

Chapter 7 Conclusions and Recommendations

In this chapter, the major contributions of this thesis are summarized. Section 7.1 presents the general conclusions and specific findings of this work. Section 7.2 then addresses the possible extensions of related research work.

7.1 Conclusions

On the previous numerical analyses it has come to the conclusions as follows.

1. General conclusions

- (1) The more recycle fees RMF imposes, the less money BLS can earn. So RMF should not impose too heavy recycle fees on IT products.
- (2) The more money RMF subsidizes, the more money RLS can earn and the higher optimal return ratio is. Therefore, RMF should subsidy more money to promote achieving the higher optimal return ratio and a better performance in the RLS.
- (3) RMF should subsidize enough money, and then RLS could earn profits and be ready to recycle useless products.
- (4) The more money RMF subsidizes, the higher the optimal return ratio is and the less money ILS will lose to achieve the highest or higher return ratio. In spite of the proposal mentioned above, it should be still a rational upper limit of the subsidy.
- (5) The more money RMF can subsidize, the better performance of ILS can achieve under governmental involvement.
- (6) The higher charge is, the higher the optimal return ratio and the highest return ratio are, and the more money RLS can earn but BLS under outsourcing.

2. Specific findings

- (1) There is the trade-off between BLS and RLS.
- (2) There is the optimal weight in each condition and the optimal return ratio in each phase to earn the most money in the ILS.
- (3) When it puts more weight on RLS, the optimal return ratio will be higher, and the net profit in RLS will be also more. It cannot be emphasized too strongly that ILS could earn more money in the case of integrating.
- (4) The return ratio only influences RLS but BLS, which is based on the optimal weight.
- (5) The higher charge is, the less money ILS can earn and the more money ILS will lose to achieve the highest return ratio under outsourcing.
- (6) There is a divergence between views of environment and business under outsourcing.
- (7) Based on the current condition ($RF=39$), the ILS will lose less money to achieve the highest return ratio and also earn more money when RMF involves in the system.
- (8) According to the results of the scenario analyses, the current policy, governmental involvement, is better for the ILS to achieve the maximum net profit.

All of this amounts to saying that the ILM is a considerably practical model to assist executives to manage the integrated logistics system in IT industry. It may be worth suggesting, in passing, that the government involvement is a better policy when the subsidy is enough to achieve a better system performance. On the other hand, it also proposes that private logistic chains should be integrated each other to gain the maximum profit.

7.2 Recommendations for Further Researches

Because the study time is limitary, the scope of this research is determined at the beginning. To put it another way, there are still many subjects, which are worth to study for follow-up researchers. In addition to these, it will also portray the ideas occurring in working to deal with the integrated logistics operational problems of IT industry as follows.

1. A close look at the forms of reuse will reveal there is only one form considered in this study. That is to say the flows of other forms: reuse, repair, and remanufacturing, could be studied further from a reverse logistic viewpoint. Follow-up researchers could probe into the influence of other forms on business logistics.
2. The ILM is developed for IT industry in this thesis, nevertheless, the follow-up researchers might still follow the concept of integrating logistics to study other industries.
3. Although the ILS is great and complicated, there are still some flecks could be improved. The raw material suppliers and secondary material market are over simplified in the ILS; follow-up researchers could also research for detail.
4. In this study, it draws more attention to the result of integrating logistics, so the ILM might be not so impeccable. In order to close to the real world, followed studies could assume that demands are stochastic processes and the lead-times are stochastic variables to study further.
5. Notwithstanding the state variables of cost, set in the case study, are referred to the real information from Internet or reports, it might be not so sensitively to respond the real condition. It is just an application with linear cost structure, as mentioned above. Attempt to extend the

application into the idea of nonlinearity; the further study could study the results with nonlinear cost functions.

6. Since IT products are definitely composed of many components and many components also derive from them, peripherally it is not reasonable to consider one item of products in the proposed model. Therefore, follow-up researchers could formulate an advanced model to deal with multi-items simultaneously.
7. Based on the conclusions, as the section mentioned above, there is evidence to suggest that there is a considerable extent practicality in the ILM. So follow-up researchers could set a database for managements to operate the ILS more conveniently.
8. In view of logistics, the model proposed in this thesis only considers the physical flows and cash flows. Therefore, followed studies could add other flows, like information flows, into the ILM.
9. To balance the importance between BLS and RLS, the further study could add the factor of risks into the ILM.
10. Attempt to extend the ILM into the idea of sustainability, there are three phases: financial, environmental, and social, could be considered in it. However, the ILM proposed in this study only considers the financial phase. So further researches could study this subject from other phases and integrate these three phases into a sustainable model.