

CHAPTER 7

TESTING

7.1 Test Objective

The focus of this research is to perform a thorough evaluation on user's participation in IBMS according to the strategies developed by the users and to evaluate whether a web based simulation system could be used for education and training development purposes.

7.2 Test Scope

The test was set up in accordance to the requirements detailed in requirements stage. The testing was implemented on Windows based system. The test was done in four environments. The four environments are:

1. Configuration Test for Year 1997 – Quarter 1
2. Configuration Test for Year 1997 – Quarter 2
3. Configuration Test for Year 1997 – Quarter 3
4. Configuration Test for Year 1997 – Quarter 4

The different configurations were determined by different economic indicators and interest rate for the particular configuration. Different economic indicators and interest rates are provided in Chapter 4.

7.3 Test Data

The test data were obtained from the Central Bank of Malaysia. These data sets are available for the bank executive to test and verify in detail the effectiveness of the system. The test data includes Instructor data set and Participants data set.

7.3.1 Instructor Data Set

The Instructor data set consist of:

1. Year 1997 Growth Rate which include GDP growth and CPI
2. Interest Rate for Deposit for the year 1997 which includes:
 1. Checking Deposit
 2. Savings Deposit
 3. Time Deposit
3. Interest Rate for Loan for the year 1997 which includes:
 1. Housing Loan
 2. Personal Loan
 3. Syndicated Loan
 4. Bridging Loan
4. Instructor Game Setup Information
5. Reserve Requirements
6. Average Tax Rate

7.3.2 Participant Data Set

The participant data set consist of:

1. Participant Game Setup Information
2. Deposit Configuration
3. Loan Configuration
4. Expenses
5. Securities Sales and Purchase

7.4 Test Implementation and Results

The test implementation phase mainly involves configuring Intelligent Bank Management Simulation system and conducting a test run with the target users. A description of the standard configuration was obtained from Central Banks' Annual Report and was used as a rule set by the Instructor in order to guide the participants.

7.4.1 Instructor's Configuration

The instructor will need to login to the system and setup a game as shown in Table 7.1

Table 7.1
Game Setup Information

CONFIGURATION	DETAILS
Instructor Name	Arasan
Game Title	Test 1
Number of Banks	1
Bank Name	ValNet Bank
Bank Chairman	Kensington
Economic Year	1997

Since the Instructor has chosen the economic year of 1997, the standard data that have been given to the Instructor are as in Table 7.2 until 7.4 below:

Table 7.2
Year 1997 Growth Rate (Malaysian Central Bank Report)

Year 1997	GDP Annual Growth (%)	GDP(RM billion)	CPI(Annual Change)
Quarter 1	7.6	46.0	4.0
Quarter 2	8.4	48.0	5.1
Quarter 3	7.2	50.8	5.2
Quarter 4	6.1	50.7	5.2

Table 7.3
Details of Deposit and Interest Rate for Year 1997
(Malaysian Central Bank Report)

Quarter(1997)	Total Deposit (RM mil)	Interest Rate for Checking Deposit	Interest Rate for Saving Deposit	Interest Rate for Time Deposit
Quarter 1	243, 811	8.81	3.90	4.83
Quarter 2		9.21	4.10	4.40
Quarter 3		9.27	4.19	4.45
Quarter 4		9.33	4.23	4.50

Table 7.4
Details of Loan and Interest Rate for Year 1997
(Malaysian Central Bank Report)

Quarter(1997)	Total Loan (RM mil)	Interest Rate for Syndicated Loan	Interest Rate for Housing Loan	Interest Rate for Personal Loan	Interest Rate for Bridging Loan
Quarter 1	200, 004	9.80	5.8	7.80	10.15
Quarter 2		9.95	6.45	8.90	10.30
Quarter 3		9.90	6.30	8.85	8.40
Quarter 4		9.60	6.00	8.70	8.20

Next, the Instructor will specify the rates according to the tables shown above in the regulatory environment as shown in Table 7.5

Table 7.3
Details of Deposit and Interest Rate for Year 1997
(Malaysian Central Bank Report)

Quarter(1997)	Total Deposit (RM mil)	Interest Rate for Checking Deposit	Interest Rate for Saving Deposit	Interest Rate for Time Deposit
Quarter 1	243, 811	8.81	3.90	4.83
Quarter 2		9.21	4.10	4.40
Quarter 3		9.27	4.19	4.45
Quarter 4		9.33	4.23	4.50

Table 7.4
Details of Loan and Interest Rate for Year 1997
(Malaysian Central Bank Report)

Quarter(1997)	Total Loan (RM mil)	Interest Rate for Syndicated Loan	Interest Rate for Housing Loan	Interest Rate for Personal Loan	Interest Rate for Bridging Loan
Quarter 1	200, 004	9.80	5.8	7.80	10.15
Quarter 2		9.95	6.45	8.90	10.30
Quarter 3		9.90	6.30	8.85	8.40
Quarter 4		9.60	6.00	8.70	8.20

Next, the Instructor will specify the rates according to the tables shown above in the regulatory environment as shown in Table 7.5

Table 7.5
Regulatory Environment for Game Test 1

Maximum Loan Rates	Percentage (%)
Syndicated Loan	20.0
Housing Loan	12.0
Bridging Loan	20.0
Personal Loan	25.0
Maximum Deposit Rates	Percentage (%)
Checking Deposit	20.0
Savings Deposit	15.0
Time Deposit	15.0
Maximum Reserve Requirements	Percentage (%)
Checking Deposit	8.0
Savings Deposit	3.0
Time Deposit	5.0
Maximum Capital Notes (% Equity)	50%
Average Tax Rate	2.47

7.4.2 Participant's Configuration

Next, the participant will log in to the system and will establish the details of the bank. The game will consist of six players per groups as shown in Table 7.6.

Table 7.6
Bank Establishment Details for Game Test 1

Designation	Details
Bank Chairman	Kensington
Bank Objective and Mission	Number one bank in Malaysia
Bank Executives	1. Khairul
	2. Bala
	3. David Lee
	4. Kumara
	5. Kamarul

The participants entered the relevant data for interest rate for Loan as shown in Table 7.7. The interest rates are adjusted according to the previous quarter results.

Table 7.7
Interest Rate Configuration for Loan (Game: Test 1)

Loan Type	Quarter 0	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Syndicated	9.80	9.75	9.85	9.80	9.50
Housing	5.80	5.70	6.40	6.20	6.00
Bridging	7.80	7.60	8.70	8.85	8.00
Personal	10.15	10.10	10.15	8.70	8.10

Table 7.8 shows the loan amount that has been disbursed for each quarter in accordance to the interest rate.

Table 7.8
Loan Amount for Quarter 0 to Quarter 4 (Game: Test 1)

Loan Type	Quarter 0 (RM mil)	Quarter 1 (RM mil)	Quarter 2 (RM mil)	Quarter 3 (RM mil)	Quarter 4 (RM mil)
Syndicated	6350.40	30845.25	23587.20	31752.00	38102.00
Housing	1411.20	6854.50	5241.60	7056.00	8467.00
Bridging	1835.00	8910.85	6814.00	9172.80	11007.00
Personal	4515.80	21934.40	16773.00	22579.20	27095.00

Table 7.9 indicates the interest rate that has been configured by the participants for the deposit. The interest rates were configured by referring to the previous quarter results.

Table 7.9
Interest Rate Configuration for Deposit (Game: Test 1)

Deposit Type	Quarter 0	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Checking Deposit	8.81	8.80	9.15	9.20	9.30
Savings Deposit	3.90	3.85	4.00	4.10	4.20
Time Deposit	4.83	4.80	4.35	4.40	4.45

Table 7.10 shows the total amount of deposit being disbursed in accordance to the interest rate.

Table 7.10
Total Deposit for Quarter 0 to Quarter 4 (Game: Test 1)

Deposit Type	Quarter 0 (RM mil)	Quarter 1 (RM mil)	Quarter 2 (RM mil)	Quarter 3 (RM mil)	Quarter 4 (RM mil)
Checking Deposit	5485.75	10971.50	10971.50	10971.50	5485.75
Savings Deposit	8228.60	8228.60	5485.50	8228.60	8228.60
Time Deposit	5485.50	8228.60	8228.60	5485.50	5485.50

Table 7.11 shows the total amount of expenses for each quarter.

Table 7.11
Total Expenses for Budget Categories (Game: Test 1)

Budget Category	Quarter 0 (RM mil)	Quarter 1 (RM mil)	Quarter 2 (RM mil)	Quarter 3 (RM mil)	Quarter 4 (RM mil)
Salaries	45.00	35.00	33.00	34.00	35.00
Advertisement for Deposit	20.00	25.00	27.00	35.00	37.00
Advertisement for Loan	20.00	25.00	27.00	36.00	40.00
Technology	40.00	15.00	18.00	25.00	31.00
Premises (Asset)	25.00	9.00	10.00	10.00	10.00

Table 7.12 indicates the total assets for each quarter.

Table 7.12
Total Assets from Quarter 0 to Quarter 4 (Game: Test 1)

Asset Type	Quarter 0 (RM mil)	Quarter 1 (RM mil)	Quarter 2 (RM mil)	Quarter 3 (RM mil)	Quarter 4 (RM mil)
Cash	1613	7834.00	5990.40	8064.00	9676.80
Loan	14111.90	68545.00	52416.00	70560.00	84671.70
Premises	403.20	1958.00	1497.60	2016.00	2419.20
Securities	4032.00	19584.00	14976.00	20160.00	24191.80

Table 7.13 indicates the total liability and equity from quarter 0 to quarter

4.

Table 7.13
Total Liability and Equity from Quarter 0 to Quarter 4

Type	Quarter 0 (RM mil)	Quarter 1 (RM mil)	Quarter 2 (RM mil)	Quarter 3 (RM mil)	Quarter 4 (RM mil)
Deposit	19199.85	46628.55	71314.15	95999.75	115199.60
Central Borrowing	0	0	0	0	0
Capital Notes	576.00	1399.00	2140.00	2880.00	3456.00
Equity	384.00	933.00	1426.00	1920.00	2304.00
Total	20159.85	48960.55	74880.15	100800	120959.60

Table 7.14 shows the income obtained by the bank for each quarter.

Table 7.14
Income Statement Information (Game: Test 1)

Details	Quarter 0 (RM mil)	Quarter 1 (RM mil)	Quarter 2 (RM mil)	Quarter 3 (RM mil)	Quarter 4 (RM mil)
Interest Income	1305.00	6290.00	4953.00	6325.00	7204.00
Interest Expense	1069.00	1676.00	1580.00	1587.00	1099.00
Net Interest Income	236.00	4614.00	3373.00	4738.00	6105.00
Operating Income	201.00	3571.00	3003.00	3700.00	5009.00
Expenses	150.00	109.00	115.00	140.00	153.00
Total Revenue	287.00	8076.00	6261.00	8298.00	10961
Average Tax	5.00	6.45	6.45	6.45	6.45
Net Income	272.65	7555.10	5857.17	7763.00	10254.00

7.5 Conclusion

This chapter presented the test results for all four quarters. Table 7.1 to Table 7.14 presents the overall result of the testing, which was summarized from the test game. As can be seen from the tables, the results were systematically obtained for each quarter as shown in Table 7.14. The results obtained were according to the configuration that has been done for each quarter. In accordance to the results, the net income increased for every quarter. This shows that the participants played well in accordance to the test environment.

The results were accurate in accordance to the algorithm used to calculate the results in Table 7.14. The test performed well in accordance to year 1997 economic environment.