CHAPTER 9

9.0 References

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CHAPTER 10

10.0 Appendixes

10.1 Appendix A

A.1 Fact finding Techniques Used

Written documents and onsite observations just tell that how the system should operate. They do not include enough details to allow a decision to be made about the merits of system proposal and don't present the user views about the current system. I conducted interviews of the staff as given bellow, which were directly involved with the application.

Questionnaires

1. What are the data you need to collect?
2. Why do you need these data?
3. What are the ways of collecting them?
4. What type of system do you use correctly whether manual or automated system?
5. How do you analyze the collected data?
6. Is there a need to have another system or changing the existing system?
7. If another system is needed, what are the basic requirements of that system?
8. What are the benefits of having that system?
9. What are the draw backs of current system?
10. Can you easily access the data? Give the reasons?
11. Is the data or information you have sufficient or do you need to collect more data?
12. What are the ways of collecting data?
13. What are the requirements that the user needs?
14. What are the requirements that the system needs?

15. What are the technologies that you are planning to use for new system?
16. Is the necessary hardware configuration and software platform is already there?
17. Are you willing to bear the cost of hardware and software needs?
18. Do you need more trained users or will you be able to train existing users?
19. Are you willing to bear the training cost?

Also the regular users of the application were interviewed. Based on their viewpoints, clear system requirements were jolted down.

Analysis of gathered requirements

The main purpose of this activity is to clearly understand the exact requirements of the user/customer. The following basis questions pertaining to the project should be clearly understood by the analyst in order to obtain a good grasp of the problem.

1. What is the problem?
2. Why is it important to solve the problem?
3. What are the possible solutions to the problem?
4. What exactly are the data input to the system and exactly are data output required of the system?
5. What are likely complexities that might arise while solving the problem?

A.2 survey conducting procedures

Survey time : 24 hours per day

Time Period : none

Counts : Detail of the Trip

Count Methodology : Manual

Survey Methodology: Measurements were carried out for one directions of travel by interviewing the vehicle passengers.

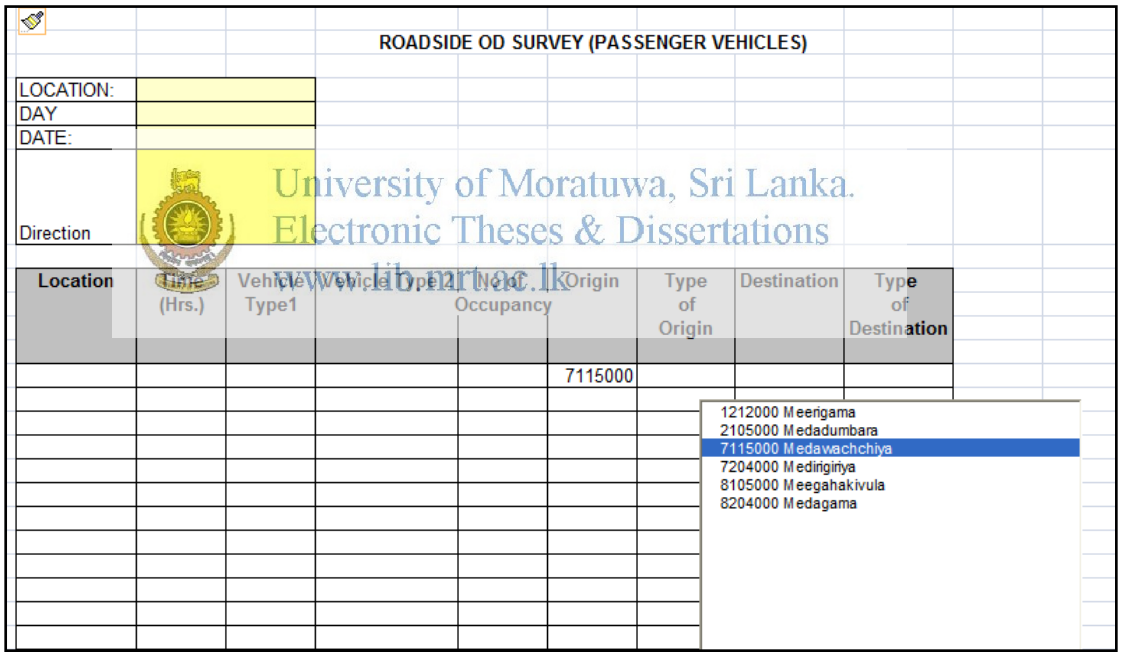

Figure 3: O-D passenger data collection sheet

10.2 Appendix B

Top Level Diagram

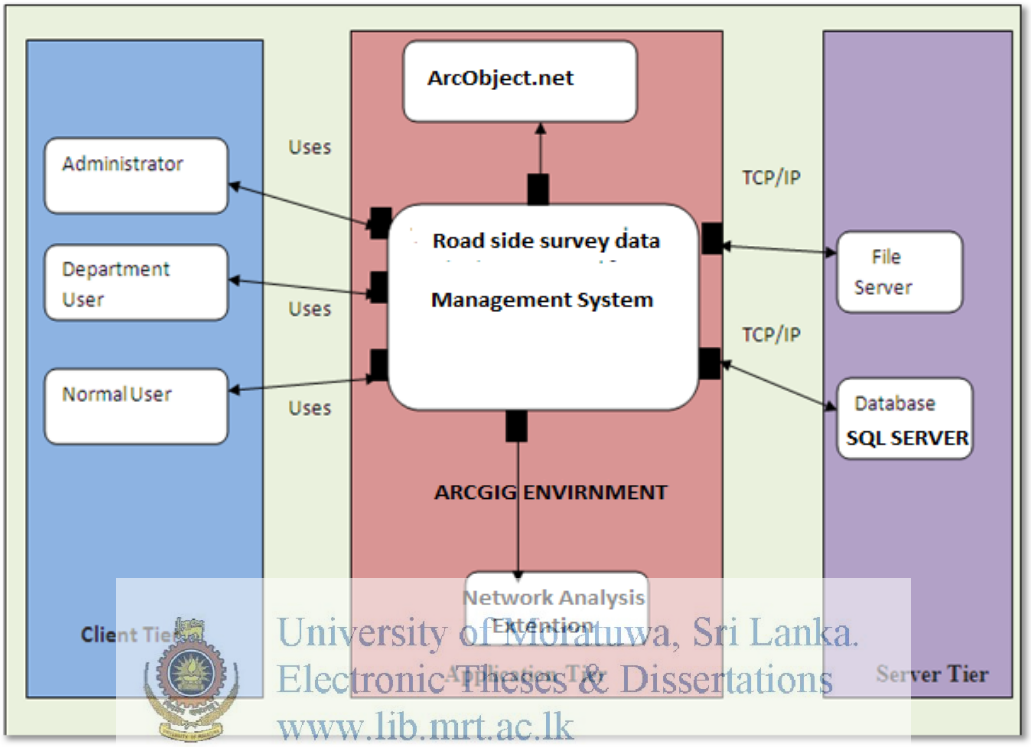

Figure 4: Top Level Diagram

There are three system components. Client tier represent the entire component that are to be interacted with the Administrator, Department users and Normal users. The Application Tier represents the business logic of the backend processes. The Application tier was implemented on the ARCGIS 10.1 environment and it includes the component of dealing with ARCGIS features, estimation and analysis from the data given by the client tier and data requested from the database server. The Server tier includes physical data structure and the file server that includes geo database files and reports.

B.1 Use Case Diagram

Administrator

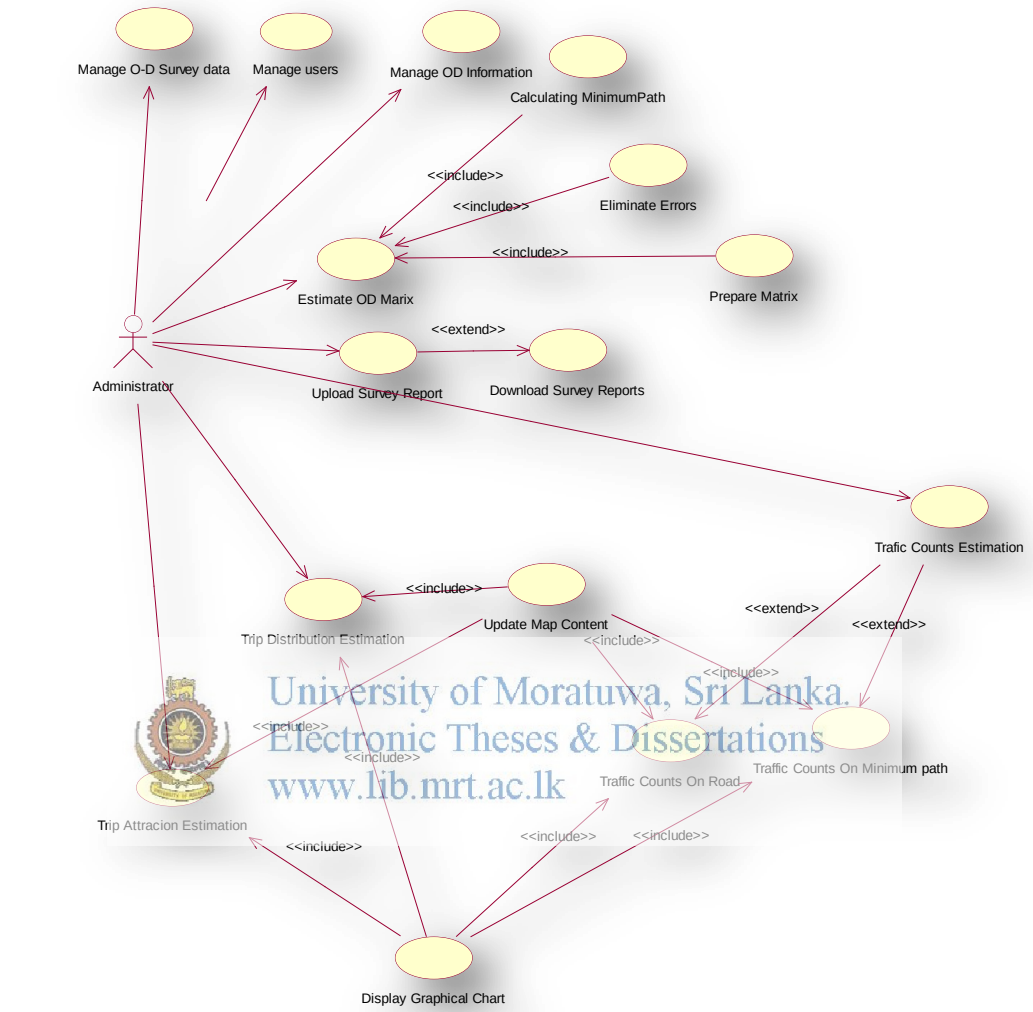

Figure 5: Use Case-Administrator

Department User

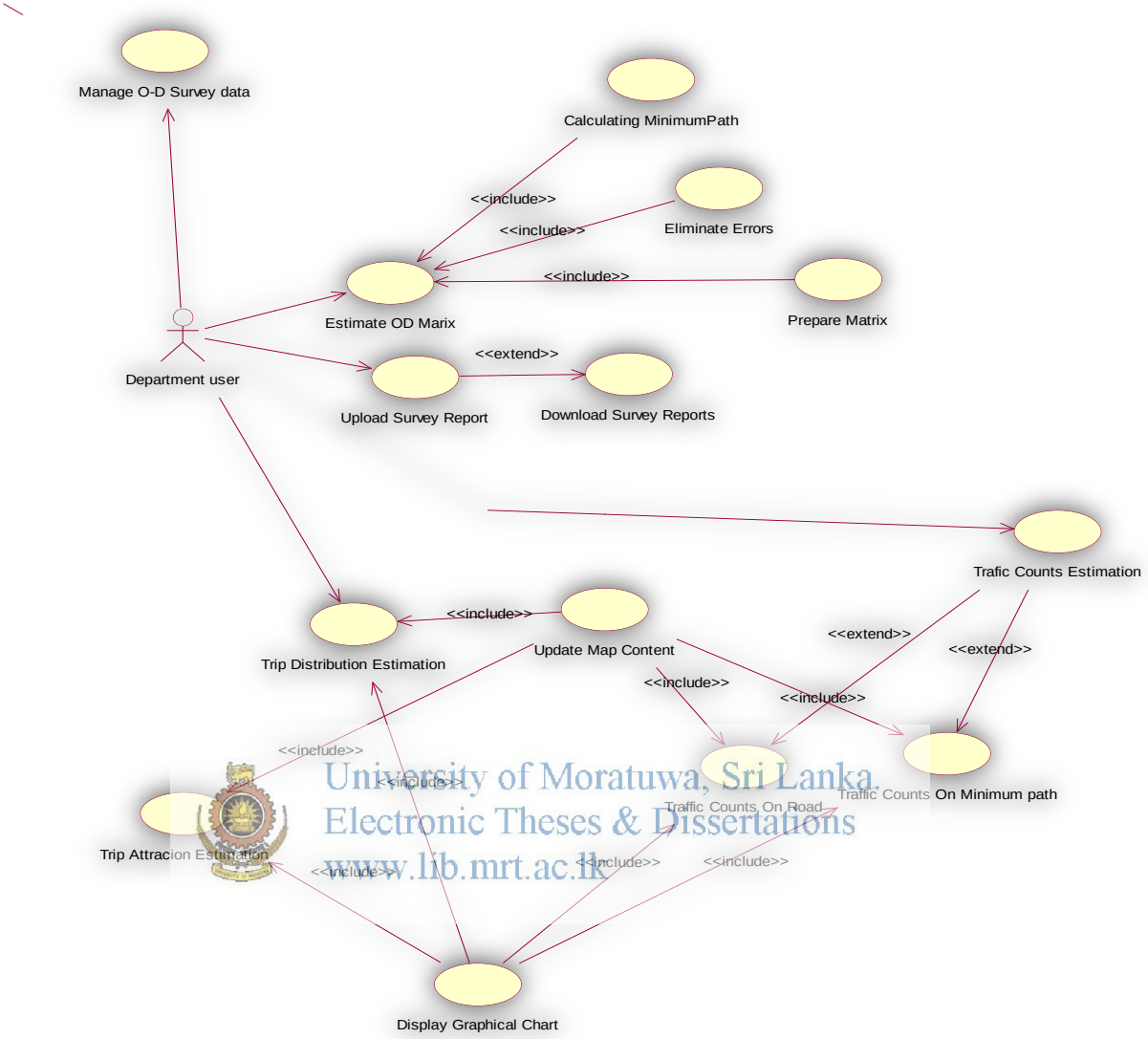

Figure 6: Use Case -Department user

Normal User

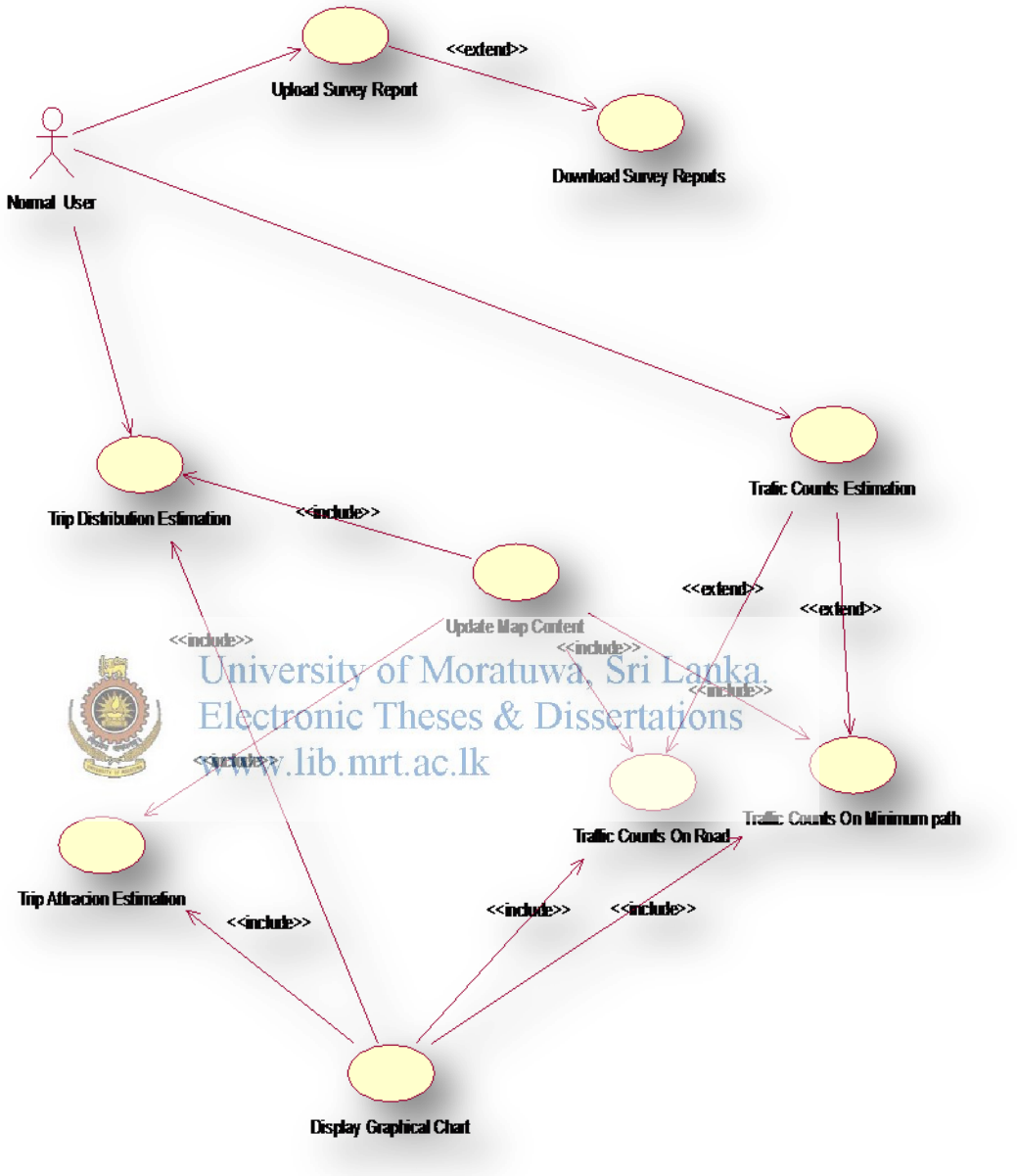

Figure 7: Use Case-Normal User

B.2 Use Case Specification

B.2.1 Prepare O-D Matrix

Basic Description:

This Use Case describes activities of how to the O-D survey data is processed to prepare the O-D Matrix

Flows of Events

- Get all the O-D information that are on the state of for-update
- Get all the O-D pairs of each of the O-D survey Sheet
- Eliminate double counting error by checking Whether there are same O-D pair was included in other updated O-D
- Calculate the minimum path of the O-D pair
- Obtain the Origin Divisional Sectary Area
- Allocate the traffic count flows at each of the Destination Divisional Secretary Areas.
- Increment the Trip Counts of the O-D table
- Continue with other O-D pair.
- Go to the 2nd step
- Load the table values to a data set
- Display the Matrix.

Alternative Flows

- If it is found that the same O-D pair is used for another O-D survey sheet that means the O-D pair is going to count twice. Stop and continue from other O-D pair.
- After completing the each of O-D pair then change the state to be updated.

Pre-Condition

- The User should be logged as Administrator.

Post Condition

- The O-D surveyed data become passed data.

B.2.2 Trip Distribution Estimation

Basic Description:

This Use Case describes activities of how to the O-D matrix data is processed to estimate Trip Distribution

Flows of Event

- Set the District Secretary Area.
- Select the District Secretary Area from the List
- Calculate the Trips distribute from relevant selected District secretary area to the other
- Prepare the Data set and load the table
- Prepare the chart
- Display Table and the Chart.
- Zoom the Map to the respective location

Alternative Flows
None

Pre-Condition

- The User should be logged as Administrator or Department User.

Post Condition

None

B.2.3 Trip Attraction Estimation

Basic Description:

This Use Case describes activities of how the O-D matrix data is processed to estimate the Trip Attraction.

Flow of event

- Set the District Secretary Area.
- Select the District Secretary Area from the List
- Calculate the Trips attractionto relevant selected District secretary area from the other
- Prepare the Data set and load the table
- Prepare the chart
- Display Table and the Chart.
- Zoom the Map to the respective location

Alternative Flows

None

Pre-Condition

- The User should be logged as Administrator or Department User.

Post Condition

None

B.2.4 Manage O-D Survey data

Basic Description:

This Use Case describes activities of how the O-D surveyed data is managed

Flow of event

- Set the O-D number from O-D details
- Load the O-D Survey sheet and other generic data.
- Fill the Origin and Destination information
- Save the Record
- Update the Records.

Alternative Flows

None

Pre-Condition

- The User should be logged as Administrator or Department User.

Post Condition

None

B.2.5 Manage Users

Basic Description:

This Use Case describes activities of how the users are managed.

Flow of event

- Load the current users details in to the table
- Fill the new users information in to the necessary fields
- Check the user is already in the system
- Save the record

Alternative Flows

- If the user wants to delete a record it needs to select the particular record

- The user needs to change the particular data on the record when (s)he needs to update the record

Pre-Condition

- The User should be logged as Administrator or Department User.

Post Condition

None

B.2.6 Traffic Counts On Road

Basic Description:

This Use Case describes activities of estimating traffics on road

Flow of event

- Select the road
- Set the links on the road
- Calculate the link counts on each link
- Create Chart
- Display Chart

Alternative Flows

None

Pre-Condition

- The User should be logged as Administrator or Department User.

Post Condition

None

B.2.7 Traffic Counts On Minimum Path

Basic Description:

This Use Case describes activities of estimating traffic on minimum path

Flow of event

- Select the Origin and Destination
- Calculate minimum path
- Set the links on the road
- Calculate the link counts on each link
- Create Chart
- Display Chart

Alternative Flows

None

Pre-Condition

- The User should be logged as Administrator or Department User.

Post Condition

None

B.3 Activity Diagram

B.3.1 Prepare O-D Matrix

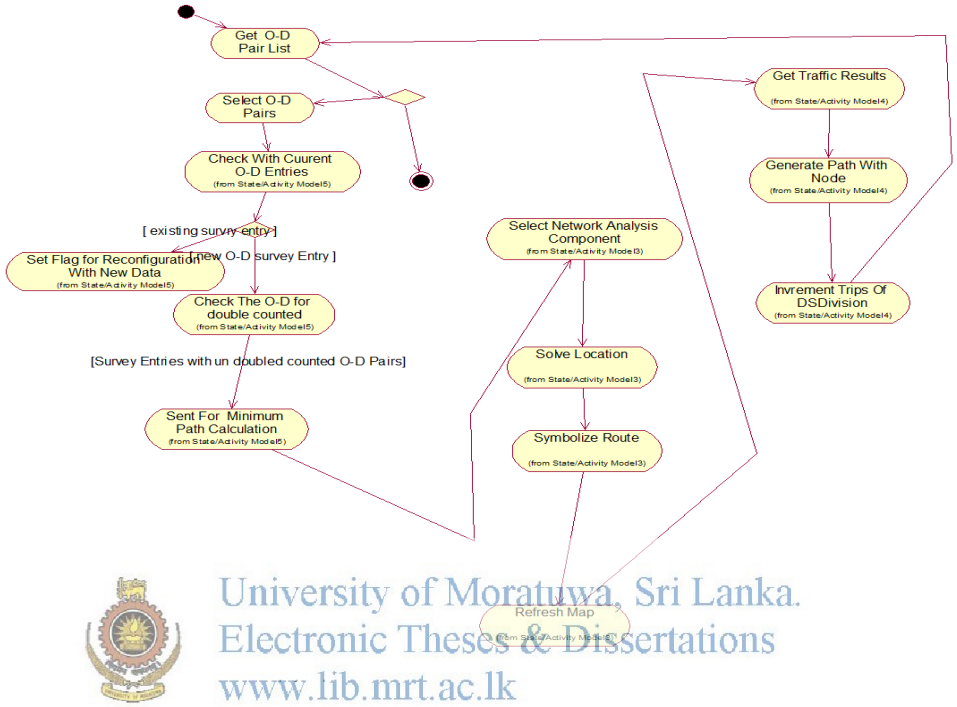

Figure 8: Prepare O-D Matrix

B.3.2 Upload Reports

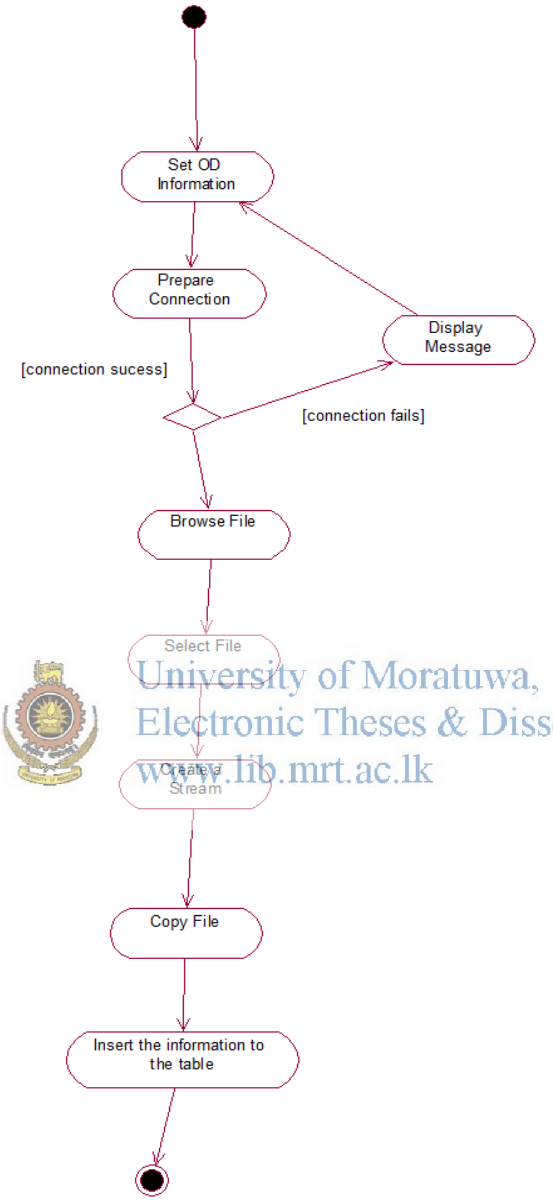

Figure 9: Upload Reports

B.3.3 Manage Users

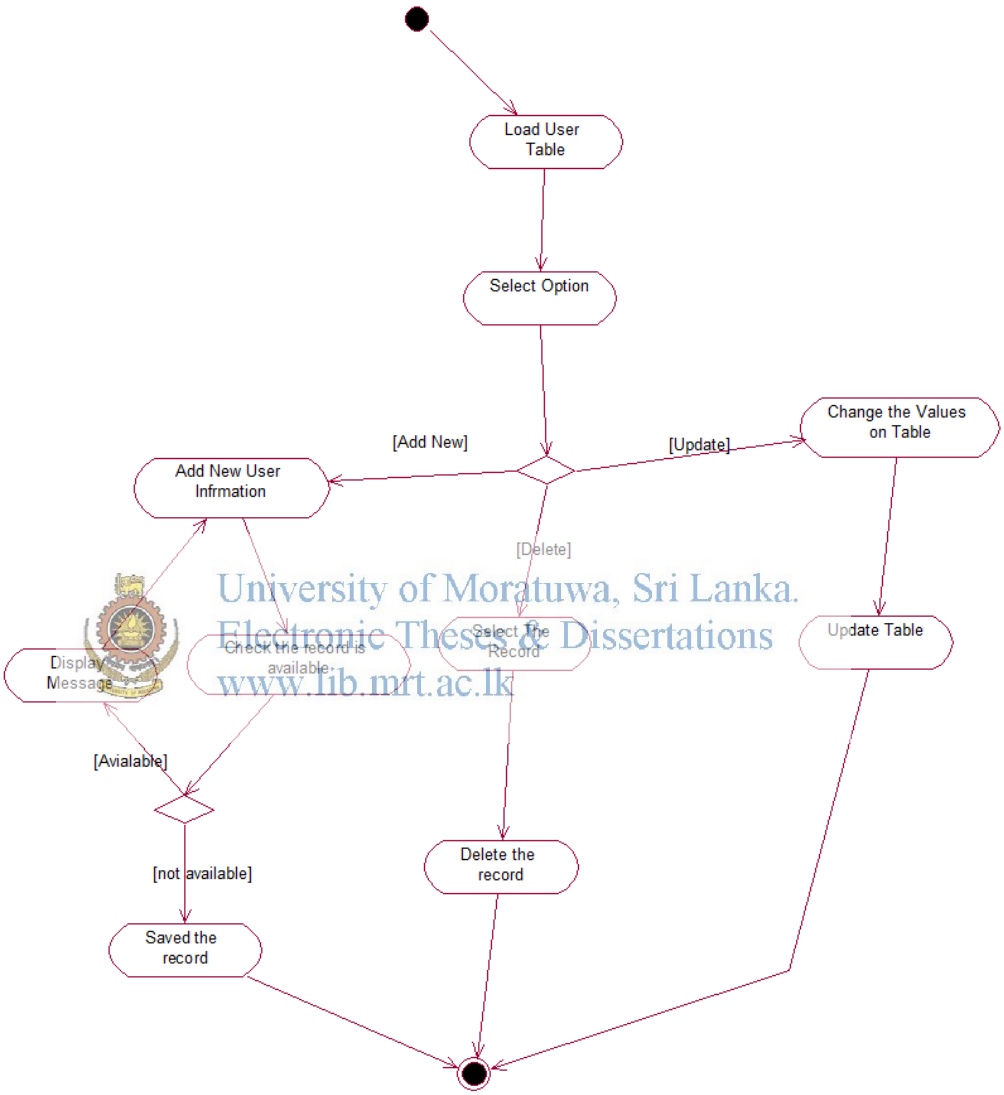

Figure 10: Manage User

B.3.4 Upload Reports

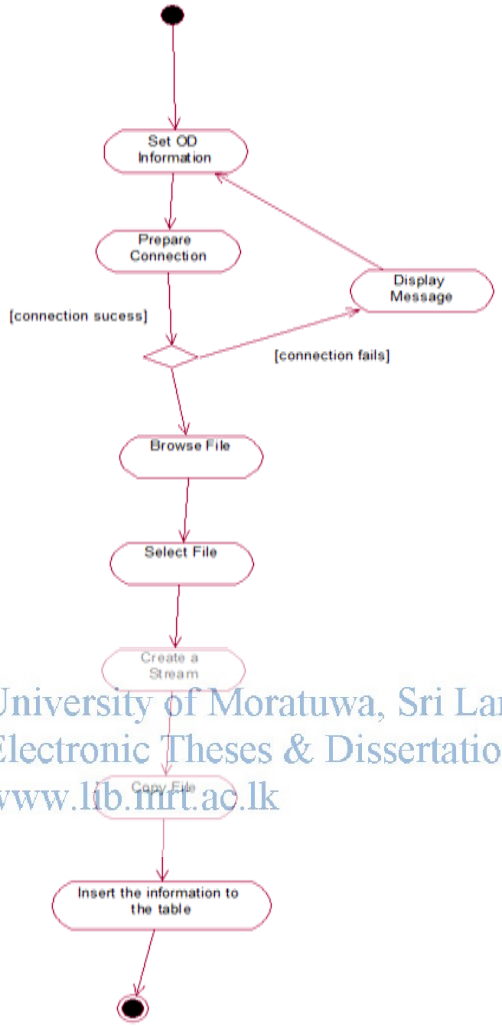

Figure 11: Upload Reports

B.3.5 Download Reports

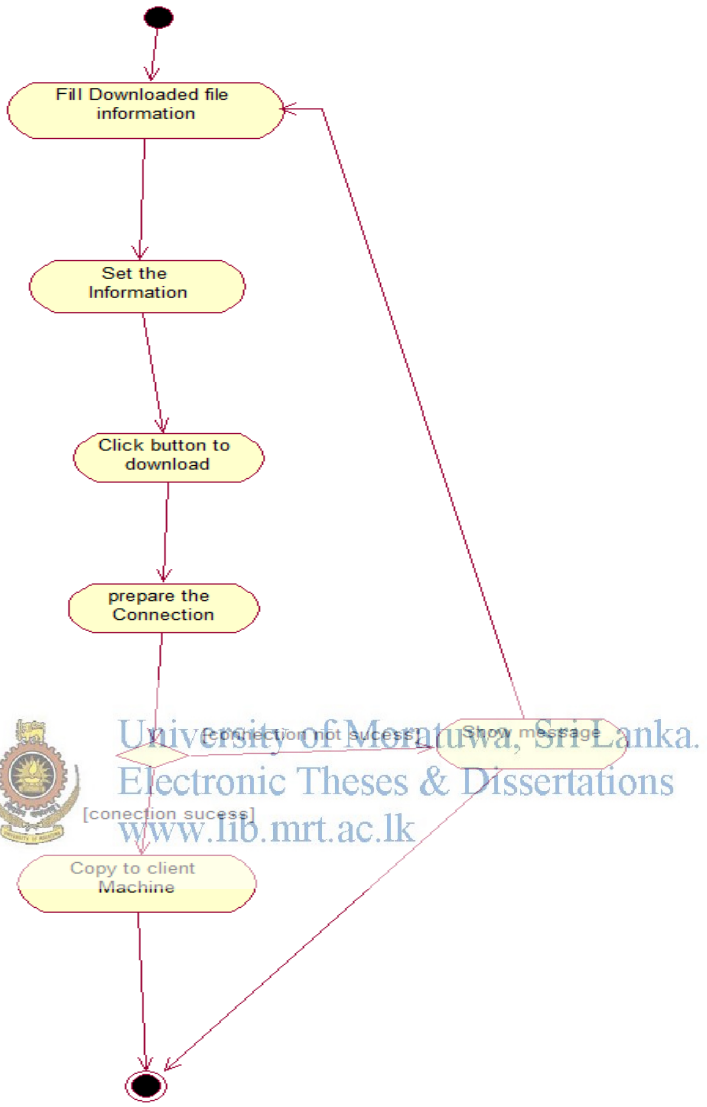

Figure 12: Download Reports

B.3.6 Trip Distribution

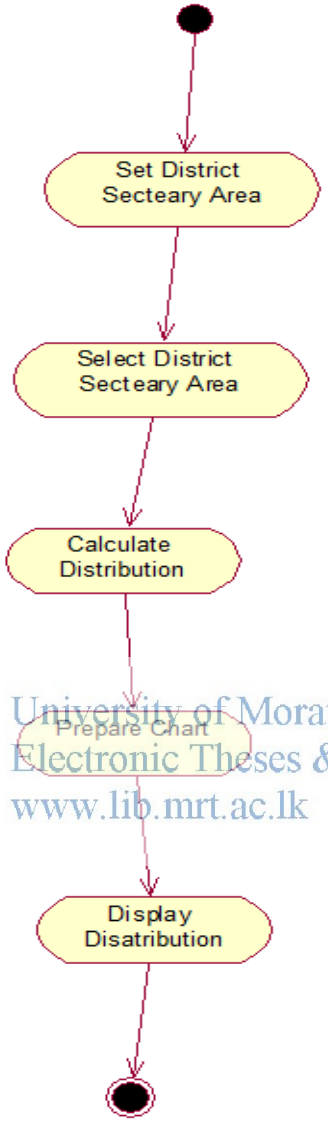

Figure 13: Trip Distribution

B.3.7 Trip Attraction

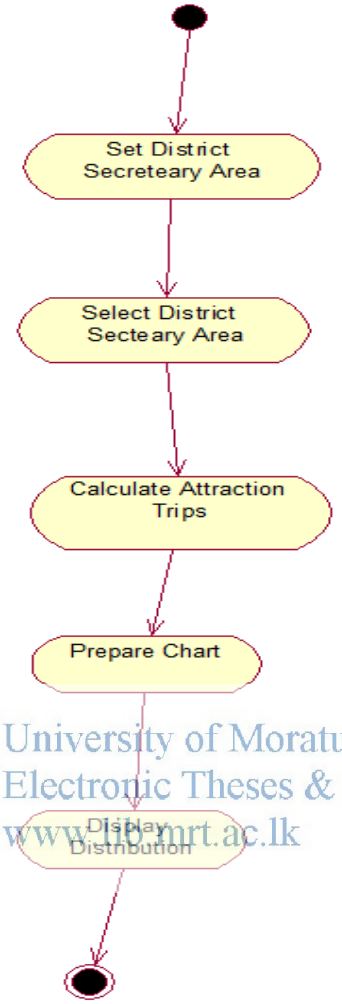

Figure 14: Trip Attraction

B.3.8 Traffic on Road

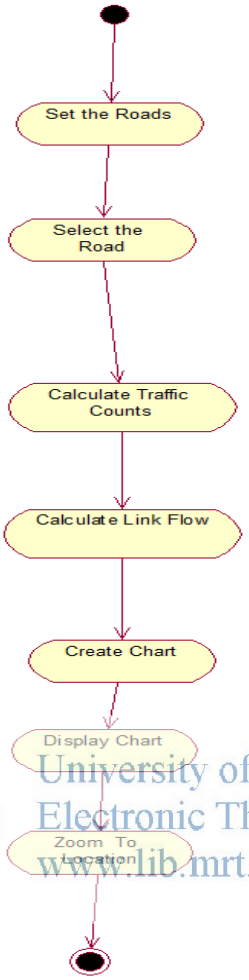

Figure 15: Traffic on Road

B.3.9 Traffic on Minimum Path

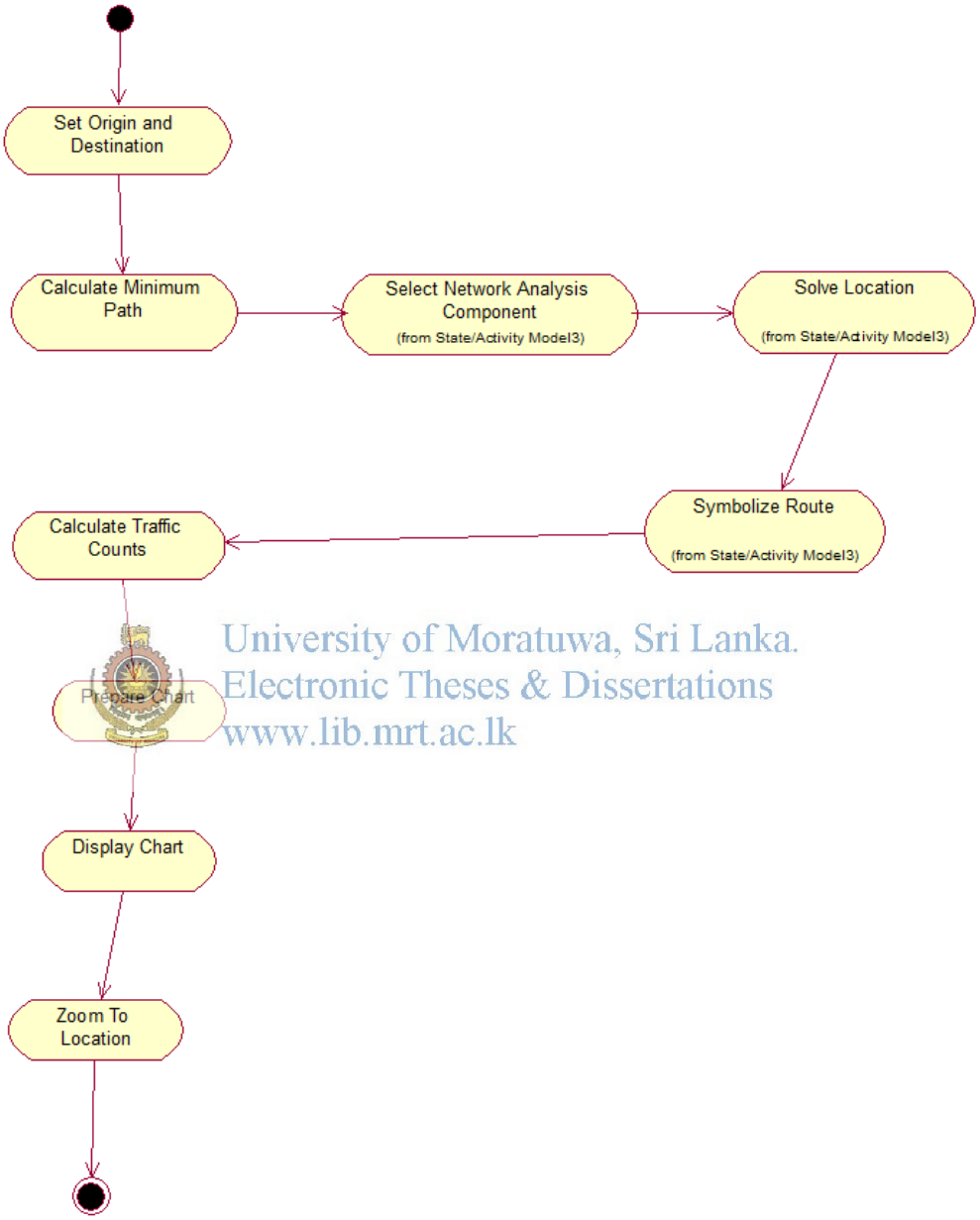

Figure 16: Traffic on Minimum Path

B.4 Component Diagram

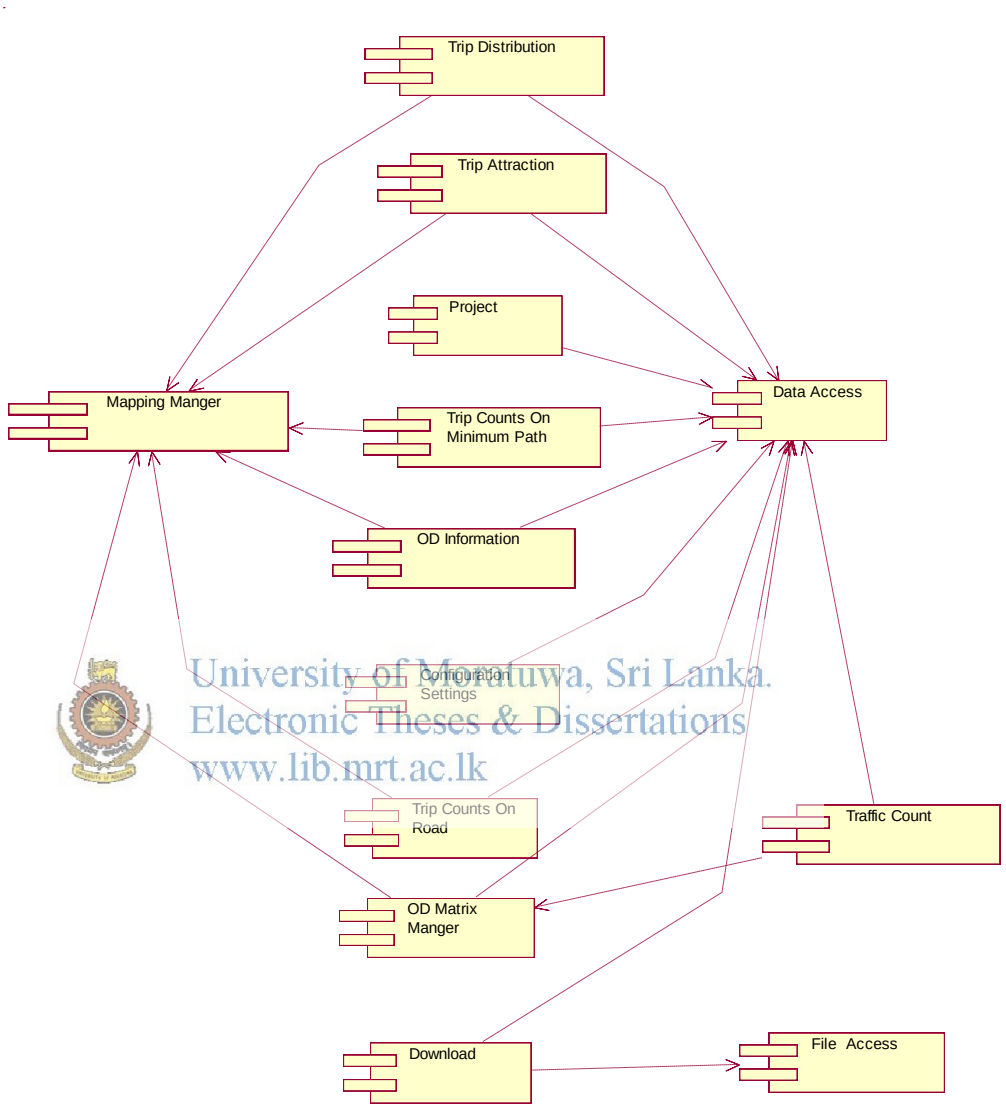

Figure 17: Component Diagram

B.5 Package Diagram

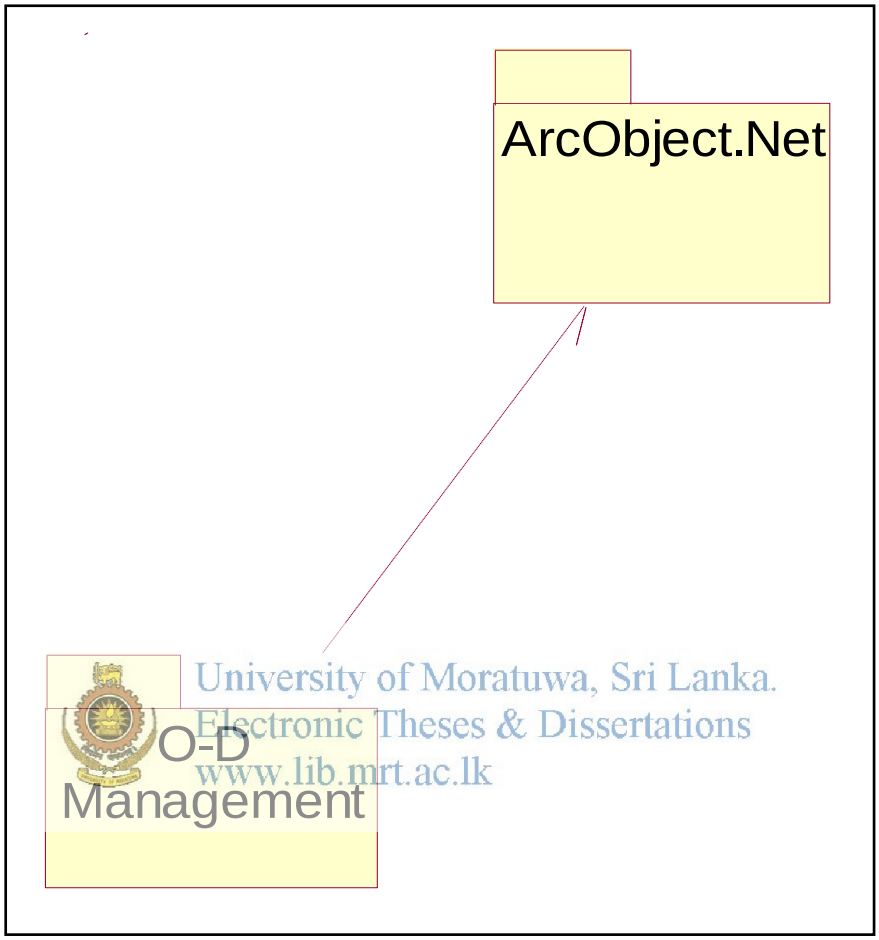

Figure 18: Package Diagram

B.6 Class Diagrams

B.6.1 ArcObject.Net

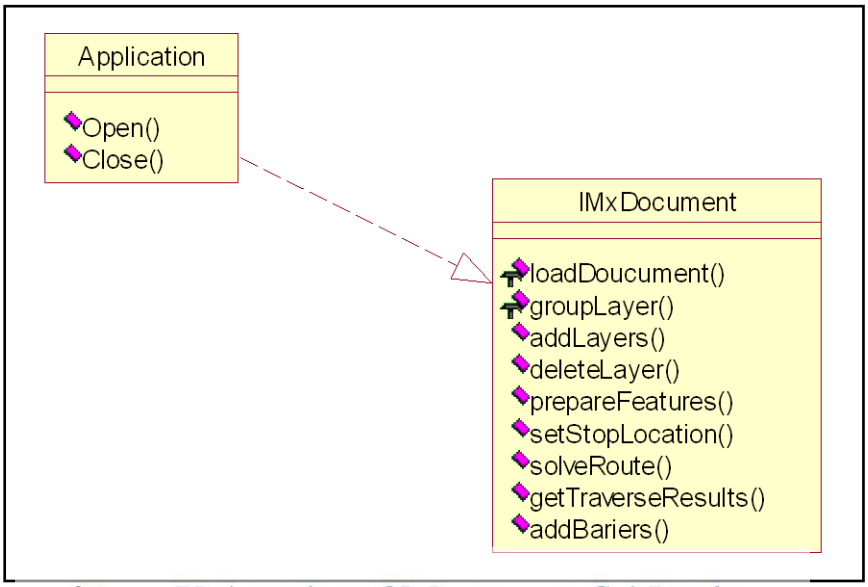

Figure 19: Class Diagram-ArcObject.Net

B.6.2 OD Management

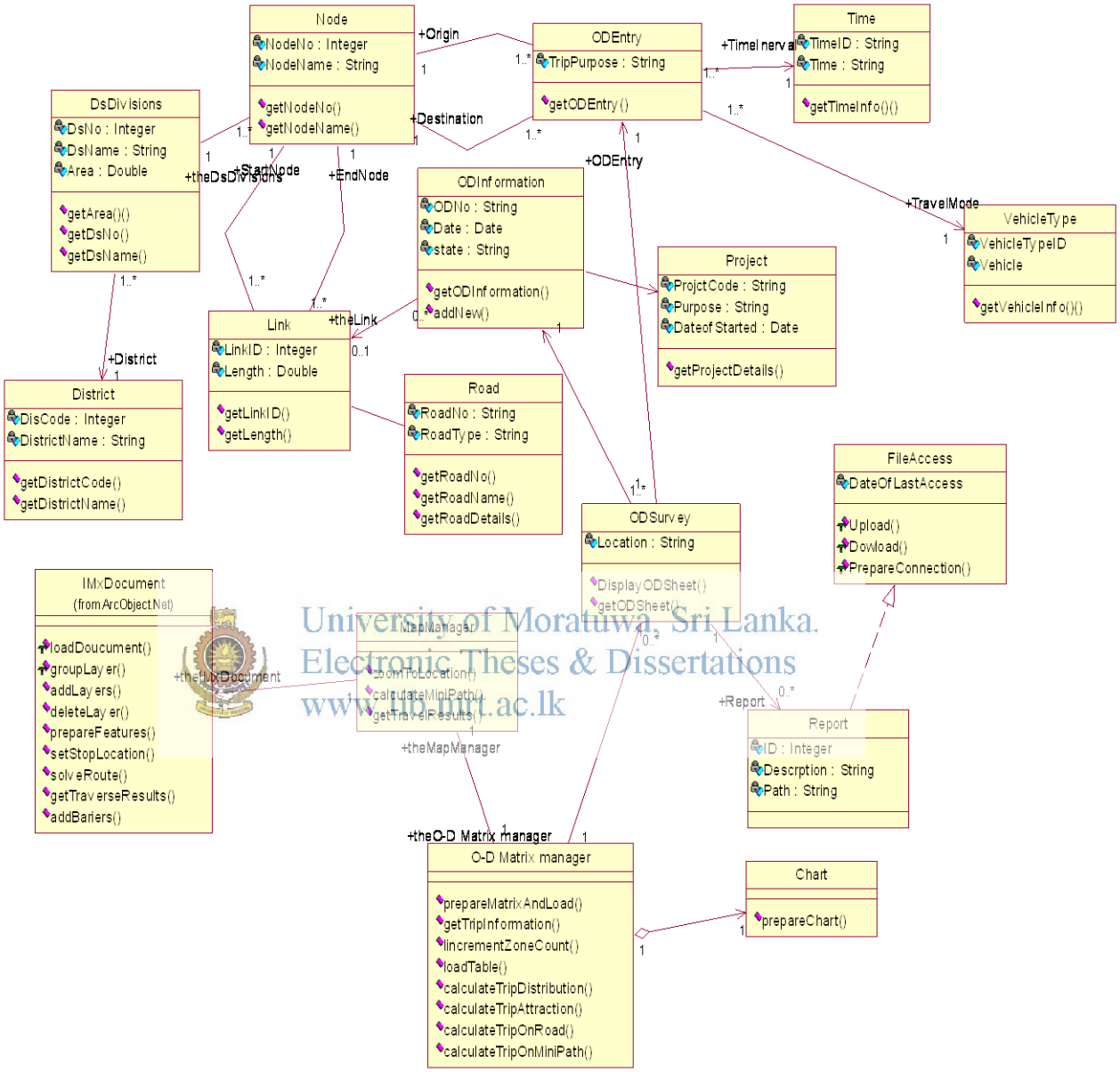

Figure 20: Class Diagram-OD Management

B.6.3 ER Diagram

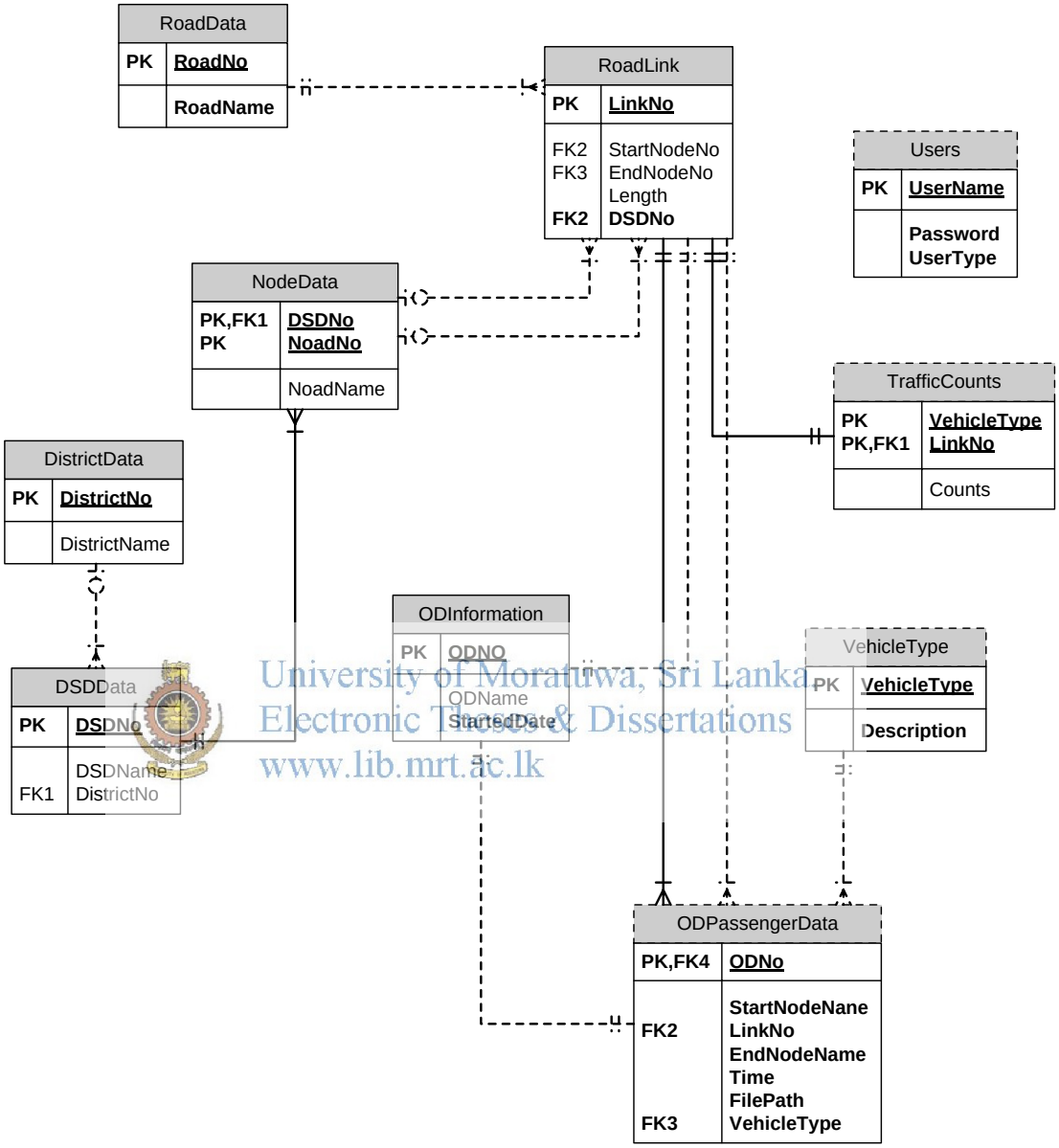

Figure 21: ER Diagram

10.5 Appendix C

C.1 Implementation (interfaces and Diagrams)

C.1.1 Integrate the Software Component

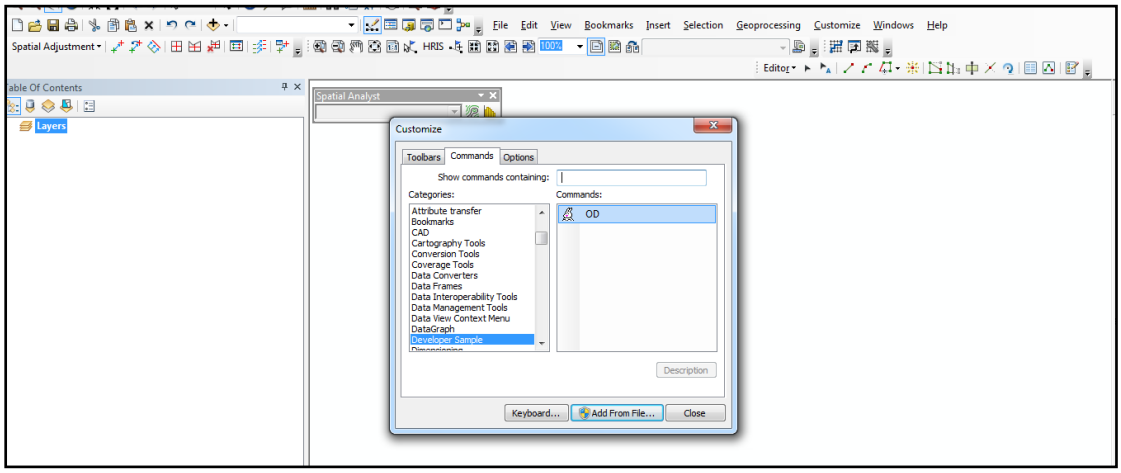

Figure 22: Integrate the Software Tool

This figure is the attempt of integrating the final software solution to the ArcMap environment

C.1.2 User Login

This is the first interface that meets when the system starts. This interface provides all types of users to login to the system by giving user name and password

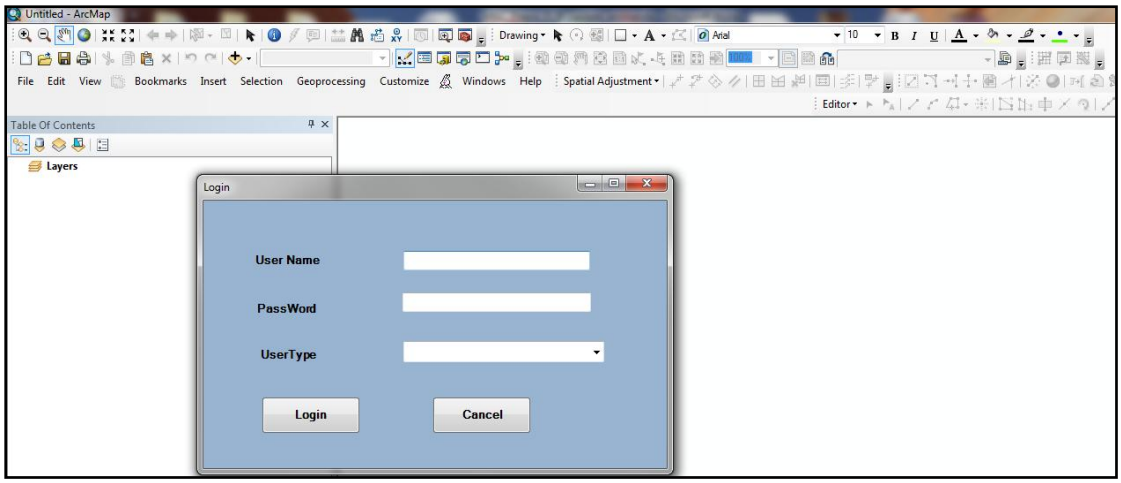

Figure 23: User Login

C.1.3 Administrator Menu

This is the first interface that meets after having successful login by the administrator. This interface provides the navigation to all of the functions

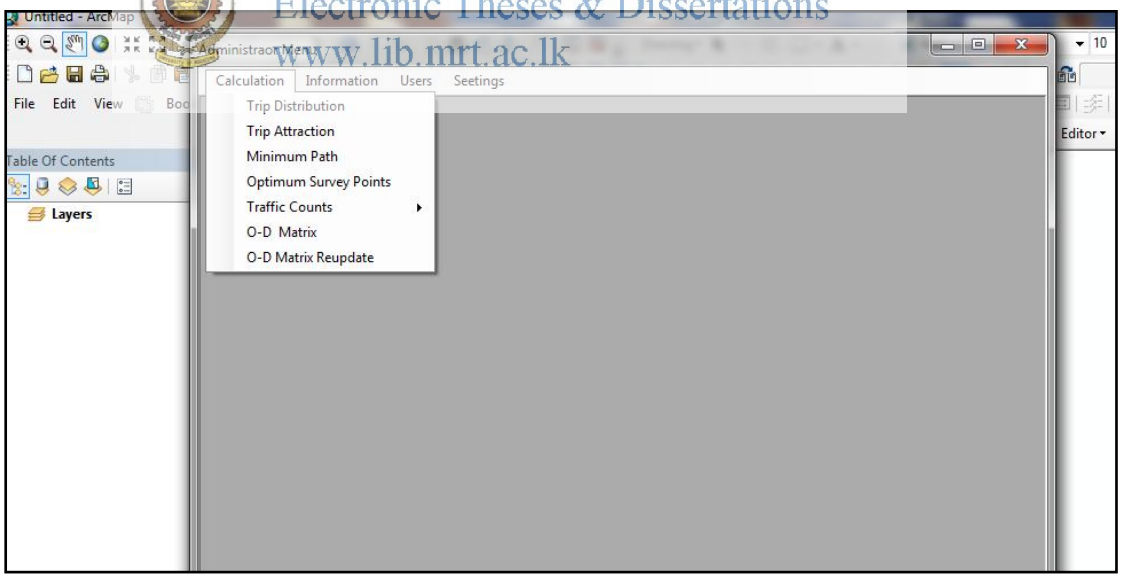

Figure 24: Main Menu

C.1.3 Manage Users

This is the first interface provides the facility to add/update/delete users in the system

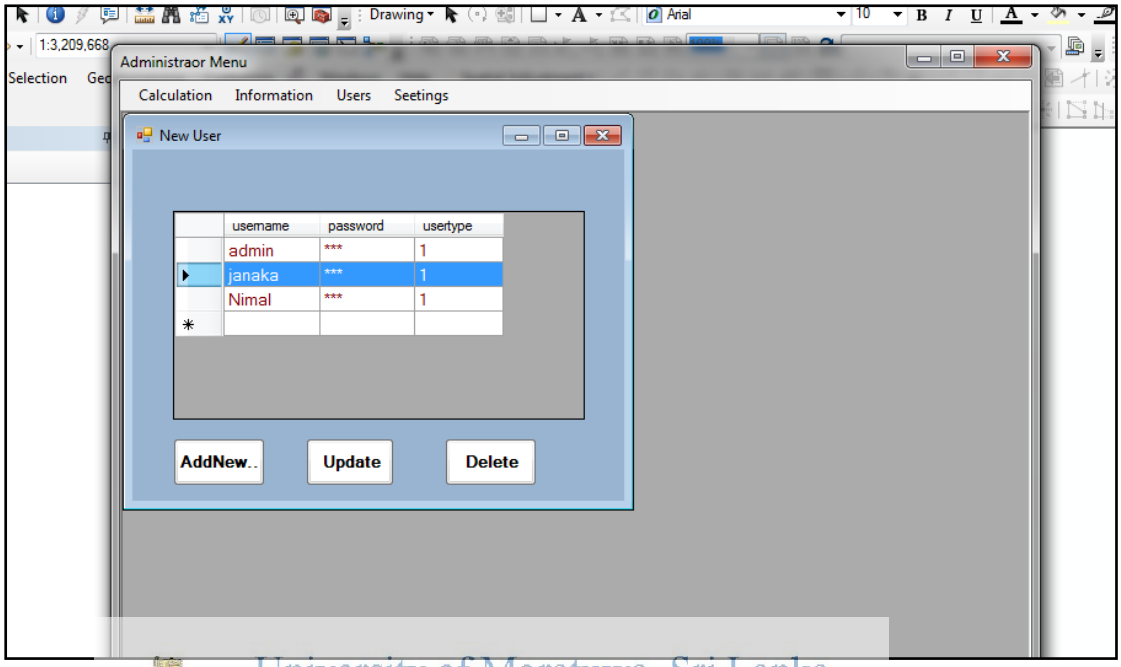

Figure 25: Manage users

C.1.4 OD Information

This is the first interface provides the facility to add/update/delete O-D basic information.

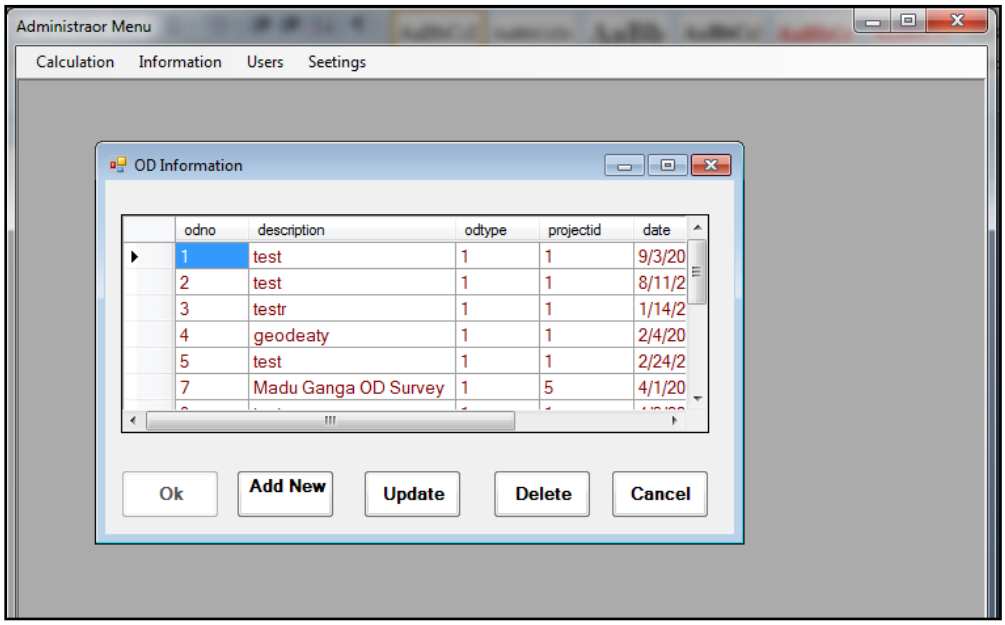

Figure 26: Manage O-D Information

C.1.5 Manage New O-D Survey Sheet

This interface provides the facility to add/update/delete O-D Survey Sheet

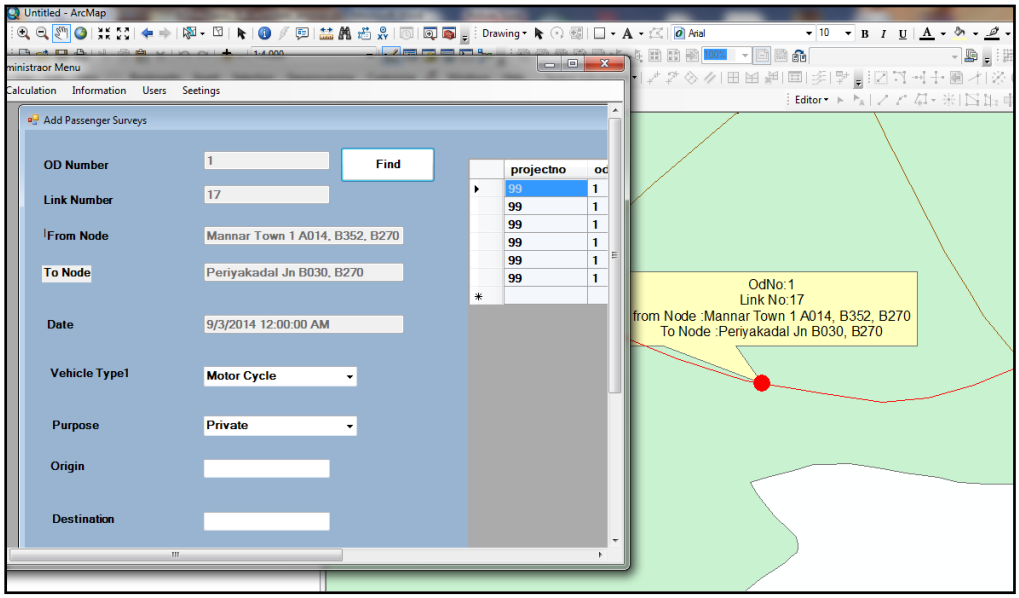

Figure 27: Manage O-D Survey Sheet

C.1.5 Upload Reports

This interface provides the facility to upload reports to the file server

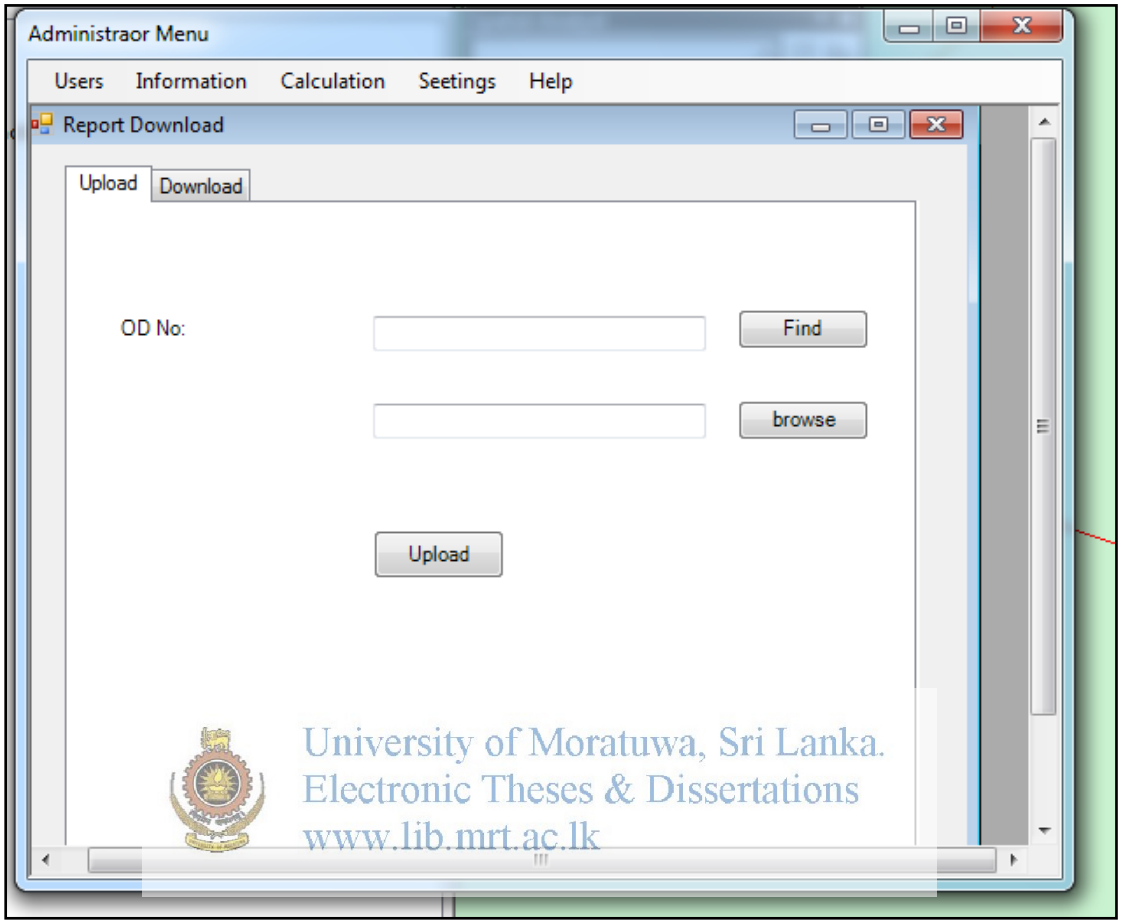

Figure 28: Upload

C.1.6 Download Reports

This interface provides the facility to download reports from the file server

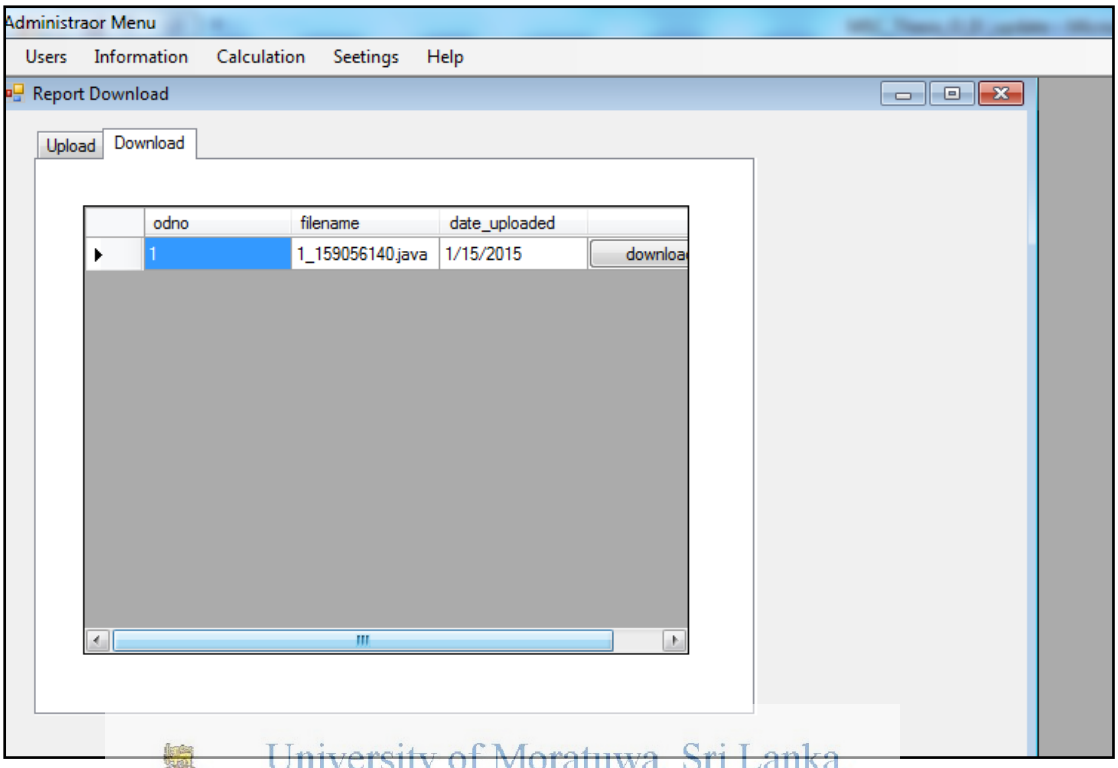

Figure 29: Download

C.1.7 O-D Matrix manager

This interface visualizes the generated O-D Matrix as in numerical values and divisions names.

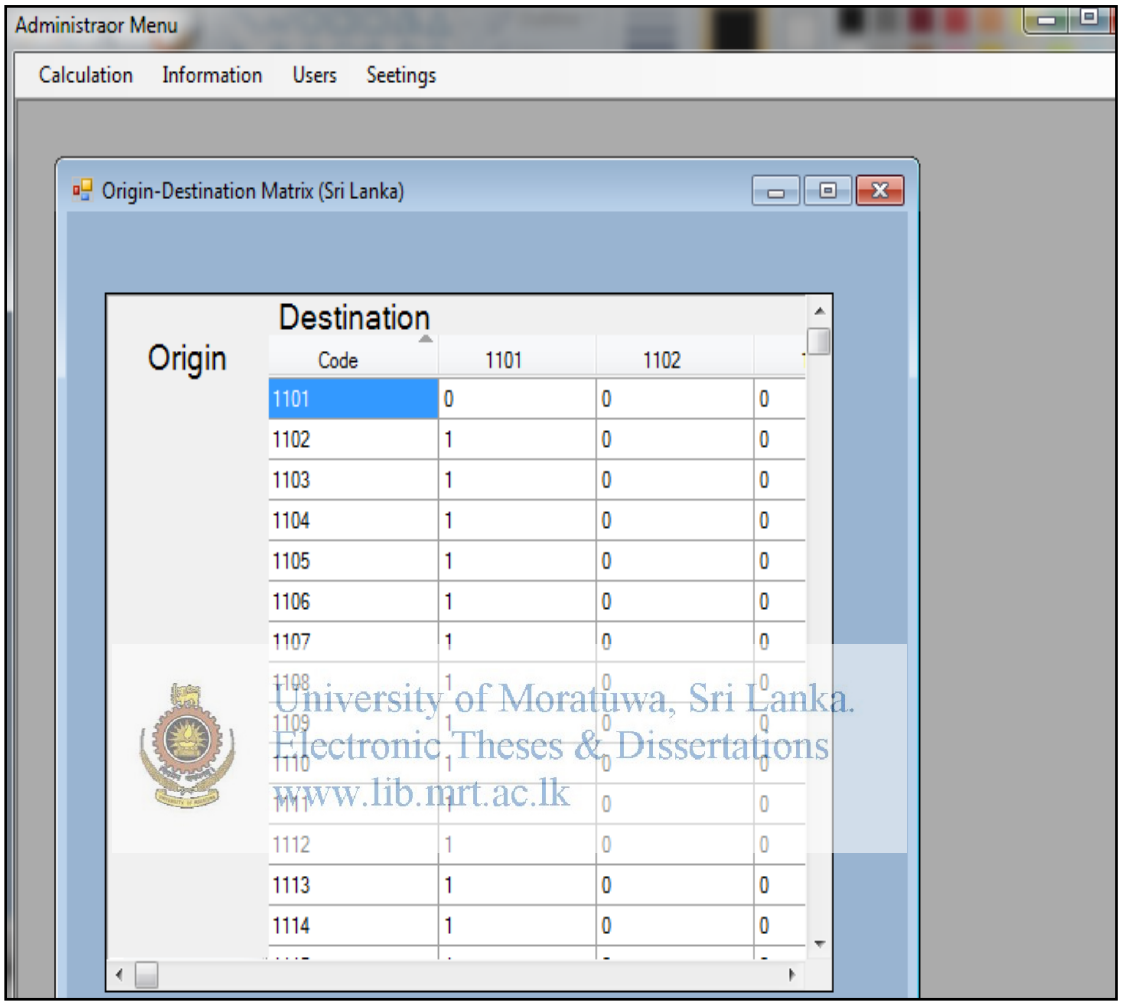

Figure 30: O-D matrix in divisional code

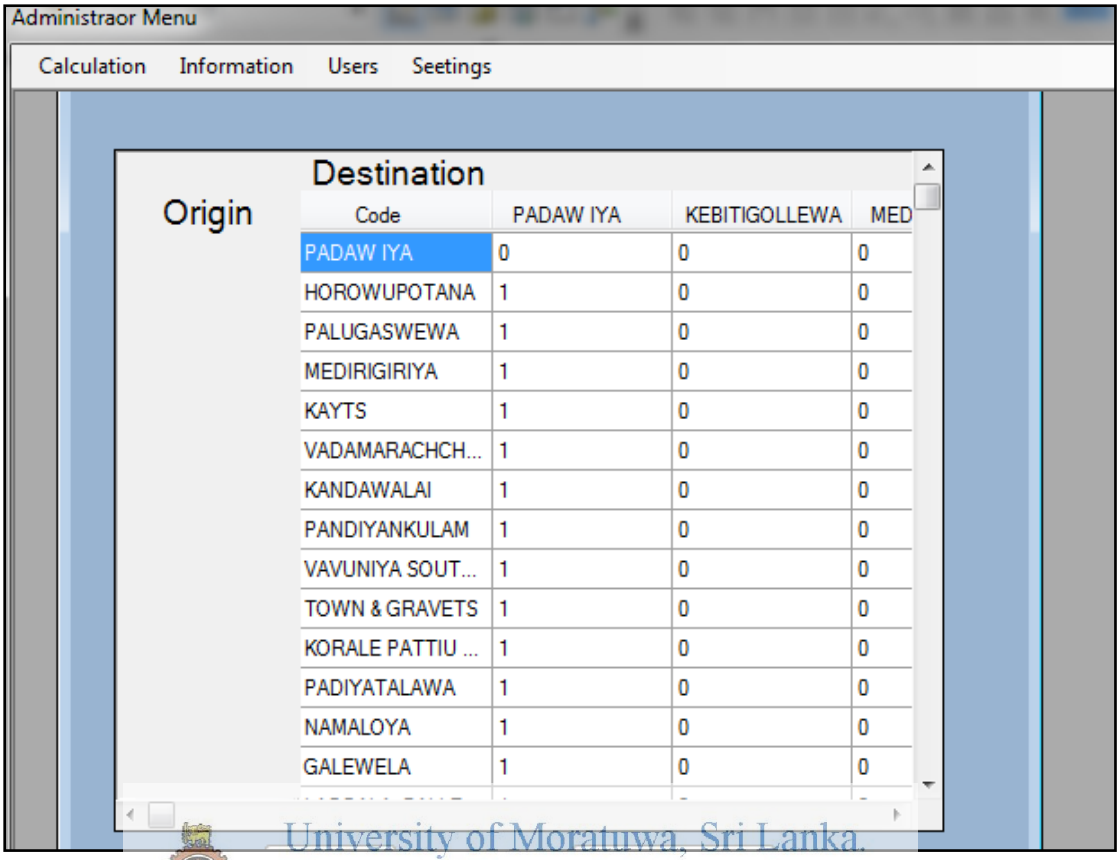

Figure 31: O-D matrix in divisional numbers

C.1.8 Trip Distribution

This interface visualize the Trip distribution from particular Divisional Secretary Area

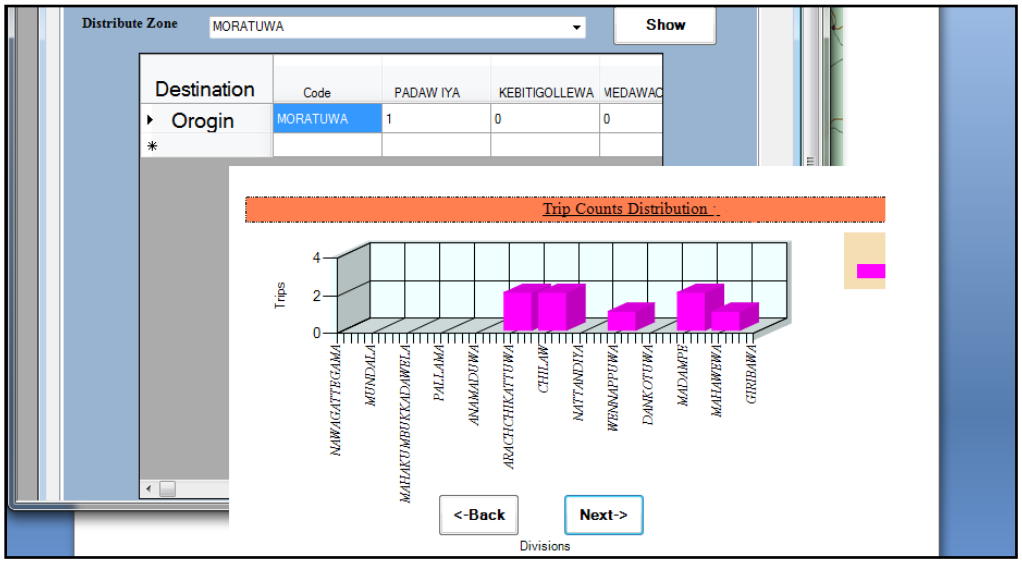

Figure 31: Trip Distribution

C.1.9 Traffic Counts On Road

This interface visualize the Trip counts on a particular area

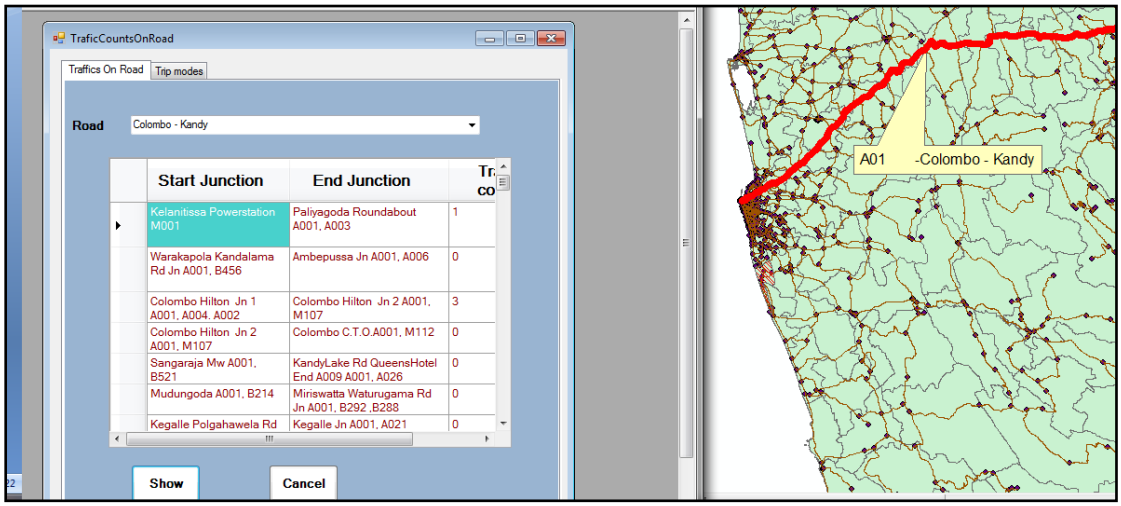

Figure 32: Traffic Counts On Road

C.2.0 Traffic Counts On Minimum Path

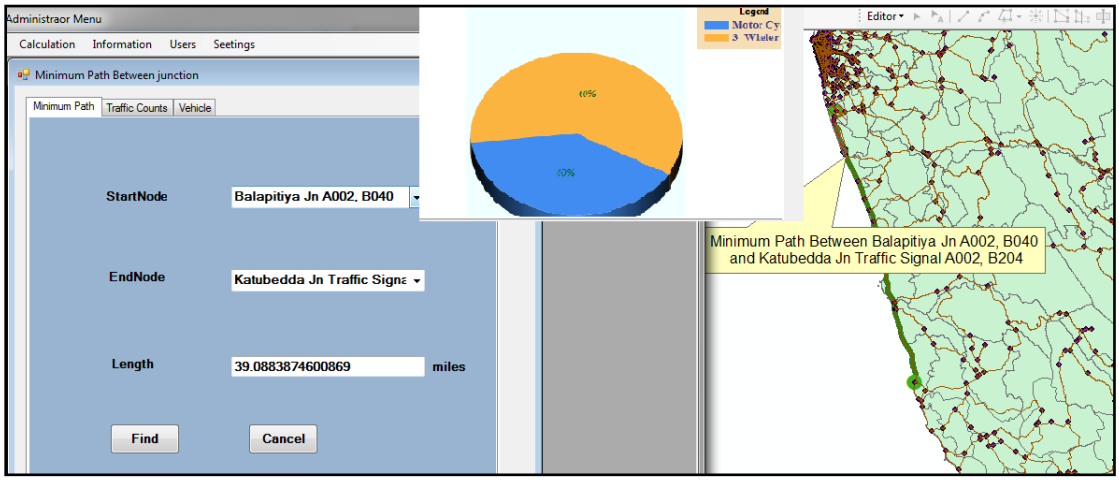

Figure 33: Traffic Counts On Minimum Path

C.2.1 Traffic Counts On Links

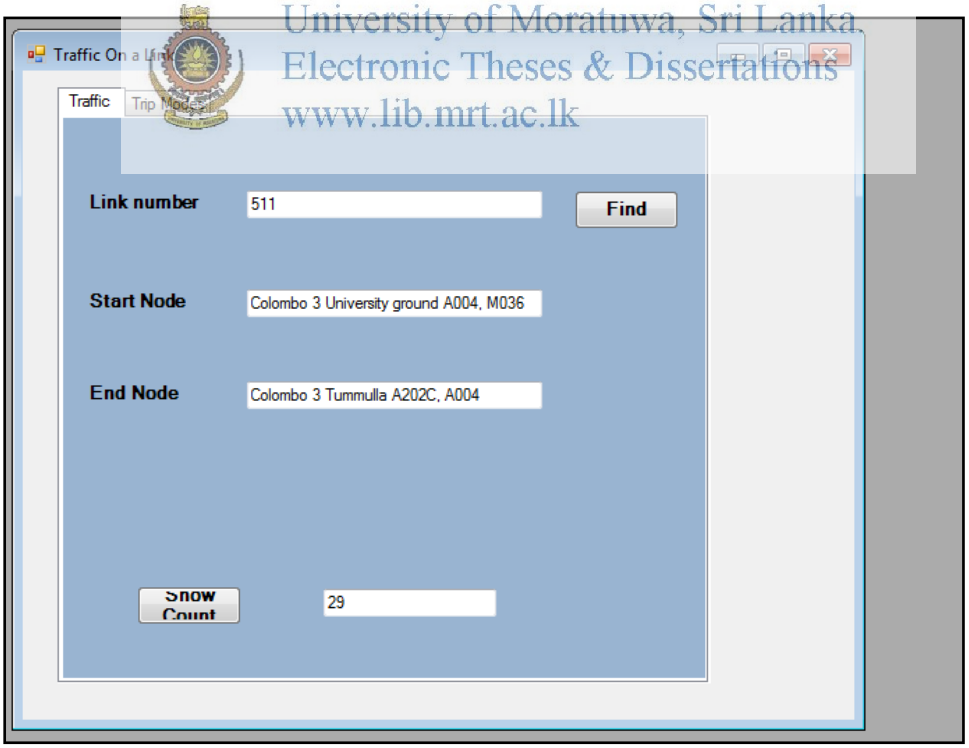

Figure 34: Traffic Counts On Minimum Path