSO algorithm is developed in this research in order to solve VRPCD. For small instances, DPSO performs better than branch and price algorithm. DPSO provided better solutions than Tabu Search algorithm proposed by Wen et al. (2009) for some large instances. In all, the proposed DPSO performs well on solving VRPCD.

This study also solves a different scenario of VRPCD without supplier-customer pairs. Upper bound and lower bound of each instance are presented and the results indicate that DPSO is a good method to solve the problem.

6.2. Research Contributions
This research provides the following valuable contributions:
1. The proposed DPSO is an effective algorithm for solving VRPCD and can help companies implementing cross-docking to reduce the cost.
2. The information related to cross-docking elaborated in this research encourages those companies who have not been exposed with cross-docking to learn more about cross-docking and consider cross-docking an effective method to tackle their transportation cost problem.

6.3. Future Research Directions
VRPCD is a unique system gaining popularity recently. Many researchers have shown interest in developing this particular VRP variant. This research can be extended by:
1. Allowing the vehicle to perform split pickups or split deliveries.
2. Adding time windows constraints.
3. Allowing direct delivery from pickup nodes to delivery nodes.
Allowing the vehicles to have different capacities.