

# **Chapter 8**

## **Summary and Suggestion**

This chapter are divided into 2 parts: summary, which is the conclusion of the appropriate facilities that should be located and the budget of facility incrementing in case there are about 2,000 incoming calls per hour, and suggestion for enhancing the model as well as identifying the problem.

### **8.1 Summary**

The result of this thesis is to determine the appropriate facilities, number of telephone lines, IVR ports, and agents, of the call center system that conforming to the bank benchmark and management policy. Bank benchmark and management policy in this case is: the success call percentage should be exceeded 85% of total incoming call, the average waiting time before receiving the service from IVR should less than 10 seconds, and the average waiting time before receiving the service from agents should less than 10 seconds.

The main tool used for determining the suitable facilities is simulation model, developed by simulation package called Arena 3.0. After interview with the bank officers, who is responsible for managing PABX machine, we found that the incoming calls will not exceed 2,000 calls per hour, if the bank doesn't provide the new services as well additional promotions. After running the model, we found that the number of telephone lines, IVR ports, and agents, which conform to the bank benchmarks and management policy, are: 100, 90, and 28, respectively. When we run the model with these numbers of facility, the success call percentage equals to 88.3%, the average waiting time before receiving the service from IVR equals to 0.07 seconds, and the average waiting time before receiving the service from agent equals to 7.9 seconds.

However, the number of agent for the regular workday should less than that of previously mentioned because the result of previous paragraph is calculated from the maximum agent service time distribution so it is useful to calculate the number of agent from the agent service time distribution, which can represent the agent service time for most days. After running the model by using this service time distribution, we found that the number of agent for regular workday should equal to 23. The average waiting time before receiving the service from agent in case there are 23 agents in the system is 9.1 seconds.

The rough budget of incrementing telephone lines from 70 lines to 100 lines is equal to 280,000 Bahts (Hardware = 100,000 Bahts, Telephone number authorization = 6,000 Bahts per line). Moreover, the payment the telephone fee for special number (4 digits) is equal to 1,750 Bahts per month per number or 52,500 Bahts per month.

The rough budget of incrementing IVR ports from 60 ports to 90 ports is equal to 2,300,000 Bahts, already include hardware and software.

The rough budget of incrementing the agent from 20 to 28 is equal to 72,000 Bahts per month (calculated by using only salary because the bank decides to outsource the agent). The total budget for supporting 2,000 incoming calls per hour is 2,580,000 Bahts (fixed) and 124,500 Bahts per month.

## **8.2 Suggestion**

This topic describes the ways to enhance this model. The major problems occur at the input gathering process. First, because of the bank's computer telephony integration (CTI) system, the agent can make only one wrap up heading per one incoming call even the customers may ask the service more than one so the data of wrap up heading in the database may be the service time that generated more than one service. Because of this reason, the agent service time cannot be classified by service type, but it is classified as one group instead. Thus, to classify the agent service time distribution by service type, which can reduce the variation, it is necessary to develop the CTI to accept making more than one wrap up heading per incoming calls.

Another problem of input gathering process is in the IVR part. It is necessary to have the authorization to obtain the sensitive data, customer ID, to track the customer behavior. Because for classifying the IVR service by type of service, it is essential to track each customer what are the services that they ask. Moreover, in the bank database, it is more useful to collect the service time of each service instead of the time that transaction occur. Thus, because of these limitations, the IVR service time is classified as one group (the time that customers finish the call less the time that customers start the call).

The period of data gathering is only one month (January 2001) because the bank decide to upgrade the IVR system in the following month so the data of the following months are not available in the period that the author perform and conclude the thesis. Thus, It will be more precise to gather more than data because the input may vary depend on month.