CHAPTER 1
INTRODUCTION

1.0 Introduction to Project Title

Web application system has been commonly used to replace the manual operation in an organization. The rapid growth of computer use and the internet, both in business and in the home, offers another way that purchases can be made: consumers can make purchases online. Customers can quickly search on the internet for products according to their wanted specifications and then they can complete the purchase online using virtual shopping carts that can record the choices that a customer makes. After proceed with payment, the products will be delivered to the customer's location that was provided earlier on. In this environment of customer choice, students have the ability to search for a range of products on the web application often with better choice and expedience compared with traditional retail shopping.

Similar idea was proposed due to help student to manage time and effort better and to help the university mini mart to be more uniform and productive. Student who often uses the university mini mart services frequently face problem where sometime item that student is looking for to buy is not in stock, for example milk and bread. Thus, this project was proposed that is to have a web-based application platform to cater the student and the university mini mart operator. This system will be easier for the student as it will display what the university mini mart is selling and the availability in stock

This web based application system namely I-Mart developed in coherent with Software Development Life Cycle (SDLC) that is Waterfall-model. Programming approach was differentiated to apply the APRIORI model in order to develop the buying pattern module. Several phases were designed that are requirement gathering phase where student performed data collection via literature review and analyzing environment of mini mart, design and development of the system, testing to demonstrate simulation by testing sample of inventory records using black-box testing and white-box testing methods, and last phase that is reporting.

All phase were done within period of two semesters and all input and output of this

project were documented within this report.

1.1 Objectives of Project

The objective of this project called I-Mart is to create a smart inventory system to meet the needs of both students and university mini mart provider. It will increase efficiency of business for the operators and saving time for the student. Therefore, I-Mart is developed to achieve the below objectives:

1. To develop web based application system that can store inventory details and item purchased.
2. To include pattern recognition functionality using APRIORI model.
3. To test the effectiveness of the system design.

1.2 Scenario Problem Statement

The current university mini mart is not interesting and up-to date. The inventory and stoking system is also not organize as student often leave the mini mart empty handed as the item they are looking for is sold out, these has even to myself. The queue at the university mini mart cashier is long during the peak hour and it is time consuming for the student. These are just few highlighted burden for student.

Another problem was identified by visualizing the operator as they find it difficult to keep track of the items in the inventory of the mini mart. The manual records are kept in a file where it is a possibility of misplacement. The management of the inventory items is also need to be managed as the items need to be updated all the times to make sure of its availability.

There are a few problems that were analysed while the requirements were gathered. The problem statement can be divided into two, which is from students and operator perspectives. From student perspective, traditional ways of buying are time and effort consuming, lack of knowledge on availability of product while from operator perspectives, the manual records keeping for items is inefficient and not reliable as it can easily be misplaced. They still using the traditional methods to manage and keep their records and

data. Storing data into record book is wasting lots of time. It also takes a lot of files and storage area to ensure all the previous records are kept. During the day business work, the mini mart operators seldom update the files. In fact, they waited until the shop is closed to update their record book.

The availability of stocks is very important for mini mart to avoid the business running out of stocks. However, mini mart operator doesn't seem to have enough time or energy to calculate and inspect all products by using this traditional method. The true quantities of each of the products are unclear. The problem is they have to check the products physically. The products available in a mini mart might reach up to hundreds. It is impossible for the mini mart operators to calculate all the available products one by one.

By providing this web application platform between the mini mart operator and student, the above problem mention for student can be prevented. This website displays item availability and student can make order online and pick-up at the item at the cashier later. From the mini mart operator side of view, student found these three (3) specific area or tasks that need major improvement that can help them perform and use their resource to full potential. The founding is shown as below:

1. Project 1 –Daily Item sold Report
2. Project 2 – Individual student purchases report
3. Project 3 – Inventory Management Report

All these report above is lacking and it's not implemented by the current university mini mart operator. This report is tools for buyer's behaviour pattern which can help the university mini mart operator plan his work-force and inventory and customer satisfaction better.

1.3 Rationale of Problem Solving and Method Available

The idea of replacing the traditional method of recording inventory with a computerized system will benefit the seller in many ways such as follow:

- ✓ Managing mini mart to be able to keep track of items available.
- ✓ Better understanding of buyers' behavior also leads to better inventory and resource management which will maximize their profit.
- ✓ Current mini mart provide daily groceries mean while after I-Mart being

implemented, it is a central role and create marketing relationship.

- ✓ I-Mart is practice two ways direction rather that current system which is one way.
- ✓ I-Mart provides continuous intersection.
- ✓ I-Mart full of spectrum of communication goals, such as informing, persuasion and listening to customer's needs.
- ✓ I-Mart works as active participant that can contribute to improve mini mart rather than passive recipient.
- ✓ I-Mart can be used as information sharing even after the transaction being done.
- ✓

This web application also has other added benefit to the mini mart operator and also their customer. One of the benefits is provide better customer satisfaction and preference for student to shop inside the university rather than going out to buy their groceries, student can save their time and energy by browsing the application for item availability first before going to the mart to pick-up their item.

The benefits are the university mini mart provider can understand the customer/buyers buying behavior better by implementing this web application. Better understanding of buyer's behavior can lead to:

1. Support delivery of short and long term business objectives.
2. Identify current and future needs for staffs and their development.
3. Forecast future workforce requirements and competencies.
4. Determine the gap between current workforce and future requirements.
5. Identify changes in workforce functions and workload.

While the impact of ineffective understanding of buyers behavior can give the contrast of the above information such as:

1. Opens to tangible and costly business risks
2. Resources no fully utilized at optimal capacities.
3. Non-optimized workforce which led to non-motivated employees, loss profits etc.

All of the benefits mentioned can be obtained by implementing a computerized system

that act as a platform for records management and indirect form of communication between seller and customer. Ready-made version of this system can be easily downloaded from internet or user can opt to develop it own their own to adjust according to their requirement.

System used for this project developed by the student themselves in accordance to standard idea in inventory management system and mini mart environment.

1.4 Project Scope

I-Mart is a web based application system involves both the user side and administration side. There is also Main Page, where the user needs to login before put their order in the checkout/order page. The details are as follows:

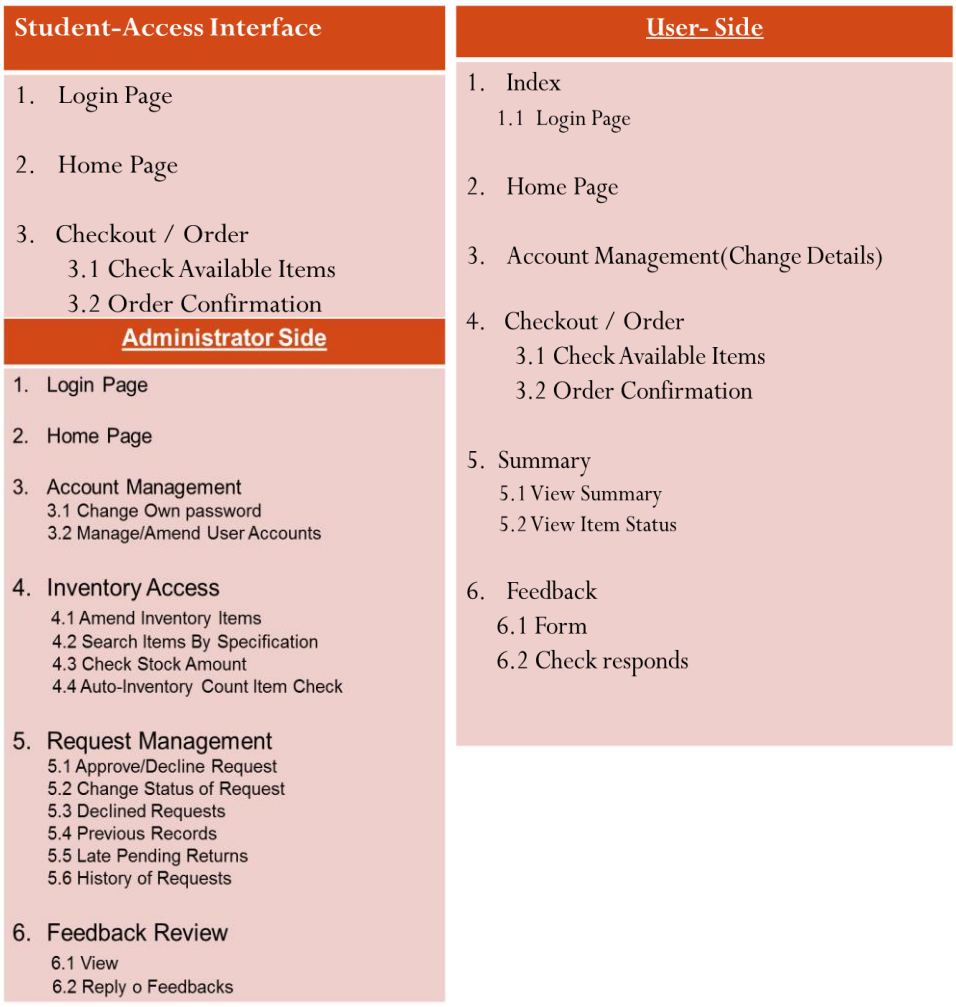

Figure 1.1: User Role in I-Mart

In order to test for the functionality of each module, sample of inventory from mini mart were recorded within the system. These data further being used to recognize the buying

pattern of customer.

1.5 Limitation of Project

1.5.1 Time Constrain

Development of I-Mart is bound to time allocated for FYP 1 and FYP 2 which cover period of two semester. Real project development for inventory management system will require longer time for each phase. To solve this issue, student minimizes the scope for the whole project to be finished within time frame estimated.

1.5.2 Simulation Based on Sample of Inventory

This project developed based on simulation for inventory management of mini mart in college residency. However the if student are to apply full scale simulation which include all inventory within a mini mart, these will require longer time, bigger and different system design. Therefore, this project will only include a sample of inventory for the system simulation.

CHAPTER 2

LITERATURE REVIEW

2.0 Feasibilities Studies of Computerized Inventory Management System

People are used to going to retail stores to find and purchase products. In usual practice, a customer goes to a market or shop and the customer chooses products carefully and slowly by physically and visually surveying the items. After the customer finds out the products that he wants to buy he takes these products to the checkout to make payment. The customer might have to travel a long distance and wait in a queue. The above procedure is the traditional shopping method, but it is not the only shopping method available in this day and age.

The proposed system is to develop an online store portal integrated with an inventory management system. The web based application or I-Mart not only provides services to mini mart operator and customers but also allows the store owner to access information stored in the inventory management system online. The online web application has a basic buying and selling functions that support the online transactions. All the users are to equip with an internet connections to access I-Mart. The inventory management system is used to manage existing stocks. All general in-house processes can be carried out through the inventory system. For instances, activities of checking inventory stock balances and obtaining historical sales transactions.

According to Pennington, Wilcox and Grover (2004), customers can find the products they want much more easily by using online web application to locate products in a fast and convenient way. Girard, Silverblatt and Korgaonkar (2002) found that more than half of the students who choose online web application stated that online shopping are much more convenient than traditional styles of shopping. Normally, these kinds of web application must have strong search capabilities and effective design for customers so that they can easily find the products that they want.

Heijden (2003) also agreed that online shopping makes shopping more convenient. Online shopping brings a sense of freedom to customers. Before online shopping was introduced, customers normally travelled physically to the shop to find the products that they wanted to buy during the opening hours of the retail shop, but sometimes the goods they are

looking for is not available. By web application, the customer can buy products anytime, day or night, and the process of making purchases is much more convenient than traditional, in-store shopping styles and no queue.

By web based application, the customer can also find brief descriptions and summary information online of the availability of the products. Online web application generally provide comprehensive details where possible: such as how many products are available for sale, images of the products, their functionality, even the instruction and assembly manuals of many products can be downloaded. Customers can view this information without going to retail shops in person. By applying the website based application, customers do not need to physically travel to retail shops in order to find the products they want. Online buyers can use the website to find products much more quickly and efficiently, saving time and effort in doing so and no need to waste time standing in a queue to pay for their chosen items.

Hunt (2007) discussed the various methods of online shopping while Wolfinbarger (2001) studied the situations involved in online shopping; and Kimberly (2007) talked about the difference between online shopping and retail shopping. These papers discussed the online shopping behavior of many kinds of consumers in connection with a wide product range. Students represent a large consumer group in the marketplace. According to Gardyn (2002), American college students purchase around 200 billion US dollars' worth of products annually. In China, the total number of internet users reaches 13.2 billion and more than 30 billion people shop online. From this group of people about 81.3% are less than 35 years old and logically a significant percentage of these younger users are students (Huang, 2007).

According to Kimberly (2007), many internet users enjoy their online experience and spend some time on the internet every day. In the research by Golden (2007), it is observed that students have much leisure time after class that they can use to surf the internet. With using internet more, students' lives depend more on the internet and it encourages more online shopping. The invention of the Internet has created a paradigm shift of the traditional way people shop.

A consumer is no longer bound to opening times or specific locations, he or she can become active at virtually any time and place and purchase products or services. The Internet is a relatively new medium for communication and information exchange that has become present in our everyday life. The number of Internet users is constantly increasing which also

signifies that online purchasing is increasing (Joines, Scherer & Scheufele, 2003). The rapid increase is explained by the growth in the use of broadband technology combined with a change in consumer behavior (Oppenheim & Ward, 2006).

The Internet is considered a mass medium that provides the consumer with purchase characteristics as no other medium. Certain characteristics are making it more convenient for the consumer, compared to the traditional way of shopping, such as the ability to at any time view and purchase products, visualize their needs with products, and discuss products with other consumers (Joines et al. 2003). Oppenheim and Ward (2006) explain that the current primary reason people shop over the Internet is the convenience. They also recognize that the previous primary reason for shopping online was price, which has now changed to convenience.

Online shopping is the process consumers go through when they decide to shop on the Internet. The Internet has developed into a "new" distribution channel (Hollensen, 2004) and the evolution of this channel, e-commerce, has been identified by Smith and Rupp (2003) to be the most significant contribution of the information revolution. Using the Internet to shop online has become one of the primary reasons to use the Internet, combined with searching for products and finding information about them (Joines et. al, 2003). Smith and Rupp (2003) also state that the consumers have never had access to so many suppliers and product/service opinions. Therefore, the Internet has developed to a highly competitive market, where the competition over the consumer is fierce. In order to have an impact on and retain consumers, in a competitive market, Constantinides (2004) stated that the first step is to identify certain influencing aspects when purchasing online, these can be regarded as factors.

New information and communication technologies are constantly emerging, altering business methods, and particularly, the relationship an organization establishes with its customers. Technological innovations ensure that, as soon as consumer behavior in any field is on the verge of stability and explain ability, new products and services are introduced to destabilize the consumer behavior model so as to create competitive openings for challengers, niche players, and other contenders.

The forgoing analysis indicated that gender and family income has significant relationship with overall attitude towards online shopping and environment characteristics and there is no

any significant relationship between internet access and overall attitudes towards online shopping, but weekly internet use having in e-shopping and willingness to more shopping online have significant relationship with overall attitudes online shopping. In addition, there is a significant difference between human senses in online decision making process.

For online retailers need to ensure that online shopping process through their website is designed and made as easy, simple, and convenient as possible. The web site should also be designed in such way not to confuse potential buyers; they should ensure that they provide an efficient delivery service to their customers. The leading telecommunication and internet service providers in Chennai need to provide cheaper internet access in order to encourage more consumers to become internet users.

A unique characteristic of online shopping environments is that they allow for the implementation of very high degrees of interactivity. It is a multidimensional construct, the key facets of which include reciprocity in the exchange of information, availability of information on demand, response contingency, customization of content, and real-time feedback (Michael and Erik,2001;Rowley, 2000). In the context of computer-mediated communication, a distinction has been made between person interactivity and machine interactivity (Venkatesh, 1998; Venkatesh et.al., 2003). While the former describes the ability to communicate with other individuals, the latter refers to the ability to interactively access information in an online database (Hoffman and Novak 1996).

Indeed, the Internet has not only provides new ways for consumers to learn about and acquire products and services online but has also reshape consumer buying patterns. With this background, the general objective of the research paper is to explore factors that affect potential of online sales of a specific product and to investigate the consumer online behavior, potential of online sales to identify those factors that influence online potential sales of a specific product.

2.1 Analyzing Buying Pattern Using APRIORI Model

Buyers behavior which is also called as Buyers Pattern consists of putting right number of item, for right kind of people at the right place, right time, doing the right things for which they are suited for the achievement of goals of the organization. Buyers have got an

important place in the arena of industrialization as it is considered as one major of the part in Business Plan & Strategies.

In the real market, many superpowers have implemented this method to help them achieve their goal. For example recently Tesco and Cold Storage Malaysia have provided this service. By analyzing purchases made by customer, supermarket positioned their item accordingly. The type and category of item does play an effect in influencing customer to choose product. For example, customers that buy milk powders and diapers have a high likelihood to buy baby wipes and solid food for babies. Therefore based on this analysis, supermarket will create a rule to position these two items within the same shelf or within the same aisle with milk powders and diapers.

These can be done using a computerized system that programmed on predictive model such as APRIORI. This model will analyze according to frequent item set based on customer transactional history which mean that the list of item shortlisted will be different for each time a purchase has been made.

APRIORI will analyze the record of information that specified within a timeframe. For example, item purchases made by customer in a mini mart within a week time. This model interpreted in programming form will sort items that have been declared based on frequency of the item bought. User then will be presented with result showing what are the item that stand out the most and which item that comes together with it.

With this information, seller can get to know which of their product that is highly in demand and which are not. This will also provide seller with information that they can use to position their product within their shop.

It is believed that this approach is useful for the mini mart seller to help identify and understand buying pattern of their customer thus maximizing their profit by managing their stock efficiently.

CHAPTER 3
METHODOLOGY

3.1 RESEARCH METHODOLOGY

According to Creswell (2003), the proper data collection methods should be chosen for the particular research methodology. In this part, the detailed methods which were used to collect data are discussed. The procedures for collecting data: these were literature review from journal, thesis, conference paper and books on World Wide Web & Internet Programming, Improving Inventory Record Accuracy and Real-time System Developments.

3.2 PROJECT METHODOLOGY

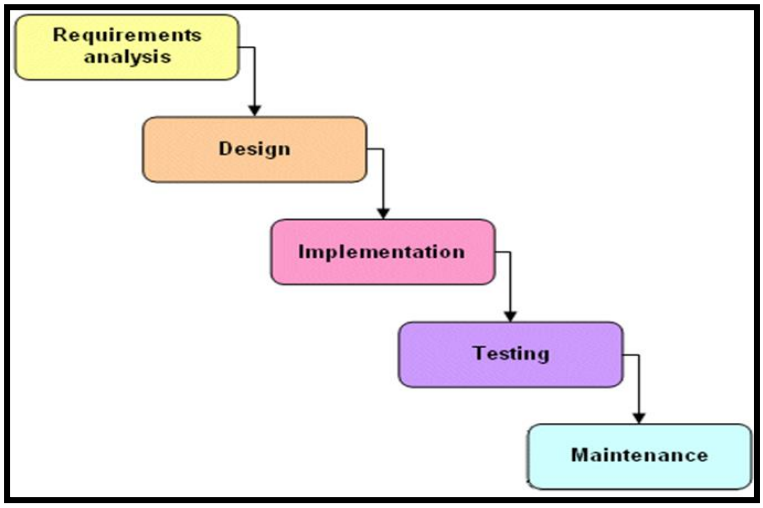

Figure 3.1: Waterfall Methodology

Waterfall Methodology is chosen due to its sequential process and its fitness to do the project. This model has several stages and each stage has numerous activities and it is distinctively important towards the project progress. In this model, stages were set as a series of sequential steps with the flow of time and information from left to right.

The model defines the order of stages that will be delivered completely to the management at the end of each stage. This is a long used traditional model and all the plus points and the drawbacks have been identified clearly. It is also the most widely used methodology in the software development industry.

Below are the 5 stages from the waterfall model that will be used in the development of the new system. The waterfall model implemented in this research is preceded with the requirement analysis. In this phase, the requirement of the new system is to be identified. All the requirements for the system were gathered with employing techniques such as questionnaires, interviews and survey. Interviews are done with the key personals in the students and from operator of mini mart to get a clearer idea of the products involved. Questionnaires are given to the customers and survey is done to understand the business needs. All the information will be analyzed and all the functional and non-functional requirements of the new system will be engineered.

This scheduled is followed by the next stage in the waterfall model, which is the system design phase. In this part, requirements of the project will be translated into detail design. The dataflow diagram will be used to link the whole system with this specification. It will provide detailed information regarding the flow between the information and the tables involved. This will also give a clearer idea of the tables that is needed. This is followed by the Normalization method. All the tables will be created and normalized to the third level to minimize its dependency and redundancy. Primary and Foreign Keys in each table will be identified to enhance the database. After identifying the normalized tables, a complete database for the system will be created. The database design will be equipped with detailed description of each attribute by field name, data-type, data validation and description respectively.

Next part in the designing will be the Entity Relationship (ER) diagram. The relationship between every table in the database will be explained in this diagram. The ER diagram also examines the relation and the dependency of the tables. Interface design is the final stage in the designing. It is one of the main components in system design. Only the necessary data should be provided in each page and confusing labelling should be avoided. All the irrelevant information in a page should be avoided to reduce mistakes made by the users. Not much graphical notation is required in this system since most of the users are assumed to be computer literate. This is the phase where all the designs will be translated into machine-readable coding. The coding should be done keeping in mind the future enhancement and the system reliability.

The complete software will be also tested based on the functional and non-functional requirements. Each components of the software will be tested separately to ensure error free software and component integration. The testing log will include information on the program, tested item, and expected action or value and remark criteria. In this research the testing will be done based on the actual data to know the system's performance in the real life-working environment. In this phase the test reports are to be documented carefully.

The system implementation process concentrates on how the I-Mart system plan to be implemented in web based application. The methodology selection brings many benefits towards the final delivery of the proposed system. The selected methodology incorporates systematic development technique to the project. This approach will create a more scalable system as it models the real world via abstraction.

The selection of Waterfall Model will encourage planning before designing and enforces some important rules in the process of developing the proposed system. It breaks the system into sub components with milestones corresponding to the completion of intermediate products. Since the waterfall model is a discipline approach, it requires each stage of the software development to be documented. Besides that, the correctness of the product is checked on each stage of the product building. This ensures only the correct product that fulfils the users requirement are built during the whole development process. Any mistakes can be rectified easier since all the activities will be documented at each stage completely. The quality of the product at each stage can be identified and maintained to meet the requirements.

The specification, design, printed code and other documentations such as the user manual are essential tools for maintaining the system. As this will be a booking management system and need to be error free, more time was spent to design the system at each stage based on the data collected from interviews and survey.. The waterfall model is a disciplined approach allowing each stage to be completed before moving forward.

3.2.1 Planning

Initial planning is a phase where the decision had to be made on what type of project to be selected and what will be the main content of the project. Once it was decided, the 1st phase, planning, refers to how the combining of the system planning and system analysis phase can be achieved. The purpose of the project, the target audience, the major contents, the project scope, constraints and system requirements, as well as key issues in the project are also analyzed under the planning phase. This has all been established in the FYP1 time period.

3.2.2 Requirements

As the planning phase completed, the 2nd phase, Requirement, whereby, all the information was gathered into a site map form to be easily viewed. During the planning phase, I decided what type of technologies I will be using all the tools listed such as software, hardware, the interactive forms etc., all the data gathering, researching and readings also took place in this phase to clarify for a better requirement lists. One of the company's inventory system was analyzed and compared to how it can be better, reliable and efficient. Below are the diagrams, Site Maps, designed to show clearer image of modules. It is necessary to provide site-map diagrams when a website is being developed. The flow charts for both admin-side and user-side have been developed.

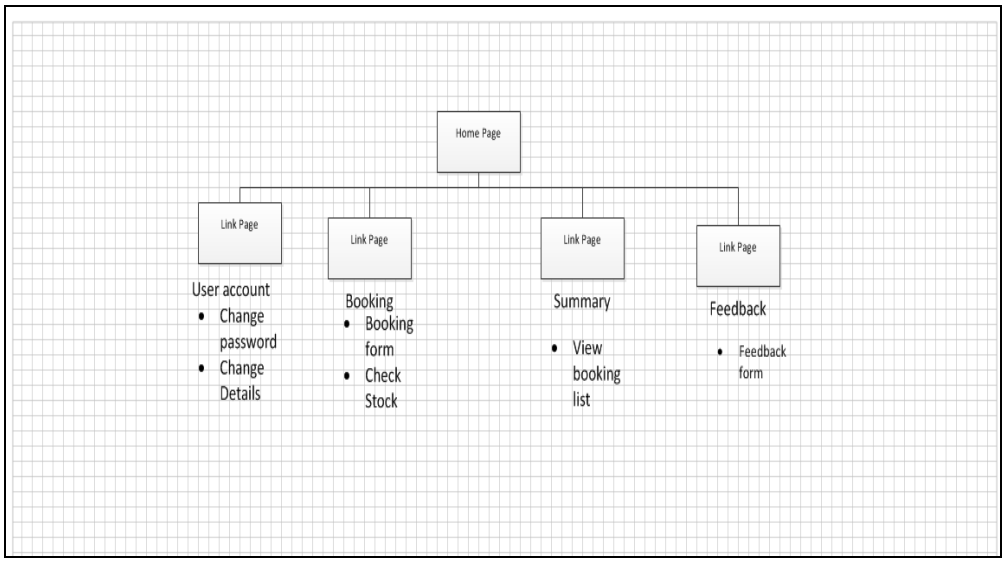

Figure: 3.2: User-side site map diagram

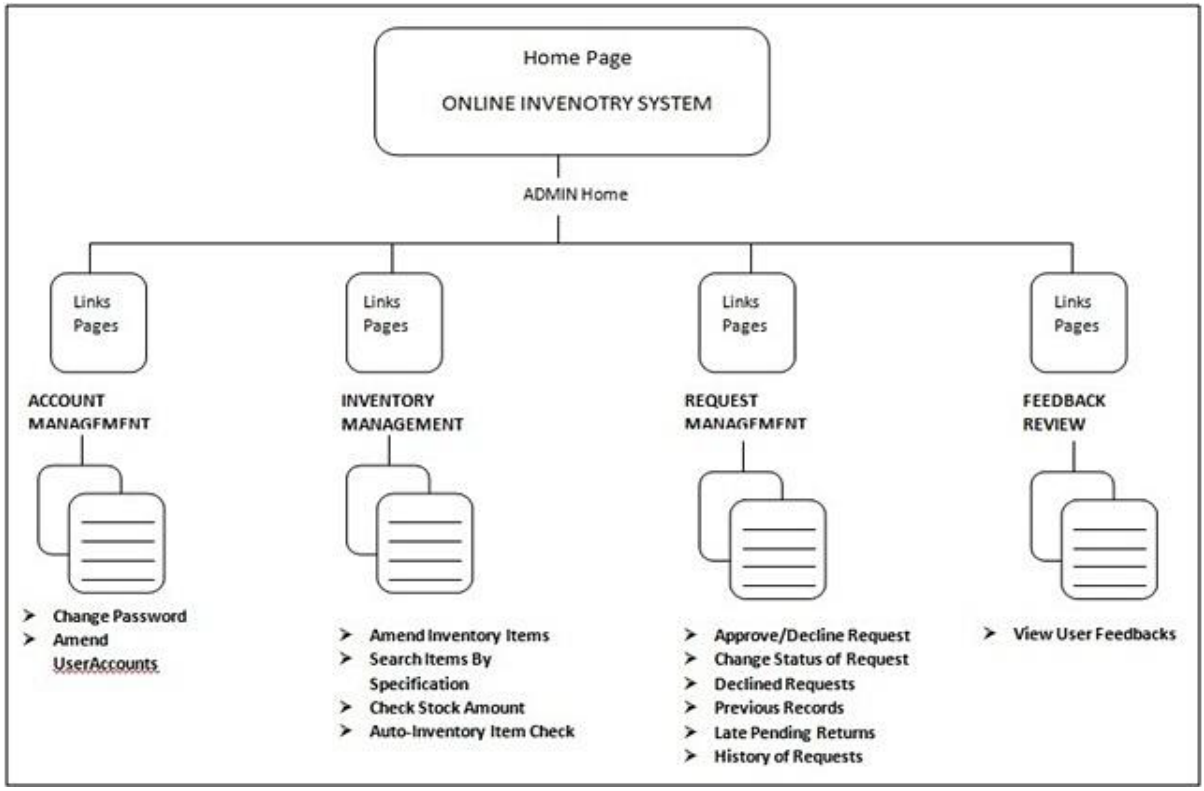

Figure: 3.3: Site map Diagram for Admin-side

3.2.3 Analysis & Design

Drawing from the information gathered up until the Phase 2, it's time to determine the outlook, layout and design of my site. Here, the key factor taken into consideration is the target audience. The audience aimed is the corporate related, therefore, the interface is needed to be simple and corporate-look. As a designer, I created 3 prototypes for my website. This was typically designed on Microsoft word, and then improved to design as built-in templates in Adobe Dreamweaver HTML coding and finally, the finalized design for the template to be used for the project. Both the User-side and Admin side have same interface. This phase gives the opportunity to express your likes and dislikes on the site design. In addition to that, it allows the communication between both the user and the web designer to match their needs and taste. It is important that I work closely to the user to exchange ideas until the final design have been achieved.

3.2.4 Implementation

Designing and Implementation phase is concurrently running as the modules are designed and their functionality is implemented. So the system is developed and maintained at the same time. User logs in using the user name and password, which is then verified in database. If it is successful, it proceeds to home page and the user is able to use the functionality of the system. Functionality that is implemented under the user-side is account management, booking request, summary viewing and feedbacks. Technically, a successful web site requires an understanding of front-end web development and back-end development. The coding involved was:

1. XHTML (Extensible Hyper Text Mark-Up Language)
2. SQL (Structured Query Language)
3. PHP (Hypertext Pre Processor)
4. CSS (Cascading Style Sheet)
5. HTML (Hypertext Mark-up Language)

6. Web server (WAMP: MYSQL, APACHE)

7. JavaScript

Furthermore, OzekiNG sms server has been also tested and implemented for this project. However, the GSM connection port and other setting have been configured such as ODBC server to allow my localhost database connectivity. It has been established correctly. The results and outcomes are discussed in the Chapter 4.

3.2.5 Testing

After each increment, regression testing should be conducted. During this testing, faulty elements of the software can be quickly identified because few changes are made within any single increment. As the implementation is on cycle, the testing occurs concurrently. When the user logs in, the database is verified using PHP code and validation java scripting. In addition to that, the validation, verification of form and data submit to the database server, debugging and over-lapping code is fixed at this section.

3.2.6 Evaluation

This is based on discussions with the supervisor and obtaining feedbacks, a plan is developed for the next increments, and modifications are made accordingly. Often some of the features in the initial planning are removed from the scope of a project in the planning or analysis phase. In addition, many bugs are found in the implementation and testing phase that are not fixed.

3.2.7 Deployment

As the interface and functionality works completely, it is being deployed and tested for further confirmation on its reliability

Figure 3.4: User Side Interface

Figure 3.5: Admin side Interface

3.3 KEY MILESTONE

Tasks / Activities	Key Milestones
1. Final Year Project I ▪ **Title Selection**	Week 1 – 12 Week 1 (Literature Review)

▪ **Submit Proposal to Research Cluster** ▪ **Extended Proposal** ▪ **Viva: Proposal Defense and Progress Evaluation** ▪ **Interim Report**	Week 3 (Literature Review) Week 6 (Literature Review) Week 10 Week 12
2. Final Year Project II ▪ **Progress Report** ▪ **Dissertation** ▪ **Pre-SEDEX** ▪ **Viva** ▪ **Final Dissertation**	Week 1 – 14 Week 4 (New progress from FYP I) Week 11(More progress than previous reports) Week 11 (More progress than previous reports) Week 12 (More progress than previous reports) Week 14 (Final results / Findings)

Table 3.1: Milestone for Key Activities

3.4 TOOLS

Hardware:

- ✓ A laptop
- ✓ Broadband
- ✓ Mouse
- ✓ Keyboard

Software:

- ✓ Wampp server - MySQL server, Apache
- ✓ Front end: Web browser, PHP and HTML (Code), Mobile Interface
- ✓ Back End : SQL database

3.5 Flow Chart

3.5.1 User-side Flow chart

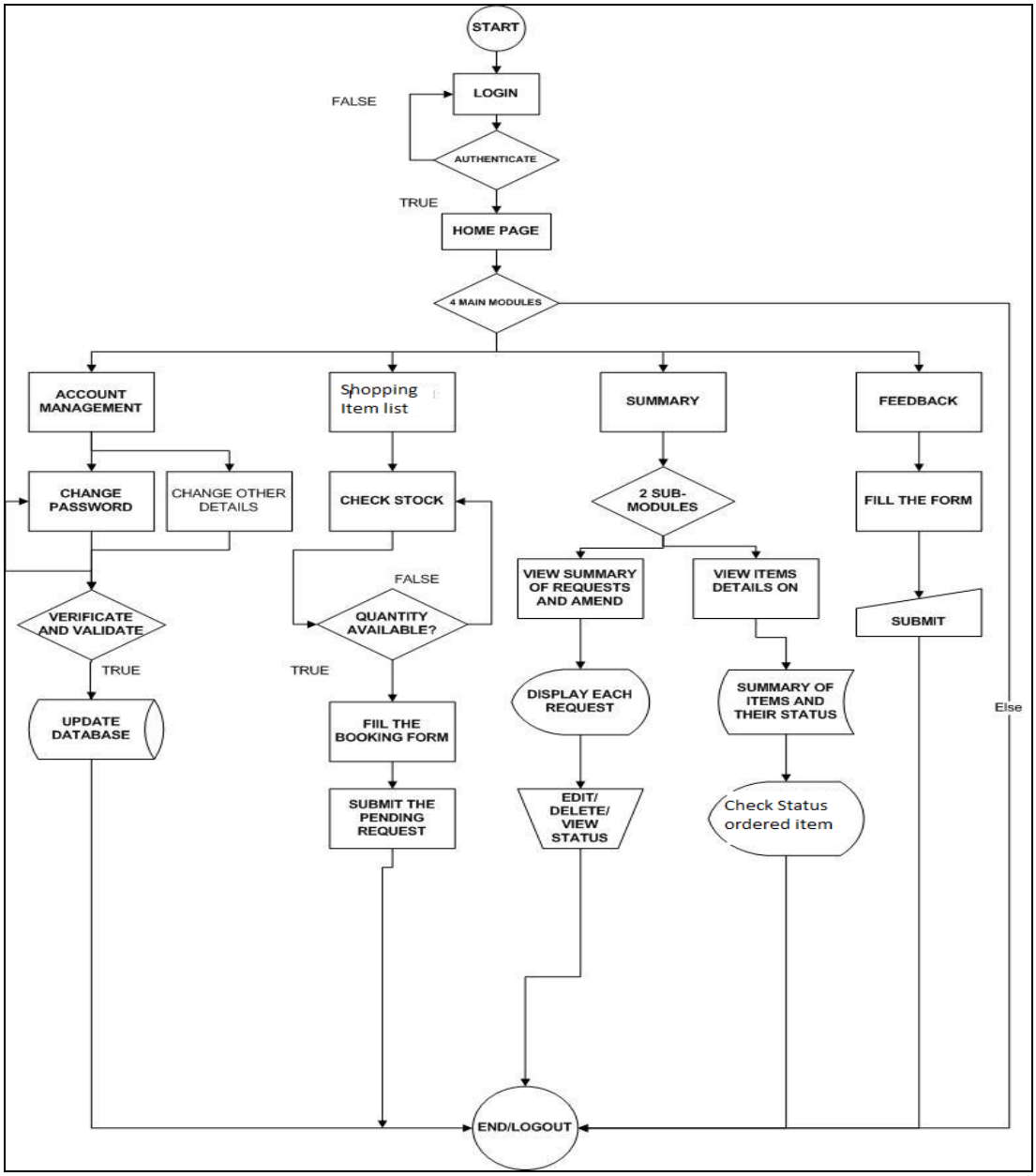

Figure 3.6: User Side Flow Chart

3.5.2 Admin-side Flow chart

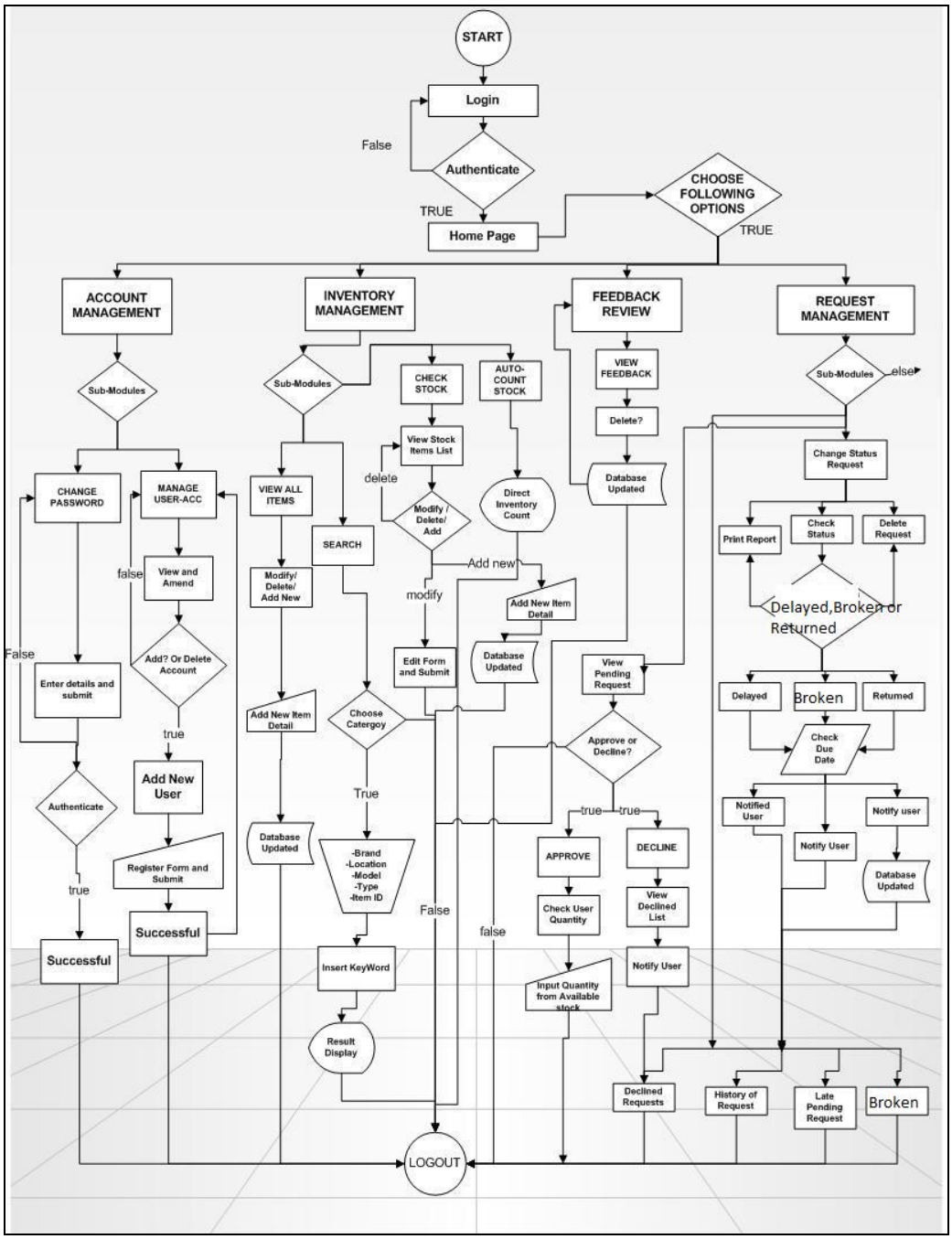

Figure 3.7: Admin Side Flow Chart

CHAPTER 4
RESULT AND DISCUSSION

This project will produce result differently at different stage. The development process will produce system prototype where this result will be forwarded to testing process. This process will further generate information that has been processed using APRIORI model.

4.1 Application Design Testing

I-Mart system design tested against two methods that are black box testing and white box testing. Both methods have their own different process and result. White box testing check the system from the back end where user intercepts specific flow process to make sure each snippet functioning accordingly. This method prevent code error in development phase

Black box testing check by giving input to the system through front end. User try to make multiple purchases through student account to see if the data saved within the database is correctly stored. This can be viewed by accessing via admin account and viewing the record directly from the database.

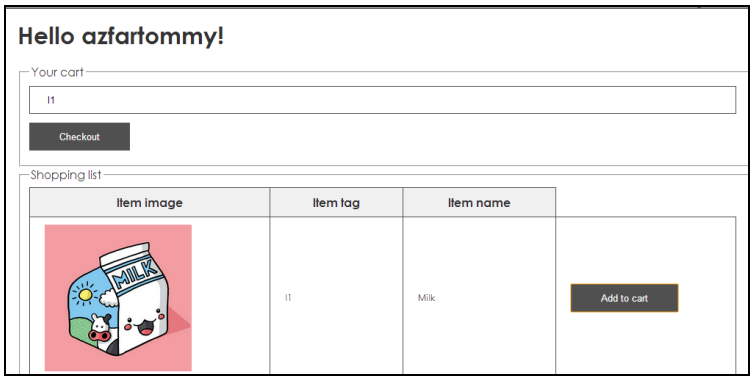

Figure 4.1: Example of Purchasing Process

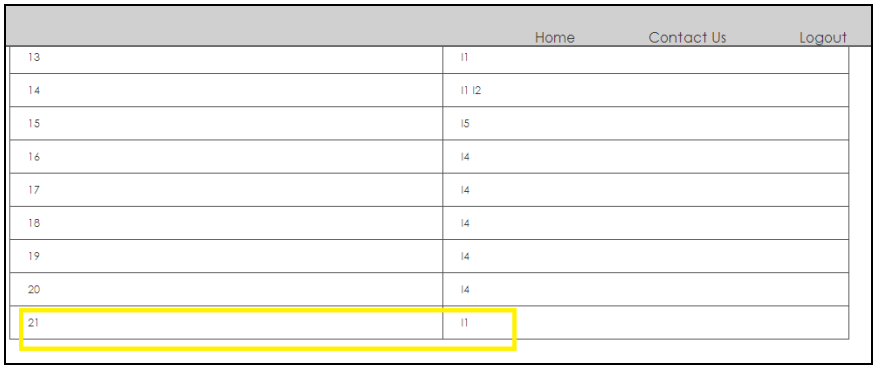

Figure 4.2: Purchased Record within System

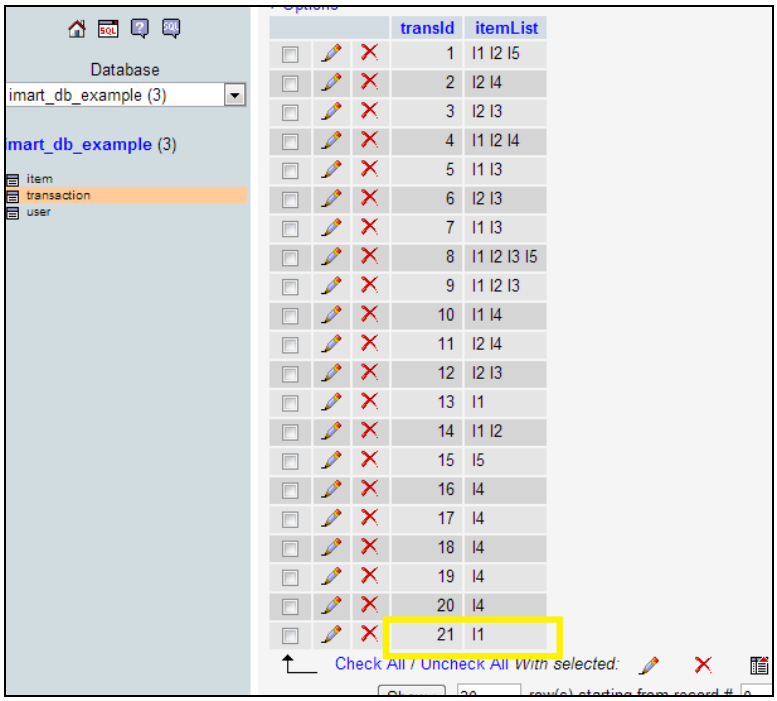

Figure 4.3: Purchase Record Stored within Database

These shown that the first objectives of this project has been successfully achieved where I-Mart has been developed and able to store inventory information and purchasing information.

4.2 APRIORI Result Analysis

This project developed to simulate the purchasing and inventory recording process in a mini mart. A sample set of item have been declared within the system and the purchasing process has been done.

Item id	Item tag	Item name
1	I1	Milk
2	I2	Bread
3	I3	Egg
4	I4	Chocolate
5	I5	Coke

Table 4.1: Item List for System Testing

After 21 records of purchasing, APRIORI result was generated that show the purchasing records have undergone three processes based on frequency of item purchased.

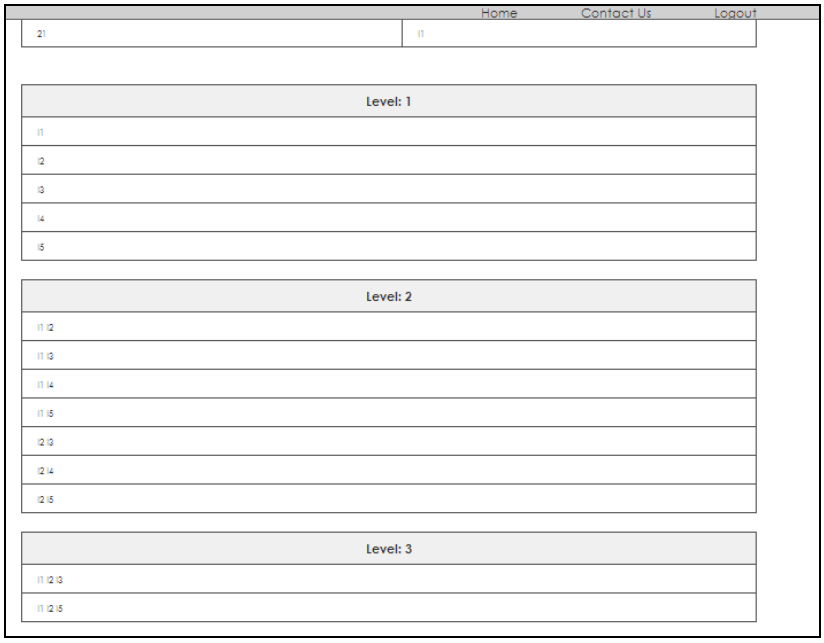

Figure 4.4: List of Item Set by APRIORI Model

The item shown in table labeled Level 3 shown the set of item that was grouped based on frequency of the 21 purchases that has been made. This result will be useful for the mini mart owner where they can arrange their marketing strategy to tackle customer of this buying pattern. They can either rearrange the product to be within the same level in a shelf or group the three item within the same shelf but at different level. Another approach will be to diversify the item varieties of different brand. For example, the item set is milk, bread and egg.

Seller can get supply of milk from several brand and flavor instead of selling one main brand. The same goes for bread and also egg. Milks must be stored within refrigerator but bread and egg can be positioned on a shelf. Based on this strong relation, seller can arrange so that the refrigerator is located next to the shelf for bread and egg. These further prove that having a computerized system to replace the traditional approach in inventory management and purchasing not only eases up the process but also create additional benefit that is providing strong information that can be used for marketing purposes.

CHAPTER 5
CONCLUSION AND RECOMMENDATION

The idea of using a computerized system to replace traditional method to manage inventory system has been successfully demonstrated throughout the development of this project. Each phase has been carried out according to plan after making minor adjustment to adapt with the project scope and student capability.

Three main functions where customer are able to view items available, seller can view list of items with stock quantity automatically recorded and buying pattern were able to be demonstrated within I-Mart.

In the future, this application can be further enhanced by adding more modules such as classification of items according to category. This will also affect the APRIORI model where instead of reading pattern for whole product list, it can be programmed to read pattern for each category of items.

User of the system can be further improved where proper profiling can be done for both seller and customer side. Proper registration form and process can be implied for new user. Within this module, customer can view details of their personal information and transaction history besides making purchases. The same type of modules can be used for seller side in case of profiling the worker of the mini mart.

In conclusion, I-Mart met the objectives that have been specified throughout the specific process planned and due to nature of the system design and its environment, it has high potential to be further enhanced and commercialized.

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APPENDIX

1.1 Gantt Chart