SHIPPING & CARGO MANAGEMENT SYSTEM

A dissertation submitted for the Degree of Master of Information Technology

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Declaration

The thesis is my original work and has not been submitted previously for a degree at this or any other university/institute.

To the best of my knowledge it does not contain any material published or written by another person, except as acknowledged in the text.

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This is to certify that this thesis is based on the work of

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under my supervision. The thesis has been prepared according to the format stipulated and is of acceptable standard.

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Supervisor Name:

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Signature: Date:

Abstract

Shipping industry, which is a very successful but very competent industry. Most of the startups and even the established companies need an Information Management System in order to overcome the issues and difficulties facing day to day operations.

Most of the companies still rely on Microsoft office packages to handle and store data and reserve large amount of office space in order to store hard copies of the shipments. Each shipment consists of large number of files. This current process is time consuming and needs a lot of man power as well.

Interaction of the customer with the shipping companies are very high. As a customer, they tend to inquire a lot about their shipments and its current status. Having a manual system takes time to respond and even employees couldn't find the correct set of documents without looking for several documents.

In order to overcome these issues, Shipping and Cargo Management System was proposed to develop. This will overcome the inefficiency, time consuming and work load of the workers. Working with lots of shipping companies, after collecting user feedback and experiencing issues that workers facing, this system was designed and developed.

Acknowledgment

This project would have not been successful without the support of many. First and foremost, I wish to thank my supervisor Dr K.L Jayaratne, whose wisdom, expertise, guidance and encouragement have enabled me accomplish success to this task.

For all my teachers from school to university, thank you for what you have taught me through out these years in order to make this project a success.

My deepest gratitude goes to my parents and specially my mother who stood by side throughout these years. Thank you for the values, discipline and experience for which have helped me in make successes such as this a possibility. And also for understanding my workload and being supportive in many ways.

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List of Abbreviations

SHIPTRACK – Shipping and Cargo Management System

OOAD - Object Oriented Analysis and Design

UML - Unified Modeling Language

SQL - Structured Query Language

URL - Uniform Resource Locator

WWW-World Wide Web

Chapter 1: Introduction

This chapter provides a general introduction of the project. It includes some description of what the project is about, need for this project, scope, aims and objectives which are to be achieved, user and system requirements and the structure of the dissertation.

1.1 Background

Shipping Industry has become one of the most competent and changing industries throughout the past years. Shipping companies are in a competition to cater their clients with effective and more productive way rather than handling large numbers of documents/information back and forth with the customers.

Information is very confidential, such as Payments, charges and most importantly their Agent's Information. Because of that, companies are under increasing pressure to manage information securely and in the meantime, provide a service in a productive way using limited resources.

Daily work flow of a shipping company is critical as they need to process at least 10 – 20 jobs. A single user needs 3-4 hours to process all the documents and reports for a job. Client interaction is too high and collecting payment, issuing invoices and gain customer trust is critical.

Based on our evaluation of the manual process, we have a mission and vision.

Mission: “Provide comprehensive service to customer and shipping industry and achieve excellence in customer satisfaction.”

Vision: “To become the most popular service provider of the shipping industry by meeting everyone’s expectations.”

1.2 Motivation for the Project

Even though there are dozens of online and standalone systems which are developed for Shipping/Cargo Industry, but most of the requirements are not being catered by such systems.

Each shipping company have their own requirements/rules and regulations and different services. Those are the main reasons where system providers fail. Therefore, shipping companies needs someone who can custom made the system according to their own requirements and flexible when new requirement comes.

For this system, I have studied their manual work flow for the past two years. During that time, I have noticed a company worker will take at least three to four hours to complete and finish documents due to the amount of information.

This situation has eventually caused the shipping/cargo industry to come up with a better solution which is Shipping & Cargo Management system with the features that essential.

1.3 Aims and Objectives of the Project

- **To develop a proper secure system.**

  This manual system is computerized and using passwords and other various methods can restrict the access to the system. If users need to hide the records that can be done.

- **Designing and implementing a new computerized online system**

  New system will improve service to the customers and business operation, such as clearing a shipment from the port and import/export goods to port of destination quickly. Able to view status of the shipment via WWW by the customer.

- **Providing a quick service to the customers and to the staff**

  We can maintain the records by creating tables, when data storage and when we create the tables the data redundancy will be reused and also saved and can quickly access. When customer is on the phone, using a reference number, customer and shipment details can be accessed easily

- **To make different reports and documents**

  Preparing different reports for different users in different views such as to generate excel reports. Therefore, we can minimize the difficulty of report preparation. We got to ensure the accuracy of report data and no ambiguous. When creating documents such as BL document, Delivery Order can be printed without data duplications and no need to maintain pre-defined formats using Excel or Word.

1.4 Scope of Project

The system that I am planning to develop is an Online Shipping and Cargo Management System for the Designsolv (Pvt) Ltd. The web application developed will be made mobile responsive in order to ensure that users are able access the web application via mobile devices and also the browser (IE 9 upwards, Firefox, Chrome and safari) compatibility will be developed to be supportive.

Using this system, generate necessary documents will be very easy and maintain payments to Agents and from Customers will be easy. Even the customers can check the process of the shipments without calling the company.

Updates of the shipment arrival will be dispatched to customers along with the invoices by email. Depending the payment status necessary documents can be prepared to collect by the customer.

1.5 Summary of Chapters

Chapter 2: Background

This chapter describes the literature review and a comparison and review of other two similar systems and the available technologies and tools to implement the system is also discussed here.

Chapter 3: Analysis and Design

This chapter includes a detailed description of the functional and nonfunctional requirements of the system.

Also, this describes the structure of the overall system, design methodologies which were used, use case diagrams, sequence diagrams, class diagrams, entity relationship diagrams and brief introduction of database tables.

Chapter 4: Progress to Date and Project Plan

This chapter contains the progress of the developed system, the details of the testing methodologies, conclusion and the future work of the system.

Chapter 5: Implementation

This chapter describes implementation of how the proposed system is implemented using the Front end and backend tools.

Chapter 6: Conclusion and Future Works

This chapter describes the summery of achievements of the project and suggestion for future enhancements.

Chapter 02: Background

Currently the freight forwarding companies are under a tremendous pressure due to the workload on both import and export sections. Because of this, companies face huge number of drawbacks such as,

- Less staff to handle jobs
- Inefficient time management
- Less Customer Relationships

These kinds of situations lead customer to look for another service provider.

Shipping companies uses several files for record keeping. The records should be written one by one, this process takes long time and to access a particular record takes a long time. This will lead to duplicate the necessary information's such as Customers, agents and bill of ladings. Because of this, company workers tend to provide incorrect or old information when requested.

To rectify such inefficiencies the top management has decided to implement a Shipping and Cargo Management System Information for the Shipping industry. Where the forwarding company can create a shipment within couple of minutes and ready the documents in a short period of time. Accounts Department of the company can keep track of all the invoices and receipts relevant to the particular shipment in a single click. Customers can get the status of the shipment without calling the companies.

2.1 Literature Review

There are many Shipping and Cargo Management Systems available as developed packages. All the solutions are commercial, developed by product companies. These systems can be used once the product license is purchased at a higher cost.

Literature Review was done to identify availability of similar solutions and to identify typical functionalities. Also, when developing a system, it is more appropriate to investigate the prior work done by others to the shipping industry. It was found that several systems are available. These solutions have categories under several topics regarding the functionality of the systems.

2.2 Similar Systems

Following are some similar online Shipping and Cargo Management Systems.

- ShipXpress
- Ctracker
- Spediconn
- Pelican

2.3 Shipping and Cargo Management Systems

The shipping and cargo Management Solutions have been designed to allow users to gain following facilities.

Facilities:

- Jobs Management
- Agent Management
- Charges Management
- BL management
- Payment Management

2.4 Comparison and Contrast with Similar Systems

There are lots of online Shipping systems which were created by organizations for business purposes. Those systems were basically built to manage their organization and to do their day to day operations. ShipTrack system has considered about the complex areas and it is relevant to major shipping companies in the country. But those systems are not suitable small scale shipping companies because there are variations among such shipping companies such as FCL (Full Cargo Loading), LCL (Loose Cargo Loading) and both FCL/LCL. And Mainly targeting Import or Either Export, but not both.

None of the above systems has been mentioned as open source systems and the cost of those systems are very high. So, this is an affordable system which helps to handle their requirements easily. It was added some features which is in the above similar system for

betterment of final software solution. Added features like keeping track of documents, generate XML for customs and sending Email notification.

2.5 Stakeholders

Stakeholders are the most important persons to involve in the requirement analysis process. They are the persons who show interest about the system. A Stakeholder can be a management person who takes the decisions or direct system users. Identified stakeholders in the system are;

- Manager (Import/ Export)
- Agent
- System User
- Customer

2.6 Requirement Analysis Methodologies

Many methodologies are available to gather the requirements of the stakeholders. Below listed methodologies are those used in the requirement gathering process of the Shipping and Cargo Management System.

2.6.1 Document Analysis

Reviewing documentation of the existing manual system was very important to understand the raw data of the system. Also, those were very useful to identify attributes to store the records in the data base. Some of document which was used;

- Generating Reports

2.6.2 Interviews

Several interviews were conducted with the stakeholders to identify their requirements. It was difficult to get time of stakeholders for the interviews. But interviews were very useful because it clarified unclear procedures and requirements on time.

2.6.3 Observation

Observation is the study of users in their natural habitats. The working environment of the shipping system was observed to understand the business, its current process and the sequence of process and their relationships.

2.6.4 The Online Survey Questions

The main goal of this survey is to get the necessary information from the user, I have given a sample survey below;

1. How easy is it to create a job using manual process?

    - Extremely Easy
    - Very Easy
    - Moderately Easy
    - Slightly Easy
    - Not at all Easy

2. How happy are you with the current process?

    - Extremely Happy
    - Very Happy
    - Moderately Happy
    - Slightly Happy
    - Not at all Happy

3. How knowledgeable are the content available in the portal?

    - Extremely Knowledgeable
    - Very Knowledgeable
    - Moderately Knowledgeable
    - Slightly Knowledgeable
    - Not at all Knowledgeable

4. How professional are the content available in the portal?

    - Extremely Professional
    - Very Professional
    - Moderately Professional
    - Slightly Professional
    - Not at all Professional

5. How helpful are the content available in the portal?

    - Extremely Helpful
    - Very Helpful
    - Moderately Helpful
    - Slightly Helpful
    - Not at all Helpful

6. How likely are you to renew your subscription with the Shipping Company?

    - Extremely Likely

- ○ Very Likely
- ○ Moderately Likely
- ○ Slightly Likely
- ○ Not at all Likely

7. Are you satisfied with the service you receive from the Portal?

- ○ Extremely Satisfied
- ○ Moderately Satisfied
- ○ Slightly Satisfied
- ○ Neither Satisfied nor Dissatisfied
- ○ Slightly dissatisfied
- ○ Moderately Dissatisfied
- ○ Extremely Dissatisfied

8. How likely are you to recommend us to a friend?

- ○ Extremely Likely
- ○ Very Likely
- ○ Moderately Likely
- ○ Slightly Likely
- ○ Not at all Likely

9. What do you think about the security of the system?

- ○ Extremely Good
- ○ Very Good
- ○ Moderately Good
- ○ Slightly Good
- ○ Not at all Good

10. Select the rating that's best describes how you feel about shipping portal.

	Low		**High**	
	1	**2**	**3**	**4**
Quality	○	○	○	○
Usability	○	○	○	○
Trustworthy Brand	○	○	○	○
Craftsmanship/Design	○	○	○	○

11. How interested would you be in using the shipping portal?

- ○ Not at all Interested
- ○ Not very Interested

- Neutral
- Somewhat Interested
- Extremely Interested
- Not Sure

12. What features/attributes of this service are the most valuable to you?

13. What do you find least appealing about this online system?

2.7 Technologies Available

2.7.1 What is PHP and how it works

PHP is a server side scripting language which uses for dynamic web pages. Use of PHP will allow to develop a system which can access no matter what time it is or what location it is.
PHP codes are written and saved with the extension as “php”. This special file type can be processed by the PHP engine which is implemented on the server. In these ”php” files, we can write instructions (codes) to display data, manipulate databases, communicate with mail servers, manipulate folders and files etc. Figure 2.1 shows how PHP works in a client-server architecture

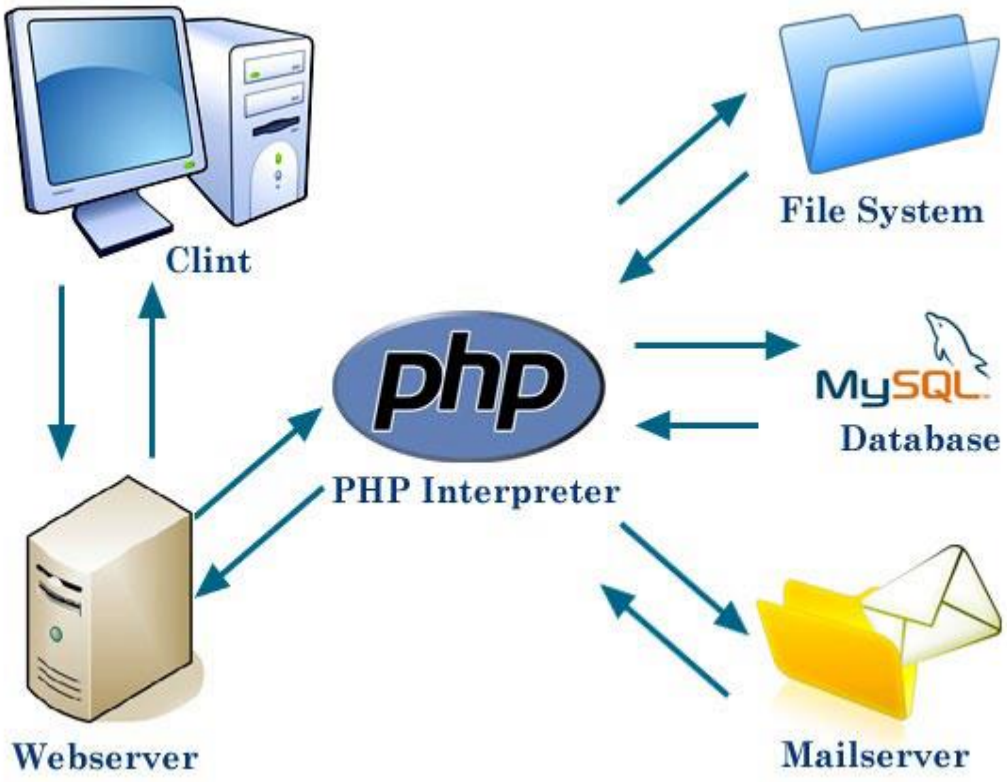

Figure 1:What is PHP and how it works

When a client requests a php file from the server, what usually happen is PHP engine process the PHP code in the file and do whatever the instructions are stated. Then it will produce a set of simple HTML code based on the results originated by processing the PHP code and send it to the client browser which renders the HTML code into user viewable data.

2.7.2 Apache Server

Apache is an open source and free web server software developed by the Apache foundation. This web server application is available in most servers. In year 2009, it became the only web server catering for 100 billion web sites on the internet.

2.7.3 MySQL database server

MySQL database server is the world most famous open-source database server. It’s known for the high speed, performance and the reliability.

2.7.4 Adobe Photoshop

Adobe Photoshop is a photo editing and image processing tool developed by Adobe Corporation. It is a high-end graphic designing tool packed with thousands of features for the end user. Nowadays, Adobe Photoshop plays a major role in developing user interfaces for software development. Especially for web based systems. It can be used to design beautiful user interfaces such as banners and logos and also has a unique image optimization process which can be used to compress images to lower the download time.

2.7.5 Database Management System

MySQL is used as the database server. It was chosen because it’s free, stable and easy to manipulate using PHP. MySQL does not require a lot of resources as other DBMS.

Chapter 03: Analysis and Design

3.1 Introduction

Software design phase is an iterative process in which requirements gathered in analysis are translated into a “blueprint” for constructing the system. At first, the blueprint depicts a high level abstract view of the system. Afterwards this can be elaborated into detailed functional and non-functional requirements.

3.2 Functional Requirements

The functional requirements of the system are the functionalities or services that should be included in an information system in order to satisfy the business needs. Following are the functional requirements of the project scope to achieve the objectives mentioned in Chapter 1. The proposed system consists of following main modules which consist of functional requirements described below.

3.2.1 Reference Data

Reference data module defines all the reference data which is needed in the system transactions. Following data will be maintained here.

- Categorization of Agents and Customers.
- Define charges, services.
- Defining Jobs and BL’s.
- Create Payment and Receipts.

3.2.2 Jobs and BL’s Handling

The jobs and bl’s section is available for authorized system user to create and manage jobs and bill of ladings under created jobs. Depending on the Job type and Bill of Lading type, system user can select the relevant container and allocate goods. Depending on the Port Of Loading or Port of Destination system user can select the Relevant Agent.

3.2.3 Payment Handling

The way of handling each transaction is discussed here. Handling the Agents and Customers payments and issuing of vouchers and receipts will be clearly defined. Payment for the Job and BL is made at the company’s cashier. No online payment will be done.

3.2.4 Report Generation

Flexible reporting procedure has been introduced for the Shipping company.

System is facilitated to generate descriptive reports in daily and monthly basis as per the given access. These reports are prepared for printable media in order to handover them to the respective personals.

3.2.5 Administration

System should be accessed by the authorized parties and access rights for each user group will be set by the system. The user login and user authorizations are created to enhance the security level of the system. Each end-user, Manager, System User, Accountant and Employee, has their own access level to cooperate with the system.

3.3 Non-functional Requirements

3.3.1 Availability

A system's availability or uptime is the amount of time that it is operational and available for use.

3.3.2 Reliability

The information screens and the reports generated by the system 100% accurate, thus the management can rely on the information to take decisions.

3.3.3 Extendibility

The system should be designed and developed in such a way that it can be extendable for future requirements. The design should always leave the space for potential requirements and it should be the base of the future developments.

3.3.4 Usability

The user interfaces of the system should be simple enough to understand and to be easily used by relatively inexperienced users. In addition, the flow of activities within the system must be memorable and the system should display understandable messages to advise the users where necessary.

3.3.5 System Security

The system should be highly secured and it must guarantee that no unauthorized personnel will perform any malicious activities in the system. The system should record the created user, last updated date and for security audits.

3.3.6 Portability

Portability of the system is very high because the usage of platform independent software to implement this system.

3.4 System Users

The following users are identified for the system users who can access the system by various limitations. The use cases clarify the activities which can be performed by each type of user groups.

- Manager (Import/ Export)
- Agent
- System User
- Customer

3.5 User Interactions with the System

Purpose of designing use case diagram is to present a graphical overview of the functionality provided by a system in terms of actors their goals and any dependencies between those use cases. They are listed under each actor the interactions and their responsibilities. User interactions with the system are illustrated by the use case diagrams shown below.

3.6 Use Cases

When designing use case diagrams, it was divided to four main categories for ease of drawing and understand ability. Use cases were drawn for each category and those are described below.

This system has 4 user levels. They are,

1. Manager (Import/ Export)
2. Agent
3. System User
4. Customer

3.6.1 Use case Diagram for System User

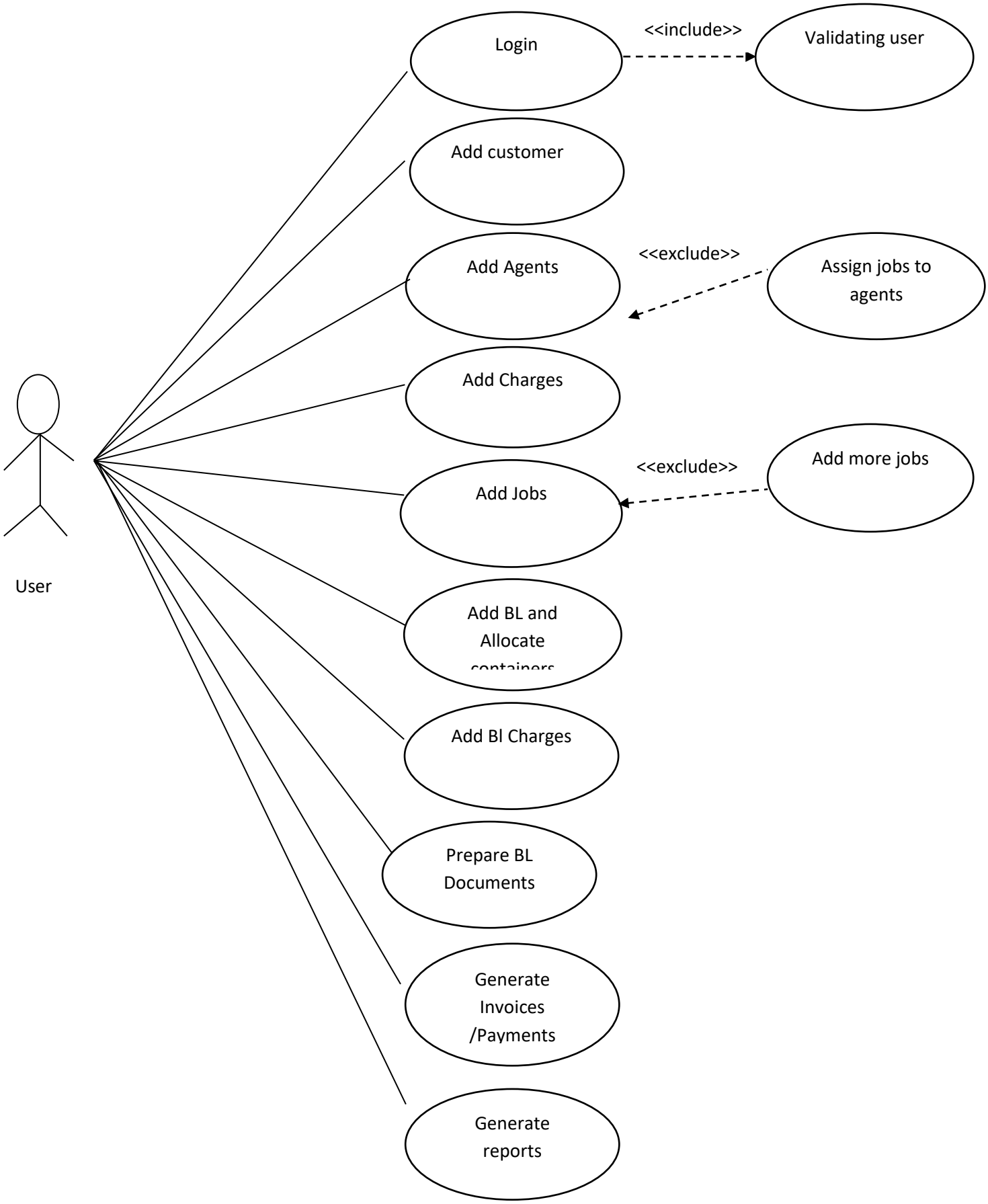

Figure 2*:* Use case Diagram for System User

3.6.2 Use case Diagram for Manager

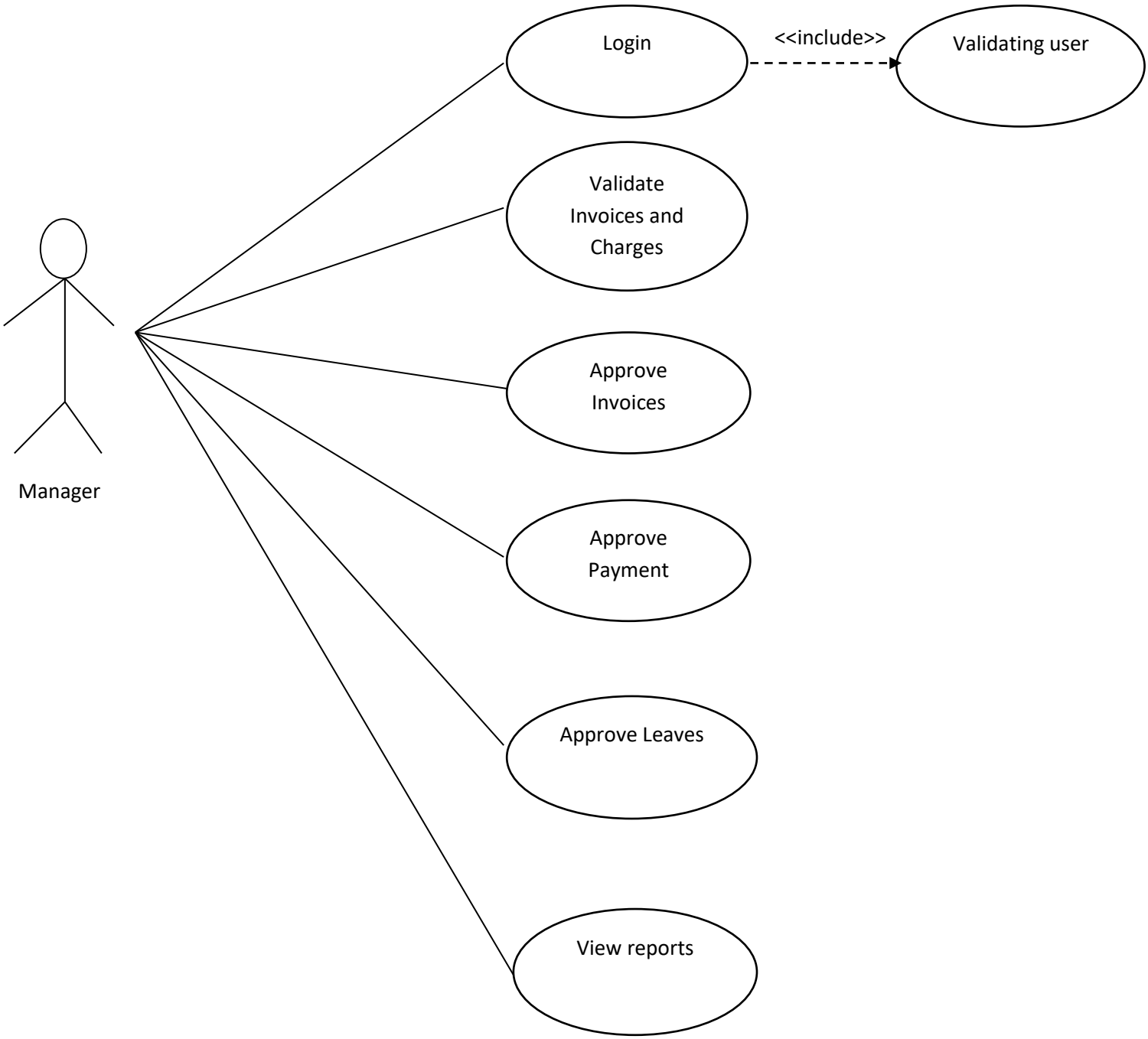

Figure 3: Use case Diagram for Manager

3.6.3 Use case Diagram for Customer

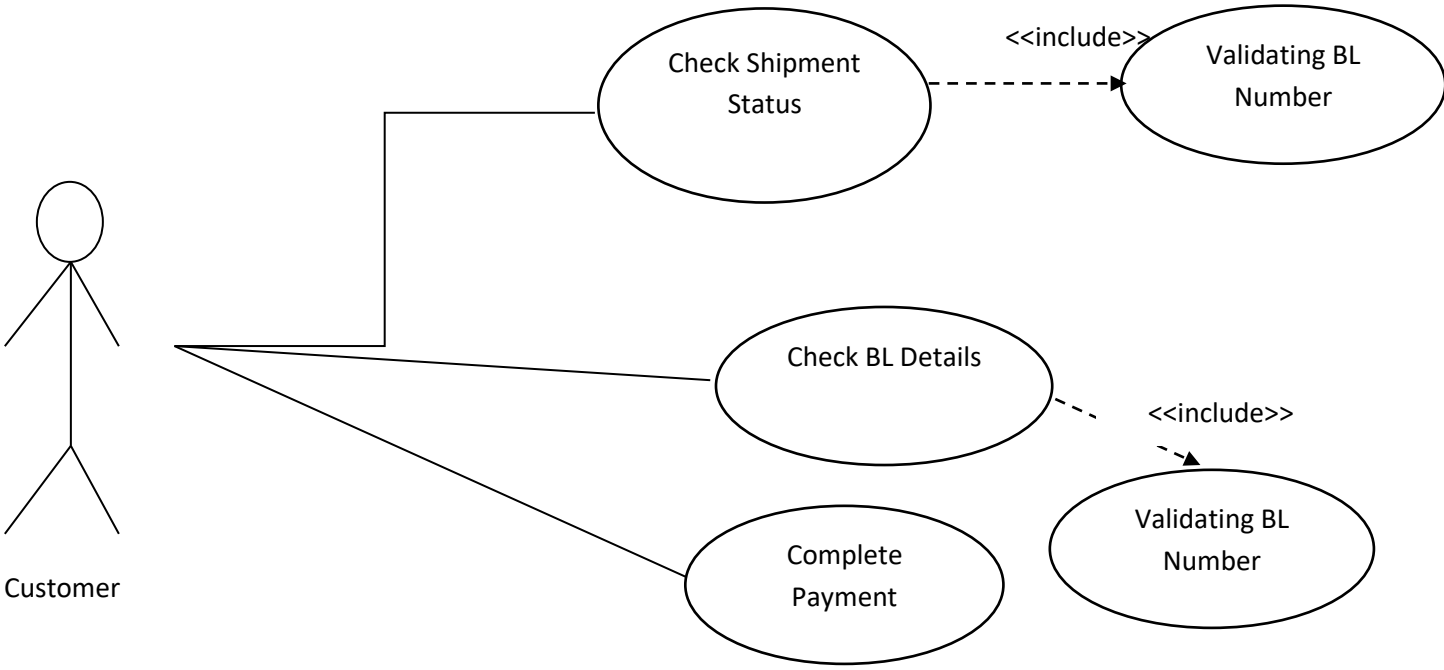

Figure 4: Use case Diagram for Customer

3.6.4 Entity Relationship Diagram

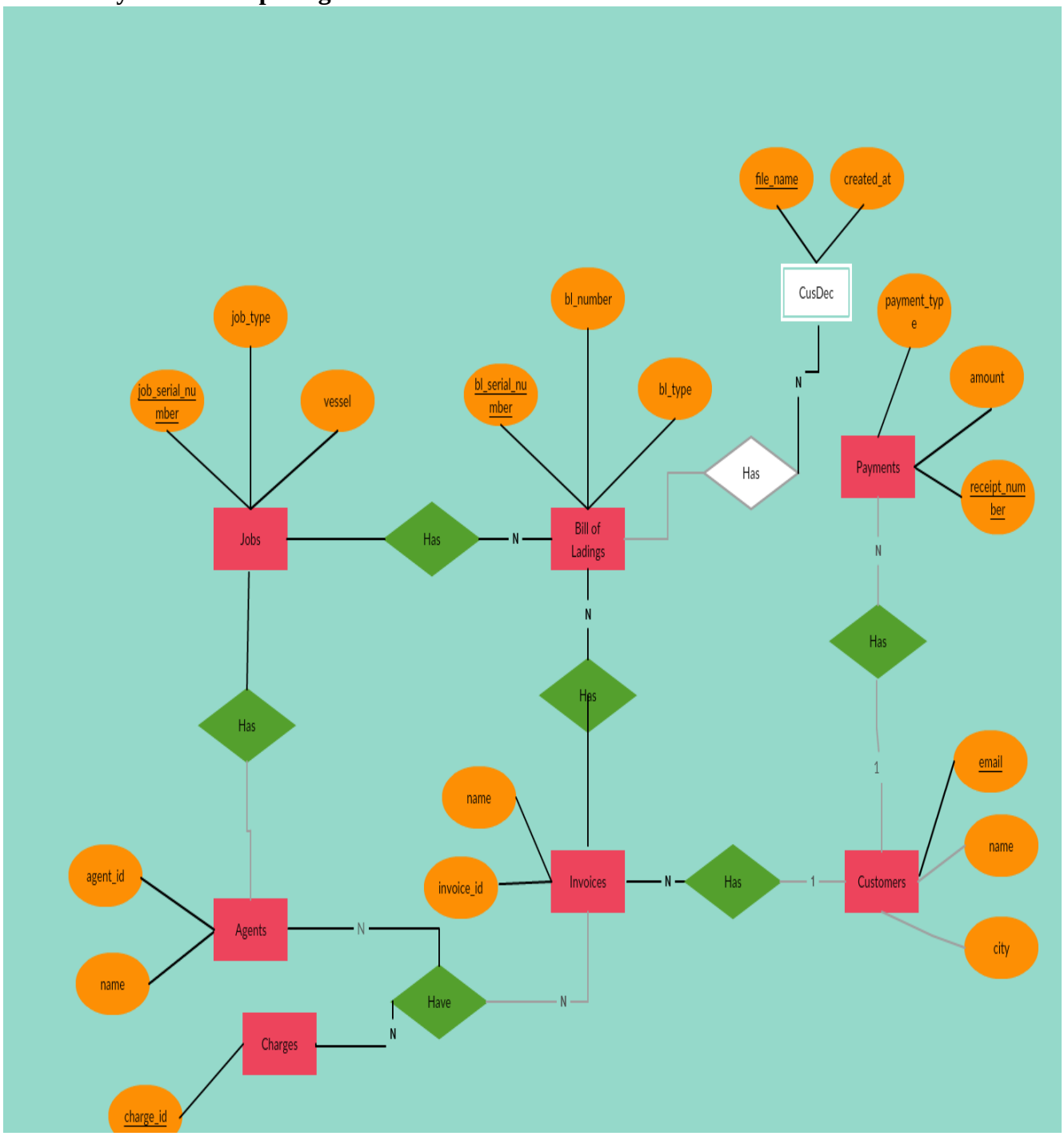

Figure 5: Entity Relationship Diagram

Chapter 04: Development Plan

4.1 Achieved Work

- Complete Use Cases and ERD of the system.
- Integrated an admin template instead of using a fancy template.
- Used Laravel 5.3, included Repository pattern.

4.2 Difficulties that I faced was;

I had some issue with the authentication of the system therefore had to use package which supports Laravel 5.3.

4.3 Detailed plan of work for the rest of the project.

Phase 01:

Jobs, Bill of Ladings and necessary master details. After that Generating necessary documents like Manifest, Delivery Order, Bill of Lading and Cusdec file.

Phase 02:

Charges module needs to be incorporated in order to complete invoices and payments.

Employee Management, their leave management, needs to be developed.

Phase 03:

Agent Module which supports CRUD operations of agents and allocating charges for them, generate invoices and make payments need to be developed.

Phase 04:

Employee management and leave management module. This will be a separate module as there is no connection between system users and employees according to the company specifications.

4.4 Work Breakdown Structure

		Name	Duration	Start	Finish	Predecessors	Resources
1		**Documentation**	**40d?**	**07/07/2016**	**08/31/2016**		
2		Initial requirement gathering	18d?	07/07/2016	08/01/2016		
3		Database designing	22d?	08/02/2016	08/31/2016		
4		**System Development**	**74d?**	**07/14/2016**	**10/25/2016**		
5		Create Basic structure	5d?	09/01/2016	09/07/2016		
6		Controllers/models creation	10d?	07/14/2016	07/27/2016		
7		Job CRUD	8d?	07/27/2016	08/05/2016		
8		bill of lading placement	6d?	08/05/2016	08/12/2016		
9		Manage Agents	5d?	08/12/2016	08/18/2016		
10		BL Charges and service manage	6d?	08/18/2016	08/25/2016		
11		Customer Manage	9d?	08/25/2016	09/06/2016		
12		Manage containers	4d?	09/07/2016	09/12/2016		
13		DO print	7d?	09/12/2016	09/20/2016		
14		Cargo arrival notice	3d?	09/20/2016	09/22/2016		
15		Invocing/Refund	4d?	09/22/2016	09/27/2016		
16		BL Print	4d?	09/27/2016	09/30/2016		
17		Search and Track Cargo	4d?	09/30/2016	10/05/2016		
18		Custom XML document	3d?	10/03/2016	10/05/2016		
19		Manifest/Cover Letter Print	5d?	10/05/2016	10/11/2016		
20		Employee CRUD	6d?	10/11/2016	10/18/2016		
21		Salary and Leave	6d?	10/18/2016	10/25/2016		
22		**Documentation**	**20d**	**01/05/2017**	**02/01/2017**		
23		Create SRS/Desertation	20d	01/05/2017	02/01/2017		
24		**Testing (Unit Testing, Quality Assurance and Bug fixing will be d**	**58d?**	**10/18/2016**	**01/05/2017**		
25		Unit Testing	15d	10/18/2016	11/07/2016		
26		Quality Assurance	20d?	11/07/2016	12/02/2016		
27		Bug Fixing	25d	12/02/2016	01/05/2017		

Figure 6: Work Breakdown Structure

4.5 Testing and Evaluation

This system was implemented to reduce paperwork and to provide efficient customer service to the customers of Shipping Industry and most importantly the employees of the shipping industry. Thereby maintaining agents, jobs and bl records will be much easier and provide a fast-accurate customer service without any delay.

At present, there is no online web site. This chapter presents the evaluation and testing of Shipping and Cargo Management System. A survey has been conducted to find the quality attributes.

4.6 An Overview of the Testing

This section provides an overview of the entire testing cycle. It presents test plan and the testing procedures and objectives of the testing. Also, this section includes the key areas which supposed to test according to the given test plan and the inputs for the testing. Output of the expected different test cases also present in this section.

4.7 Goals of the Testing

When considering the software development, testing is an essential part of the development cycle. In software development, it is very difficult to develop systems without any bugs or issues. But tried to minimize the errors within the product. To develop a quality software should have a test plan to preserve its quality. Test plan and the strategies has to be presented in the following manner.

Major Constraints:

1) Time - This is a limited factor for testing. With the given time duration try to finish the testing according to the test plan.

2) Staff - Lack of the human resources. This makes difficulties to test the system.

4.8 System Test Case

The test case will explain exactly how the testing process is going to happen. Using test cases, we can verify and validate the system. When writing test cases it should contain all the combination needed to test and the expected results. Test case may contain test id, test case description, inputs, outputs and the actual results.

For quality software solution, it`s essential to have a test plan. Testing of the system can guide and make improvements to the system and it helps to continue the project to the correct routing. Apart from that it guaranteed that the system is capable of satisfactory of its users.

4.9 Evaluation

Web developers should provide their products and services to market with high standards.

Once the project is completed, there should be an evaluation process to assess whether the project objectives are achieved or not. So project evaluation will perform an assessment to the project objectives.

4.10 Evaluation Method

This section proposes a model with a set of evaluation criteria that used by System for evaluation process which illustrated in the Table 4.1. It includes design, usability, content updates, security and performance of the website.

Evaluation Process	
Security	User need to register the system to get the facilities of the Ship Track. This makes authorized people to login to the system.
Content Update	Status of the Shipment will be updated by the system user in daily basis.
User Transaction	Customers can make their payments and collect necessary documents
Design and Maintenance	Laravel is used to develop the system and it helps to maintain well updated and secured system
Performance	How easy to navigate within the system and the processing speed to the functions.

Table 1: Evaluation Process

Chapter 05: Implementation

A short description of software, tools and technologies used has been indicated below.

5.1 Languages and frameworks used

Server side:

- PHP Laravel Framework (https://www.laravel.com/)
- MySQL database Management system
- Vagrant Homestead on Ubuntu

Client side:

- CSS (CSS2/ CSS3)
  - CSS library - Twitter bootstrap (http://twitterbootstrap.org/)
- JavaScript
  - Bootstrap JavaScript library (http://twitterbootstrap.org/)
  - Data table bootstrap addon(https://datatables.net/)
- HTML 5

Tools and Software's Used:

- PHP Storm
- Lamp on Ubuntu

PHP has been used over other languages such as ASP, Perl and CGI as the server side language due to several reasons. Simplicity of ease of learning, Ability to obtain support through online means such as forums, social media and blogs easily for issues due to large user base of PHP as PHP being an open source product and level of freedom received to use multiple editors due to PHP being open source scripting language are some of them. Additionally, ease of use across different operating systems as PHP is not OS specific, PHP being free of charge with no requirement for licenses or royalty fees and ease of finding frameworks due to larger user base could also be listed. Not limiting to those PHP was preferred over other languages due to ease of fixing problems, easier scalability with addition of more servers as projects grow and PHP's ability to call Java and create custom classes as well as the higher speed of PHP due to the fact that PHP is not dependent on a lot of system's resources.

On the other hand, JavaScript has been used as the client side language due to several reasons. JavaScript is executed on the client side and thus the web server is released from the strain of allocating bandwidth. JavaScript is relatively faster to the end user as the code is executed on the client's computer. This would encourage the users to use the system frequently without a hassle. Additionally, due to JavaScript's closeness to the English language it is relatively easier to learn.

Chapter 06: User evaluation and testing

Testing is one of most important aspects of the development life cycle. By conducting different test cycles in different time cycles, we can guarantee that system is in a steady situation.

Once a new section is developed, we need to make sure that other sections of the system is acting as expected. For that we will be using integration testing and smoke testing. In this chapter, it is discussed as to how the system user evaluation has been done.

6.1 Testing method

System was given to employees who handle most of the documentation process. Evaluation of the usability was the main aspect of the system as in we had to make sure that interfaces are more user friendly and descriptive of what they are doing.

6.2. User Evaluations

User feedbacks and evaluations are mentioned under APPENDIX-A & APPENDIX-B

6.3 Test Cases

6.3.1Test cases for Login

Test case	**Steps**	**Expected Result**
Check whether the user is able to login with valid user name and password	Go to login screen Enter valid user name and password Click Login	User is able to login successfully
Check whether the user is getting error message when trying to login with wrong user name and wrong password	Go to login screen Enter wrong user name and wrong password Click Login	User is getting an error message to check the credentials
Check whether the user is getting error message when trying to login with empty user name and empty	Go to login screen Do not enter user name and password Click Login	User is getting an error message to check the credentials

password		

Table 2: Test cases for Login

6.3.2 Test cases for Job Section

Test case	Steps	Expected Result
Check whether the user can successfully save a job	Go to job section Fill all the required fields Click Save Changes	User is getting the success message User is is redirecting to the job list
Check whether the user is not able to save a job without filling Job serial number	Go to job section Leave Job Serial Number empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Custom Unique Number	Go to job section Leave Custom Unique Number empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Hospital	Go to job section Leave Hospital empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Vessel	Go to job section Leave Vessel empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Voyage	Go to job section Leave Voyage empty Fill other mandatory fields Click Save Changes	User is getting an error message

Check whether the user is not able to save a job without filling Port of Loading	Go to job section Leave Port of Loading empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Port of Loading	Go to job section Port of Loading empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Master BL	Go to job section Leave Master BL empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Departure Date	Go to job section Leave Departure Date empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling ETA Date	Go to job section Leave ETA Date empty Fill other mandatory fields Click Save Changes	User is getting an error message
Check whether the user is not able to save a job without filling Total number of BL	Go to job section Leave Total number of BL empty Fill other mandatory fields Click Save Changes	User is getting an error message

Table 3: Test cases for Job Section

6.3.3 Test cases for User creation

Test Case	Steps	Expected Result
Check whether the admin is able to create a user account	Login to admin panel Go to User creation screen Fill User Name Fill Email Fill Password Fill Confirm Password Click Save	Admin gets the successful message User is getting an email with the link to Login screen
Check whether the admin is not able to create a user without a user name	Login to admin panel Go to User creation screen Do not fill User Name Fill other mandatory fields Click Save	Admin gets an error message
Check whether the admin is not able to create a user without an email	Login to admin panel Go to User creation screen Do not fill email Fill other mandatory fields Click Save	Admin gets an error message
Check whether the admin is not able to create a user without a password	Login to admin panel Go to User creation screen Do not fill password Fill other mandatory fields Click Save	Admin gets an error message
Check whether the admin is not able to create a user without confirming the password	Login to admin panel Go to User creation screen Do not fill confirm password Fill other mandatory fields	Admin gets an error message

	Click Save	
Check whether the admin is getting error message if the password and confirm password do not match	Login to admin panel Go to User creation screen Fill User Name Fill Email Fill Password Fill Confirm Password which is not similar to the password Click Save	Admin gets an error message
Check whether the admin is getting error message when using a wrong email format	Login to admin panel Go to User creation screen Fill User Name Fill Email in wrong format (1.test@gmail 2.test@-gmail.com 3.*(**&%%@gmail.com) Fill Password Fill Confirm Password which is not similar to the password Click Save	Admin gets an error message

Table 4: Test cases for User creation

6.3.4 Test cases for Edit User Profile

Test case	Steps	Expected results
Check whether the user is able to edit User profile	Login to system Go to Edit user profile Edit user name Change the password Confirm the password Click Save	User is getting successful message
Check whether the admin is getting error message if the password and confirm password do not match	Login to system Go to Edit user profile Edit user name Change the password Fill Confirm Password which is not similar to the password Click Save	User is getting an error message

Table 5: Test cases for Edit User Profile

Chapter 7: Conclusion and future work

Idea of building a new system is to streamline the process of the workers and provide efficient service to the end client. However, there is a list of areas where further improvements can be made.

7.1 Problem Encountered and Lessons Learned

In order to complete the system in a perfect way, requirement analysis was the critical part as continuous meetings, clarifications of the requirements and getting the feedback of developed sections from the end user. Because of the changing requirements, had to deal with system section changes as well as database changes had to be incorporated.

Managing system developments with the office work was bit stress full as well as hard. Being a software Engineer in full time, made me to achieve several deadlines with the projects and work some late nights.

Authentication mechanism on Laravel 5.1 was giving bit trouble and therefore had to upgrade the system into Laravel 5.3 and it caused some domino effect on few areas which already developed.

7.2 Critical Evaluations

Most of the systems features which are available and ship track system is very much similar. But we stand out of them because our system can be customized and there are less web based systems available at the moment. Last year Sri Lanka customs introduced a Shipment validation document called “Cusdec” and it should be submitted to the customs in order to release the shipments without taking a long time. There are only two similar systems which provide the above feature including our system.

7.3 Future Enhancements

This system was built considering the requirements received from the client. The following is amongst the future extensions that could be put into action.

- Track ships real time in order to provide the exact location of end client’s goods.
- Once the goods arrive, track containers exact location.
- Generate common documents for Port of Loading and Port of Departing agents.

8.References

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9.Appendices

9.1 APPENDIX A-EVALUATION QUESTIONARIES

	Strongly Agree	Agree	Somewhat Agree	Neither agree nor disagree	Disagree
1.I think the interfaces are attractive					
2.I think the application is not unnecessarily complex					
3.I think I do not need technical support to be able to use the system					
4.I think there was too much inconsistency in the application					
5.I would imagine that most people would learn to use this application very quickly					
6.I feel comfortable using the application					
7.Titles used in general process are similar and find no issues within the used titles of the application					
8.The application gives error messages that clearly tell me how to fix problems					
9.I have to put extra effort to handle this application than the existing manual process					
10. I can effectively complete my work quickly using the application					
11. I can recommend this application to others					
12. The system is behaving perfectly in all browsers					
13. I did not find the misleading guides within the application and the user manual					
14.Overall, I'm satisfied with the application					

Table 6: Evaluation Questionnaires

9.2 APPENDIX B-QUESTIONNAIRE ANALYSIS

1. I think the interfaces are attractive

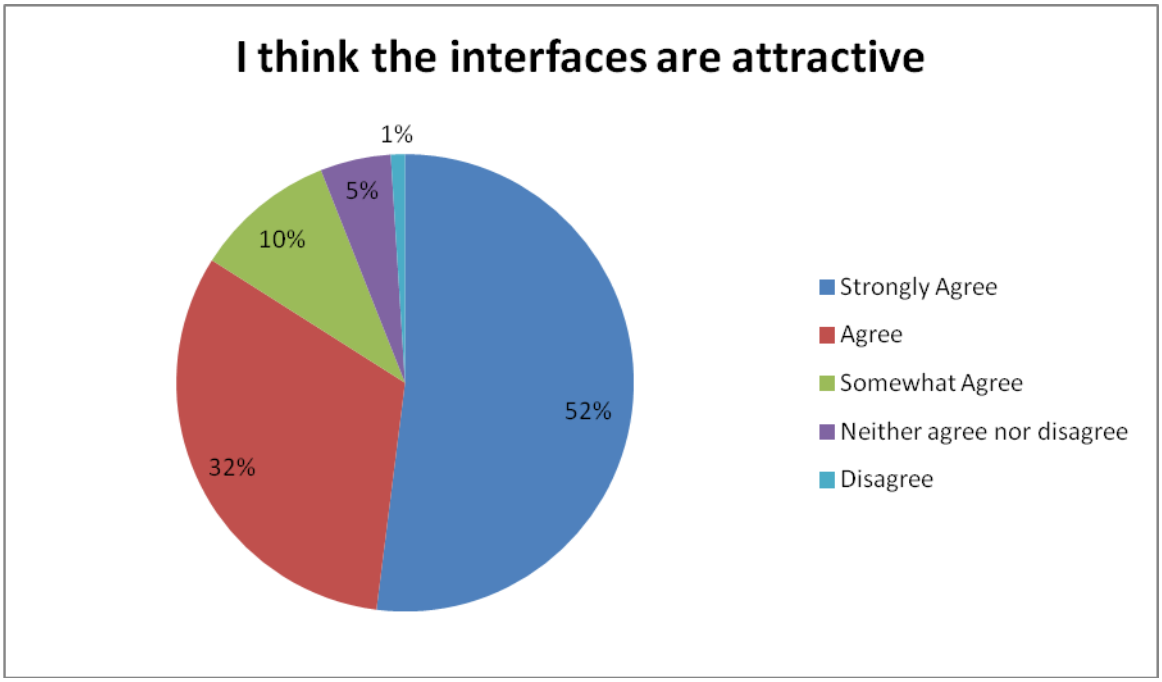

Figure 7: I think the interfaces are attractive

2. I think the application is not unnecessarily complex

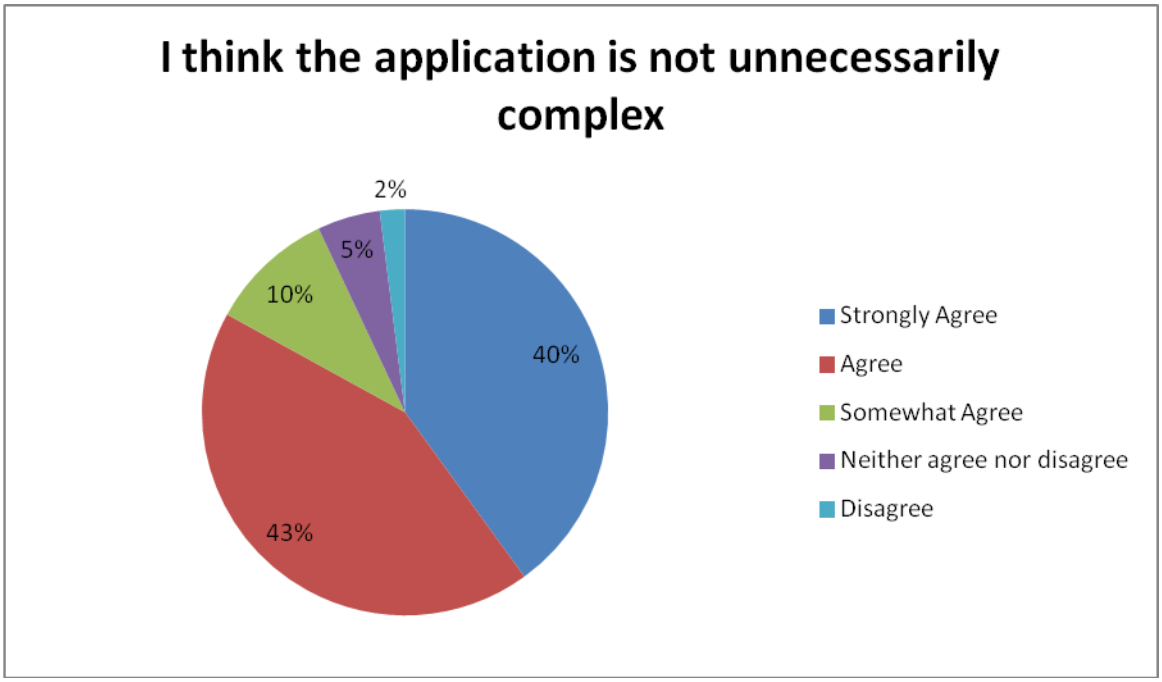

Figure8: I think the application is not unnecessarily complex

3. I think I do not need technical support to be able to use the system

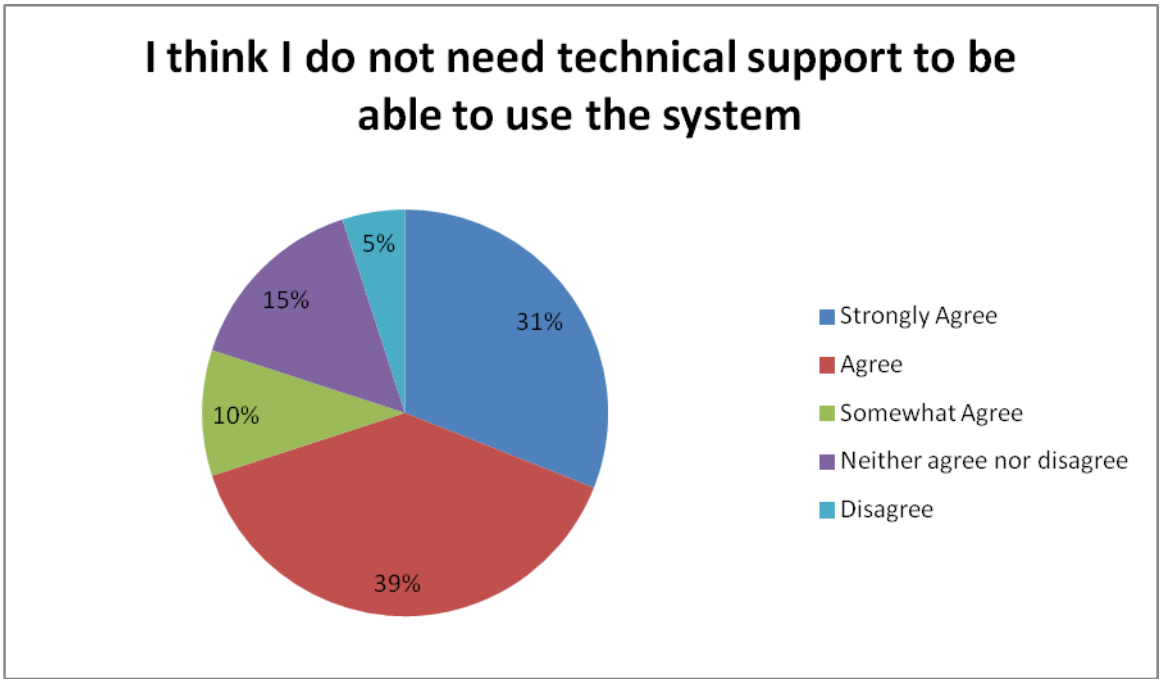

Figure 9: I think I do not need technical support to be able to use the system

4.I think there was too much inconsistency in the application

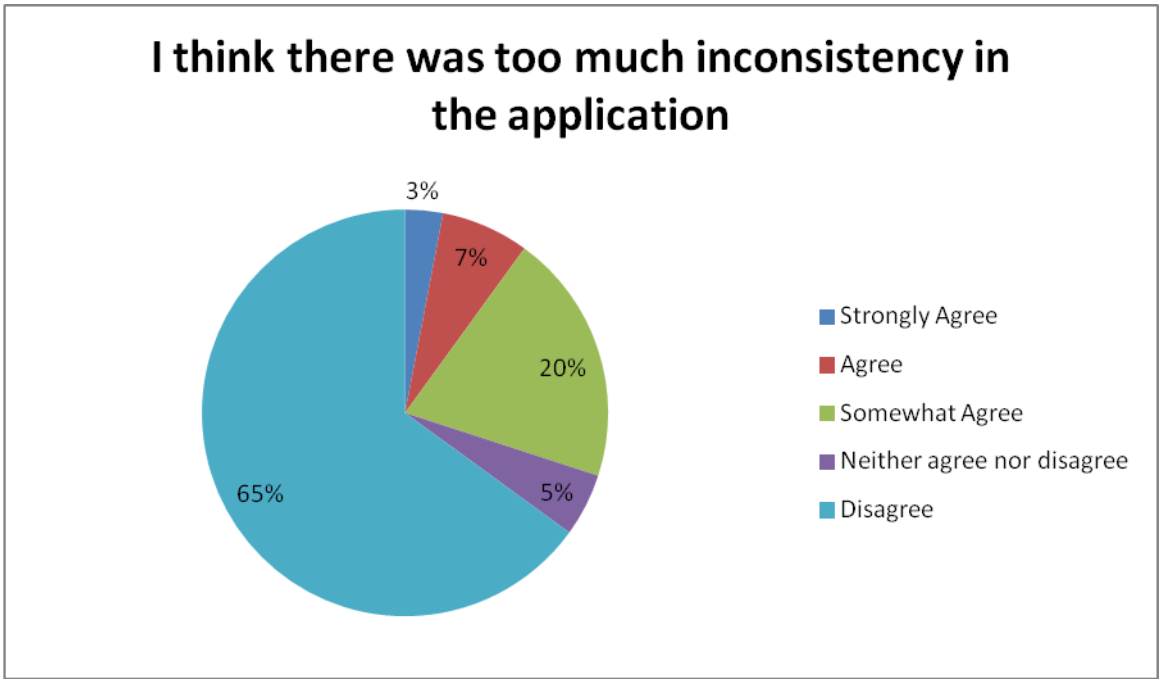

Figure 10: I think there was too much inconsistency in the application

5.I would imagine that most people would learn to use this application very quickly

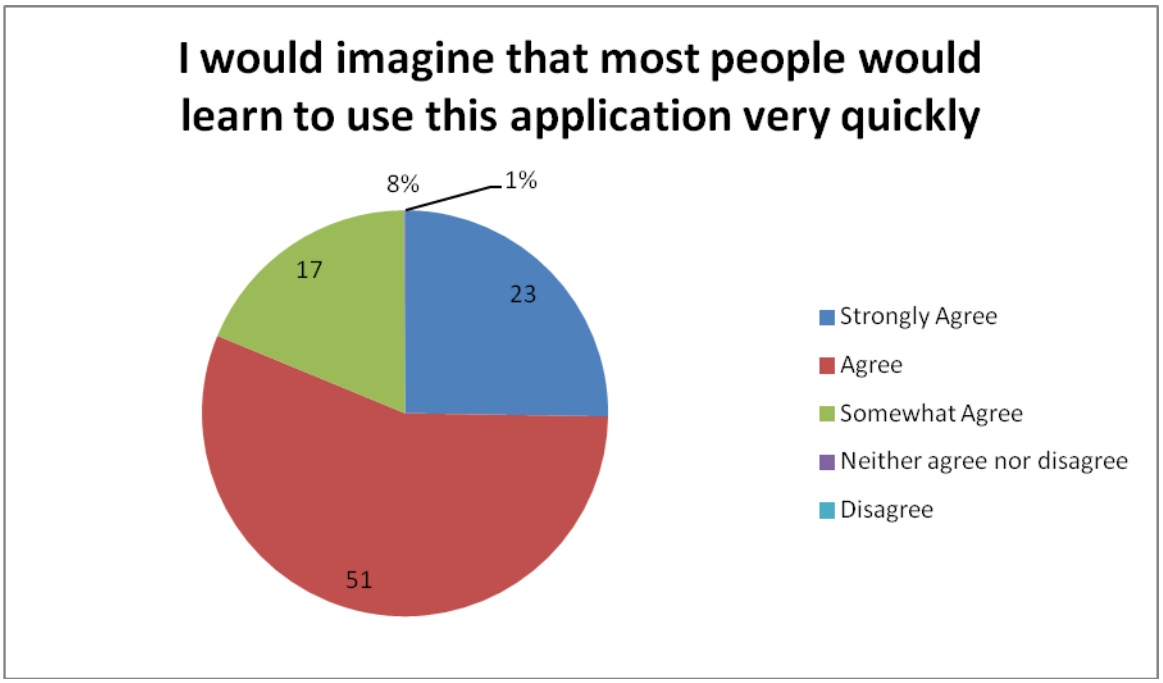

Figure 11: I would imagine that most people would learn to use this application very quickly

6.I feel comfortable using the application

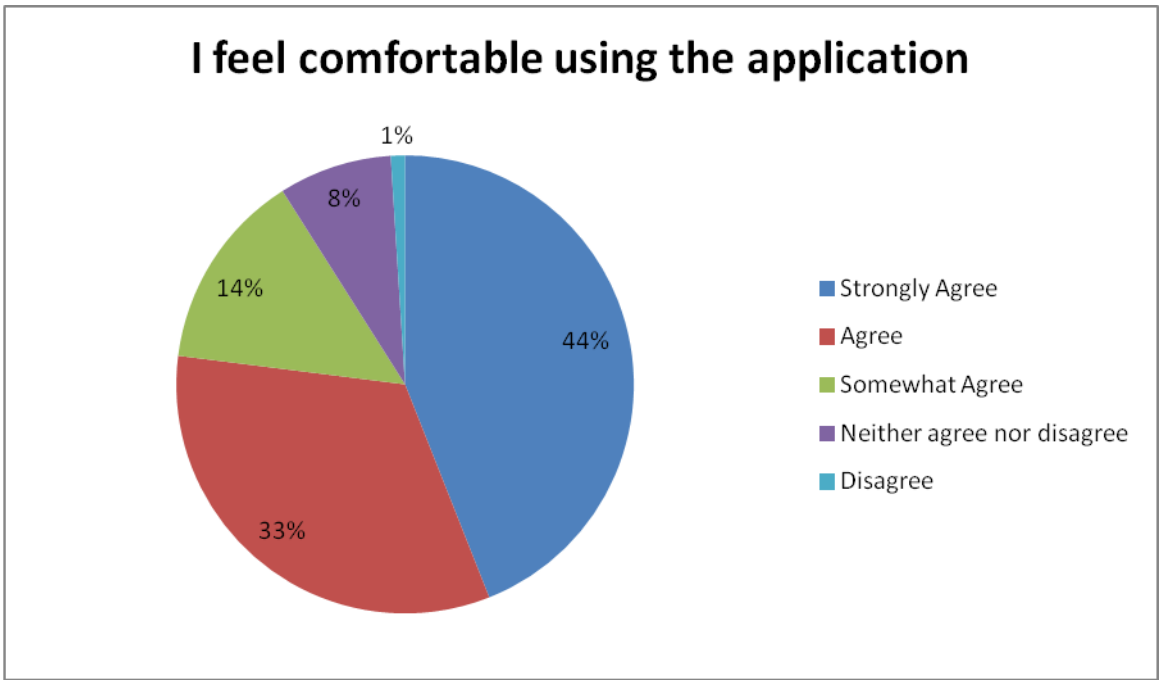

Figure 12: I feel comfortable using the application

7.Titles used in general process are similar and find no issues within the used titles of the application

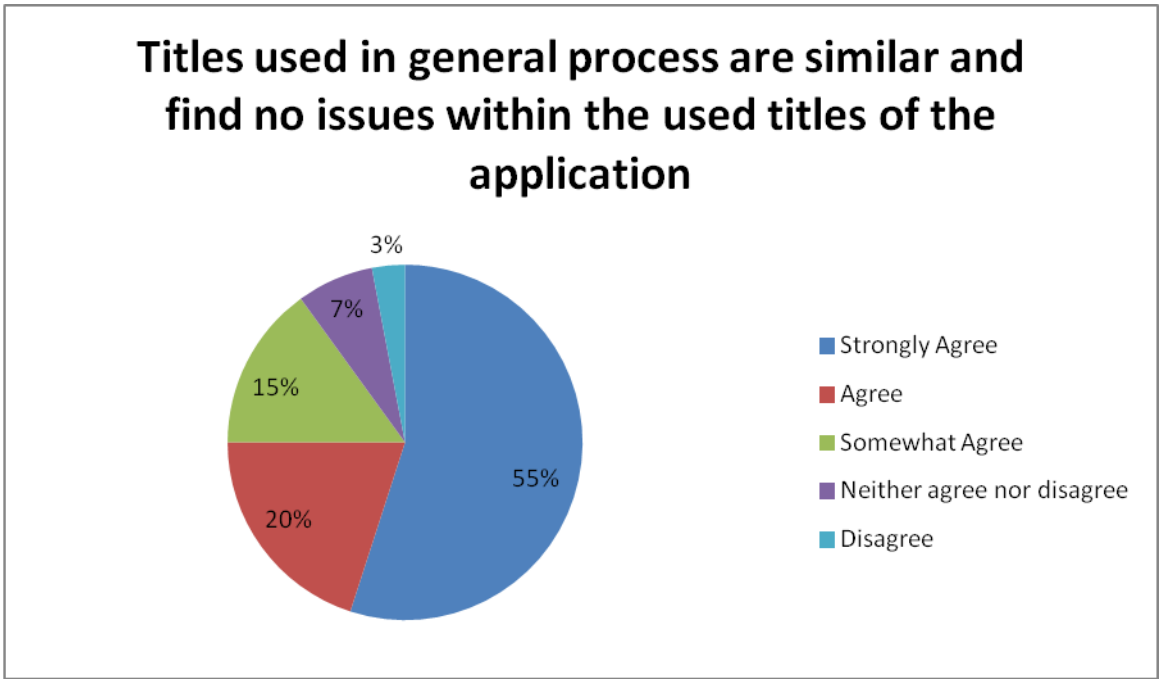

Figure 13: Titles used in general process are similar and find no issues within the used titles of the application

8. The application gives error messages that clearly tell me how to fix problems

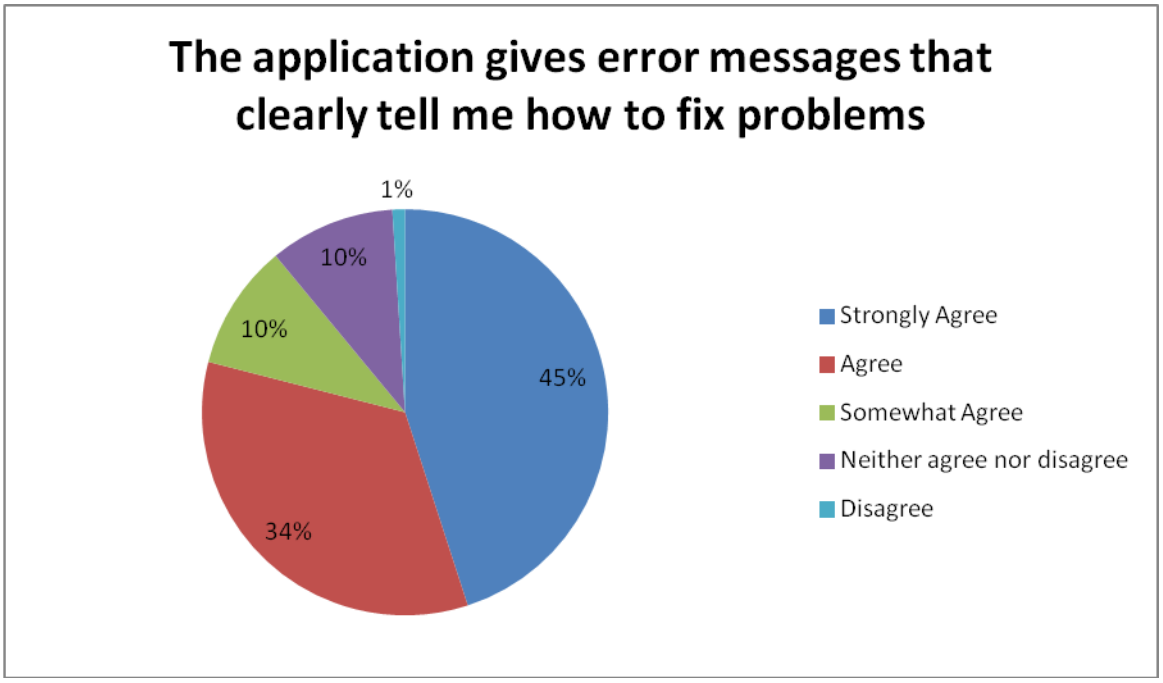

Figure 14*:* The application gives error messages that clearly tell me how to fix problems

9.I have to put extra effort to handle this application than the existing manual process

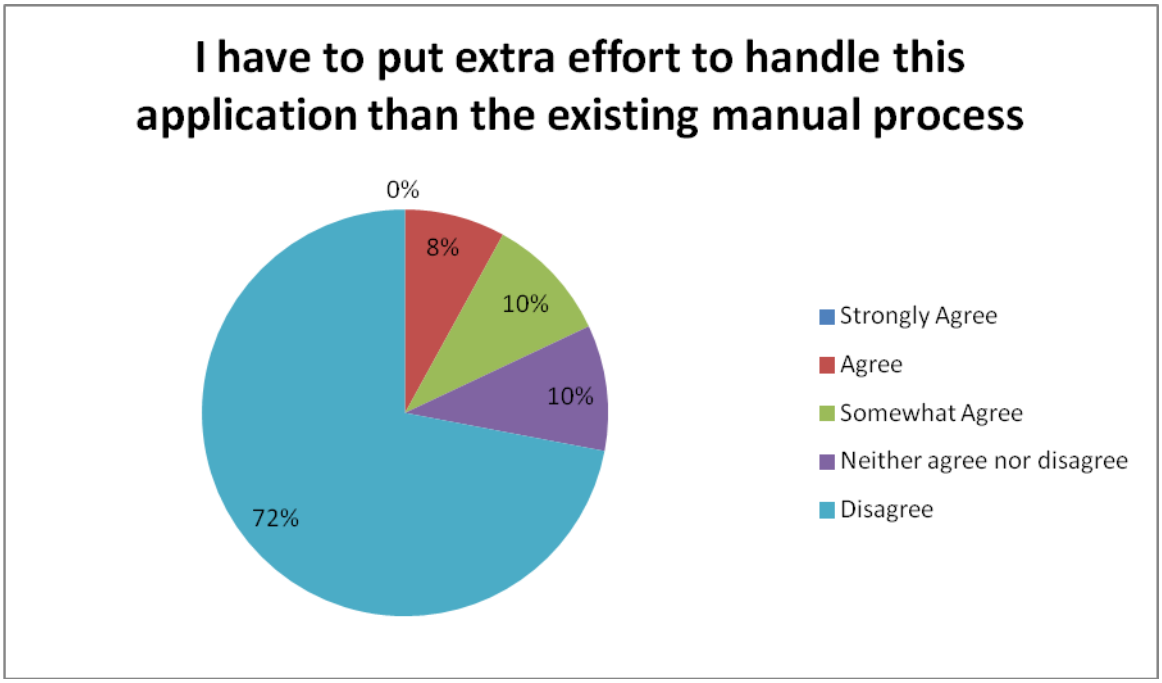

Figure 15: I have to put extra effort to handle this application than the existing manual process

10. I feel comfortable using the application

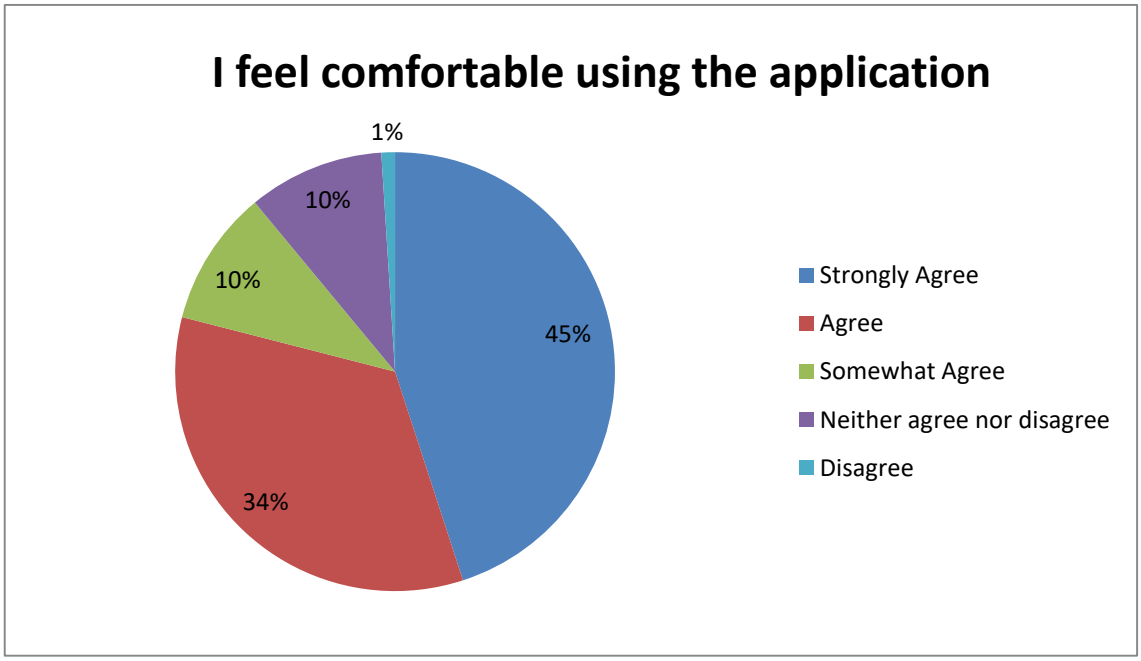

Figure 16: I feel comfortable using the application

11.I can effectively complete my work quickly using the application

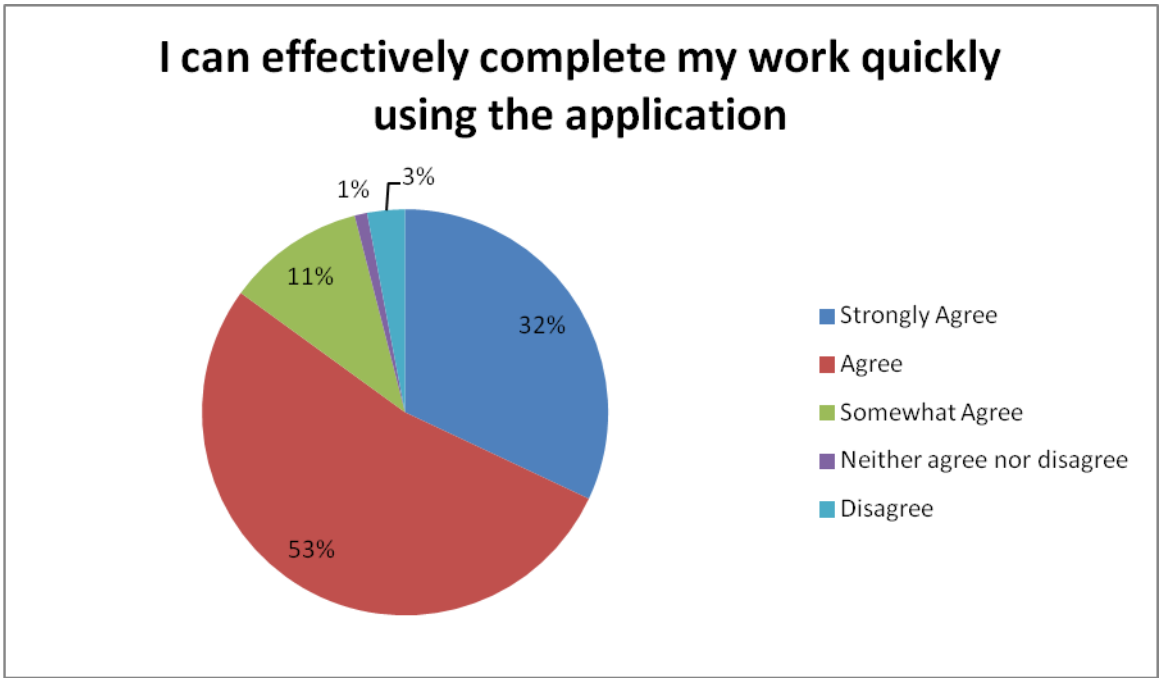

Figure 17: I can effectively complete my work quickly using the application

12.The system is behaving perfectly in all browsers

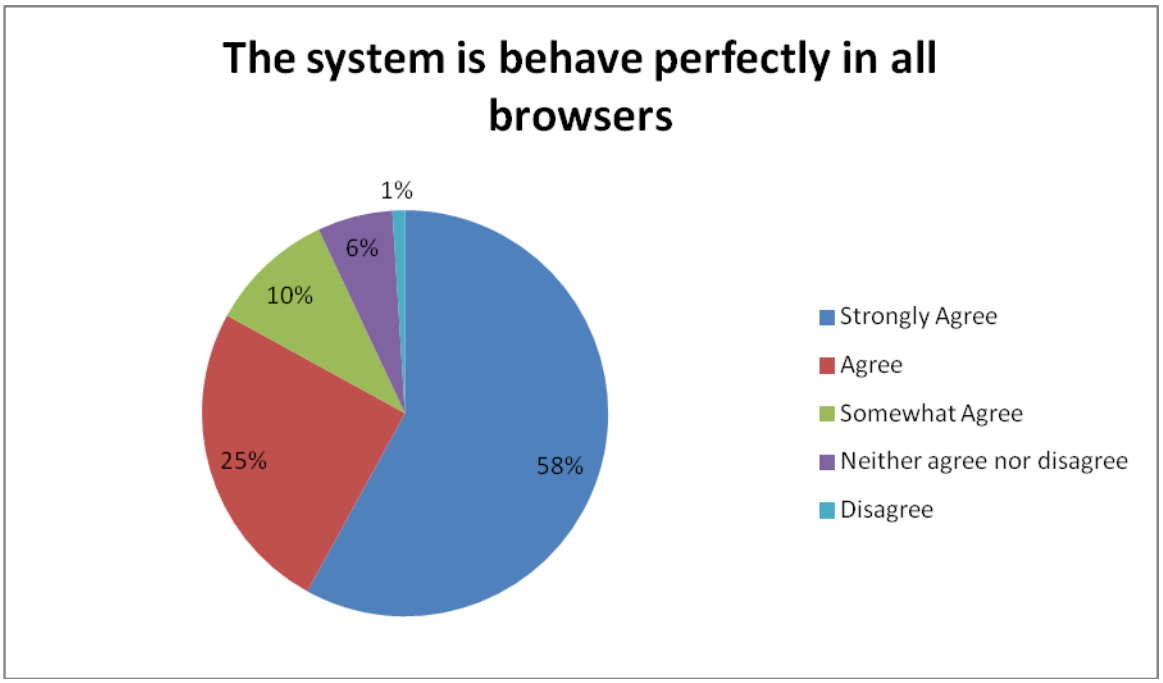

Figure 18: The system is behaving perfectly in all browsers

13.I did not find the misleading guides within the application and the user manual

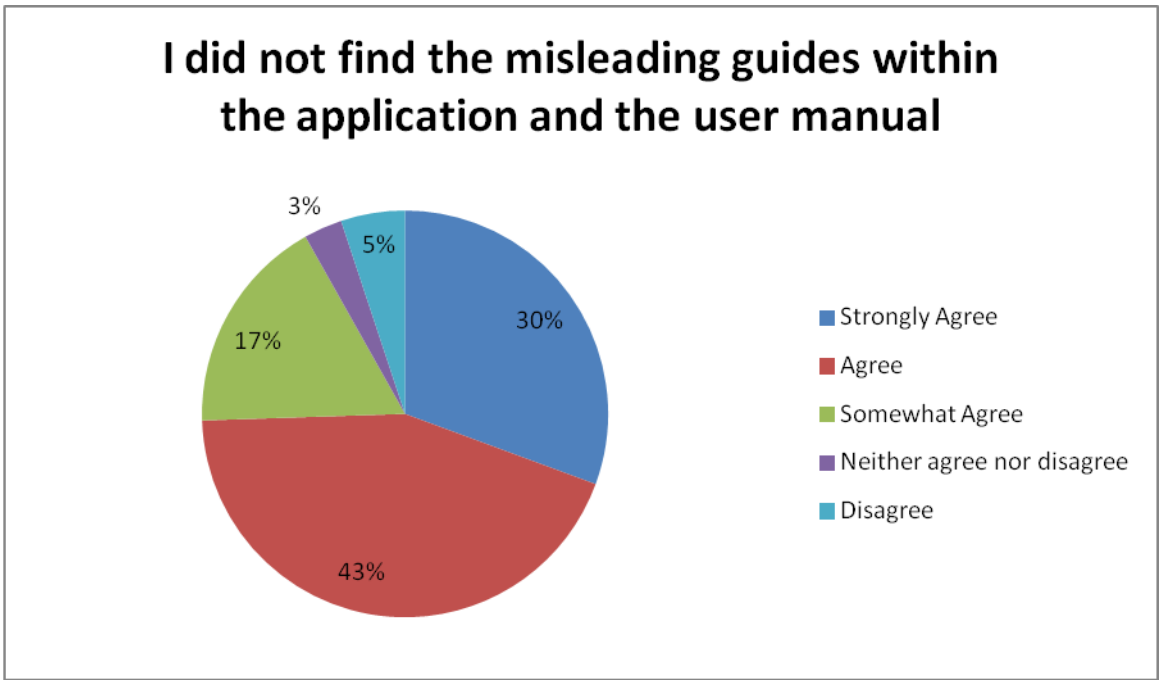

Figure 19: I did not find the misleading guides within the application and the user manual

14.Overall, I'm satisfied with the application

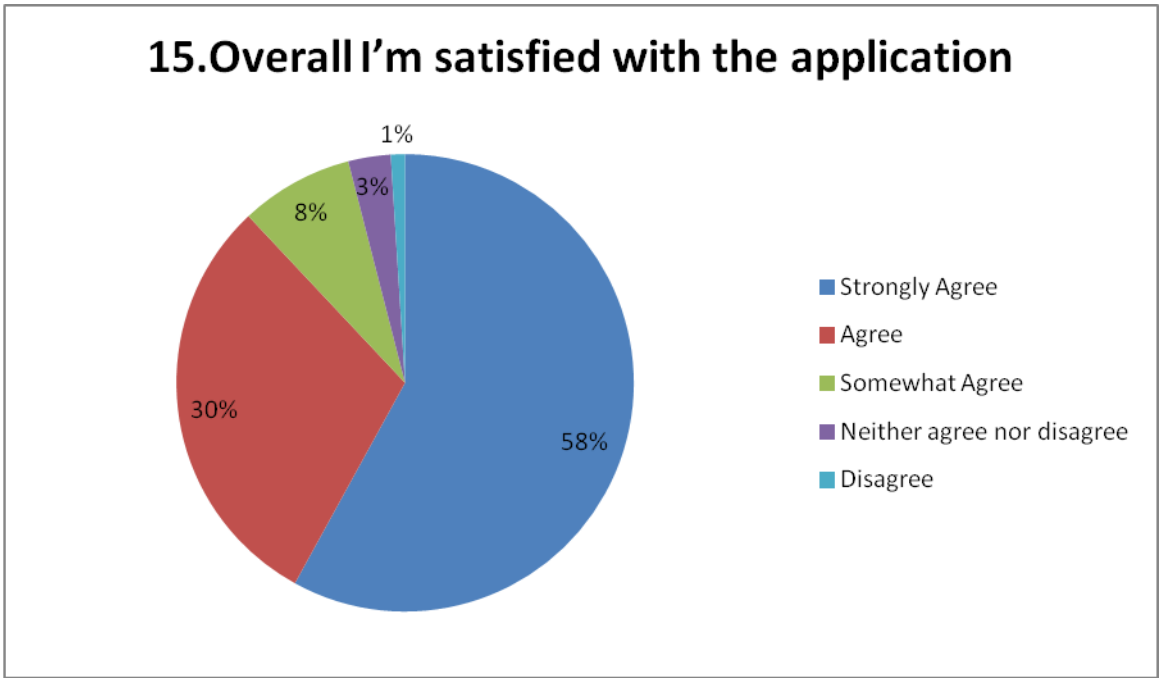

Figure 20: Overall, I'm satisfied with the application