Chapter 1
Introduction

1.1 Background

At the moment, the call center takes a vital role in banking business. Traditional, the call center is the telephone customer service. Even providing the service through telephone is still the main function of call center, but today, the call center representatives, called agents, also perform other activities, such as outbound telemarketing, switchboard, and opening accounts over telephone, that cause the profit to the bank.

As mentioned above, the customer service over telephone is the main function of call center, thus, the bank has to receive and handing a large amount of telephone calls that are made to the bank for various reasons. Most customers tend to call for balance inquiries or other information about the status of check and deposits.

By using the interactive voice response (IVR) systems, these calls, such as call for balance inquiries, can be handled without human. The IVR causes the customers become more comfortable for calling to the bank; thus, the amount and frequency of using call service tend to increase significantly. The considerable increase in the call volume also cause the more calls going to the agents.

1.2 Statement of Problem

Because the call volumes tend to increase (nowadays, in this case, there are nearly 400,000 calls per month), as a result, the call center is challenged with offering the appropriate number of staff to handle the increasing call volumes as well as giving the suitable number of IVR ports and lines.

For this interested system, there are 2 types of call: external call from the customers and internal call from the bank employees. The maximum external calls are equal to 60 lines while the maximum internal calls are equal to 10 lines. Firstly, both types of call will be managed by IVR and will be transferred to agents if they require.

The IVR has only 60 ports, and one port can mange one call that mean if there are more than 60 calls, the queue will occur. The IVR can serve 6 major types of service: accounting service and credit card, notification and suspension a lost card, general information and branch phone number, incentive or new services, online service manual, and contact customer service representatives (agents).

The agent is a part that causes the customer impression to the bank because they are typically the first people and sometime only people that customer interacts with. Thus, the sufficient amount of staff is a factor to ensure that customers do not wait for unusual amount of time, which is considered as poor service. The agents respond 15 types of services, listed as follows:

1. Accounting service and credit card
2. Notification and suspension a lost card
3. Other Credit Card information
4. Electronic Banking
5. E-Service
6. Bank Products (in case enable to finish the line by himself)
7. Bank Products (in case transfer line to others)
8. General Information
9. Line transfer
10. Request/Suggest/
11. System Error
12. Work following
13. Special Project
14. Transfer line to IVR
15. System Testing

In sum, establishing the simulation model for determining the level of staff, telephone line, IVR ports needed for the call center at that time and on a permanent basis is an essential activity to make the bank survival and growth in the banking business.

1.3 Thesis Objective and Scope

The objective of this thesis is to determine the appropriate facilities of call center system that conforming to the bank benchmark and management policy as well as to identify the budget for adjusting these facilities.

The interested system is illustrated in figure 1-1.

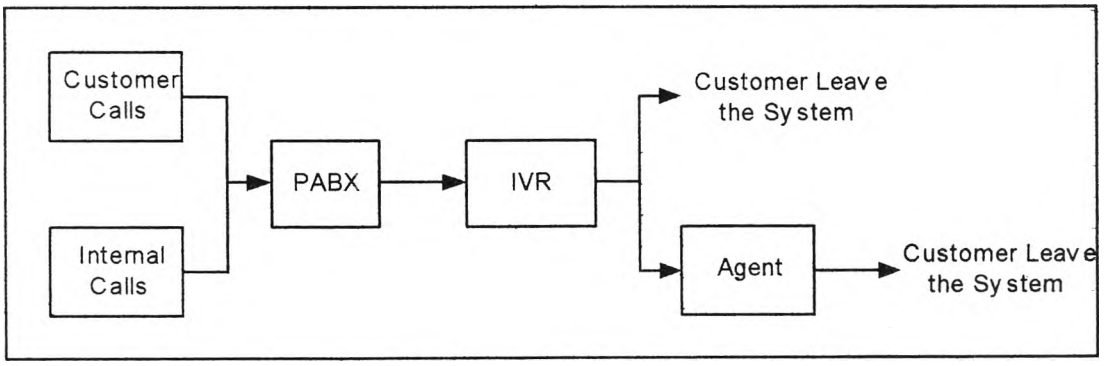

Figure 1-1: The scope of simulation model

1.4 Methodology

The steps of analyzing the call center include: interviews, profile development, data gathering, model development, and reporting.

1.4.1 Literature Survey

Educating the theories, such as queuing system, probability and statistic, involved the thesis and used for accomplishing the thesis objective as well as finding the articles that relate to the thesis.

1.4.2 Existing system information collection

To accurately define the objective and boundaries, the existing system information is collected by documentations, and interview.

1.4.3 System Definition

This step is to determine what component should be included in the model for ensuring that the model includes only the components of the system relevant to the thesis objective.

1.4.4 Model Formulation

Developing a preliminary model by defining the components, variables, and interactions that constitute the system.

1.4.5 Experimental Design

Selecting the factors to be varied, and the levels of factors those factors to be investigated as well as choosing the appropriate sample size and starting condition.

1.4.6 Data Gathering

Data in this case relates to the inputs for the model such as the theoretical distribution's mean arrival rate of customer call volumes per day. Some parameters may be applied as input for comparing of the systems as well as finding the conditions that conform to bank policies.

1.4.7 Model Translation

Formulating the model in a suitable simulation language. The simulation language used in this case is SIMAN, one of today's most advanced and widely used simulation languages. And, the software package used in the case is Arena (educational version)

1.4.8 Verification and Validation

The objective of verification is to show that the computer program perform as expected and intended. While, the objective of validation is to show that the model behaviors can represents the behaviors of the real system being simulated. One way to accomplish this step is to compare the information generated from the simulation model with the information that actually occurred.

1.4.9 Running the Model

Once the model is complete, the information, supplied from various sources such as call center manager, and agents, is used to run the model.

1.4.10 Analyze the results

Providing the choices of solution depend on the management policies.

1.4.11 Conclusion

Concluding all information that obtains from all previous steps.

1.4.12 Written the thesis

The thesis will be written and sent to the committees before oral examination.

1.4.13 Oral Examination

The thesis will be sent to the committees for examining whether or not the results achieve the objective and conform to the thesis proposal.

1.4.14 Correction and Send the Thesis

The thesis will be corrected and added some information by the committees' suggestions in the oral examination step. In the end, the thesis will be sent to the university.

1.5 Expected Results

The expected result of this thesis is to develop the model for call center system in a case study's bank. The model has the parameters that can be adjusted for system comparison. As a result, this model can be used as a tool to help the managers making the decision. Another result is to offer the number of ports of IVR, and level of staff that conform to the management policies.

1.6 Thesis Schedule

Thesis schedule is illustrated in figure 1-2.

Step	Time period							
	2000						2001	
	Oct		Nov.		Dec.		Jan.	
1. Literature Survey								
2. Existing system information collection								
3. System Definition								
4. Model Formulation								
5. Experimental Design								
6. Data Gathering								
7. Model Translation								
8. Validation and Validation								
9. Running the Model								
10. Analyze the Results								
11. Conclusion								
12. Written and submit the thesis (draft)								
13. Oral Examination								
14. Correction and submit the Thesis								

Figure 1-2: Steps and Schedule