BUSINESS TO CUSTOMER (B2C) E-MARKETPLACE FOR SMALL AND MEDIUM ENTERPRISES IN UUM

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B2C E-MARKETPLACE FOR SMALL AND MEDIUM ENTERPRISES IN UUM

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ABSTRACT

E-Marketplaces can provide significant value to buying and selling organizations of all sizes. They facilitate more efficient and effective trade of goods and services, and eliminate inefficiencies inherent in the trading process. The development of business to customer e-Commerce has brought significant changes in recent years in Malaysia. Malaysian businesses, Small and Medium Enterprises (SME) have been relatively slow in web adoption. In UUM there are many Small and Medium Enterprises (SME) working at the mall of university, they needs to develop a trade methods to selling product and selling effectively, awareness of the problem which arises because the understanding of the electronic environment of the interaction of SMEs with customers. Moreover, during the holiday there are no any customers, which that mean cannot maintain the business. On other side, the students find it difficult to provide the daily needs such as fresh foods and deliver without damage. This study is to develop e-Marketplace within the University Utara Malaysia (UUM) and its surroundings, the prototype was develop by using C# language, and the research design adopted the general methodology. The prototype was evaluated by use questionnaire technique based on usability testing with the System Usability Scale (SUS). The prototype was assessed by a sample consists of sixty-three respondents. The results have been positive.

ACKNOWLEDGEMENT

I am most grateful to Allah and to those who have helped me during the process of my research. I am heartily thankful to my supervisor, Dr. Nor Farzana Binti Abd Ghani. Whose encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the subject? Deep gratitude goes to my parents and my family, for their love, support and encouragement.

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CHAPTER ONE

INTRODUCTION

1.1 Background

The Information and Communication Technologies (ICTs), particularly use the internet is conduct online business is quickly changing the conventional way of doing business among brick and mortal companies. With the strong waves of globalization and liberalization across the world, ICT is believed to be the most cost-efficient tool to help companies gain bigger markets and the ability to compete with larger organizations in attracting customers to their products, services and information (Tan *et al.*, 2009).

E-commerce evolved in various means of relationship within the business circle. It can be in the form of Business to Customer (B2C), Business to Business (B2B), Business in Business (BIB) and lastly Customer-to-Customer (C2C). Generally, B2B, which is between organizations, formed the bulk of the e-commerce activities. Although e-commerce implies information between businesses, the technology is equally applicable between business and consumers and indeed between consumers themselves (Stevenson & Hojati, 2002). As such, the significant role of the internet as the main tool in ecommerce is becoming

more relevant as it also act as a distribution channel on top of involving with the task of the traditional intermediaries (Vrana, 2006).

Organizations are increasingly using the Web to conduct business with greater speed, reach and efficiency. Despite this, buyers and sellers are still struggling with high transaction costs, disjointed and complex supply chains, inefficient processes and poor communications that characterize traditional trade in many industries (Lau, Li, Song & Kwok, 2008). A completely new class of dynamic e-commerce solutions is quickly overtaking the comparatively static models of the first wave. This new wave has the potential to leverage fully the Internet's inherent capacity for creating truly interactive communities and markets, with real-time, market driven pricing and interaction. These trading communities, or e-marketplaces, employ a combination of technologies and services to enable buyers and sellers to interact in a dynamic environment and to establish and maintain relationships with supply chain partners (Chong & Shafaghi, 2009).

The rapid growth of the e-Marketplace for business to customer (B2C) has led to the emergence of new business models (Eid, Trueman & Ahmed, 2006). The main advantages for buyers are reported to reduce time by instant access to sellers (Harridge-March, 2004); the lower selection costs (Büyüközkan, 2004) and the ability to ensure the best buying price by comparing to multiple sellers in the e-Marketplace (Dave, 2008). The major benefits associated with sellers are increased exposure to the global markets (Raymond & Bergeron, 2008), enhanced communication (Dave, 2008), and reduced transaction costs (Chong, Shafaghi, Woollaston & Lui, 2010) due to the aggregation of needy buyers generated by the e-Marketplace. As B2C e-Marketplace provides value

for both sellers and buyers, the expected transactions are highly promising and are indicative of significant growth. Malaysian businesses, SMEs have been relatively slow in web adoption.

SMEs play major roles in economies by creating jobs and increasing income levels of a majority of the people. SMEs are generally distinguished by the nature of their production and management arrangements, trading relations, financial practices and internal competence (Ongori & Migiro, 2010). The challenges faced by SMEs include limited access to manufactured inputs, especially high-quality imported goods and lack of skilled human capital to exploit and improve ICTs within the business (Mutula & Brakel, 2006). In addition, lack of managerial skills, finance, market information and commercial intelligence gathering have been identified in the continuum of challenges facing SMEs (Hanqin & Allison, 2007). SMEs are also faced with problems of small markets, inadequate regional integration, poor infrastructure, bad governance, legal and administrative hindrances and failure to access credit (Arendt, 2008).

Small and Medium Enterprises (SMEs) in Malaysia can apply for soft loan through SMIDEC to use ICT to improve competitiveness, efficiency and productivity, but only about 20 percent of Malaysia's manufacturers have an online presence and use Information Technology extensively in their daily operations (Alam, 2009). Through this project I will development a B2C e-marketplace prototype for SMEs in north of Malaysia to reduces the costs of closely integrating buyers and suppliers activities through the Internet. In addition, Increase cooperation between companies and the customers in the UUM, and the decline of monopoly in the market by increasing competition

among suppliers offers, which lead to enhancement the new businesses for SMEs in UUM.

1.2 Problem Statement

Business is the main contributor to the economic growth in Malaysia. The process of buying and selling of products or services have become the major activities in the country. Malaysian government has implemented various strategic initiatives and program to provide necessary support and create a climate in which these enterprises can thrive. In many aspects, effort of the Malaysian government as a nation has seen unprecedented development and economic advancement over the last decade. Unfortunately, the growth in Bumiputera entrepreneurial activity has not been in tandem with the pace of the overall development of the nation (Mansor & Shaikh Ali, 2010).

The development of B2C e-Commerce has brought significant changes in recent years in Malaysia. Lack of Understanding the Environment, Most Malaysian SMEs does not understand deeply the nature of environment (Tan, Chong, Lin & Eze, 2009), and how it interacts with E-marketing. It is crucial for SMEs to understand the internet technologies and its complementary tools that can enhance their marketing capability. In addition, reliance on the geographic scope provides an integrative force for the growth of SMEs (Alam, 2009) refers to that this would allow information technology consultants and vendors to tailor their service and products based on geographic issues, and would allow them a greater opportunity of increasing the level of the web adoption.

In the compound of UUM, there are many SMEs working at the mall of university such as Koperasi UUM Berhad Company, Forest secret sdn bhd, and

others, they said the prospects of opening new business, it is interesting, and especially that there are long periods of students holiday which was weaken the process of buying and selling. On the other hand, many of international students confirmed that in the period of the official holiday for university most of the shops are closed, which is making it difficult to provide daily needs. Moreover, there is no e-Marketplace within the geographic scope provides the possibility of delivery of fresh foods. During this study I will determine the requirements to develop a prototype for e-Marketplace to provide the services to the customers and owners within the university and its surroundings.

1.3 Research Questions

The research questions can be formulated as:

1. What are the requirements of e-Marketplace prototype for SMEs in UUM?
2. What is the design for e-Marketplace prototype for SMEs in UUM?
3. How to evaluate the functionality of e-Marketplace prototype for SMEs in UUM?

1.4 Research Objectives

The research objectives are written as follows:

1. To identify the requirement of e-Marketplace prototype for SMEs in UUM
2. To build prototype for e-Marketplace prototype for SMEs in UUM
3. To test the functionality of e-Marketplace prototype for SMEs in UUM

1.5 Scope of the study

The domain of this study will be focus on develop a new business for the SMEs such as Koperasi UUM Berhad Company; which are working in the UUM compound. By build an electronic marketplace to support the interactive with the customer and give highly flexible to get the information about the goods offers about foods or study stuff, which interested with student.

1.6 Signification of the study

E-marketplaces will continue to find new ways to help buyers and sellers cut costs, tying them even more closely to the business processes they support. Businesses and business systems will need to communicate and interaction with each other more directly and more efficiently for an e-marketplace to be truly dynamic and efficient. This study will give the SMEs work in shopping mall inUUM to be more iteractive with the students, and the market model and design must be easily changeable to react to new opportunities and requirements before competitors do.

1.7 Organization of the study

The organization of this study is divided into '5' chapters. This chapter gives a brief background of the study pursuant to the problem of the research is put into light; the objectives and research questions are set. Moreover, the research scope and significance are also pointed out.

Chapter '2' provides a review of literature related to the design and development of an e-Marketplace prototype for UUM mall to help the business owners for develop their work by opening up new ways to market their wares. This chapter includes overview of the e-Commerce, then focus on the B2C e-Marketplace. As

well as, provides an overview about the SMEs and narrow the search to highlight on SMEs in Malaysia, and conclusion with related studies.

Chapter '3', emphasizes on the research methodology adopted from Kuechler and Vaishnavi (2008), with the elaboration of its six stages (Initial Observation, e-Marketplace Observation, Argument requirement, Development, Evaluation and conclusion).

Chapter '4' presents the analysis and design of the research that comprises the system users' requirements, system design and prototype development. As well as, provides the result for evaluation the system.

Finally, Chapter '5' provides the concluding remarks on the system, its limitations as well as suggestions and recommendations for future research.

1.8 Summary

B2C e-Marketplaces match buyers and sellers with automated transactions, lower search costs, and increased process effectiveness and efficiency. In this chapter, brief introduction has been introduced about the proposed e-Marketplace for UUM (eM-UUM), which is to help the business owners for develop their work by opening up new ways to market their wares; it also offered a clear view of the scope and the significance of the study.

CHAPTER TWO

LITERATURE REVIEW

Literature review of this project is focus on e-Marketplace to enhance the services to the customers and owners within the UUM and its surroundings. The overview about E-commerce concept is made in section 2.1. The framework of B2C e-Marketplaces was discussed in section 2.2. In the section 2.3, shows a review about term Small and Medium Enterprises SME. An overview of Malaysia's Small and Medium Enterprises approach is shows in section 2.4 with highlighted on Small and Medium Enterprises in UUM. In section 2.6 was displayed the summary of this chapter.

2.1 E-commerce

The emergence of E-commerce is creating fundamental changes to the way that business is conducted (Mohd Amirul, 2001). Customer can shop around comprehensively at their leisure anywhere, at any time and always enjoy the same level of services at virtually no costs (Drew, 2003). Apparently, with paperless transaction, buyers are no longer required to fill in order forms or visit a business premise to place their order. Everything can be done electronically at

buyers' convenience. According to Daniel, Wilson and Myers (2002), even though SMEs might have a difficulty to develop a sophisticated web due to lack of expertise and fund, but they still need E-commerce to prosper and for on-going survival.

E-commerce evolved in various means of relationship within the business circle. It can be in the form of Business to Customer (B2C), Business to Business (B2B), Business in Business (BIB) and lastly Customer-to-Customer (C2C). Generally, B2B, which is between organizations, formed the bulk of the E-commerce activities. Although E-commerce implies information between businesses, the technology is equally applicable between business and consumers and indeed between consumers themselves (Stevenson & Hojati, 2001). As such, the significant role of internet as the main tool in ecommerce is becoming more relevant as it also act as a distribution channel on top of involving with the task of the traditional intermediaries (Vrana, 2006).

B2C E-commerce is a concept of online marketing and distributing of products or services over the Internet. It is a natural progression for many retailers or marketers who sell directly to the consumer. If you could contact with more customers, provide better services, and make more sales while spending less to do it, the general idea is which the formula of success for implementing a B2C E-commerce infrastructure. For the consumers, it is relatively easy to appreciate the importance of E-commerce. Consumers may no longer spend more time in shopping in the crowded supermarket, and enjoy the services of online shopping and delivery to home directly. The whole process of shopping is all carried out in virtual Internet shopping malls.

B2C E-commerce can increase the seller's revenue and lower operating costs. Because of integration and exterritorial of Internet, it allows buyers and sellers far from each other to have a deal online. So the sellers' customer base is expanded. At the same time, it is better to attract customers due to network promotions diversification. It is true that B2C E-commerce can increase the seller's income. On the other hand, the operating costs such as rent of online store will be greatly reduced compared to physical shopping malls.

B2C E-commerce can effectively reduce the purchase cost of consumers. Consumer's purchase cost mainly includes the cost of money, time and energy. Compared to the traditional retail shopping mall, consumers only need to look up product information and order product online. Thus, it can save a lot of transport and selection time and energy expenditure..

However, B2C E-commerce mode usually is analyzed as global network-based trade from the beginning of E-commerce, and regional E-commerce in small area still cannot unfold the advantages of Internet on globalization (Dubelaar, Sohal & Savic, 2005). Hence, B2C E-commerce mode should be studied furthermore. On the other hand, after application of B2C E-commerce, more and more enterprises have faced many actual problems, such as how to settle accounts with banks, how to carry out the functions of logistics, especially how to gain more return. Because of that, these enterprises cannot pay more capital out to continue the project of B2C E-commerce. Along with the success of some enterprises that actualize the B2C E-commerce mode in small area, the feasibility of E-commerce is re-evaluated quickly. Practices have proved that regional B2C E-commerce mode may be a better way to develop the E-commerce at present (Ping, 2009).

2.1.1 Regional B2C E-commerce

The regional B2C E-commerce is a kind of B2C Ecommerce, which carries out in a small area, such as a province or a region. Regional B2C E-commerce can provide a platform of online marketing for enterprises. On this platform, enterprises can integrate the resources of supply chain, and provide more products or services for consumers. The connotation of regional B2C E-commerce mainly includes four parts as shown hereinafter:

a) This mode of E-commerce aims at a small area.
b) The platform of E-commerce is mainly built by the regional government
c) The objects of services are mainly those small and medium enterprises in this region.
d) Products or services provided by regional B2C Ecommerce enterprises are correlated directly with terminal consumers.

Ping (2009) referring that a leading authority on competitive strategy and international competitiveness, has summarized five types of competitors for the modern enterprises. These competitors include competitive rivalry with an industry, threat of new entrants, threat of substituted products, bargaining power of suppliers, and bargaining power of consumers as shown in Figure 2.1. This is the famous model named as five forces competitive model, called diamond model too. Referring to this diamond model, we can see that enterprises, which adopt the new type of B2C E-commerce, may face five competitive powers too. In addition, other relatives also influence regional B2C E-commerce enterprises such as regional government.

Figure 2. 1: Competitive powers model

However, studies have proved that the profits, gained from the applications of regional B2C E-commerce, will be gained, firstly, enterprises will gain better benefits from the online business. Depending on the new type of business, enterprises can get more returns from market by utilizing the information technology. Especially, regional B2C E-commerce mode mainly regards common consumers as service objectives, so it is valuable for enterprises. Secondly, government can push the development of informatics project quickly. Applications of regional B2C E-commerce will bring more benefits for government. On one hand, the existing governmental resources will

be utilized fully. On the other hand, regional E-commerce can provide opportunities to improve the informatics construction further, and then extend regional B2C Ecommerce from small area to large area.

Moreover, Social information resources will be used adequately, and maximum of social value will be created by taking full advantages of information technology. At present, the number of investments is very great. However, value of society from information cannot be gained in good level because of many systemic limitations of organization. In the regional B2C E-commerce, consumers that are more common can enter the business system, and shop only by personal computer and Internet. By this means, enterprises can take full advantages of information resources that are left unused before, and quicken the velocity of capital cycle.

Regional B2C E-commerce can provide more services for consumers by Internet in a region. Commonly, regional B2C Ecommerce can carry out by online or outline payment mode in the perfect supporting of logistic distribution. The basic structure model of regional B2C E-commerce includes five parts: regional B2C enterprises, regional logistics enterprises, consumers, regional bank and regional certification centre. They are connected with Internet, and information about trades is transmitted quickly among members of regional B2C Ecommerce. This basic structure is described in Figure 2.2.

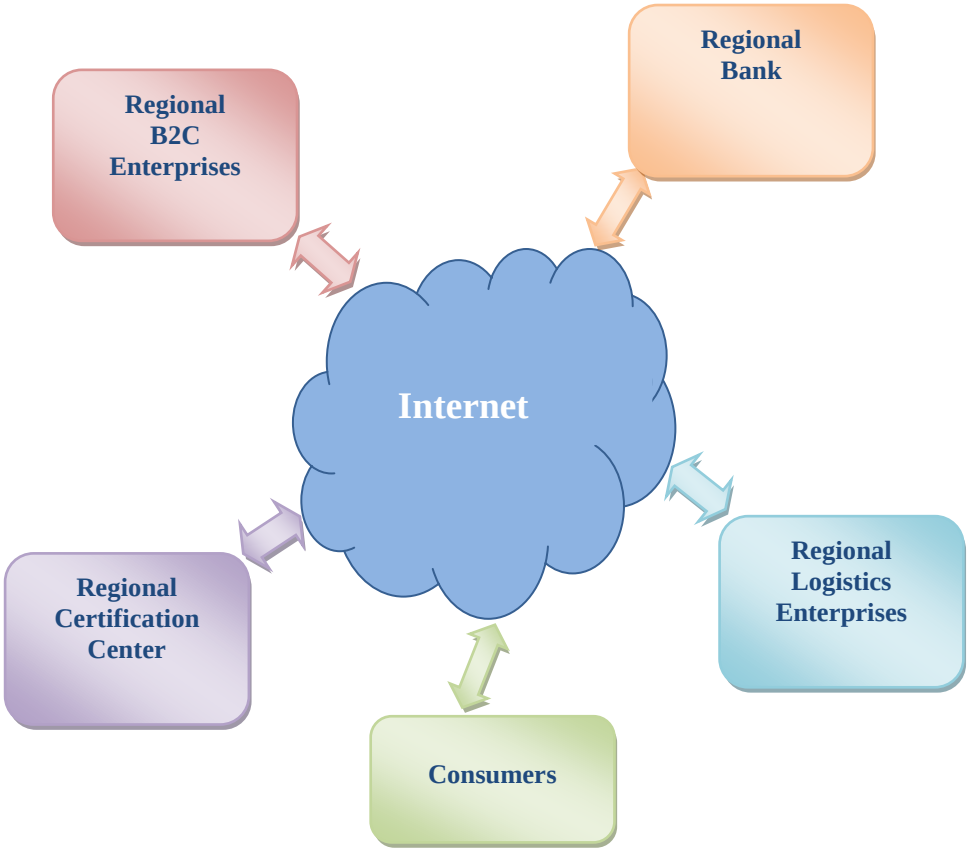

Figure 2. 2: Basic Structure of Regional B2C E-commerce

In fact, consumption patterns of people and business mode of enterprises has changed by E-commerce. Enterprises have to adopt B2C E-commerce mode to improve their business and adopt the new requirements of market. Researcher has proved that regional B2C E-commerce is an effective way to integrate the enterprises and resources of government in order to heighten the competition of regional economy.

2.2 B2C e-Marketplace

Generally, an electronic marketplace is defined as an information system existing between organisations allowing a number of buyers, sellers, and other

stakeholders to communicate and conduct business through a “dynamic central market space” supported by added facilities (Stockdale & Standing, 2004). It is tightly coupled with the term e-commerce which takes on the definition as a process where firms use the Internet as a medium to facilitate the exchange of service and information (Chang & Wong, 2010). Electronic marketplaces can provide significant value to buying and selling organizations of all sizes. They facilitate more efficient and effective trade of goods and services, and eliminate inefficiencies inherent in the trading process. They can improve productivity by providing secure, integrated and ubiquitous access to relevant information and applications. In addition, they can improve business processes by facilitating better two-way flow of information between people and applications in a collaborative environment (Zhao, Xia, Shaw & Subramaniam, 2009; Loukis, Spinellis & Katsigiannis, 2011).

In addition, for organizations to acting autonomously, they are based on heterogeneous architectures. Software infrastructure supporting the architecture has to be opened enough for integrates new organizations. Each organization is implemented to interoperate with others by exchanging XML business documents via HTTP protocols, CORBA, or DCOM specifications. Each organization has a user interface (GUI) for modelling and integrating documents, as well as alliances, processes and their artefacts. A XML parser is associated to each organization to parse exchanged documents. Parser' s APIs are accessible. The invoker activates organization if necessary with arrival of new XML documents (Tiako, 2003). The adaptor changes XML documents to other formats and vice-versa. The repositories store documents, alliances, processes, and Web sites as illustreted in Figure 2.2.

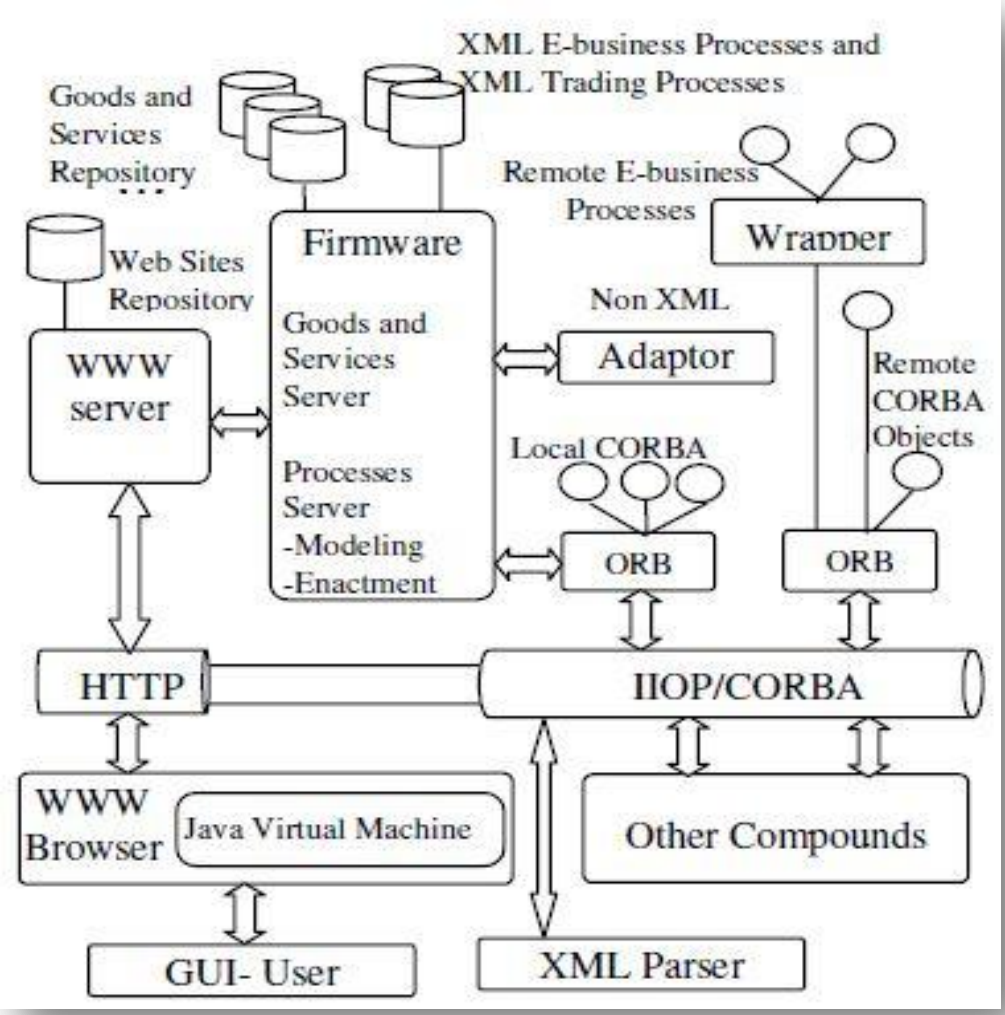

Figure 2. 3: Organization infrastructure for e-marketplace

A B2B e-marketplace then is a space online where a number of buyers and sellers can gather in a single trading community to get information to make a decision on buying and selling (Humphrey *et al.*, 2003). It is common for many-to-many business relationships to exist in this type of marketplace. In other words, a single buyer is not limited to buying from a single seller and vice versa. A buyer can have a number of different sellers in the same way that a seller can have a number of different buyers. B2C (business-to-customer) e-marketplaces

also exist but they are different from B2B systems in the way that they involve individual consumers in the transactions, as opposed to involving only business firms (Zott, Amit & Donlevy, 2000). B2C systems allow consumers not acting as business entities to buy and interact with the business side of the relationship.

B2C e-marketplaces match buyers and sellers with automated transactions, lower search costs, and increased process effectiveness and efficiency (Zhao, Xia, Shaw & Subramaniam, 2009). The emergence of such e-marketplaces represents one of the major market transformations brought about by the proliferation of information technologies (White, Daniel, Ward & Wilson, 2007). However, despite firms' enthusiasm in Internet-based B2C e-marketplaces, the growth of B2C transactions has fallen short of earlier expectations (Koch & Schultze, 2011). Most notably, the shakeout of B2C e-markets1 during the late 1990s and early 2000s has spurred skepticism about the earlier high expectations about the role of these e-markets. A large number of B2C e-markets, such as Chemdex and Adauction, went out of business, while others, including e-Steel and Covisint, changed their business model from e-market operators to technology service providers. Nevertheless, there are still hundreds of B2C e-markets, such as World Wide Retail Exchange and SciQuest; that have survived and thrived (Zhang & Bhattacharyya, 2010).

2.3 Small and Medium Enterprises

According to Ongori and Migiro (2010) small, medium enterprises (SMEs) play major roles in economies by creating jobs and increasing income levels of a majority of the people. SMEs are generally distinguished by the nature of their production and management arrangements, trading relations, financial

practices and internal competence. They are not a homogeneous set of businesses but a heterogeneous group of businesses usually operating in the service, trade, agri-business and manufacturing sector (Lukacs, 2005). They vary in size, age, sector, motivation, mode of organization, ethnic background, location, knowledge base, power and control of resources and innovative capacity (Spurge, & Roberts, 2005). OECD (2004) defines SMEs as enterprises that have less than 500 employees. In Britain SMEs are defined as enterprises with annual turnover of e2 million or less and with fewer than 200 paid employees; while in Australia, SMEs are defined as enterprises having between five and 199 employees (Kotey & Folker, 2007); but in Indonesia an enterprise with five to 99 employees (Kartiwi, 2006). In Kenya, SMEs are defined as those enterprises that employ 11-100 workers (Moyi, 2003).

There is no accepted worldwide definition of SMEs (Hooi, 2006). In Malaysia, the definitions are solely based on a fixed quantitative measure; for instance the total number of workers, the total number of capital, total assets and lately by determining sales turnover (Hashim & Abdullah, 2009). According to Saleh and Ndubisi (2006) SMEs in the manufacturing sector are defined as 'enterprises with full time employees not exceeding 150 or annual sales turnover not exceeding RM25 million whereas SMEs in the services and primary agriculture sectors and ICT are enterprises with full time employees not exceeding 50 or annual sales turnover not exceeding RM5 million'. These SMEs are further categorized into medium-sized companies, small enterprises and micro-enterprises, as indicated in Table 2.1.

Table 2. 1: Definitions of SMEs (Saleh & Ndubisi, 2006)

	Category	Micro-enterprise	Small enterprise	Medium Enterprise
1.	Manufacturing	Annual sales turnover not exceeding RM250, 000 or with full time employees not more than five Person.	Annual sales turnover of between RM250, 000 and RM10 million or employing between five and 50 full time employees.	Annual sales turnover of between RM10 million and RM25 million or employing between 51 and 150 workers.
2.	Services, primary agriculture and Information and ICT	Annual sales turnover not exceeding RM200, 000 or with full time employees not more than five person.	Annual sales turnover of between RM200, 000 and RM1 million or employing between five and 20 full time employees.	Annual sales turnover of between RM1 million and RM5 million or employing between 20 and 50 workers.

The challenges faced by SMEs include limited access to manufactured inputs, especially high-quality imported goods and lack of skilled human capital to exploit and improve ICTs within the business (Mutula & Brakel, 2006). In addition, lack of managerial skills, finance, market information and commercial intelligence gathering have been identified in the continuum of challenges facing SMEs (Hanqin & Allison, 2007). SMEs are also faced with problems of small markets, inadequate regional integration, poor infrastructure, bad governance, legal and administrative hindrances and failure to access credit (Ongori, 2008).

2.4 Small and Medium Enterprises in Malaysia

The increased use of technology has brought about numerous changes in the business world. According to Scull et al. (1999) the internet is increasingly recognised for the vast array of information, services, meeting places, and communities-of-interest that it offers. Although studies on internet adoption by businesses have proliferated in the last few years, this kind of research has, however, been limited in some developing countries like Malaysia. As of December 2005, 600,000 SMEs were registered in Malaysia (SME bank), of which their contribution to the manufacturing sector was 29.3 per cent of total output or RM75.2 billion to gross domestic product (GDP). Adoption of the internet is considered a means to enable these businesses to compete on a global scale, with improved efficiency, and closer customer and supplier relationships (Chong et al., 2001).

According to the Small and Medium Industries Development Corporation (SMIDEC) Malaysia, SMEs can be defined into two broad categories namely:

1. Manufacturing: such as agro-based industries and manufacturing-related services
2. Services: such as information & communication technology and primary agriculture

The Manufacturing, Manufacturing-related Services and Agro-based industries are enterprise with full-time employees not exceeding 150or with annual sales turnover not exceeding RM25 million. Whereas the services, Primary Agriculture and Information & Communication Technology sectors are enterprises with full-time employees not exceeding 50 or with annual sales

turnover not exceeding RM5million. Some countries have different definitions for SMEs in the manufacturing and services sector and may exempt firms from specialized industries or firms that have shareholdings by parent companies (Tan, Chong, Lin & Eze, 2010; Chong, *et al.*, 2009).

The application of E-commerce in Malaysia even though is encouraging, but it is still at its infant stage. Reviewing on the finding by Daniel, Wilson and Myers (2002), most of the Malaysian SMEs are still left behind in terms of using internet in their business transaction. One way to promote the application is by speeding the usage among the local MSC status companies, which act as the centrepiece of the national IT strategy. Despite of the promotion most of the MSC status companies found to be using the internet for conservative task such as for communication and information gathering purposes (Vrana, 2006). Previous study on the SMEs in Perak indicated the low usage of the application in most business sectors. Similar trend prevailed even for those who had been in operation with the novice status or already established (Norudin Mansor and Noor Rohaya Abdul Manap, 2006).

Malaysian businesses, SMEs have been relatively slow in web adoption. The Economist Intelligence Unit (2006) reported that although SMEs in Malaysia can apply for soft loan through SMIDEC to use information and communications technology (ICT) to improve competitiveness, efficiency and productivity, but only about 20 percent of Malaysia's manufacturers have an online presence and use information technology (IT) extensively in their daily operations. This reflects a poor rate of ICT adoption among the estimated 600,000 local SMEs.

2.4.1 Small and Medium Enterprises at UUM

University Utara Malaysia is officially established on 16 February 1984 and it is first batch of students for the academic year, which commenced in early June 1984. The Darul Aman Campus was on a 62-acre tract of land in Bandar Darulaman. It was 18 KM north of Alor Setar and 4.8 KM from Jitra. Furthermore, the students, which live in, Darul Aman Campus is now over than 20,000 people.

Figure 2. 4:Universiti Utara Malaysia

University Utara Malaysia is a self-contained campus. Therefore, all students' daily requirements are catered for within the campus. Most of these required daily facilities are located centrally at the Varsity Mall. These facilities include banking facilities (Islamic Bank and BSN) and ATMs from various other banks, a local Post Office, a Cooperative Bookshop, and a restaurant, which can

accommodate up to 350 people at a time. As shown in Figure 2.5, the mall also has a mini-market that supplies stationary, toiletries, groceries, and other needs at affordable prices. Located within the mall premises are 40 shop-lots operating a variety of businesses ranging from cyber-centers, hair salons, computer and telecommunications sales and service shops, to photocopy service centers and gifts shops. As shown above, the varsity mall plays the central role in facility housing (UUM, 2012).

Figure 2. 5:University Utara Malaysia Mall

2.4.1.1 Koperasi UUM Berhad Company

Koperasi UUM Berhad Company is one of the small and medium enterprises have a mini market in the UUM mall named (uni market). As shown in Figure 2.6, this enterprise has provided through the shop food

and supplies daily living, cleaning supplies, and other things. Furthermore, there open a cafe named (uni cafe).

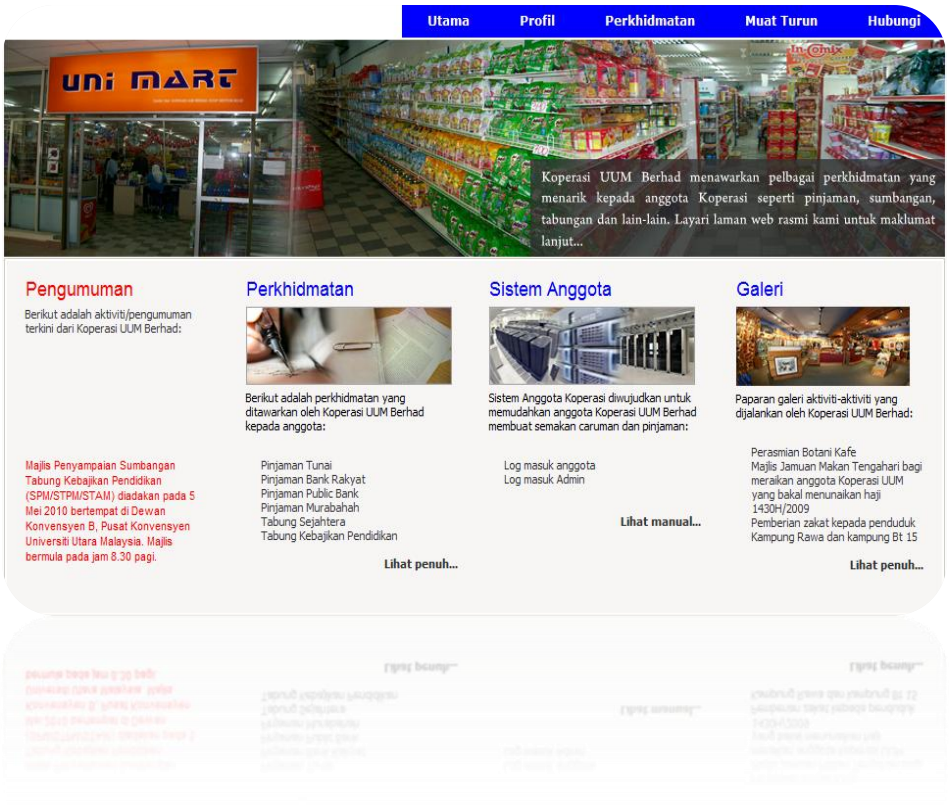

Figure 2. 6: Koperasi UUM Berhad Company

2.5 Summary

Summary this chapter explains the technical gab, which faced the SMEs in UUM campus. However, it will be clear to determine the requirement of e-Marketplace prototype and analysis all the dimensions. However, e-Marketplace needs to determine the best model, which can be used to accelerate the growth of the business for SEMs in UUM campus and help the customer to provide best services.

CHAPTER THREE

METHODOLOGY

Research methodology defines as the activity of research to understand a phenomena need to solve and the way to measure improvement. The research design methodology in this project adapt to general methodology. Overview of the methodology provides in section 3.1. Summary for the methodology stage was describing in section 3.2; as a result, the conclusion of chapter was placed at end.

3.1 Research Methodology

Research in particular phenomenon refers to a search for knowledge. Once can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation (Short, Black, Smith, Wetterneck & Wells, 2012). The process of implementation of research needs to techniques and methods to achieve the outcome of research such as instruments and data collection technique, data processing techniques. Descriptive research seeks knowledge about the nature of reality whereas prescriptive research, also known as design science, seeks to

improve the performance of a task or system (Levin & Wagner, 2009). However, an agreeable method that used in this study, described, excellently chosen and accepted among many researchers in information system research design (Vaishnavi & Kuechler, 2004). The research is conducted in several steps. The following Figure 3.1 illustrates the major steps of the design research methodology.

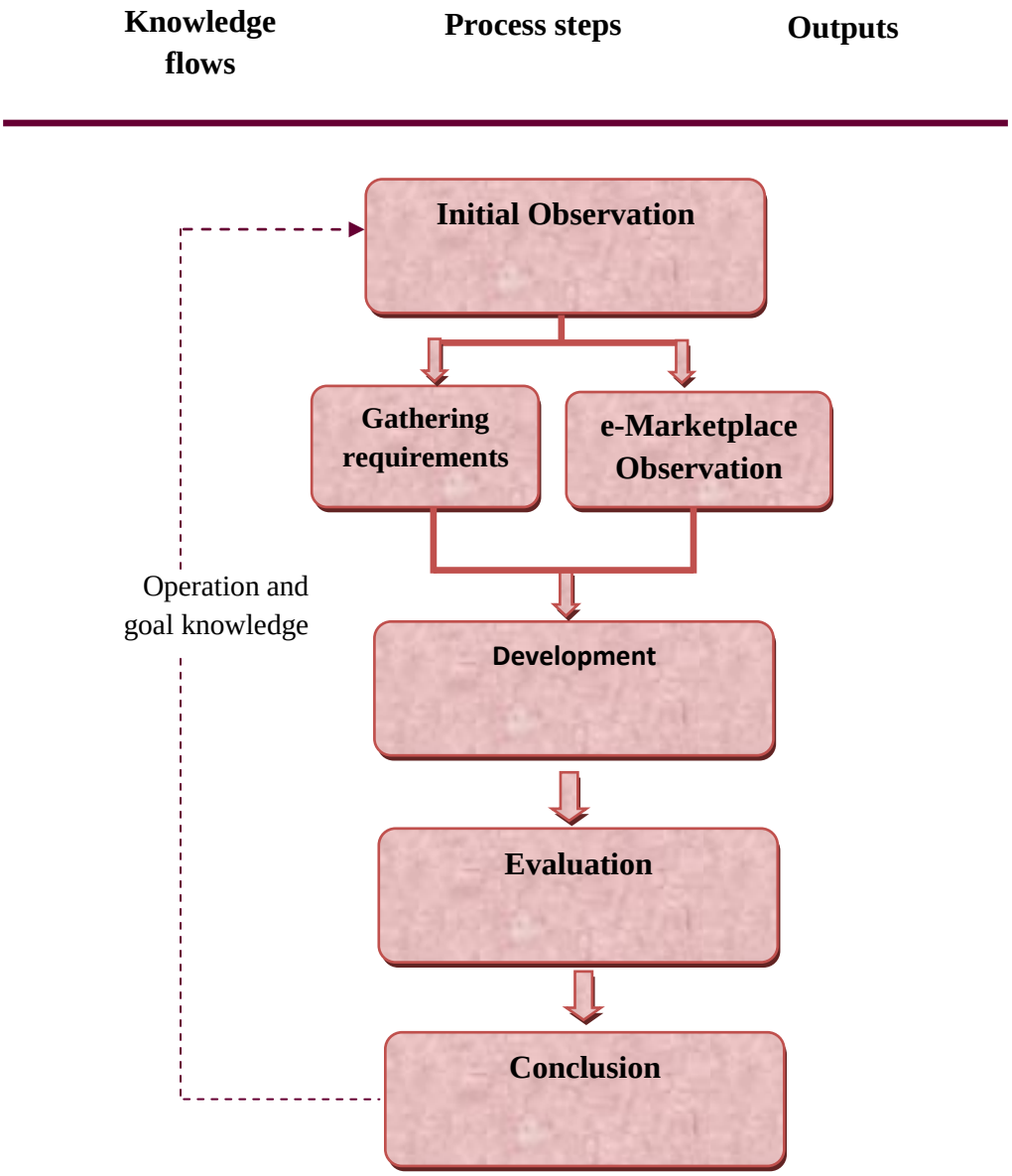

Figure 3. 1:Research Design Methodology (Vaishnavi & Kuechler, 2004)

3.2 Phased of Methodology

Adapt to Vaishnavi and Kuechler (2004), the stage of design research methodology use in this study was consists of six stages, start with an awareness of problem stage, e-Marketplace observation stage, Gathering requirement stage, development stage, evaluation stage and conclusion.

3.2.1 Awareness of Problem

The understanding of the objectives and the scope of this study is the first stage of this methodology by initial observation of needs for the SMEs which working in the UUM mall. As well as, the problems which are required to solve in this study is awareness of the problem, which arises because the understanding of the electronic environment of the interaction of SMEs with customers. Moreover, during the holiday there are no any customers, which that mean cannot maintain the business. Accordingly, there is a need to develop business with this company through the creation of the field of marketing via the designing an e-Marketplace prototype.

3.2.2 Gathering requirement

In this stage, the requirement of the prototype will gathering by use two techniques review of the current system popular e-marketplace in Malaysia such as lelong (lelong.com.my) and ebay (ebay.com.my), and questionnaire technique. The review of the current system, which is documented and obtained from a deeper review of the function used in the e-Marketplace; and the questionnaire will be determined the requirements of prototype dependence on the sample which are beneficiaries from the proposed prototype.

Moreover, the data for the requirement of system was gathering by use questionnaire, the sample was selected are the business owners for the shops in the Darul Aman Campus and the results of the questionnaire as follows:

I. (77.3%) of responsive had been emphasized the importance of the use of e-Marketplace in UUM to facilitate the arrival of goods to the customer.
II. (83.2%) of respondents confirmed that the prototype must be easy to use and has a friendly way to communicate between the seller and buyer, as well as, (89.8%) of respondents refer that should be the cost to open shop is low.
III. All of participate in questionnaire was recommendation to dependence the previous successful systems to select the prototype features.
IV. (34.7%) of the participants are not comfortable to work with the e-Marketplace, because of delivery services will be rely on internal staff in most cases.

3.2.3 e-Marketplace Observation

The study suggests designing an e-Marketplace for the SMEs in UUM, based on observation the needs of this enterprise to develop their business. Software development approach adopted is one of the major influences on the quality of the systems developed. In this prototype development used a combination of object oriented approach and regular flowcharts. As information systems requirements are becoming increasingly complex, the use of combined approach is more necessary. One of the important ways to determine the requirements is observation of the successful current system such as lelong and ebay.

a) History Interbase Resources Sdn. Bhd. is a relatively young company that has come a long way from its beginnings. Since its inception at the end of 1998, the firm has quickly established a firm footing in the e-commerce arena. As the founders of the pioneer auction website (http://www.lelong.com.my) in Malaysia as shows in Figure 3.2.

Figure 3. 2: lelong homepage

Interpose has secured its position with the largest subscriber base for any site of this genre. In fact, the mission of website is serving the community and bringing a high standard of quality into homes and businesses by providing an avenue for on-line trading at a low cost. However, the site design allows the joint to design his/her shop and displays all the products

available to him/her. On other hand, the system is allows to customer for search and purchase the goods through bank transfer payment.

b) eBay is a platform was founded in 2000 and third party software applications already accounts for over 25% of eBay.com listings. It is platform offers an unprecedented opportunity to build a new eBay business or expand current business, reach new customers, and create a potential new stream of revenue. Leverage the resources of the eBay Developers Program to tap into eBay's marketplace of over 200 million users with tools and services that meet the diverse needs of buyers and sellers on eBay. eBay developers can use program resources to build and offer any of the following tools or services:

   - Selling and buying, manage listing, bidding, checkout and shipping tasks
   - Searching, customized interfaces for searching the eBay marketplace
   - Affiliate, tools to drive buyers to eBay
   - Customer service functionality–feedback, customer communications
   - Merchandising, content and listing design
   - Wireless, mobile applications for searching and re-bidding on eBay
   - Interactive television, delivering the eBay experience to the set-top box

   The eBay website in Malaysia (http://www.ebay.com.my) is shows in Figure 3.3.

Figure 3. 3: eBay Malaysia homepage

Furthermore, during the this phase Unified Modeling Language (UML) will be used to involve general use cases such as use case diagrams to show the user retaliations and the system components. Sequence diagram to show how the system work based on the use case diagram, follow collaboration diagram to illustrate the main components of the sequence diagram and the relation between them. The other diagram will be designing is activity diagram; this diagram used to describe operational workflows of a system. Finally, class diagram will be drawing to show inter-relationships, the operations and attributes of the classes of

the system. However, The Rational Rose 2000 Enterprise Edition's software was chosen as a tool to develop the diagrams, which are use case diagrams, use case specifications and sequence diagrams, and all of the system structure was implemented in Chapter 4.

3.2.4 Development

The tentative design is implementing in this phase. The design is translate into program code. C# language will used for coding. Microsoft SQL Server 2005 is use as the Database to store and retrieve all information. The development of the prototype follows the Prototyping approach methodology.

3.2.5 Evaluation

During this phase, the prototype has been evaluated for its usability aspects. Questionnaire is chosen as a method to measure users' satisfaction. It is adapted from the System Usability Scale (SUS) proposed by Brooke (Bangor, Kortum & Miller, 2008). Moreover, the sample of about 63 users from seller and student was selected randomly to measure the user satisfaction. Perceived usefulness is a strong correlate of user acceptance, and should not be ignored by those attempting to design or implement successful systems.

All data that gathered from questionnaire were analyzed by using the Statistical Package for the Social Sciences (SPSS) program version 19. Data analysis is carried out in the form of descriptive statistic. The analysis of the data that gathered from the questionnaire will be discussed in chapter four.

3.2.6 Conclusion

This phase is the latest step in the research effort. Results will be compiled and lead to further work, which can combine with this application to the overall e-Marketplace for UUM.

3.3 Summary

This chapter has been introduced the research design methodology, which is suggested for this study and the sequence of its main phases. The requirements of the e-Marketplace prototype were goatherd using two techniques a review of the previous successful systems and questionnaire with the business owners of the SMEs in UUM mall. The prototype was developed by use prototyping approach technique that design by use ASP.net environment; the System Usability Scale (SUS) questionnaire was be use to evaluate the prototype with a sample of about 63 seller and customer.

CHAPTER FOUR

ELECTRONIC MARKETPLACE PROTOTYPE

The present chapter discusses succinctly proposal e-Marketplace for UUM campus (EM_UUM). The outcomes of this chapter are determined the requirements of the EM_UUM prototype and analysis the system using UML language to understand how the system works through designing use case diagram, class diagram, sequence and collaboration diagram. Finally, build the interface for e-Marketplace for UUM campus.

4.1 Prototype Requirements

4.1.1 Functional Requirements

Basically a system's utility is based on into functionality and nonfunctional characteristics, such as flexibility, interoperability, security, usability and performance (Chung & do Prado Leite, 2009). Table (4.1) illustrate summarizes of the functional requirements for the system and gives a short description of the different requirements.

- M – mandatory requirements (something the system must do)

- D – desirable requirements (something the system preferably should do)
- O– optional requirements (something the system may do)

Table 4. 1: List of Functional Requirements

No.	Requirement ID	Requirement Description	Priority
	EM_UUM_01	**Login**	
1.	EM_UUM_01_01	To authenticate user (admin business, customer) must enter validate his/her user name and password.	M
2.	EM_UUM_01_02	To inform invalid password and user name.	M
	EM_UUM _02	**View Product**	
3.	EM_UUM_02_01	The user (admin business, customer) has ability to view the entire products, which adding from the owners shop.	D
	EM_UUM_03	**Search Product**	
4.	EM_UUM_03_01	The customer has ability to enter the key for find any product after select the categories.	M
	EM_UUM_04	**Make Registration**	
5.	EM_UUM_04_01	The user (admin business, customer) has ability to make account after full all the information and press confirm	D
	EM_UUM_05	**Manage Product**	
6.	EM_UUM_05_01	The admin business has ability to add a product to his/her shop by enter the product name, product number, description about product and select the product photo.	M

	EM_UUM_06	**Make Order**	
7.	EM_UUM_06_01	The customer has ability to make order by select the product number and make confirm after the system view the shipping address.	D
	EM_UUM_07	**Log out**	
8.	EM_UUM_07_01	The user make log out of the system.	M

4.1.2 Non Functional Requirements

Non-functional requirements are constraints on various attributes of these functions or tasks. Non-functional requirements are capture properties that are not primary for the system to work or features of the system that has to do with performance and quality (Chung & do Prado Leite, 2009). However, non-functional requirements can help the system gain competitive advantage over other systems and they are often features that highly desired by the user. Table (4.2) summarizes the non-functional requirements for the EM_UUM prototype.

Table 4. 2 : List of Non-Functional Requirements

No.	Requirement ID	Requirement Description	Priority
	EM_UUM_8	**Usability issues**	
9.	EM_UUM_8_01	The system must be easy to deal with.	M
10.	EM_UUM_8_02	The admin should be able to view assessment result in 4 second after click	O

	EM_UUM_9	**Maintainability requirements**	
11.	EM_UUM_9_01	In case of change or addition demand, the maintainability shall be easily done by integrating new modules and offering new software solutions.	D
	EM_UUM_10	**Operational requirements**	
12.	EM_UUM_10_01	The system will have server for the database and connection to the main database.	M
	EM_UUM_11	**Performance requirement**	
13.	EM_UUM_11_01	The system must have reasonable speed according to technology use to access many of users at the same time.	M
14.	EM_UUM_11_02	The system should be available 24x7.	O
	EM_UUM**_12**	**Security requirements**	
15.	EM_UUM_12_01	Only who has credit card and PIN code or using fingerprint can access the system.	M
16.	EM_UUM_12_02	Unauthorized person should not use the system.	M
17.	EM_UUM_12_03	No one can change the password without login to the system.	M

4.2 Use Case

Use case is a requirements description tool, as well as a useful in recommended means of aiding the transition from a problem domain-oriented view to a solution-oriented view of the system (Hasling, Goetz, & Beetz, 2008). In general, use case steps are written in an easy-to-understand structured narrative using the vocabulary of the domain. The primary elements and processes that form the system are identifying by use case diagram. The processes are called use cases and the primary elements are termed as actors. The Use case diagram shows interact between actors and each use case.

A use case diagram captures the business processes carried out in the system. The system depend on the use case diagram has two main components (actor/use case). In this study, two actors represent by admin business and customer. The user (admin business, customer) has to login to the system before able to manage product and make order respectively. The admin can add new product and review the passive product, as well as the user (admin business, customer) can view all the products. On other hand, the customer has ability to do search for find any product and make order after select product. The use case it represented in the following Figure (4.1):

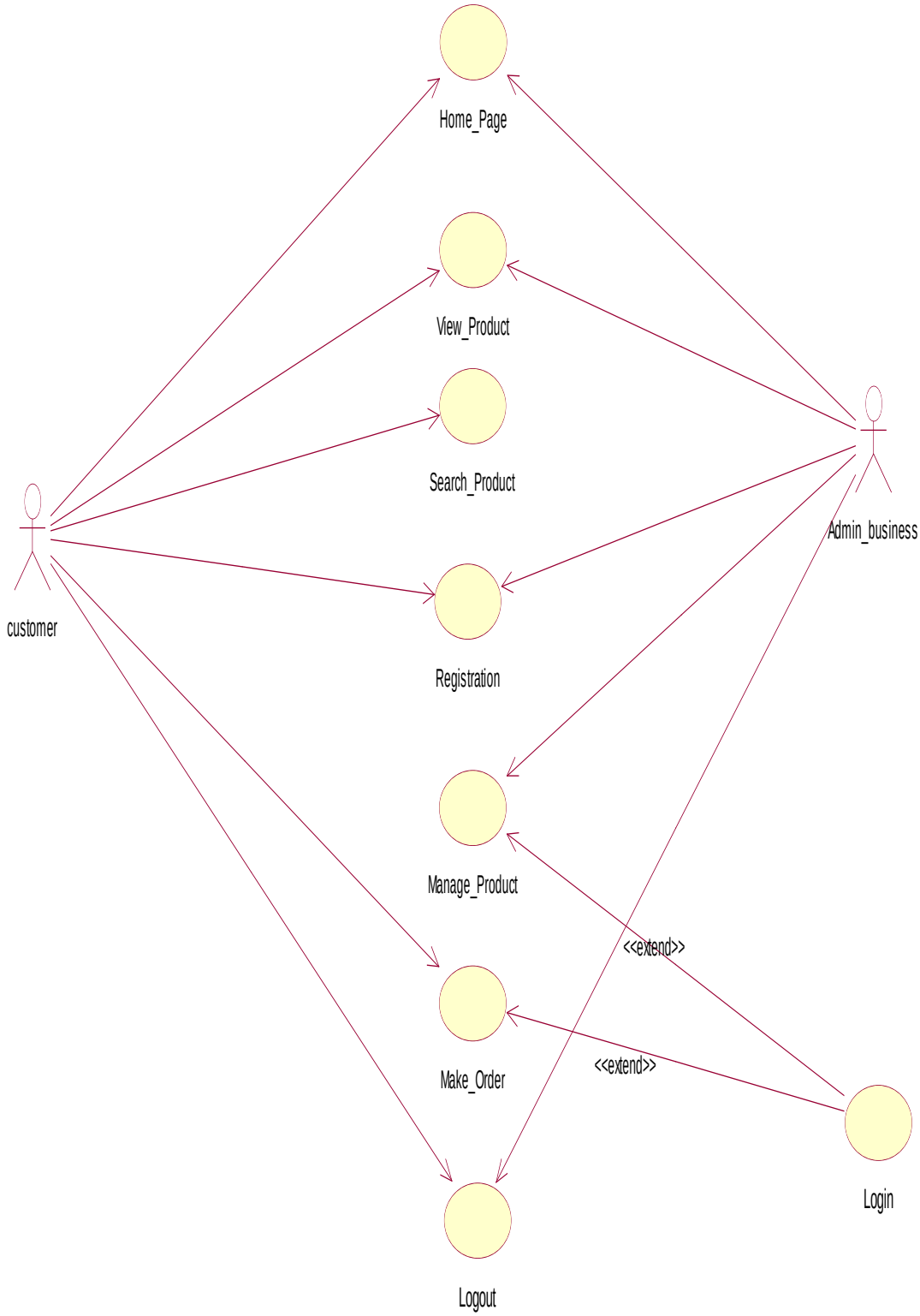

Figure 4. 1: Use Case Diagram of EM_UUM

4.3 Activity Diagram

Activity diagram represents is a dynamic diagram that shows the activity and the event that causes the object to be in the particular state; it is the business and operational workflows of a system. Figure 4.2 and 4.2 describe the activity diagram for (admin business, customer) eParticipation decision-making for school of computing prototype.

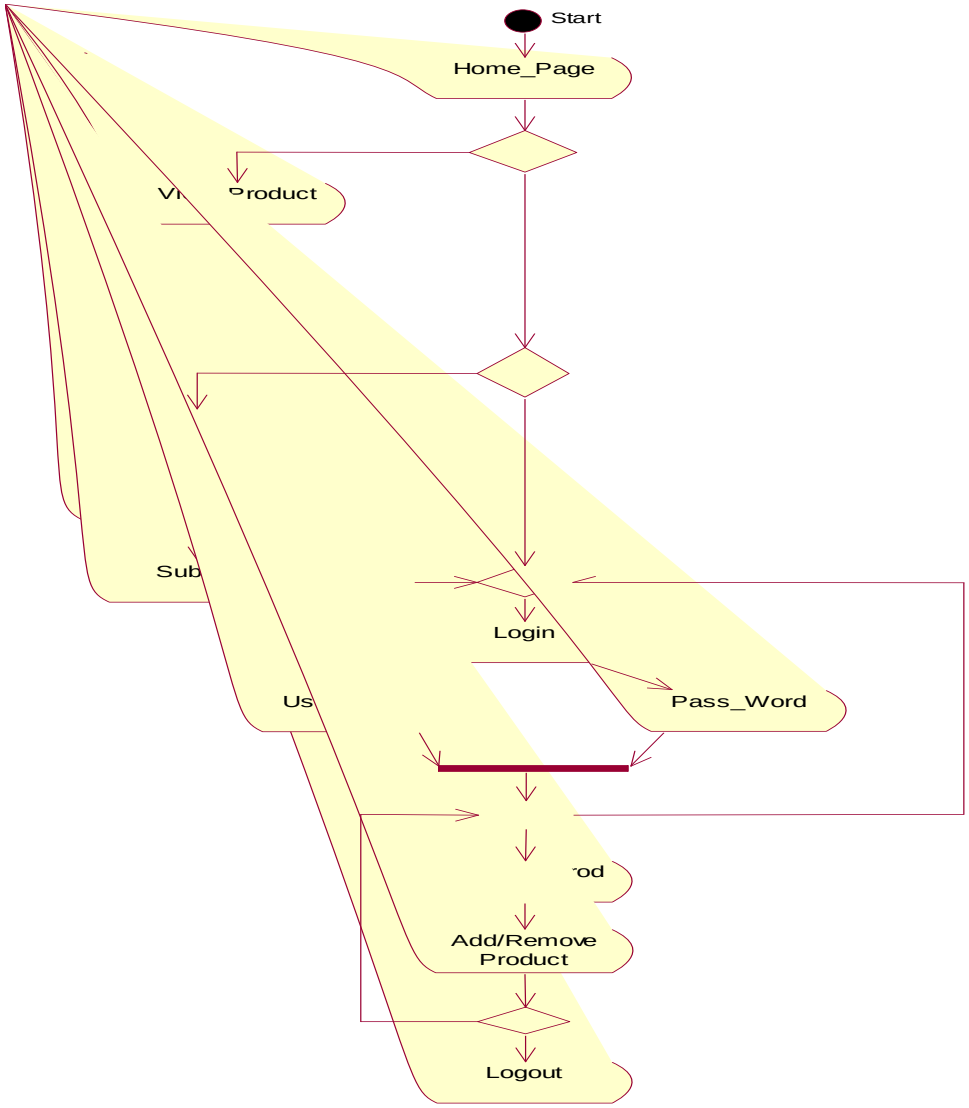

Figure 4. 2: Description the activity diagram for admin

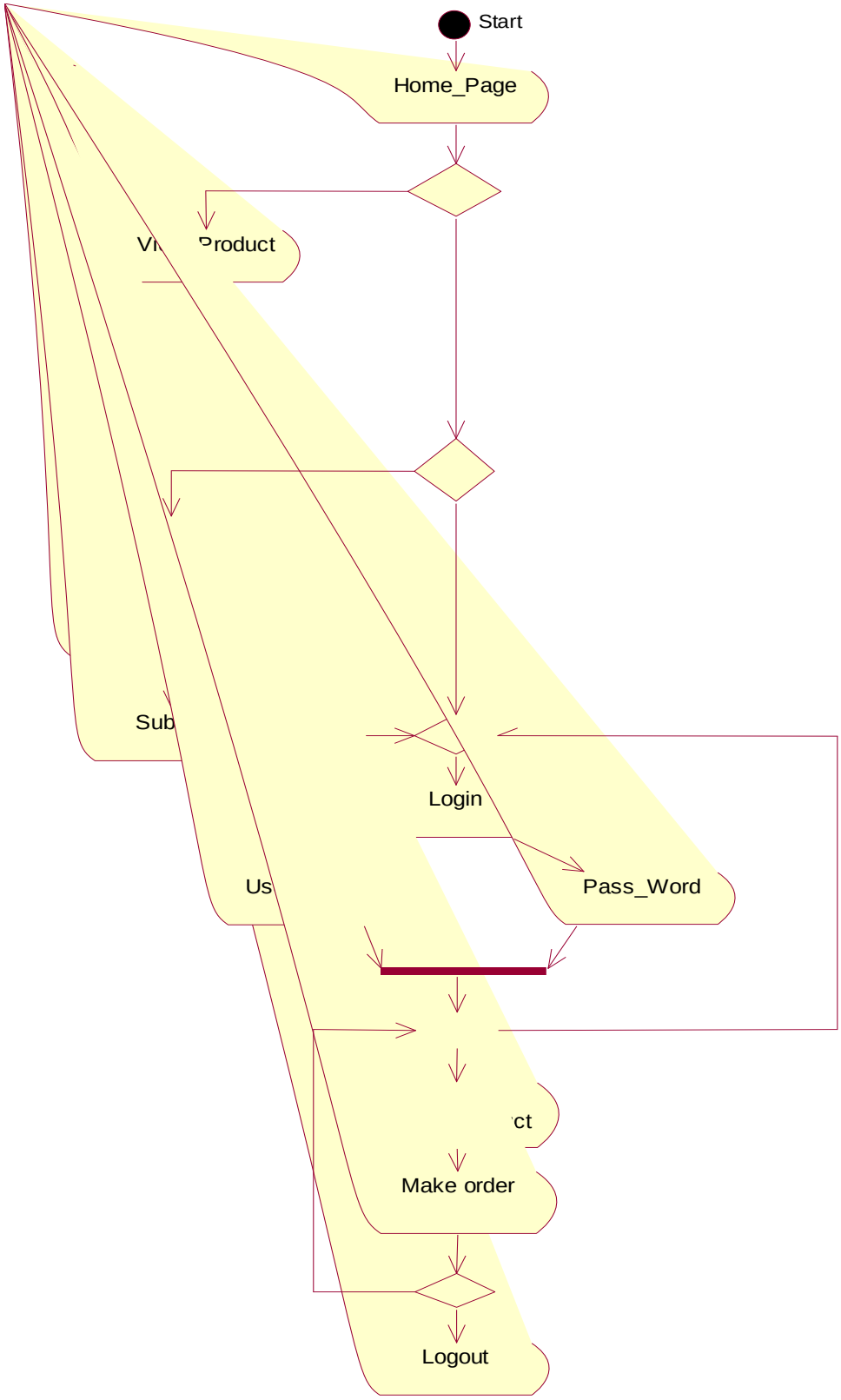

Figure 4. 3: Description the activity diagram for customer

4.4 Sequence and Collaboration Diagram

According to Ying, Ye, & Guo (2009) sequence diagram are explains the groups of objects collaborate in accomplishing some system behavior; the collaboration is describes a series of messages between objects. Typically, a sequence diagram illustrates the detailed implementation of a single use case (or one variation of a single use case). Sequence diagrams are not useful for showing the behavior within an object. Consider using state-transition diagrams for that purpose.

Login

The sequence and collaboration diagram for system login are describe in Figure 4.4 and 4.5; users (admin business, customer) can access to system by login his/her validate username and password.

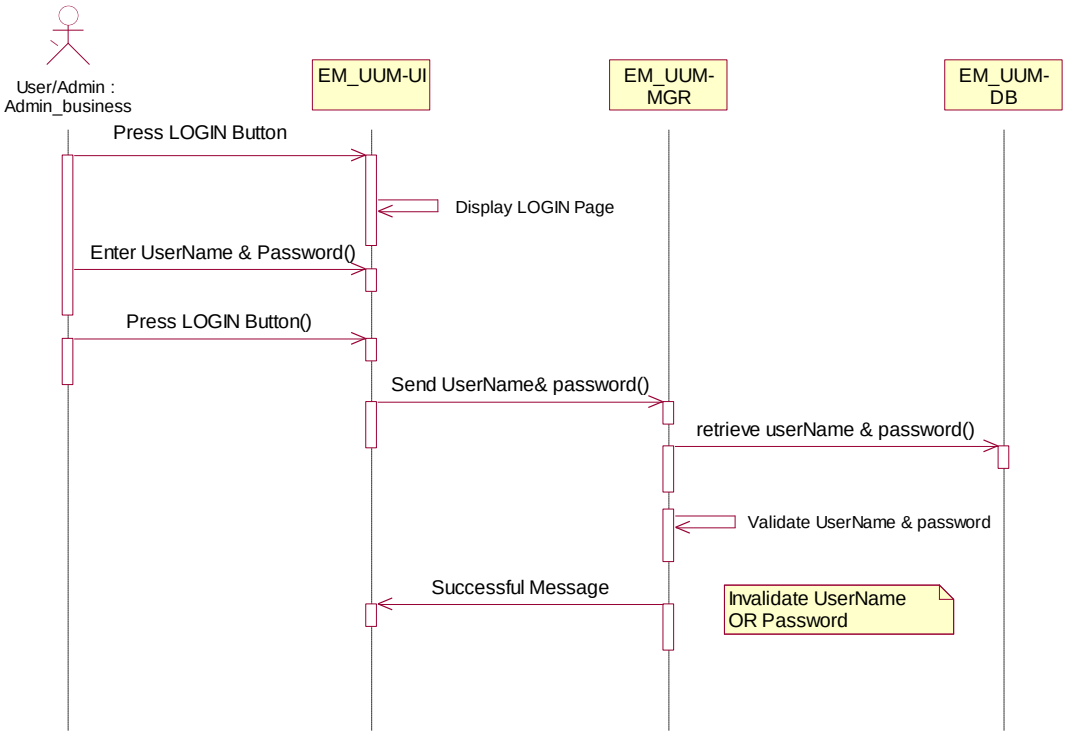

Figure 4. 4: Login Sequence Diagram

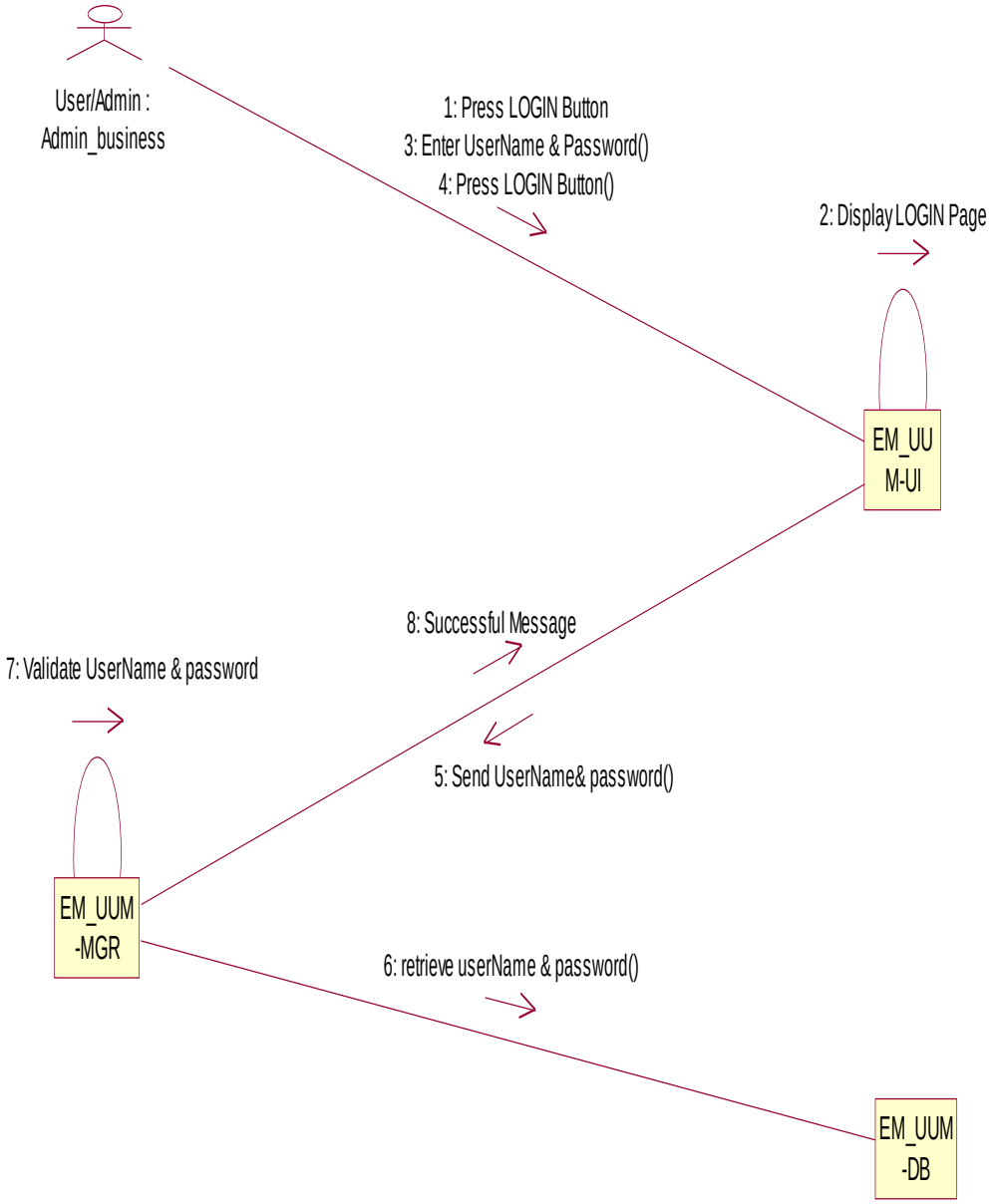

Figure 4. 5: Login Collaboration Diagram

View Product

The user (admin business, customer) has ability to view all products that accuse in the site, Figure 4.6 and 4.7 describe the sequence diagram and collaboration for view a product use case.

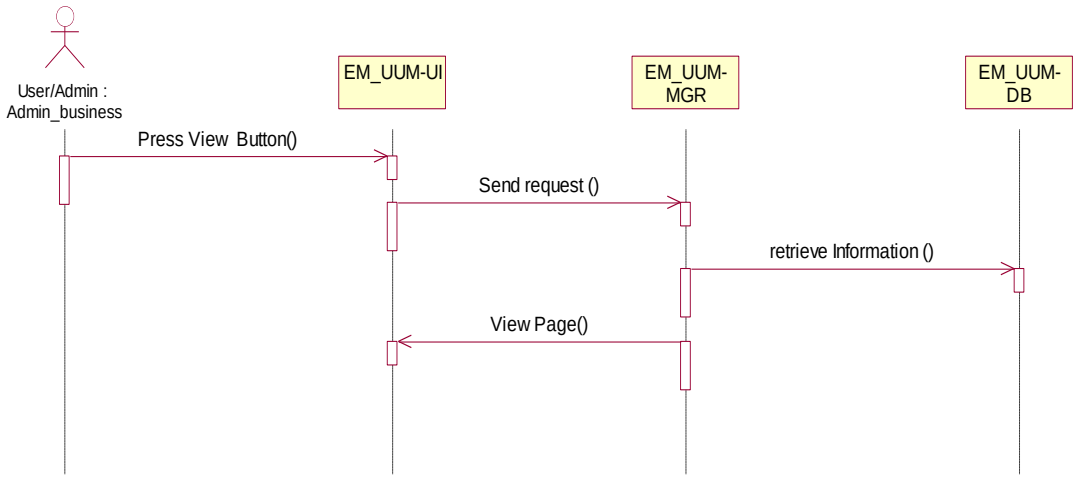

Figure 4. 6: view product Sequence Diagram

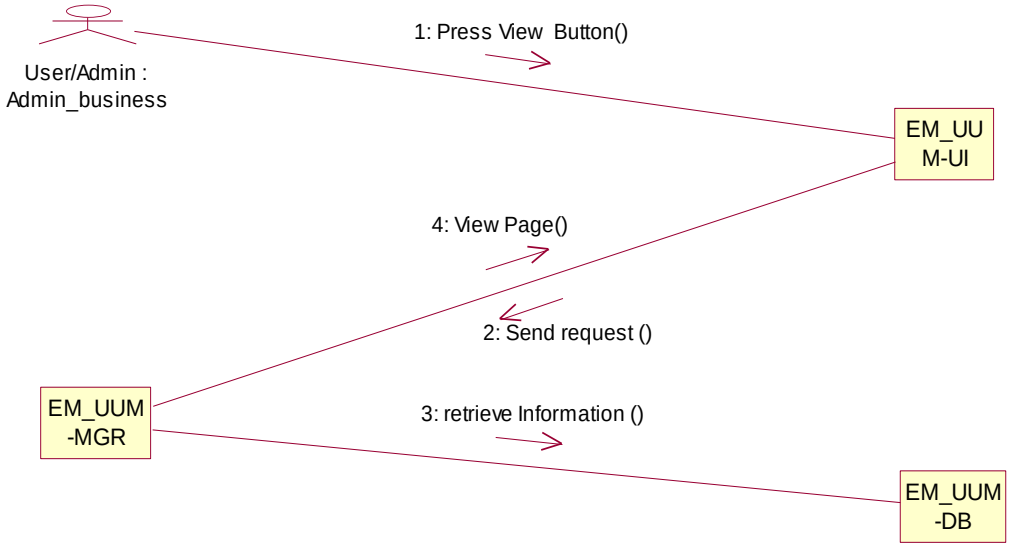

Figure 4. 7: View product Collaboration Diagram

Search Product

The customer has ability to search to find any product access in the marketplace, Figures 4.8 and 4.9 illustrated the process of search a product use case

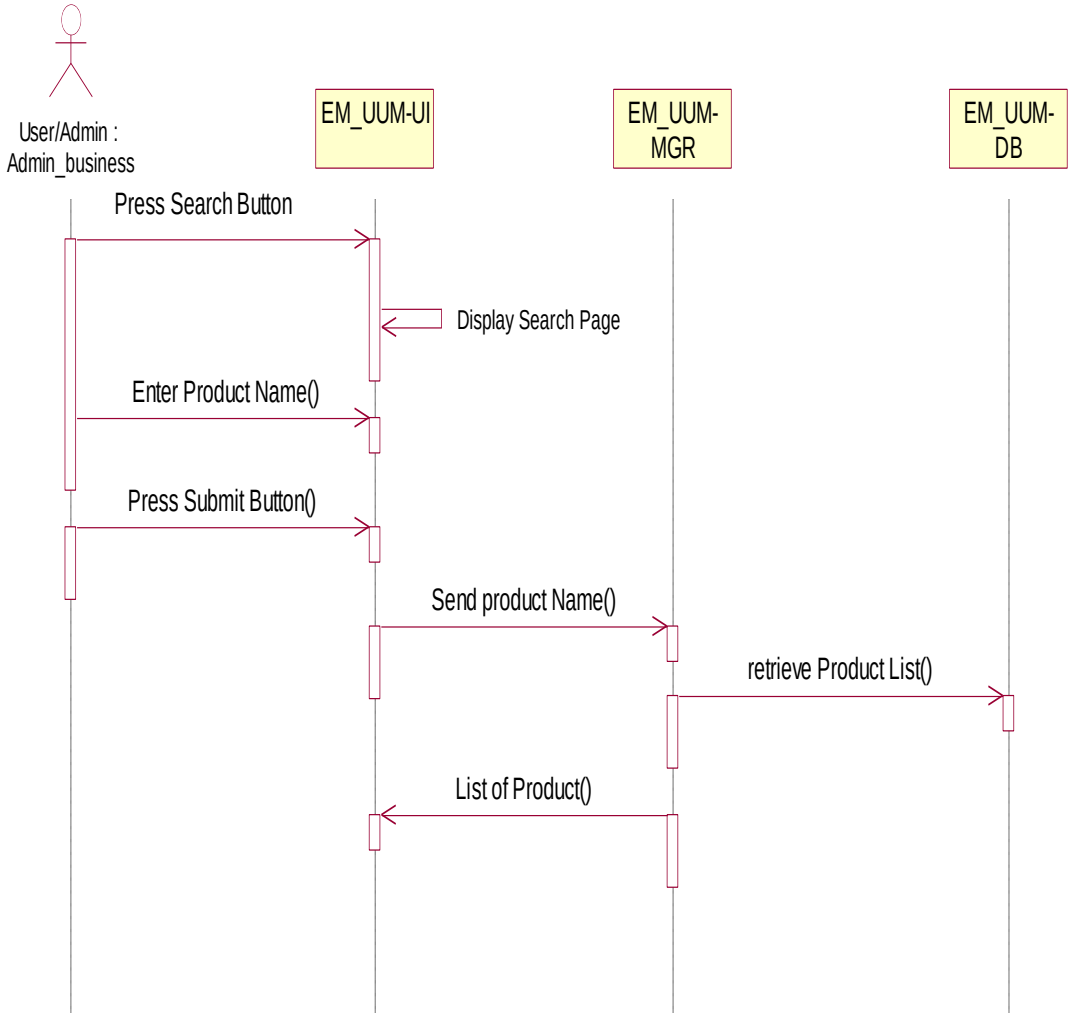

Figure 4. 8: Search product Voting Sequence Diagram

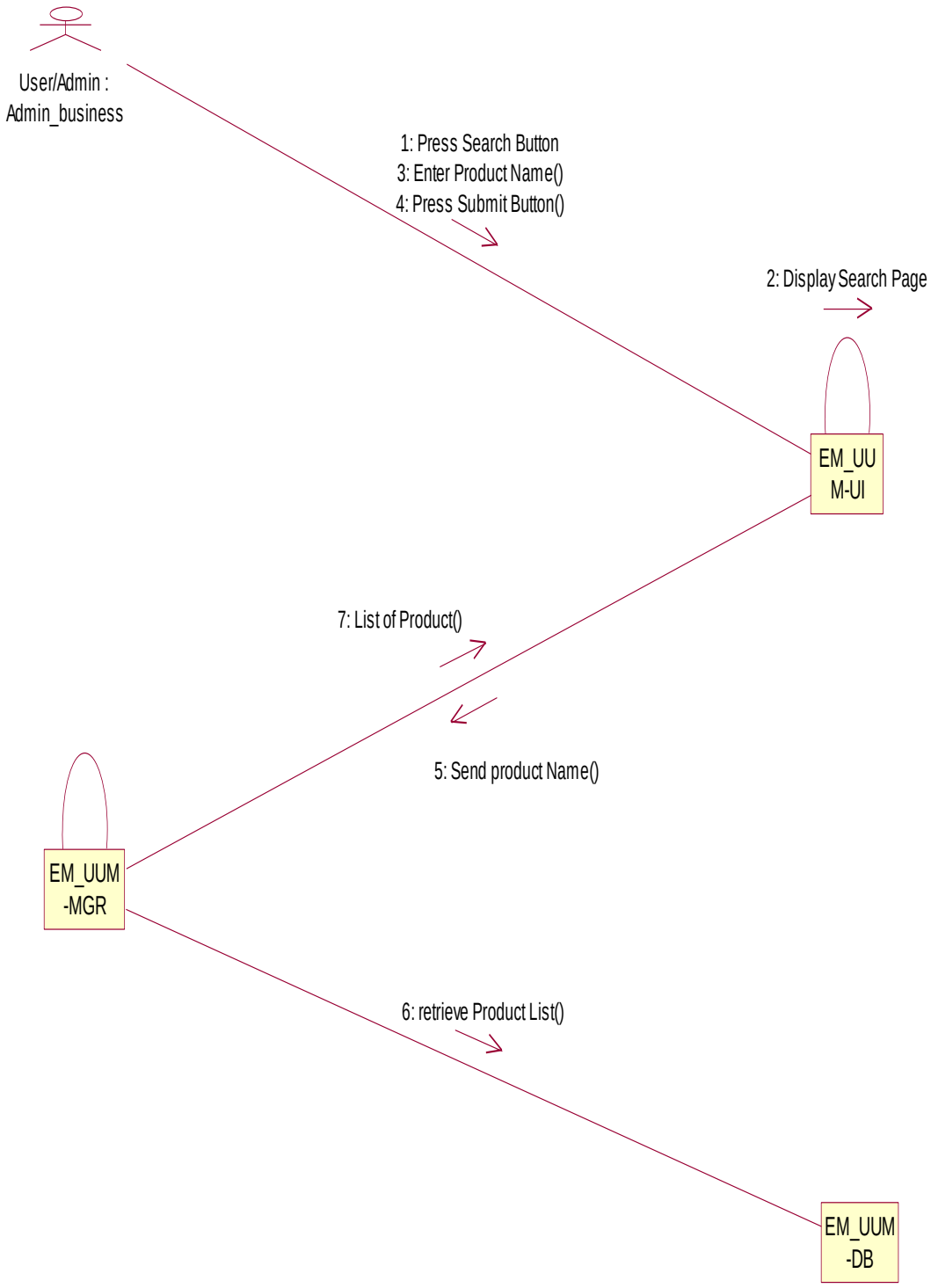

Figure 4. 9 : Search product Collaboration Diagram

Make Registration

The user (admin business, customer) has ability to make registration, through enter all the information in the fields then press confirm; Figures 4.10 and 4.11 shows the sequence diagram and collaboration diagram the process of carry vote use case.

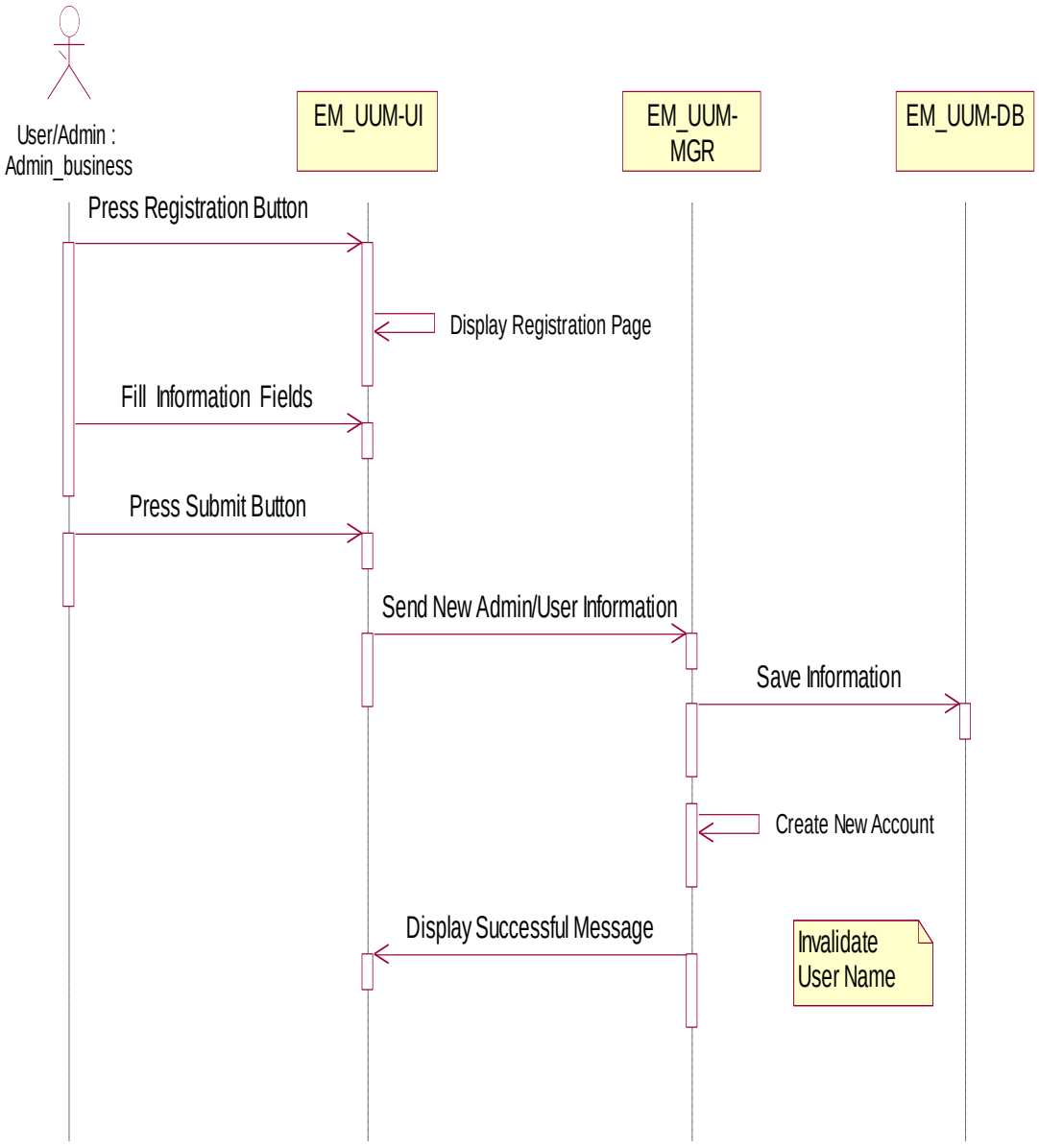

Figure 4. 10: Sequence Diagram for Use Case Make Registration

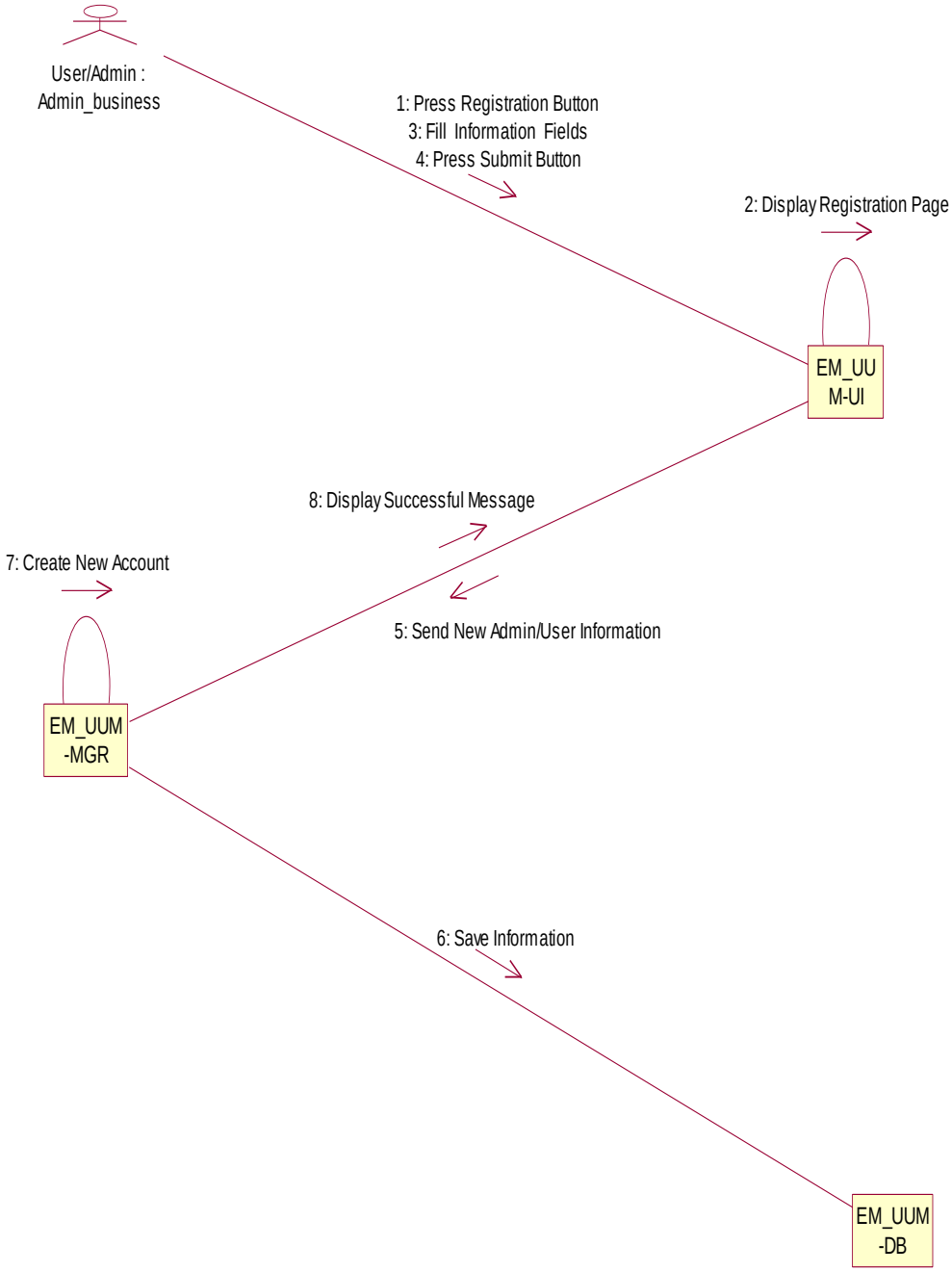

Figure 4. 11 : Collaboration Diagram for Use case make registration

Manage Product

The admin business has ability to add the product by enter the product name and the number of product, as well as the product image; Figures 4.12 and 4.13 illustrated the sequence diagram and collaboration diagram the process of manage products use case.

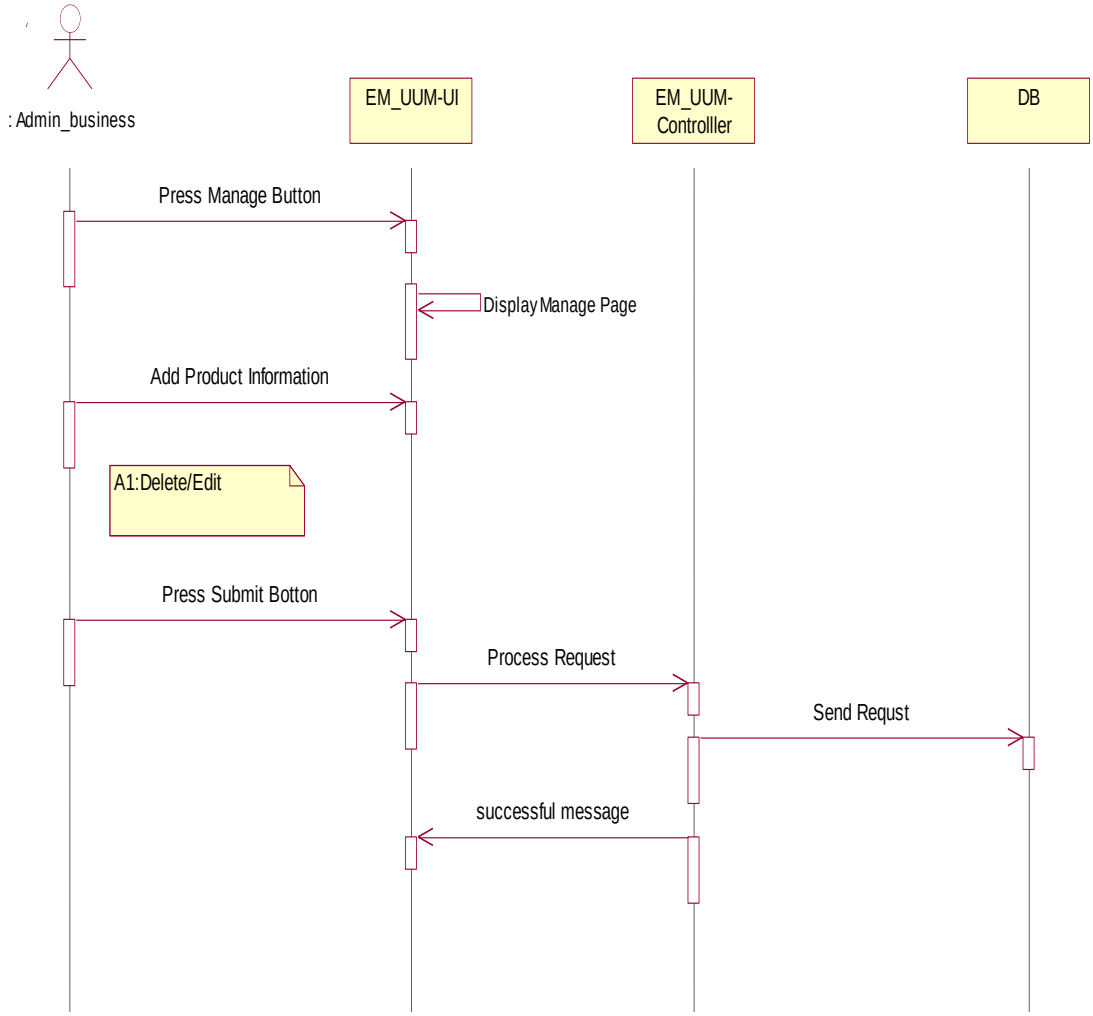

Figure 4. 12: Sequence Diagram for manage product Use Case

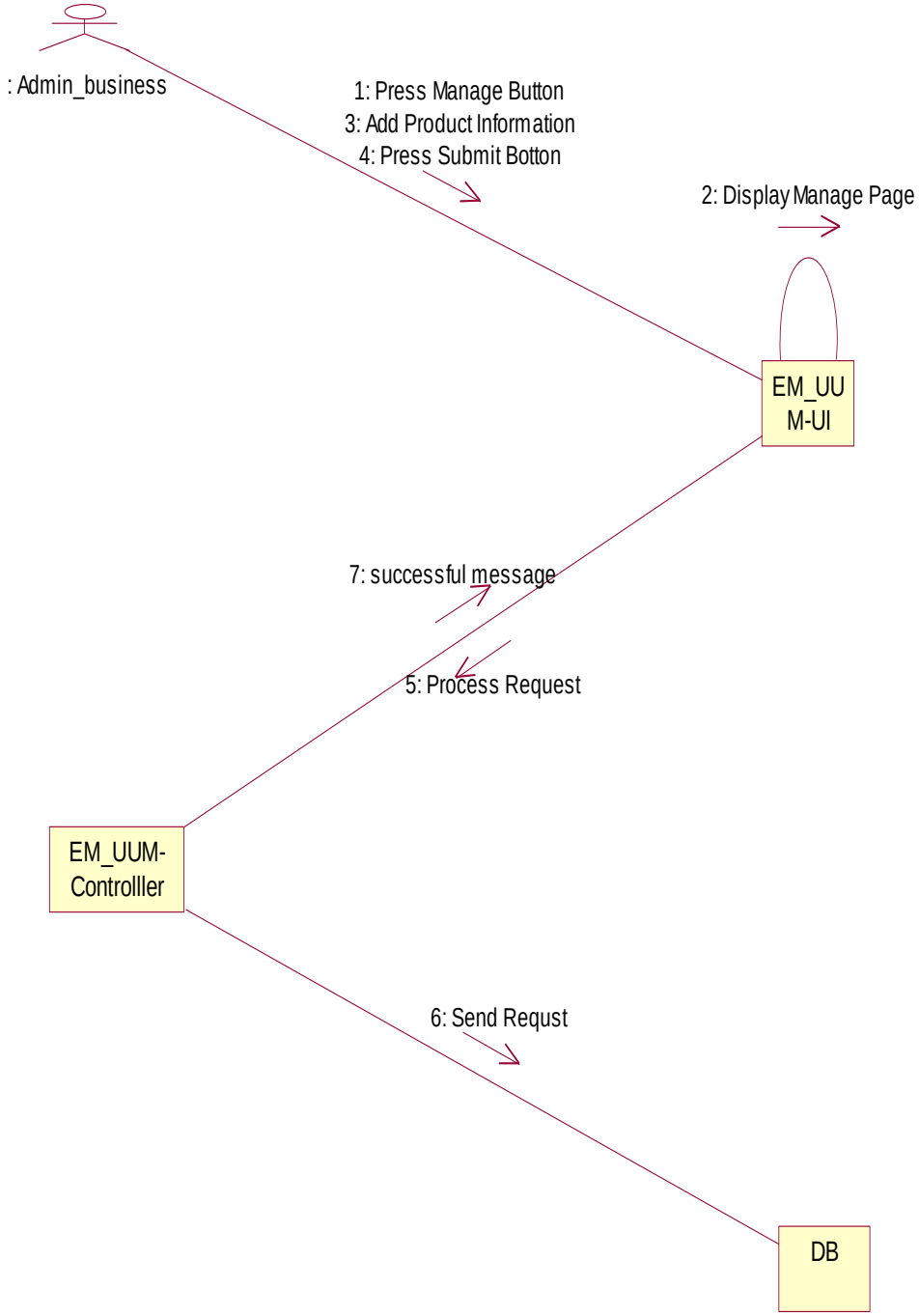

Figure 4. 13: Collaboration Diagram for manage product Use Case

Make Order

The customer has ability to make order by select the product number and confirm the order after system display ship address, Figure 4.14and 4.15 described the sequence diagram and collaboration diagram the process of make order use case.

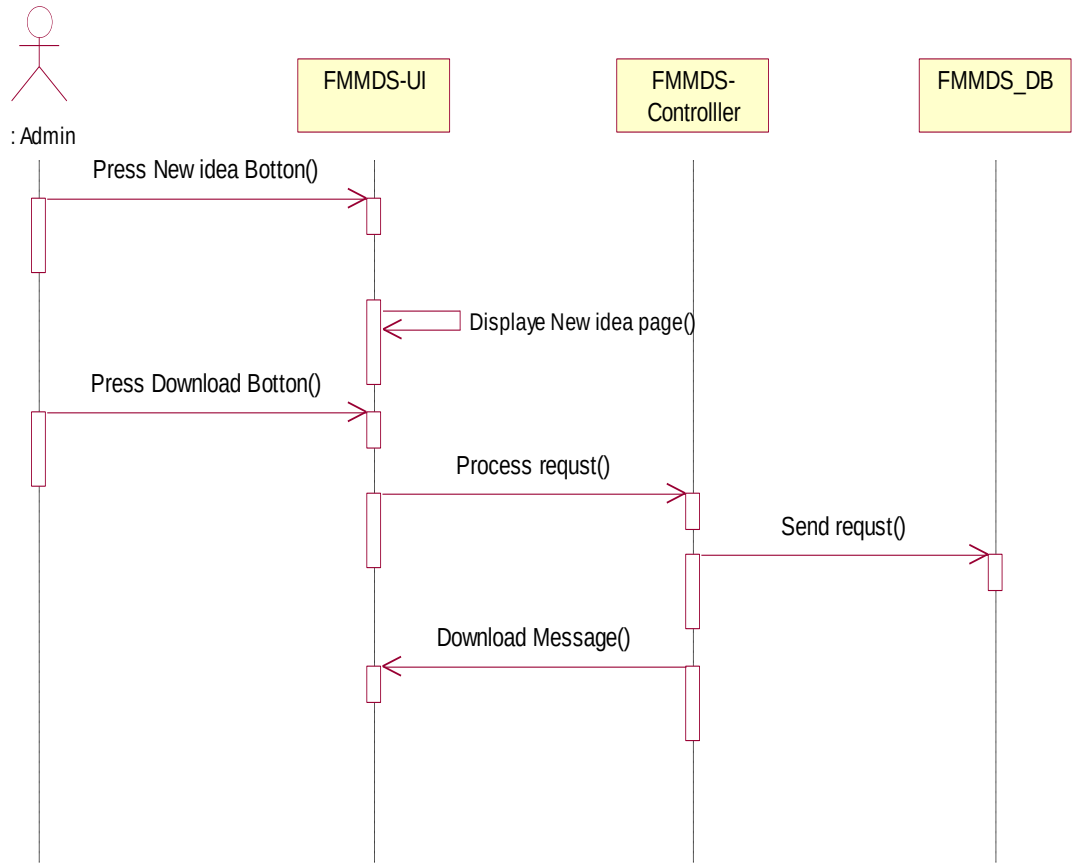

Figure 4. 14 : Sequence Diagram for make order Use Case

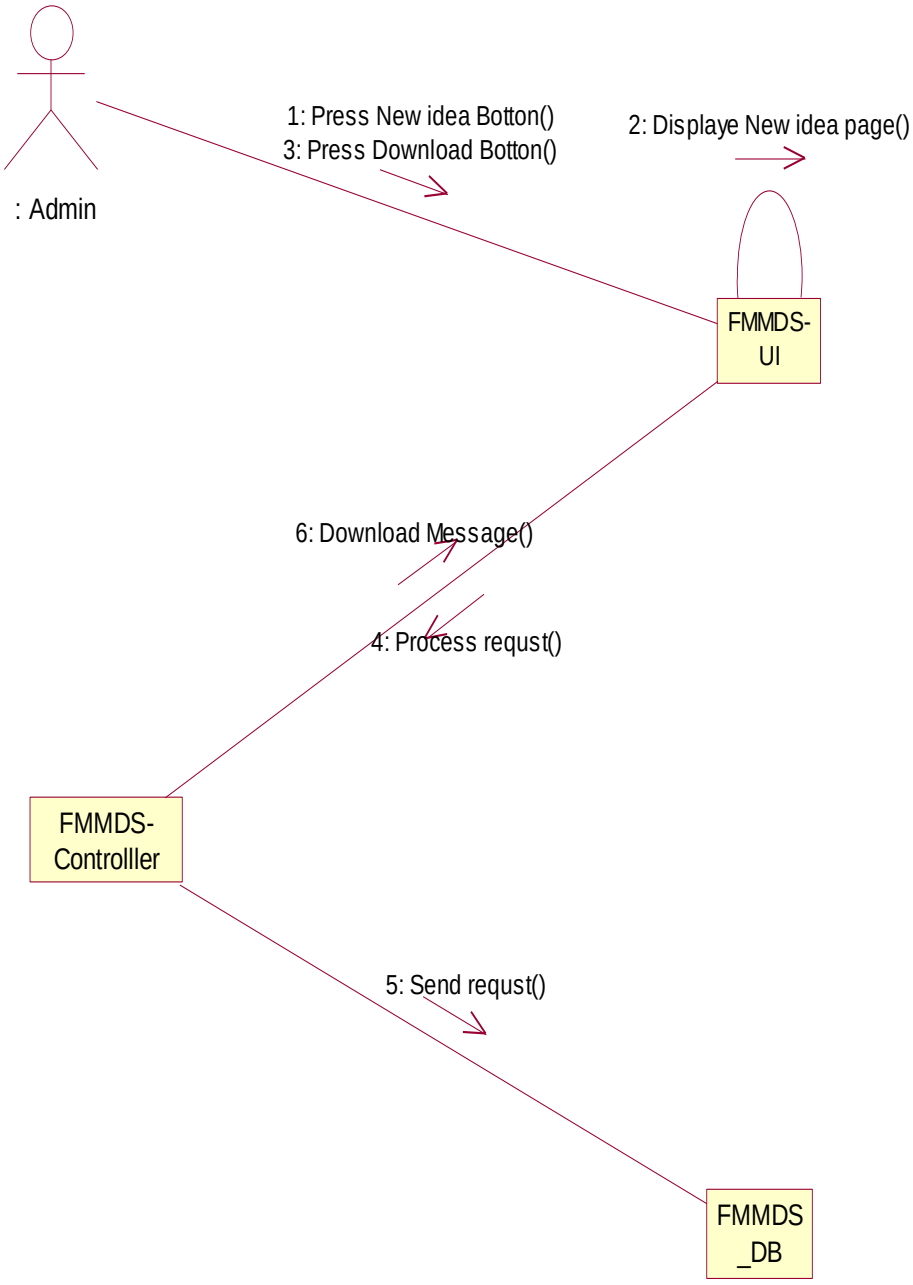

Figure 4. 15: Collaboration Diagram for make order Use Case

Logout

The user (admin business, customer) has the ability to logout from the system and goes to home page. Figures 4.16 and 4.17 shows when the user selects logout button and how this process will be done.

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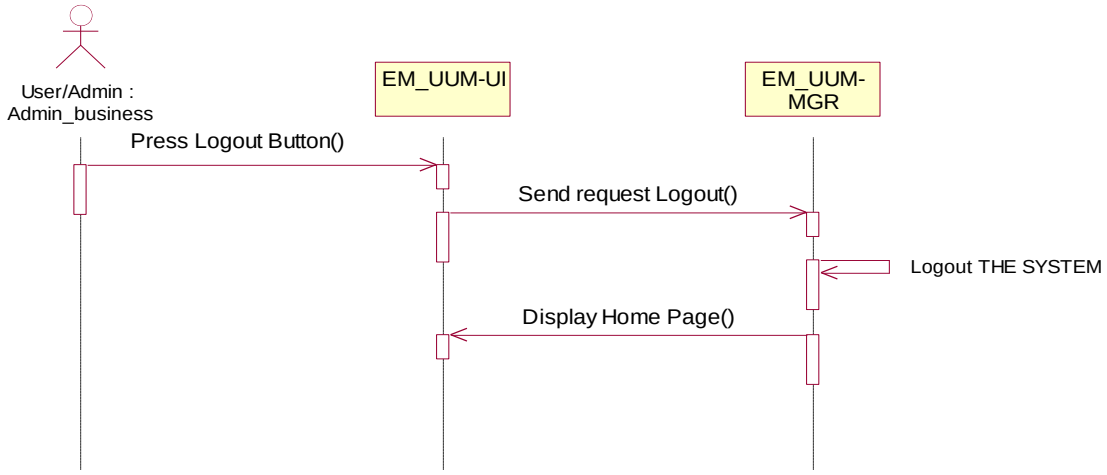

Figure 4. 16: Sequence Diagram for Logout Use Case

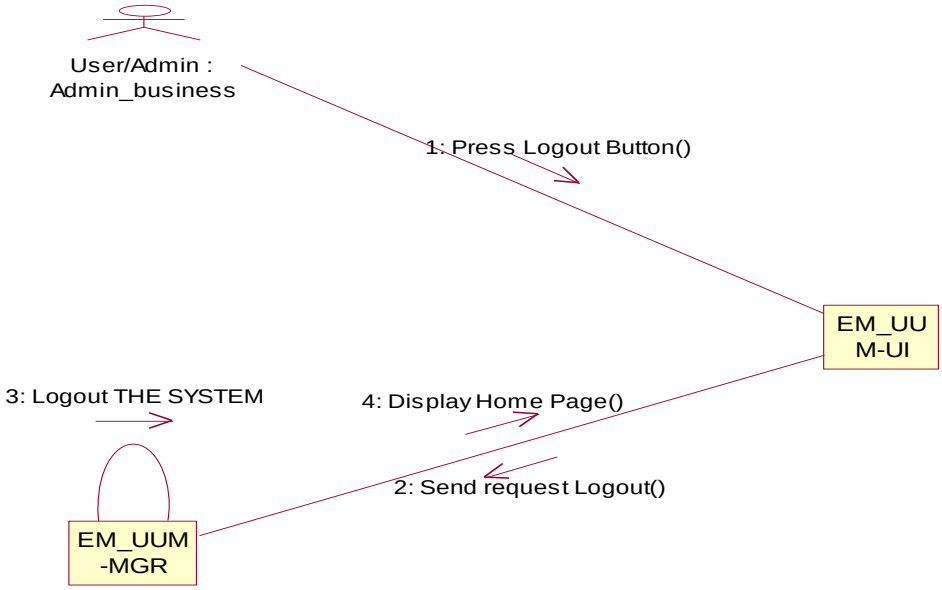

Figure 4. 17: Collaboration Diagram for Logout Use Case

4.5 Class Diagram

Elaasar and Labiche (2011) referring that class diagrams are the base for object-oriented analysis and design. It is purpose to represent the classes within a model. The classes divided into attributes (member variables), operations (member functions) and relationships with other classes; all these parts can illustrate very easily within The UML class diagram. Moreover Class diagrams show the classes of the system, their relationships (including inheritance, aggregation and association), and the operations and attributes of the classes. Class diagrams are used for a wide range of uses, including conceptual/domain modeling and detailed design modeling; Figure 4.18 shown the class diagram of EM_UUM prototype.

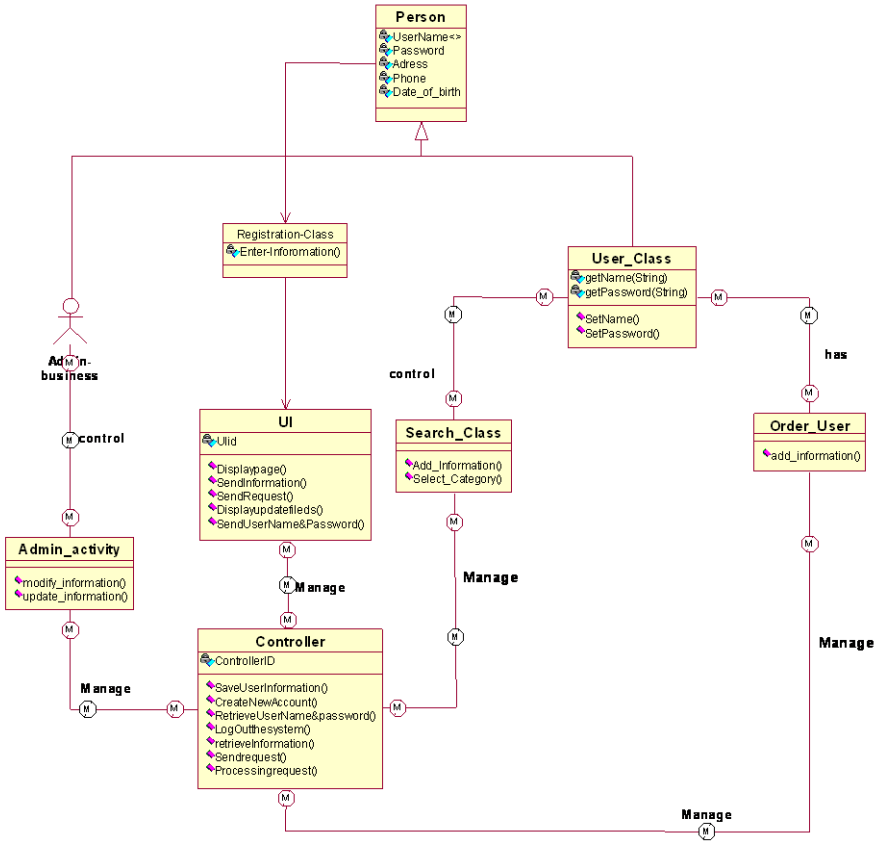

Figure 4. 18: Class diagram for EM_UUM

4.6 Prototype Interface

4.6.1 System Interface

Homepage Interface

The homepage of the prototype is content all the function to navigation through the prototype. The user (admin business and customer) can enter to view the products and make account by use registration button as well as login to the prototype by press login button; Figure 4.19 is illustrated the homepage of the EM_UUM prototype.

Figure 4. 19: Interface of homepage prototype

View Products Interface

The customer has ability to view all the products are access in the prototype by select the view button or select category of the products and view specific products as shows in Figure 4.21.

Figure 4. 20: View Product interface

Search Products Interface

The customer has ability to find any product is access in the prototype by enter the product key and select the category for the product then click search button to view the result in same page as show in Figure 4.22.

Figure 4. 21: Search product interface

4.6.2 Business Admin Interface

Register Interface

The business admin has ability to create a shop to make business by register in the prototype; the user must full all the fields then press submit button to create the shop on the e-Marketplace as illustrated in Figure 4.23

Figure 4. 22: Register interface for business admin

Login Interface

The business admin has ability to enter the system by insert the username and password, and he/she must have validated username and password as shown in Figures 4.24.

Figure 4. 23: login interface for business admin

Manage Product Interface

The business admin has ability to manage the products in his/her shop by enter the product name and description about the product then select the image for the product as well as determine the category of product as shows in Figure 4.25.

Figure 4. 24: Manage product interface

4.6.3 Customer Interface

Register Interface

The customer has ability to create an account by register in the prototype; the customer must full all the fields then press submit button to create his/her shop on the e-Marketplace as illustrated in Figure 4.26

Figure 4. 25: Register interface for customer

Login Interface

The customer has ability to enter the system by insert the username and password, and he/she must have validated username and password as shown in Figures 4.27.

Figure 4. 26: Login interface for customer

Make Order

The customer has ability to make order after enter the prototype and select the number of product then click on order button to start the order process as shows in Figure 4.28.

Figure 4. 27: Make order interface

The system will display the information about the product that selected from the customer and view the information about the customer such as ship address. The customer must be click on confirm button to successful the order process as illustrated in Figure 4.29.

Figure 4. 28: Make order interface

4.7 Prototype Evaluation

Prototype evaluation is important to prove the viability of the system and abilities to use by the user. The last stage in the application is test the validity of the system. A prototype of EM_UUM is assessment usability testing based on System Usability Scale (SUS) proposed by Brooke (Bangor, Kortum & Miller, 2008). ; a questionnaire consists of 12 questions and psychometric theory scale consisting from one to five degrees the terms "Strongly disagree" for 1 and "Strongly agree" for 5. A sample of 63 users is selected randomly to measure user satisfaction towards the EM_UUM. The questionnaire consists of two sections, i.e. general information section and user evaluation section.

4.7.1 General Information

The Statistical Package for Social Sciences (SPSS) version 18 is used to perform evocative statistics analysis for the collected data as well as to conclude the frequencies of each question. However, the histogram has been provided in this assessment 41 (42.86%) are female respondents and 22 (34, 92%) are male; and most of the respondents are between 18-24 years old 42 (66.66%), and 36 (57.14%) of the respondents are degree students. Table 4.3 represent this data in tabular and graphical format respectively.

Table 4. 3: Distribution of Respondents histogram

Gender	Frequency	Percentage (%)
Male	22	34.92%
Female	41	65.08%
Age	**Frequency**	**Percentage (%)**
18-24	42	66.66%
25-29	12	19.04%
30-39	9	14.3%
Education	**Frequency**	**Percentage (%)**
Degree	36	57.14%
Master	16	25.4%
PhD	11	17.46%

Furthermore, over the half of respondents are sometime buy goods from the internet, and (24) (38.1%) are always buying from the internet as shows in Table 4.4. On other hand, all the respondents are agreeing to develop e-Marketplace for the UUM campus.

Table 4. 4: Do you buy goods over the Internet

		Frequency	Percent	Cumulative Percent
Valid	Always	24	38.1	38.1
	sometimes	39	61.9	100.0
	Total	63	100.0	

4.7.2 Evaluation of User

Measure the performance of any system depends mainly on the assessment of users. For EM_UUM prototype, the system should be assessing by the UUM students. The questionnaire is content twelve questions, each questions in the measurement has a rate from 1 to 5 (1 mean Strongly Disagree, 2 mean

Disagree, 3 mean Neutral, 4 mean Agree, and 5 mean Strongly Agree). As describe in Table 4.6 the survey focus on two dimension the usefulness and ease of use; the result illustrates that the mean for every dimension is above four. Table 4.5 is shows the details about the statistics for elements of the questionnaire. The questionnaire form and other details were existed in appendix A.

Table 4. 5: Illustrate Statistics for All Elements

PERCEIVED USEFULNESS		**Mean**
Q1	Using EM_UUM helps me to be more effective	4.2063
Q2	Using EM_UUM helps me to be more productive.	4.0159
Q3	Using EM_UUM saves my time when I use it	4.0794
Q4	Using EM_UUM would enhance my effectiveness	3.9683
Q5	Using EM_UUM would make it easier to do my tasks	4.0476
Q6	EM_UUM was everything I would expect it to do.	4.1111
PERCEIVED EASE OF USE		**Mean**
Q7	EM_UUM is simple to use.	4.0476
Q8	EM_UUM is very friendly to use	4.0476
Q9	It requires the fewest steps possible to accomplish what I want to do with it	4.2857
Q10	I can use it without written instructions	4.1746
Q11	I don't notice any inconsistencies as I use EM_UUM	4.0317
Q12	I can use EM_UUM successfully every time.	4.1270

Table 4. 6 : Attributive statistics for dimensions

Dimension	Number	Mean	SD
Perceived Ease of Use	63	4.1190	.910
Perceived Usefulness	63	4.0714	.875

The analysis for first question as shows in Table 4.7 and Figure 4.30 was describes four level of response the high degree focus on level strongly agrees with (31) (49.2%), which means that the system is an effective tool for students and SMEs working in UUM to identify customers in need.

Table 4. 7: Q1 Using EM_UUM helps me to be more effective

		Frequency	Percent	Cumulative Percent
Valid	2.00	4	6.3	6.3
	3.00	10	15.9	22.2
	4.00	18	28.6	50.8
	5.00	31	49.2	100.0
	Total	63	100.0	

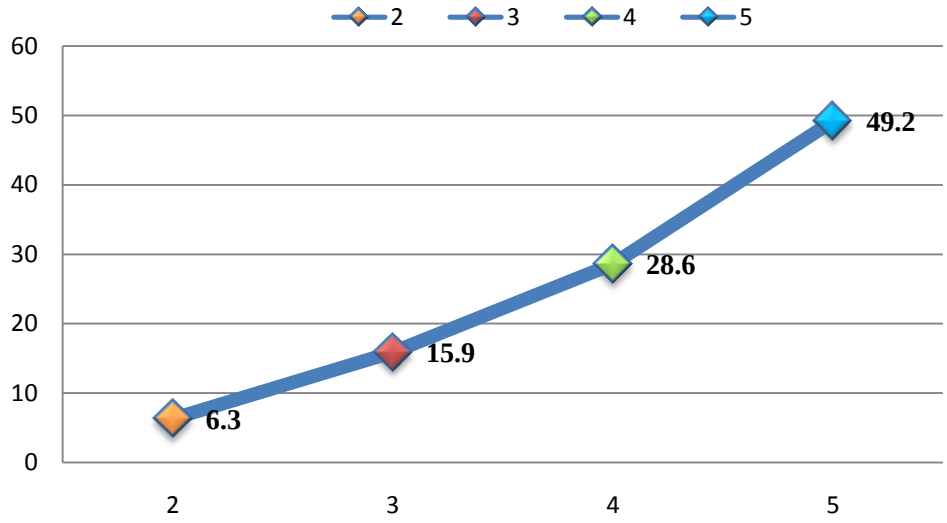

Figure 4. 29:Statistics for question one

The analysis for second question as shown in Table 4.8 and Figure 4.31 illustrates four level of response, the strongly agree level is the first with (42.9%) meant (27) users gave 5, then the second level are natural with (28.6%) meant (18) users give 3. Four of user gives disagree with (6.3%), which means that the prototype was help the user to be more productive.

Table 4. 8:Q2 Using EM_UUM helps me to be more productive.

		Frequency	Percent	Cumulative Percent
Valid	2.00	4	6.3	6.3
	3.00	18	28.6	34.9
	4.00	14	22.2	57.1
	5.00	27	42.9	100.0
	Total	63	100.0	

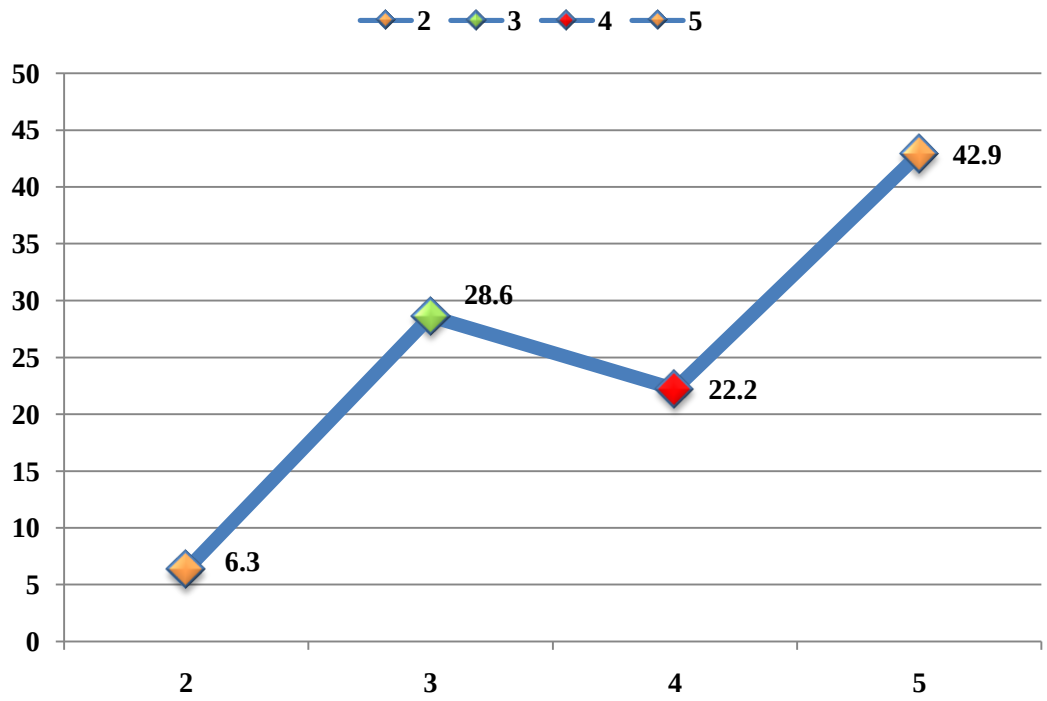

Figure 4. 30: Statistics for question two

The analysis for third question as describe in Table 4.9 and Figure 4.32 illustrated four level of response, the strongly agree level is the first with (44.4%) meant 28 users gave 5, and (16) users (25.4%) agree give to the prototype. Four user disagree with (6.3%) but (15) of users are natural with that in (23.8%), which that mean prototype is saves customer time to perform children.

Table 4. 9:Q3 Using EM_UUM saves my time when I use it

		Frequency	Percent	Cumulative Percent
Valid	2.00	4	6.3	6.3
	3.00	15	23.8	30.2
	4.00	16	25.4	55.6
	5.00	28	44.4	100.0
	Total	63	100.0	

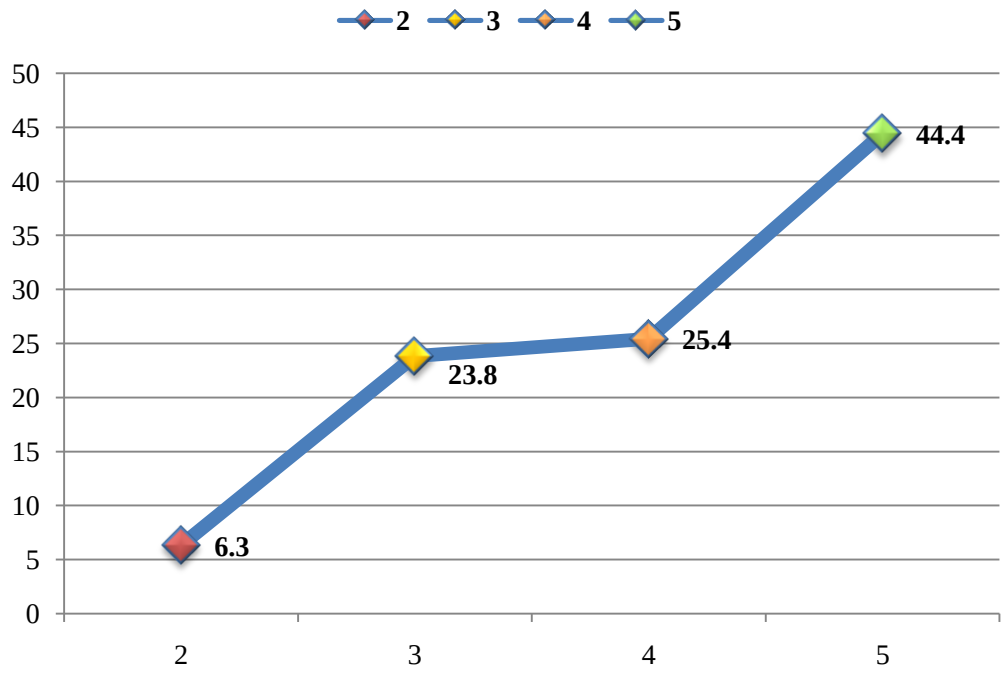

Figure 4. 31: Statistics for question three

The analysis for fourth question as shown in Table 4.10 and Figure 4.33 explain three level of response, the agree level is the first with (42.9%) meant 27 users gave 4, then the second level is natural with (30.2%) meant (19) users give 3. Seventeen of users strongly agree with (27%); that mean the prototype is enhance the effectiveness the customer.

Table 4. 10: Q4 Using EM_UUM would enhance my effectiveness

		Frequency	Percent	Cumulative Percent
Valid	3.00	19	30.2	30.2
	4.00	27	42.9	73.0
	5.00	17	27.0	100.0
	Total	63	100.0	

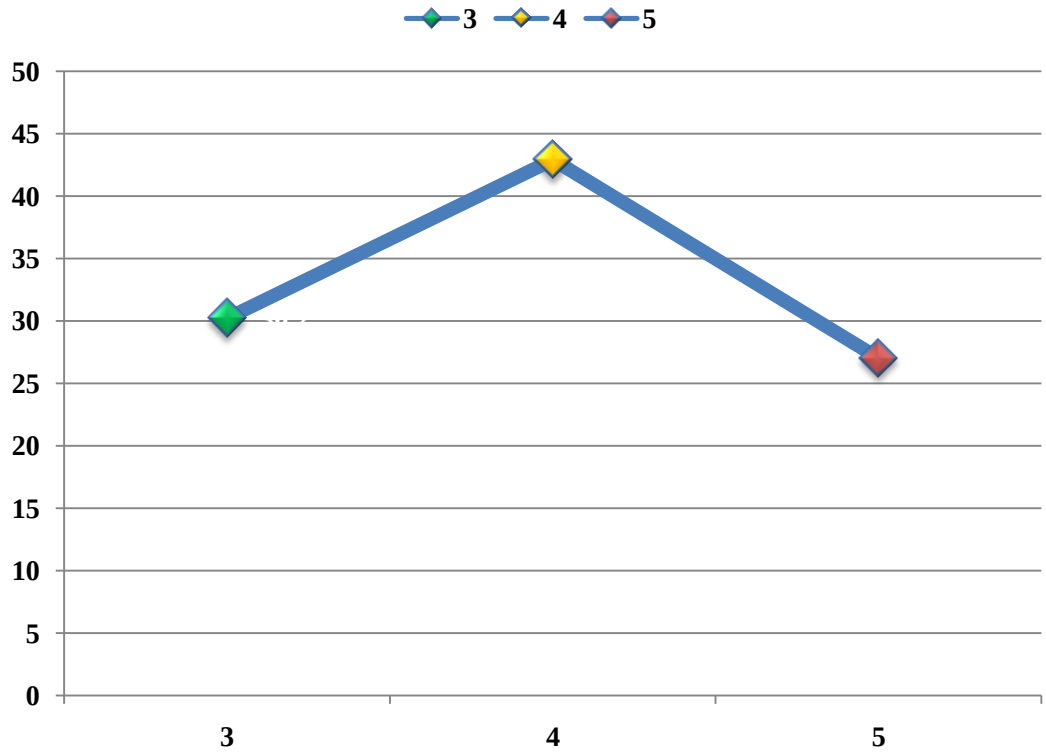

Figure 4. 32:Statistics for question four

The analysis of fifth question as illustrated in Table 4.11 and Figure 4.34 show three level of response, the strongly agree level is the first with (36.5%) meant 23 users gave 5, then the second level is both the agree and natural with (31.7%) for each level. Generally, prototype was easier to do customer tasks.

Table 4. 11: Q5 Using EM_UUM would make it easier to do my tasks

		Frequency	Percent	Cumulative Percent
Valid	3.00	20	31.7	31.7
	4.00	20	31.7	63.5
	5.00	23	36.5	100.0
	Total	63	100.0	

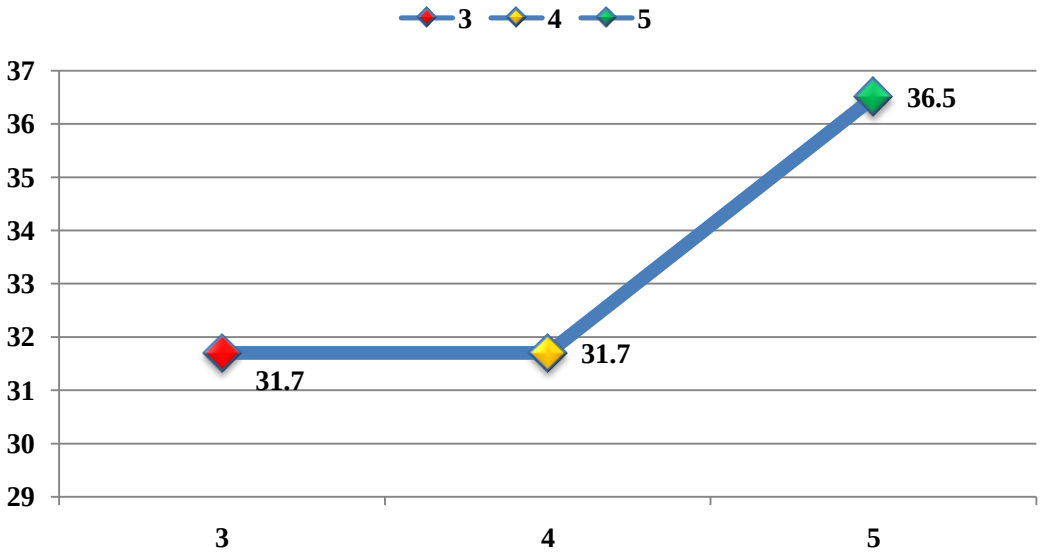

Figure 4. 33:Statistics for question five

The analysis for sixth question as in illustrated Table 4.12 and Figure 4.35 shown four level of response, the strongly agree level is the first with (44.4%) meant (28) users gave 5, then the second level is agree with (30.2%) meant (19) users give 4. Five user disagrees with (7.9%), and (11) (17.5%) users give natural; which that means system was everything the user expect from an online marketplace system.

Table 4. 12:Q6 EM_UUM was everything I would expect it to do.

		Frequency	Percent	Cumulative Percent
Valid	2.00	5	7.9	7.9
	3.00	11	17.5	25.4
	4.00	19	30.2	55.6
	5.00	28	44.4	100.0
	Total	63	100.0	

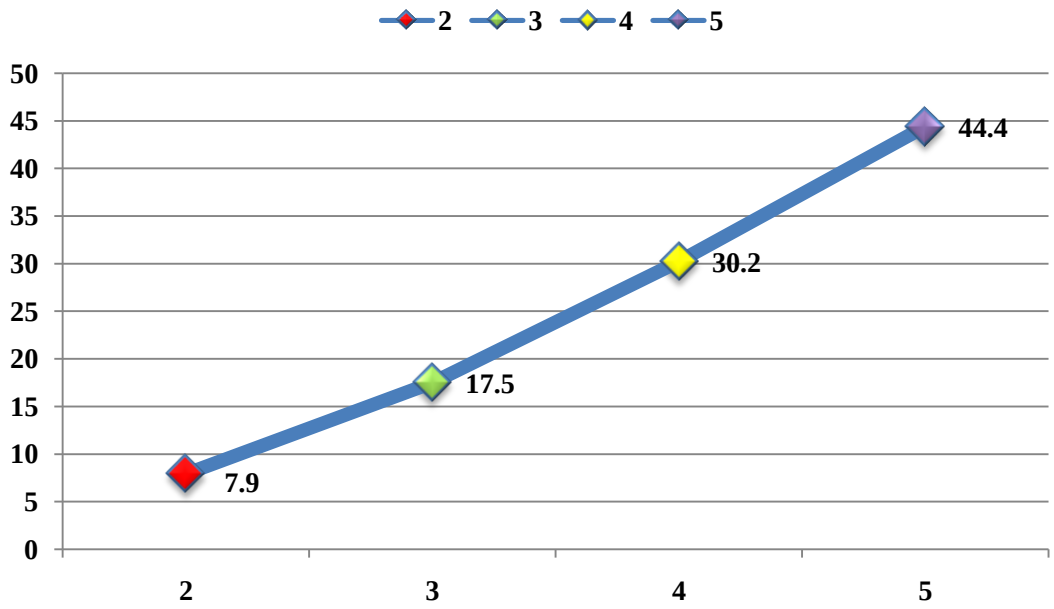

Figure 4. 34: Statistics for question six

The analysis for seventh question as describes in Table 4.13 and Figure 4.36 shown four levels of response, the strongly agree level is the first with (39.7%) meant (25) users gave 5, and the second level is natural with (31.7%) meant (20) users give 3. One of response disagree with (1.6%) on other side, (17) users select agree with (27%), that means the prototype is simple to use.

Table 4. 13:Q7 EM_UUM is simple to use.

		Frequency	Percent	Cumulative Percent
Valid	2.00	1	1.6	1.6
	3.00	20	31.7	33.3
	4.00	17	27.0	60.3
	5.00	25	39.7	100.0
	Total	63	100.0	

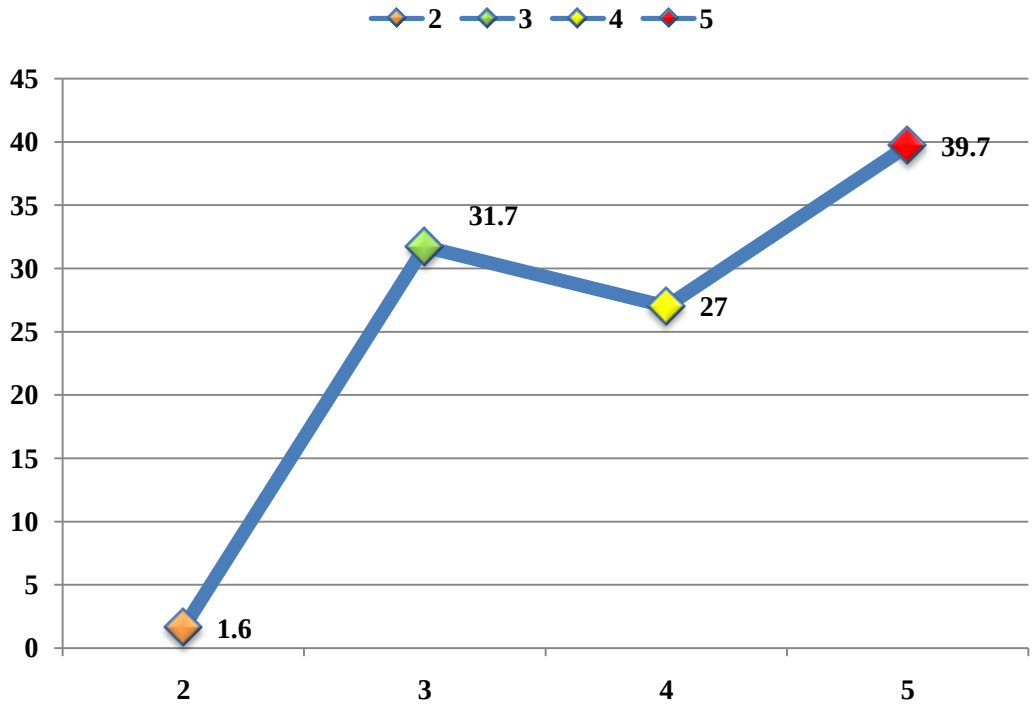

Figure 4. 35:Statistics for question seven

The analysis for eighth question as shown in Table 5.14 and Figure 4.37 illustrate four levels of response, the strongly agree level is the first with (39.7%) meant (25) users gave 5, then the second level is both the agree and natural with (28.6%) for each level. Two users disagree with (3.2%), which mean the prototype is friendly to the customer.

Table 4. 14: Q8 EM_UUM is very friendly to use

		Frequency	Percent	Cumulative Percent
Valid	2.00	2	3.2	3.2
	3.00	18	28.6	31.7
	4.00	18	28.6	60.3
	5.00	25	39.7	100.0
	Total	63	100.0	

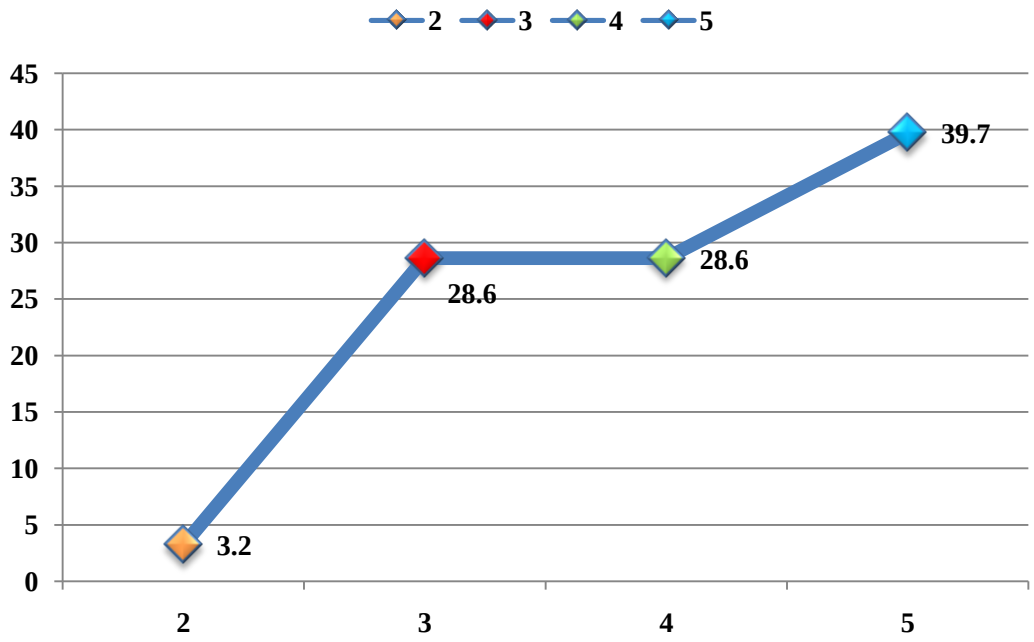

Figure 4. 36 : Statistics for question eight

The analysis for ninth question as shown in table 4.15 and figure 4.38 illustrate three level of response, the strongly agree level is the first with (46%) meant (29) users gave 5, then the second level is agree with (36.5%) meant (23) users give 4. Eleven of users give natural with (17.5%), that mean the prototype are accomplish the work in short way.

Table 4. 15:Q9 It requires the fewest steps possible to accomplish what I want to do with it

		Frequency	Percent	Cumulative Percent
Valid	3.00	11	17.5	17.5
	4.00	23	36.5	54.0
	5.00	29	46.0	100.0
	Total	63	100.0	

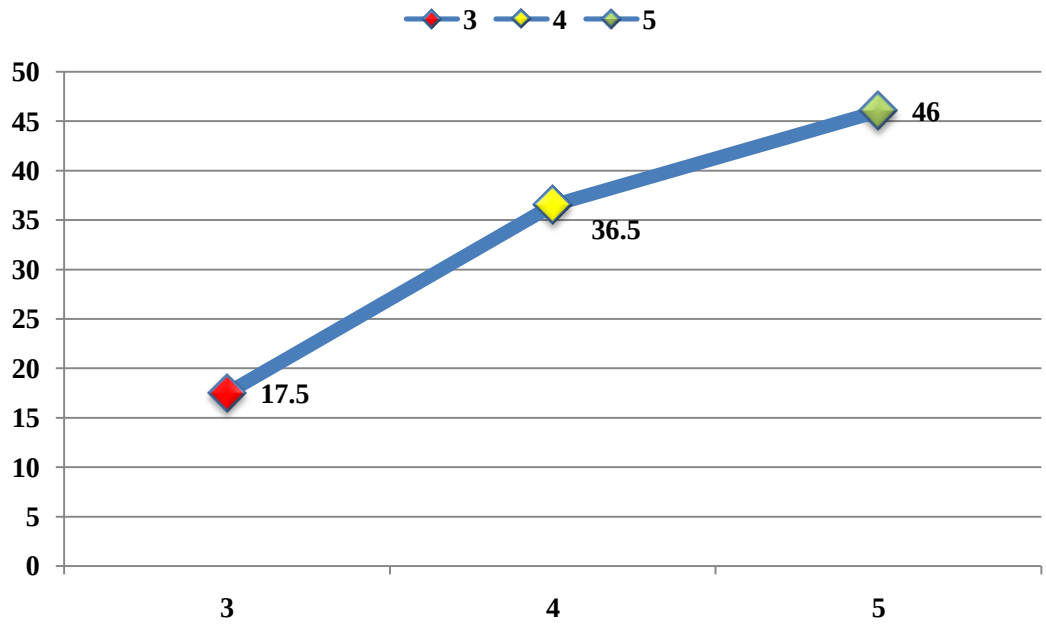

Figure 4. 37: Statistics for question nine

The analysis for tenth question as describes in table 4.16 and figure 4.39 show three level of response, the agree level is the first with (41.3%) meant (26) users gave 4, then the second level is strongly agree with (38.1%) meant (24) users give 5. However, (13) users give natural in (20.6%), that mean the functions of CSS prototype are clear and understandable.

Table 4. 16: Q10 I can use it without written instructions

		Frequency	Percent	Cumulative Percent
Valid	3.00	13	20.6	20.6
	4.00	26	41.3	61.9
	5.00	24	38.1	100.0
	Total	63	100.0	

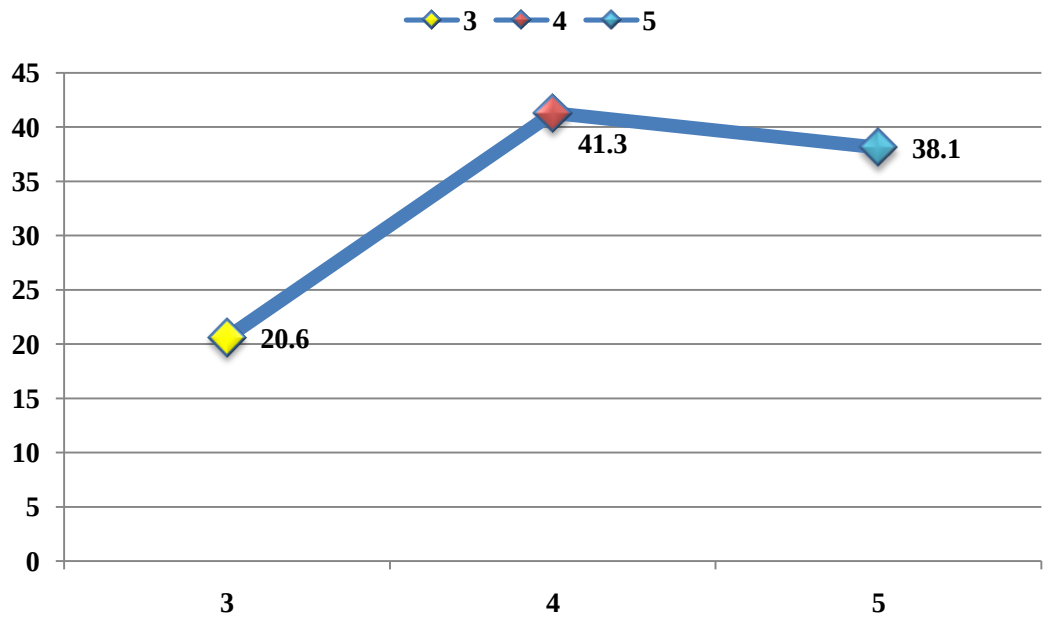

Figure 4. 38: Statistics for question ten

The analysis for question eleven as shown in Table 5.17 and Figure 4.40 describes four level of response, the strongly agree level is the first with (39.7%) meant (25) users gave 5. Moreover, the second level is agree with (30.2%) meant (19) users give 4. Four users disagree in (6.3%) and (15) users give natural in (23.8%); that mean the prototype is well integrated.

Table 4. 17:Q11 I don't notice any inconsistencies as I use EM_UUM

		Frequency	Percent	Cumulative Percent
Valid	2.00	4	6.3	6.3
	3.00	15	23.8	30.2
	4.00	19	30.2	60.3
	5.00	25	39.7	100.0
	Total	63	100.0	

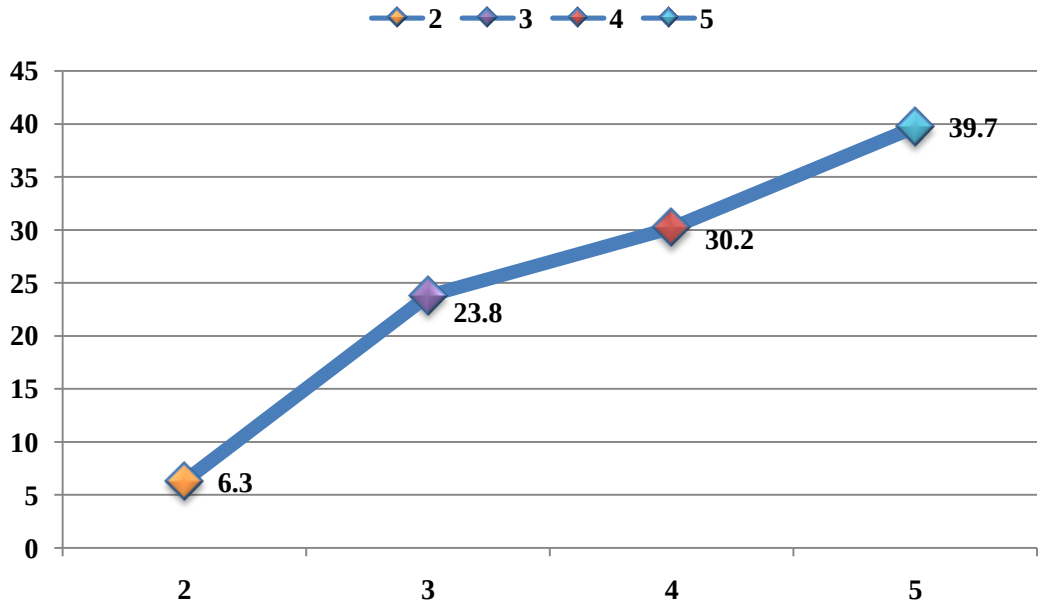

Figure 4. 39: Statistics for question eleven

The analysis for last questions as shown in Table 4.18 and Figure 4.41 illustrate four levels of response, the strongly agree level is the first with (50.8%) meant (32) users gave 5, then the second level is natural with (25.4%) meant (16) users give 3. Four users are disagreeing with (6.3%), which means the prototype is successfully to use.

Table 4. 18:Q12 I can use EM_UUM successfully every time.

		Frequency	Percent	Cumulative Percent
Valid	2.00	4	6.3	6.3
	3.00	16	25.4	31.7
	4.00	11	17.5	49.2
	5.00	32	50.8	100.0
	Total	63	100.0	

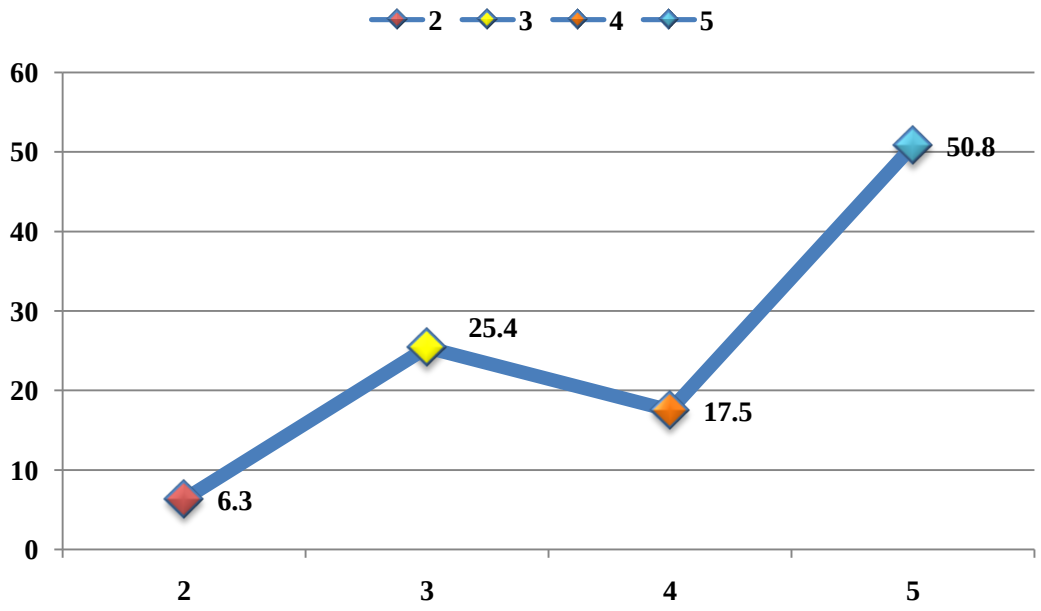

Figure 4. 40: Statistics for question twelve

4.8 Summary

This chapter are content the analysis about the prototype, the requirement, use cases and the entire diagram which describe the function of EM_UUM prototype. The result of running the system illustrated that target of the study is done successfully. The output of chapter four is the interface of prototype and the result of user assessment for the prototype, which is positive.

CHAPTER FIVE

CONCLUSIONS

Beginning the chapter with a discussion of the outcome found in chapter four, and it is density with prior research works that either support or disagree with result of this research labor. It’s followed by conclusions that are drawn from this research labor. Several implications for both research and practice

emerged and are discussed in following section, and then recommendations for future research are made, finally, the conclusion of the study.

5.1 Discussion

The main purpose to built EM_UUM prototype to provide the services to the customers and owners within the university and its surroundings, one of the important aims are determined the requirements to help the SMEs in the UUM especially through the holiday of university. As well as, the international students, that lived in the university campus.

Objective 1:

In this research developed the system requirements to determine the functionalities of designing an e-Marketplace for UUM mall.

- Business admin can open shop on the e-Marketplace by register in the system, and he/she has ability to manage the product to the shop, as well as describe the product and select the category for product.
- The customer can create an account to buy from the EM_UUM, and he/she has ability to view all products access in the e-Marketplace, as well as search to find specific product that needed. Furthermore, the customer has ability to make order.

Objective 2:

Electronic marketplaces can provide significant value to buying and selling organizations of all sizes. They facilitate more efficient and effective trade of goods and services, and eliminate inefficiencies inherent in the trading

process. They can improve productivity by providing secure, integrated and ubiquitous access to relevant information and applications.

The prototype was implemented using C# language under environment of ASP.net. Moreover, the database designed by using SQL. However, all operating system is compatible with the prototype.

Objective 3:

The best electronic marketplaces websites are designed through collaboration between the people who will be served and the people who will maintain them. Gather community input during the initial stages of website development and continue to engage this group throughout the process. All those depend on the evaluating of the system. The evaluation is based on usability testing by using System Usability Scale (SUS) proposed by Brooke (Bangor, Kortum & Miller, 2008). Prototype was assessed through a sample consists of sixty-three customers; and the results have been positive.

5.2 Contribution

This research obtained the following contributions in the B2C services sector, electronic marketplace fields:

a) Give a picture of possible solutions to activate the purchasing services via internet to the SMEs working in the UUM campus, through construct e-Marketplace to provide goods for students and staff in the campus.

b) This study contributes to facilitate and accelerate the work of businesses owners, and give him/her the potential to provide

greater opportunities for the growth and development by organize the shop on the internet in every time.

5.3 Future Work

The spread of the computer and the growth of the number of users quickly, putting information technology in the areas of new research and development. Accompanied by the continuous development and facility earned this area the flexibility to cope with all the sciences. Through this research was to highlight on an important aspect in the life of society through dealing with online marketplace to develop business of SMEs in UUM mall and provide services to the international students in the holiday especially the delay goods like foods. It is recommended that, the future research in this field cover the followings:

a. EM_UUM prototype has develop in the UUM area to provide services for the customer in this area only, which that mean the system is limited and need more possibility to expand the geographic range.
b. Expand the scope of the system to integrate the business among SMEs in north of Malaysia, by development a B2B e-marketplace prototype to reduces the costs of closely integrating buyers and suppliers activities through the Internet.

5.4 Conclusion

ICT can radically affect working activities and methods of private organization to provide online services. B2C transactions include various services provide from the business owners to the customer, B2C e-marketplaces match buyers and

sellers with automated transactions, lower search costs, and increased process effectiveness and efficiency.

At the compound of UUM, there are many SMEs working at the mall of university, they looking for prospects of opening new business, it is interesting, and especially that there are long periods of students holiday which was weaken the process of buying and selling. As well as, many of international students are suffer because that in the period of the official holiday for university most of the shops are closed, which is making it difficult to provide daily needs.

Through this study was designed e-marketplace prototype for the SMEs work in the UUM campus to facilities the services to the students and staff of UUM. Prototype was developing by using C# language under environment of ASP.net. Moreover, was evaluation based on usability testing by using System Usability Scale (SUS) proposed by Brooke and prototype was assessed through a sample consists of sixty-three students of UUM; and the results have been positive.

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APPENDIX A

UNIVERSITY UTARA MALAYSIA
COLLEGE OF ATRS AND SCIENCES
SCHOOL OF COMPUTING

B2C e-Marketplace for Small and Medium Enterprises in UUM

Supervisor: Nor Farzana Binti Abd Ghani

I am a Master of Science (Information Technology) student at final semester, in University Utara Malaysia. Currently, I am performing this questionnaire to help me gain a requirement of e-Marketplace for Small and Medium Enterprises in UUM. A questionnaire that adapted to Moore and Shipman (2000) is aims to understand general information about system users; the results from this questionnaire will help me to understand the system requirements for developing an e-Marketplace system for UUM.

MSc. IT Candidate

Sharf Khaled Alzu'bi

I. General information

1. **Gender**

Male [ ] Female [ ]

2. Age

20-29 [ ] 30-39 [ ] 40-49 [ ]

3. Occupation ……..

II. QUESTIONNAIRE

1. What are the features that e-Marketplace for UUM mall should have?

……

……

2. How would you use these features?

……

……

3. How would you like add the producer?

……

……

4. How would you like remove the producer?

……

……

5. How would you like update the producer?

……

……

6. What are your concerns about such a prototype?

……

……

7. How comfortable would you be with e-Marketplace prototype?

……

……

8. What function you like to add to the prototype?

……

……

9. What are the functions that do not want to be available in the prototype?

……

……

Thank you for your help

COLLEGE OF ATRS AND SCIENCES

UNIVERSITY UTARA MALAYSIA

B2C e-Marketplace for Small and Medium Enterprises in UUM (eMP_UUM)

I am Master of Science (Information Technology) student at final semester in University Utara Malaysia. Currently, I am performing this questionnaire to help me gain an understanding of the user who used e-Marketplace prototype for SMEs in UUM (EM_UUM) to provide the services to the customers and owners within the university and its surroundings. This questionnaire aims to understand general information about system user's and the usability of the system. The results from this questionnaire will help me to understand the system requirements for developing an EM_UUM prototype.

All your information will be held in strictest confidence and it will be used for research purpose only. Your insights a feedback in making this study successful is highly appreciated. If you have any queries or if you like to know the result of this study, please do contact me at 017-5244819or through the e-mail: **sharaf_alzoubi@yahoo.com** . This questionnaire consists of two sections:

- Section A - General Information
- Section B - System Usability

This questionnaire is adopted from Brooke (Bangor, Kortum & Miller, 2008) System Usability Scale (SUS).

Thank you for your valuable time and help in completing this questionnaire.

MSc. IT Candidate

Sharf Khaled Alzu'bi

QUESTIONNAIRE

System to Be Evaluated:

e-Marketplace for UUM (EM_UUM)

Objective:

Obtain your view on the evaluation of EMP_UUM.

Please answer **all** questions from each segment.

1) General Information

This segment is about your background information. Please fill up the blanks and mark [√] where appropriate.

1. Gender: [ ] Male [ ] Female

2. Age: _____

3. Education

[ ] Degree [ ] Master [ ] PhD

4. Do you buy goods over the Internet?

[ ] Always [ ] Sometime [ ] Never

5. Do you support design an e-Marketplace in the UUM?

[ ] Yes [ ] No

2) e-Marketplace for UUM (EMP_UUM)

Please rate the usefulness and ease of use of e-Marketplace for UUM (EMP_UUM).

	PERCEIVED USEFULNESS	1	2	3	4	5
Q1	Using EM_UUM helps me to be more effective	O	O	O	O	O
Q2	Using EM_UUM helps me to be more productive.	O	O	O	O	O
Q3	Using EM_UUM saves my time when I use it	O	O	O	O	O
Q4	Using EM_UUM would enhance my effectiveness	O	O	O	O	O
Q5	Using EM_UUM would make it easier to do my tasks	O	O	O	O	O
Q6	EM_UUM was everything I would expect it to do.	O	O	O	O	O
	PERCEIVED EASE OF USE	**1**	**2**	**3**	**4**	**5**
Q7	EM_UUM is simple to use.	O	O	O	O	O
Q8	EM_UUM is very friendly to use	O	O	O	O	O
Q9	It requires the fewest steps possible to accomplish what I want to do with it	O	O	O	O	O
Q10	I can use it without written instructions	O	O	O	O	O
Q11	I don't notice any inconsistencies as I use EMP_UUM	O	O	O	O	O
Q12	I can use EM_UUM successfully every time.	O	O	O	O	O