UNIVERSITI UTARA MALAYSIA

2009

WAP-BASED APPLICATION FOR HANDICRAFTS PRODUCTS IN RURAL AREA

A thesis submitted to the Graduate School in partial
fulfillment of the requirement for the degree
Master of Science (Information Technology)
Universiti Utara Malaysia

By

HANI FAWZI MOHSEN ALSHOMARRY

PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a postgraduate degree Master of Science (Information Technology) from University Utara Malaysia, I agree that the university's library may it freely available for inspection. I further agree that permission for copying this thesis in any manner, in a whole or in a part, for scholarly purpose may be granted by my supervisor or in their absence, by the Dean of Faculty of Technology Management. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to University Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or to make other use of materials in this thesis, in whole or in part shall be addressed to:

Dean Graduate School
University Utara Malaysia
06010 Sintok
Kedah Darul Aman

ABSTRACT

The main objectives of this study are to design WAP-Based Application for Handicrafts products in Rural Area, to develop a prototype of WAP-Based Application for customers to view and search details about the handicraft products in rural area. The design is tested on the prototype and evaluated to test the usability and acceptability of the system. The Wireless Application Protocol (WAP) technologies have been used in this application has enable users to make booking through mobile telephones.

In The Name of GOD Allah S.W.T Most Gracious and Most Merciful

This Project I Dedicated to My beloved family, parents and sisters and for all of my beloved friends

ACKNOWLEDGEMENTS

Praise to Allah S.W.T the Most Gracious, Most Merciful whose blessing, guidance and helped me to finish and make this project successfully, and Peace for our prophet Muhammad S.A.W, who has given to mankind.

Firstly, I like to thank the academic the members of staff in Applied Science, College of Arts and Science, University Utara Malaysia for their cooperation, dedicated, professional guidance together with the management of the Graduate School, they have made the creation of the project a pleasure. Special thanks to my supervisor Haslina BT Mohd. Have enthusiastically supported and backed the project. They played a large role in helping me to complete the project. Also thank you very much for the invaluable guidance, encouragements, suggestions, comments, and assistances throughout the period of this project. Your kind advice will encourage me to do further research in future.

Finally, most sincere appreciation goes to my beloved family and friends for their contribution, support and understanding. All of you are wonderful helpmate, I really appreciated that much. And for the last Thank you I dedicate for all of the individuals who share my laughter and sadness.

Hani Fawzi Alshomarry

22 October, 2009.

TABLE OF CONTENTS

LIST OF FIGURE

LIST OF TABLE

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Rapidly Mobile marketing application is come out to the development of technologies which enable to come out with a lot of new services. Actuality, the keys in influencing in any effort at business area is mobile and wireless devices technologies. The mobile and wireless devices technologies are definitely the next wave due to the evolution of e-business. With the selection of mobile and wireless devices technologies, considerable attention in promoting the products marketing in business landscape.

The fast development of wireless networking technology and the significant increase in mobile device users have made advertising and marketing activities that deliver ads to mobile devices over a wireless network a hot topic (Hassim *et. al*., 2003). According to Nor Shahriza *et al*. (2006), the number of mobile users is raised from 9.7 percent in year 1995 to 55.9 percent in year 2004 in Asian countries. While in the global, the sales of mobile phones for the 1st quarter of 2004 arrived at 153 million handsets (McManus and Scornavacca, 2005). Furthermore, the number of mobile users exceeded 468 million which is a much higher number than the 365 million people using the Internet (Hassim,

2003). This can be obvious viewed in the study of Ishii (2006), who claimed that the keitai (mobile phone) is the core communication technology than access to the Internet or television especially for the young people.

The three main advantages of wireless devices over PCs and other conventional platforms which are mentioned by Hassim *et. al*., (2003) are as follows. First, wireless devices are accessible. Wireless devices are rapidly becoming personal devices that must be handy, portable, and always available for use. Second, wireless devices are personal. The typical wireless device belongs to a single person and thus becomes uniquely identified with that individual. Third, wireless devices are location aware. If a wireless device is on and connected, it can be used to track a user's physical location which is a critical capability for effective user-oriented marketing and advertising (Hassim *et. al*., 2003).

Kumar *et. al*, (2003) mentioned that Wireless Application Protocol (WAP) emerges as a standard Internet-enabling wireless protocol and a browser framework for small, limited-display-capable devices. It allows for the Internet access to cell phones, PDAs, and other low-computational-power devices. The mobile devices is defined by Elliott and Phillips (2004) as a small handheld devices, for example, mobile phones, palmtop computers and devices which special operating system. It is also included the Personal Digital Assistants (PDAs) and handheld computers (Teng *et al.*, 2007).

Moreover, Barnes and Scornavacca (2004) view out that mobile marketing can improve the relationship between the customers with the business. Further, the mobile marketing

medium obtains high responses with 40% rate, 3% via direct mail and 1% via internet banner ads (Clarke, 2001).

Consequently, this study adopted mobile and wireless devices technologies to improving the promotion and sell of the products for handicraft at rural area. It is hoped that this adoption would be reduce the cost of business and increase the profit of the business. So that, the craftsmen can be survive their business continually.

1.1 Problem statement

Handicrafts consider as a one of the most important component to develop the rural areas, the majority of the people who stay in the rural area they face much challenge in business landscape and a lot of difficulties to communicate with wholesaler or directly to the customer in order to promote their products in the market. Moreover, it needs time to distribute catalogs of the product and quite costly also for them because they need to pay some amount with the intention to promote their products. This statement is supported by Jamie Teoh (2008), who mentions that normally they utilize the advanced technology such as online internet (website) and with some of brochures or flyers. Currently, they spent RM100,000.00 for the advertisement such as road shows, participation in events, advertising, point of purchase materials for distributors, authorized dealers for the year 2007.

As a result, craftsmen in rural area always search the alternative approach in order to survive their business. Thus, this study makes an effort to overcome this problem for craftsmen with the intention to increase their profit with save cost and convenient tool.

1.2 Research question

The research question of this study is in the follows.

i. How mobile and wireless devices technologies can improve the promotion and sell processes at rural area?

1.3 Research objectives

The primary objective of this study is to reduce the cost of promoting and improve the sell processes at rural area in business landscape. The following objectives were identified in order to achieve the objective of this study:

- To design WAP-Based Application for Handicrafts products in Rural Area.
- To develop a prototype of WAP-Based Application for customers to view and search details about the handicraft products in rural area.
- To test the prototype.

1.4 Scope of the research

This study would use mobile and wireless devices technologies to assist customers to view details and buy product of handicrafts for rural area in Bekan Rabo, Alor setar-Malaysia. The prototype would be developed using Wireless Application Protocol (WAP) technology as a protocol, Java programming as well database engine tool to

connecting the database. The prototype would have two functions for customer and handicraftsmen (administrator). The handicraftsmen of rural area will upload the information of products for customer through the website. The customers will view products through mobile device and buy products through mobile device.

1.5 Significance of the research

There are two significances of this research which are. First and primary, this study is in providing approach to the customers of the craftsmen in searching products at anytime and anywhere by mobile and wireless devices technologies.

Second, this study contributes the present body of knowledge for the mobile marketing system for customers.

1.6 Outline of the thesis

Chapter one, discussed the background of the study and the research problems related to the mobile and wireless devices technologies and its application in services and operation of the business landscapes. As well as discussed the objective, scope and its significance of this study.

Chapter Two, continue discusses the related literature reviews to the issue of handicrafts, mobile and wireless devices technologies, mobile and wireless devices applications in services and operation of the business landscapes.

Chapter Three, describes methodology used in this study is adopted from Vaishnavi and Kuechler (2004). This methodology would be carried out in five phases according to the phases in Vaishnavi and Kuechler's (2004) general methodology which are awareness of problem, suggestion, development, evaluation and lastly conclusion. Summary is drawn in the last sections.

Chapter Four, describes the implementation of the prototype for the WAP-Based Application for Handicrafts products in Rural Area. The prototype of the WAP-Based Application for Handicrafts products design takes account of UML diagrams. The UML diagrams consist of the use case diagram and sequence diagrams in order to assist the development stage.

Chapter Five, discusses the finding of the study. After design the prototype model, this system would be tested by end user. 15 questionnaires would be distributed to the respondents among handicraftsmen in rural area.

Chapter Six, is the last and final chapter that reviews back the study by providing a general idea based on the research objectives. It is not excluded the recommendations, directions of future work and limitation are also discussed in chapter One.

1.7 Conclusion

This chapter describes regards on the background of the study and research problems that necessarily to be solved and gives the motivation to this study. The aim of this study is to use mobile and wireless devices technologies to assist customers in customers to view and search details about the handicraft products. The related literature reviews to the issue of handicrafts, mobile and wireless devices technologies, mobile and wireless devices applications in services and operation of the business landscapes are discussed as in the chapter two.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Recent advances in hardware technologies such as portable computers and wireless communication networks lead to the emergence of mobile computing systems (Dunham and Helal, 1995). This is supported by Zheng and Lee (2001) who mentioned that the advance of the wireless network and the popularity of the portable devices increased the growth of mobile computing and becomes one of the hottest topics in academic and industry. In additional, technological wireless developments such as 3G mobile phones, wireless application protocol (WAP), General Packet Radio Services (GPRS) and others plays an important significant role in our life in communicating, entertaining and transacting information (Agrawal and Zeng, 2003).

While the evolution of cellular networks brings significant results in many mobile services, such services are mainly for voice. Mobile phone users desired to access the Internet. Hence, efforts in enhancing the capability of mobile phones and devices were made. Thus, the Wireless Application Protocol (WAP) is an open protocol for wireless multimedia messaging (Lee, 2002). Thus, the Wireless Application Protocol (WAP) as result of continuous work to

decide industry-wide specification to build up applications that operate over wireless communication networks (Wireless Application Protocol Forum, 1999; 2001). In other words, it means that the WAP specifies an application framework and protocols for wireless devices. It can be concluded that, the WAP is a kind of combination of mobile networking technologies and Internet technologies (Lee, 2002).

Furthermore, WAP can be carrying out different kinds of business transaction and is innovate new ways of creating value about doing business (Shoniregun, 2004). WAP will give multiple applications, for business and customer markets such as banking, corporate database access, and a messaging interface (International Engineering Consortium, 2007). Lee (2002) also agreed that the WAP (Wireless Application Protocol) allows the design of advanced, interactive, and real-time mobile services, such as mobile banking or Internet-based news and travel services. In the mobile banking services, Mallat *et al*. (2004) claimed that it is an adopting new and innovative mobile financial applications and service provisioning methods.

2.1 Overview of handicrafts

Hu and Yo (2007) noted that the tourist's criterion to select handicrafts is multi-dimensional with a wide range including cultural relationship, transfer facilities, method of using and maintaining handicrafts, enjoyment resulted from purchase, mastery and proficiency in handicrafts production. Moreover, Littrell (1990) mention that an essay that the reasons for tourist's interest to purchase textile handicrafts are the experience from the purchase comprising the contact with seller and artist, establishing the cultural and historical relationship, suitable price, the higher quality of products.

In additional Littrell et al, (1993) believe the authenticity of raw color, materials, products quality, proficiency in production handicrafts, beauty of color and design, the ways the handicrafts are being used, the history of producing country, tourists' experience from the purchase, the validity of advertisements by the producing country make the handicrafts valid to the tourist.

Alvani and shahrokh (1994) believe that the development of handicrafts can attract more tourists and activate handicrafts in rural areas. They believe that tourists come to Iran to buy carpets as they go to India to buy ivory. They consider the reputation of Iranian carpet as a factor leading tourists to buy them.

Iranian organization of handicrafts (1983) believes that the handicrafts know as the tools to present the nation civilization and considers establishing the handicrafts as factor for marketing and attracting tourist's people. Therefore can conclude that the handicraftsmen in rural area and tourism industry interact in order to increase the income and the profit.

2.2 Wireless and mobile technology

In the early wireless web, corporations produce proprietary application protocol. This caused the wireless web which developed was followed a corporation standard possibly merely to watch by the mobile phone utilizes that standard communication protocol. Consequently, in the year 1997, Motorola, Nokia, Ericsson, Unwired Planet, Phone.com formed the WAP forum (Lee, 2002; Wan, 2005). More than 90 companies in the wireless telecommunications

commerce becomes members of the WAP Forum. WAP is the standard developed by the WAP Forum, a consortium formed by device manufacturers, service providers, content providers, and application providers (Lee, 2002).

The Wireless Application Protocol Forum is an industry group dedicated to the goal of enabling sophisticated telephony and information services on handheld wireless devices. These devices are namely mobile telephones, pagers, personal digital assistants (PDAs) and other wireless terminals (WAP Forum, 2000). Kumar *et. al* (2003) also agreed that WAP permits Internet access to PDAs, cell phones and other low-computational- power devices (Kumar *et. al*, 2003). Thus, it can be concluded that WAP consists of mobile devices, for instance, cellular phones, handheld or palm-sized computers, and even vehicle mounted interfaces, paging devices, MP3 players, PDAs, tablet PCs and laptop (Gan, 2006), applying wireless telecommunication networks and other wired e-commerce technologies.

The objectives of the WAP forum are showed by WAP Forum (2000) and Lee (2002) as in the below.

I. To bring Internet content and advanced data services to digital cellular phones and other wireless terminals.
II. To create an interoperable wireless protocol specification that will work across differing wireless network technologies.
III. To enable the creation of content and applications that could scale across a wide range of wireless bearer networks and device types.

IV. To embrace and extend existing standards and technologies

Based on Internet standards such as HTTP, WAP wireless protocols needs to transfer huge text-based data. The WAP based on two elements which is end-to-end application protocol and application environment. The application protocol is a communication stack embedded in each WAP-enabled wireless device (user agent). The server side defined as a WAP gateway implements the other end of the protocol, which can communicate with any WAP client (Kumar *et. al*, 2003).

2.3 Related Works

Bojkovic and Milovanovic (2005) stated that mobile and wireless devices technologies bring an innovative dimension in problem solving in transforming information for business landscape. Therefore the developments of the technology as such mobile and wireless devices technologies can deliver the information facilitate to be accessed supported by (Nor Shahriza *et al.* 2006), who pointed out that the mobile and wireless devices technologies facilitate the transformation of information that is from employers to employees, business to business and business to customers with more add value services. For instance, students can be accessed the academic results by the mobile and wireless devices technologies which are mentioned in the study of Lim (2004), Lim (2004) hoped that his prototype can be continued by other researchers in the future with much complexity.

Thus, marketing promotional in transforming information would be affected by mobile and wireless devices technologies in business landscape. according to McManus and

Scornavacca (2005) viewed the benefits of the mobile and wireless devices technologies to promoting marketing as three reasons which are it is instant and fully interactive media, second, it is easy to track and measure to make marketing efforts more, third, accountable it can deliver communication synchronously and asynchronously.

Dickinger *et. al*. (2004) defined the mobile marketing as using interactive wireless media to provide customers with time and location sensitive personalize information that promotes goods, services and ideas, thereby generating value for all stakeholders. In accordance with this definition, the related work involved the marketing promoting as well as the wireless and mobile devices technologies are studied.

Hassim (2003) mentioned that wireless media research companies such as WindWire and SkyGo pointed out that delivering permission-based alert to wireless phones captures consumers' attention, drives response actions, and builds brand awareness. It is also not excluded the Microsoft, Yahoo, AOL, and other large companies have created subsidiaries that specifically target this market with wireless advertising.

Haghirian *et. al*. (2005) investigated the effectiveness of mobile advertising by carried out an interviewed with 815 mobile phone users. The purpose of the study is to understand the influence factors on consumers' perceived advertising value of mobile-advertising. The results of Haghirian *et. al*. (2005) showed that the advertising value of mobile-advertising is strongly related to the content and the frequency of the advertising message sent via mobile devices.

Dickinger *et. al*. (2004) examined that the Short Message Services (SMS) marketing model of two independent variables, message and media success factors, which influence three dependent measures of success: consumer attention, consumer behaviors and advertising cost ratios and also is a success factors for implementing mobile marketing.

Pousttchi and Wiedemann (2006) defined mobile marketing as form of marketing communication using mobile communication techniques in promoting goods, services and ideas. Moreover, Pousttchi and Wiedemann (2006) examined characteristics of current mobile marketing campaigns based on the 55 of the case studies. Pousttchi and Wiedemann (2006) concluded that mobile advertising would be undoubtedly become more essential in the future for marketers because mobile advertising can provide the chance to build personal one-to-one relationships with clients through mobile devices. This can be viewed in the big brands such as BMW, Coca Cola, L'Oreal and so on are just forerunners of this evolution in practice. Pousttchi and Wiedemann (2006) trusted that mobile advertising will turn from infancy to adulthood in the near future.

Scharl *et. al*. (2005) reviewed the mobile marketing and investigated the most successful form of mobile communication, short message services (SMS) through the quantitative content analysis of the Fortune Global 500 Web sites and qualitative interviews with European experts. The results of Scharl *et. al*. (2005) shown that the mobile technologies by industry have a strong presence not only among technology providers such as

telecommunications, but also strong interest for applying mobile services within the automotive and financial sectors.

McManus and Scornavacca (2005) discussed issues related to mobile marketing as the potential and effectiveness of the usage of mobile phones as a promotional media by analyzed major Australian mobile marketing company. The results evidenced that mobile marketing can provide a chance to marketers in exploring the advantage of the mobile medium as a channel of promotional direct marketing. McManus and Scornavacca (2005) stated that with further technological advances would be increased the interest among the mobile-business academic community in mobile promotion marketing strategy.

Carroll *et. al*. (2005) investigated the consumer's insight and acceptance levels of mobile marketing via Short Message Service (SMS) by using both of the qualitative and quantitative methodology on 70 participants in New Zealand. Carroll *et. al*. (2005) added that this new advertising medium indicate that mobile advertising campaigns can generate responses, which are as high as 40% compared with a 3% response rate through direct mail and 1% with Internet banner advertising. The results of Carroll *et. al*. (2005) encouraged that marketers should be optimistic concerned on selecting in deploying mobile marketing.

Mobile application has been successful proposed by Kim and Noh (2003) with supported by the mobile agent system architecture and implemented in a cyber-market called mobile market agent service (MMAS). The proposed architecture implemented in a

mobile server namely Java-based Aglets and applied in a mobile computing service namely Java APIs which is developed on Java Virtual Machine under Windows NT system. Mobile market agent service (MMAS) provides a simple commercial trading simulation where involved the information of user inputs and goods. They found out that the proposed architecture which is mobile market agent service (MMAS) solved the mobile vulnerabilities caused by a mobile computing environment.

Marmaridis and Unhelkar (2005) showed that the mobile transformations gave simply, unified way to way in manage the information in existing markets. Therefore, Marmaridis and Unhelkar (2005) influenced that it is no surprise that many organizations hoping to get onto the mobile transformation bandwagon. Further, May (2002); Jonker (2003) point out the need for real-time information and for communication at anywhere, independent of the user's location, is becoming a business essential.

Kumar *et. al.* (2003) claimed that the Instances of some Wireless Application Protocol (WAP) applications in business landscapes financial trading, buying tickets online, ordering from restaurants, updating financial portfolios, conducting banking transactions (such as transferring funds between accounts), and comparison shopping. Business that implemented mobile technologies reduced operations costs, gained efficiency and improved service quality (Nadia, 2004).

Hannula and Schiefloe, (2000) noted that the mobile ticketing is per-received as a stepping-stone to broader mobile commerce platforms. Met (2003) stated that a ticket is a

confirmation of access/usage rights to challenging the service and mobile ticketing is its electronic realization with the support of the mobile device. In one kind of mobile ticketing, evidence can reside in a ticket issuer's server, in which case the redemption of the ticket included the user authentication to the server.

Abdualromae Hawor (2004) viewed in the study mobile airline ticketing reservation by using the mobile and wireless technologies in order to enhance the business performance. The results of development mobile reservation ticketing system for Airline Company gain a lot satisfaction among the respondents.

Binh *et. al.* (2002) mentioned that the existing impediment is the come up to services and applications are offered on mobile devices. Mobile business is a fresh method in carrying out the business anytime and anywhere. This can be showed in the study of O'Donnell *et. al.* (2007), who declared that there have sixteen case studies have exposed that the business push has generally exaggerated the success of mobile devices technologies projects in Australia. O'Donnell *et. al.* (2007) stated that almost all of the organizations, undertaking mobile and wireless devices technologies is a fresh endeavor. There are not much of systems that can be implemented without a large degree of customization.

Ahmad (2002) proposed a prototype of the Internet banking web site that supports the use of the wireless devices by using the mobile technologies. The benefit of the proposed framework architecture is that it utilizes existing web infrastructure used by banks lacking the need for high investment setup (Ahmad, 2002). The usability testing

conducted in this research revealed that the web-based mobile application is effective to be implemented by financial intuitions.

Ahmad (2002) proposed a prototype of the Internet banking web site that supports the use of the wireless devices by using the mobile technologies. The benefit of the proposed framework architecture is that it utilizes existing web infrastructure used by banks lacking the need for high investment setup (Ahmad, 2002). The usability testing conducted in this research revealed that the web-based mobile application is effective to be implemented by financial intuitions.

Majyambere (2005) pointed out that the issue of distribute the handicrafts products are lack of information about the market, high cost of transportation and competitive products on the market. (Example, "You find transporting a T-shirt or a shirt to the US will cost US$10 but on reaching the market it sells at US$4 thus leading to a loss," (Nshuti, 2005). Thus, with online marketing through mobile and wireless technologies can reduce the cost and the time of the transportation. This can support by study of Pousttchi and Wiedemann (2006), who defined mobile marketing as form of marketing communication using mobile communication techniques in promoting goods, services and ideas.

Based on the related literature review, the issue of promotional or marketing by using the mobile and wireless devices technologies in business landscape brings a potential, chance and successful marketing effort.

2.4 Conclusion

This chapter discussed the related literature reviews issue of handicrafts, mobile devices technologies, mobile and wireless devices applications in services and operation of the business landscapes. The practical suggestion on some earlier studies by Leet (2001), Clarke (2001), McManus and Scornavacca (2005) and so forth evidenced that mobile marketing is allow to offer an opportunity to marketers in exploring the advantage of the mobile medium as a channel of promotional direct marketing.

CHAPTER THRER

METHODOLOGY

3.0 Methodology

The general methodology build by Vaishnavi & Kuechler (2004) would be selected and adopted in this study due to its suitable for developing the proposed. These research methodologies include of five stages that are awareness of problem, suggestion, development, evaluation and lastly conclusion. These stages are briefly illustrated as in the Figure 3.1 below.

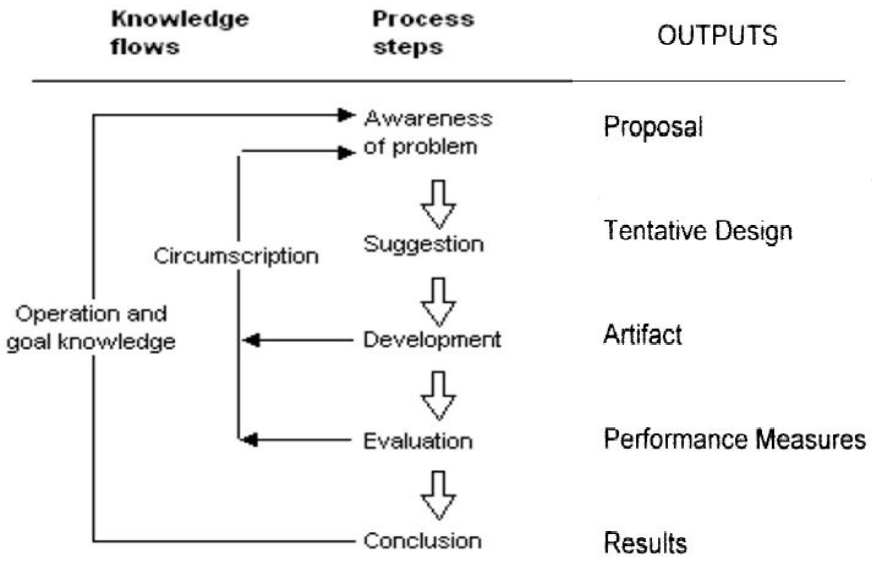


Figure 3.1: General methodology (Vaishnavi and Kuechler, 2004).

3.1 Phase 1: Awareness of problem

In this phase, the problem will be identified as well as the problem's complexity motives the craftsmen's to pursue the new proposed in this study. The interviews with the handicraftsmen was conducted any carry the answer for the entire question which is listed in appendix A. The scope of the interview included the current business operation to promote/market the product. Weather is it costly or not.

.

3.2 Phase 2: Suggestion

In this suggestion phase, a brief interview with sample 15 responds of handicraftsmen include manager and worker was carried at rural area in Bekan Rabo, Alor star-Malaysia to apprehend the viewpoint of the current management and remark and comment on the proposed system. The interview incorporated understands what the current business operation is, and the viewpoint of the new proposed.

In addition, the related literature review to the mobile advertising and promoting would be collected. The suggestion on some previous studies by Hassim (2003), Dickinger *et. al*. (2004), Scharl *et. al*. (2005), Haghirian *et. al*. (2005), Pousttchi and Wiedemann (2006) and so forth evidenced that mobile marketing is highly targeted, flexible, and dynamic wireless advertising or promoting marketing due to users easy searching for information, issue inquiries, and make purchases at any mobile location. Besides that, these previous studies ensure that the proposed system would be achieved better to develop a logical model by appropriate methods. The intention of this study is to exploit the wireless and mobile technology in aiding handicraftsmen's to manage well the

business and the information delivery of products with low cost as well as to provide a convenient tool for their customers to view and search their products.

3.3Phase 3: Development

In this phase, all requirements and suggestion will be identified and translated into a more detailed design. The System Analysis and design (SAD) as use case, sequence diagram and class diagram are designed. Then, the development of the prototype for customers and administrator of craftsmen would be constructed by using the JAVA as programming language and my-SQL as database engine to stored and retrieve the data from the database tables.

3.4 Phase 4: Evaluation

In this phase, is to test the prototype after proposed and developed, the prototype was tested by end users (customers) who looking for handicrafts product, the end-user was filled out the questionnaire which adopted by sari (2008) and through interview with them after testing the system in order to know that the system good enough or not. The questionnaire has four sections, first, general information, second, perception on the preference, third, perception on current system, lastly user interaction satisfaction. Afterwards, the questionnaire will be analyzed to know the level of the usage and user satisfaction which can be found through their comment and enthusiasm.

After the end-user filled out the questionnaire will enter the data into SPSS software to find out the result of the acceptability of the system. The result will show that if the

percentage greater than 0.5 on the stander deviation then the system is good enough and can be apply into real mobile device, but if the percentage result less than 0.5 on the stander deviation then the system will be not good enough and have to find out the weakness of the system to modify it. The result of the questionnaire is shown in chapter five, Table 5.6:

3.5 Phase 5: Conclusion

In this phase is the last stage of a research effort, the WAP-Based Application hoped to achieve the requirements and suggestion of user and craftsmen. The view and searching system for handicrafts products which would be discovered in the evaluation step will be corrected at Rural Area

3.6 Conclusion

As a summary, the general methodology method is selected carefully in order to develop the proposed system for this study. The sequences of the five phases in the general methodology for carrying out the view and searching system for handicrafts products are discussed.

CHAPTER FOUR

IMPLEMENTATION

4.0 System Development

Earlier noted, the UML diagrams which includes the use case diagram and sequence diagrams will consider as system design. The Use Case Diagram will used in order to draw the design diagrams for the development phases.

4.1 Use Case Diagram

Based on the use case for the WAP application for handicrafts in following figure, there is list of the system functions which would be available in the WAP application for handicrafts products are listed in Table 4.1, and the use case diagram in the Figure 4.2.

	Handicraftsmen	Customer
Operation 1	Login	View Products
Operation 2	Add Products Information	Search Products
Operation 3	Update products Information	Buy Products
Operation 4	Delete Products	

Table 4.1: System Option for Handicraftsmen and Customer

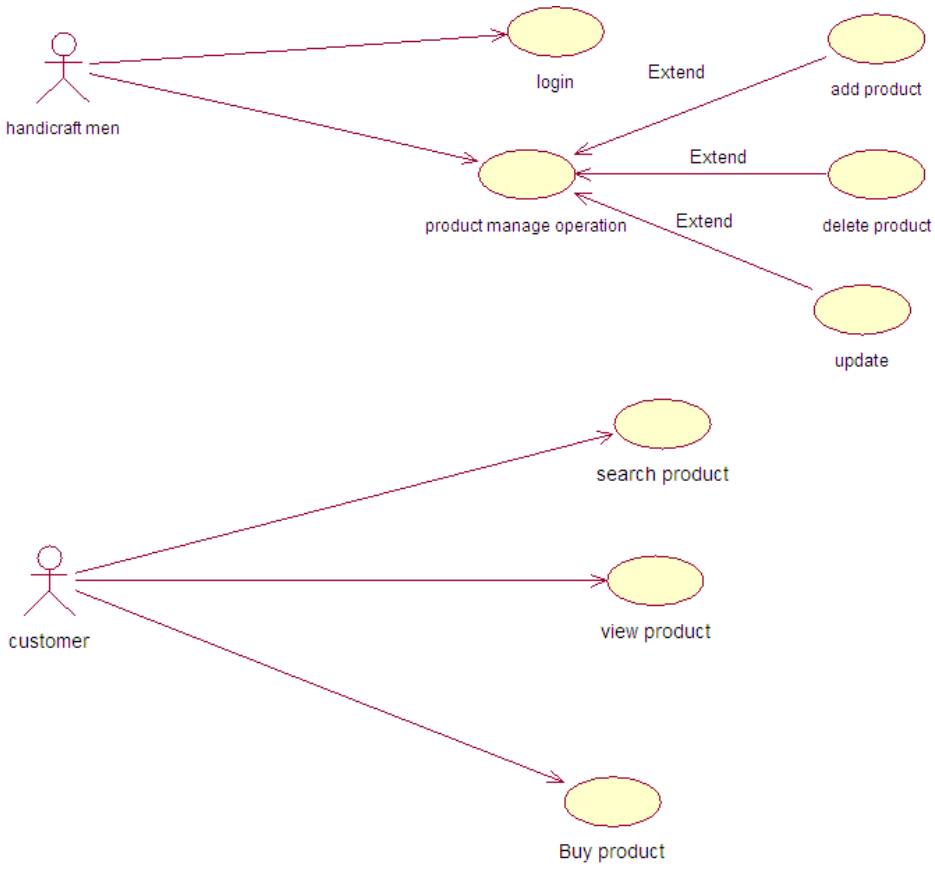


Figure 4.1: Use Case Diagram for Handicraftsmen and Customer Application Option.

4.2 Use Case Specification

4.2.1 Use Case Specification for Handicraftsmen Application

Figure 4.2: Use Case for Login into system

Brief Description	This use case will be used to allow Handicraftsmen to access their page
Basic Flow	• The Handicraftsmen need to insert username and password • Handicraftsmen need to conform the login process by press the login button E1: invalid user name or password • The system will respond to his/her order by verify the login information • The system send the admin to the main page
Exceptional Flow	• E1: wrong username or password: the system will display message invalid user name or password
Pre-condition	• The Handicraftsmen must login to his/her account by the login username and password

Post-condition	• The Handicraftsmen can access the second page

Table 4.2: Use Case Specification for Login

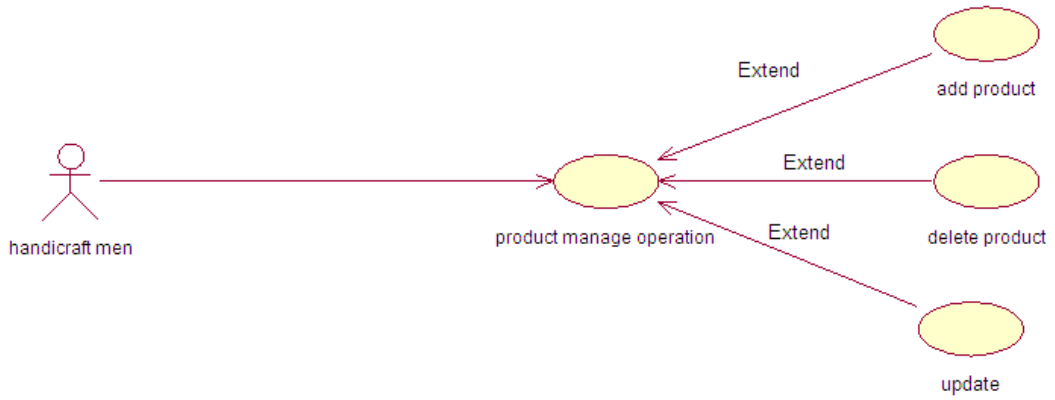


Figure 4.3: Use Case for manage Products

Brief Description	This use case initiated by Handicraftsmen to do many operations such as update, add, delete.
Basic Flow	• The Handicraftsmen can manage the operation for them product • The handicraft men click to the operation to activate this operation
Exceptional Flow	• Please back to Table 4.4, Table 4.5, Table 4.6
Pre-condition	• The Handicraftsmen need to login by username and password to the system
Post-condition	• The access for them page success and they can do them operation.

Table 4.3: Use Case Specification for product manage operation

Figure 4.4: Use Case for Add Products extend from product manage operation

Brief Description	This use case will allow the Handicraftsmen to add new Product to the database
Basic Flow	• The Handicraftsmen will select add product link • After that the Handicraftsmen need to fill the product form and press submit button • The system will respond to admin order and will save the Product in the system database
Exceptional Flow	• Not applicable
Pre-condition	• The Handicraftsmen need to login by username and password to the system • Fill the product field
Post-condition	• Add success, update product entity.

Table 4.4: Use Case Specification for Add Product extend from product manage operation

Figure 4.5: Use Case for Update product extend from product manage operation

Brief Description	This use case will allow the Handicraftsmen to update product to the database
Basic Flow	• The Handicraftsmen need to select update product • After that the Handicraftsmen need to update the product filed and press submit button • The system will respond to Handicraftsmen order and will save the product in the system database
Exceptional Flow	• Not applicable
Pre-condition	• The Handicraftsmen need to login by username and password to the system • Update product information field
Post-condition	• Update success

Table 4.5: Use Case Specification for Update Product extend from product manage operation

Figure 4.6: Use Case for Delete Product extend from product manage operation

Brief Description	This use case will allow the Handicraftsmen to delete product from database
Basic Flow	• The Handicraftsmen need to select delete product • After that the Handicraftsmen need to press submit button • The system will respond to Handicraftsmen order and will delete the product from system database
Exceptional Flow	Not applicable
Pre-condition	• The Handicraftsmen need to login by username and password to the system • Delete product
Post-condition	• Delete success, update product entity.

Table 4.6: Use Case Specification for Delete Product extend from product manage operation

4.2.2 Use Case Specification for Customer Application

Figure 4.7: Use Case for Search Products

Brief Description	This use case applies for the Customer to do the search process through searching option
Basic Flow	• The Customer need to select search products • The system will show the search page for Customer • After that the Customer need to fill the key word filed and press submit button • The system will respond to Customer order and will retrieve the products information from the system database
Exceptional Flow	• Not applicable
Pre-condition	• Product available
Post-condition	• Searching success

Table 4.7: Use Case Specification for Search Product

Figure 4.8: Use Case for View Product Information

Brief Description	This use case will allow the Customer to view product information from database
Basic Flow	• The Customer need to select view product • After that the Customer need to press submit button • The system will respond to Customer order and will retrieve the product information from system database
Exceptional Flow	Not applicable
Pre-condition	• System ready
Post-condition	• view success

Table 4.8: Use Case Specification for View Product Description

Figure 4.9: Use Case for Buy Product

Brief Description	This use case will allow the Customer to Buy product
Basic Flow	• The customer view product when they click on view • Then, the system will display list of product • The customer will select the product to see the product characteristics and it's price • Then, the customer will press on pay button to buy the product • The system will display the payment page • The customer will insert the credit number E1: the credit number invalid • The system will display the deposit page • Insert the price E2: the credit not have enough money
Exceptional Flow	• E1: invalid credit number: the system will display message invalid credit number • E2: the credit not have enough money:

Pre-condition	• System ready to do the operation (mobile) • Product available to buy
Post-condition	• buy success

Table 4.9: Use Case Specification for Buy Product Description

4.3 Sequence Diagram

4.3.1Sequence Diagram for Handicraftsmen Application

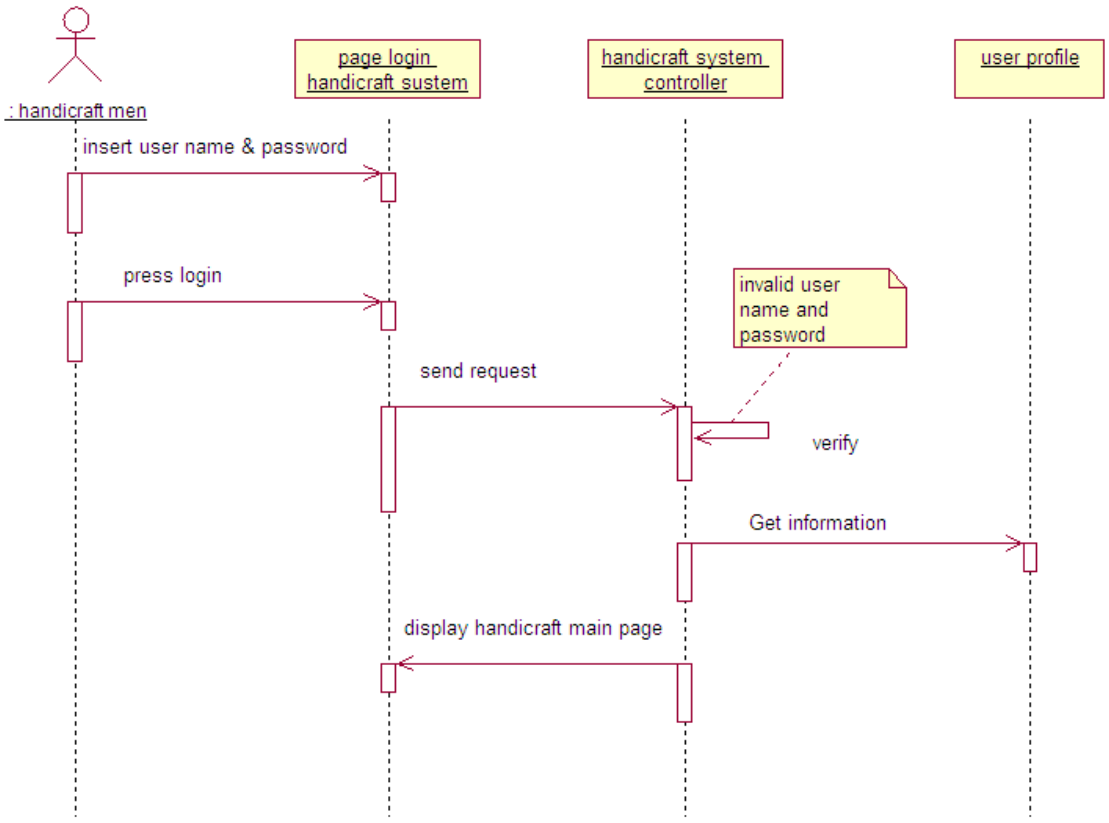


Figure 4.10: Sequence Diagram for Login in Website

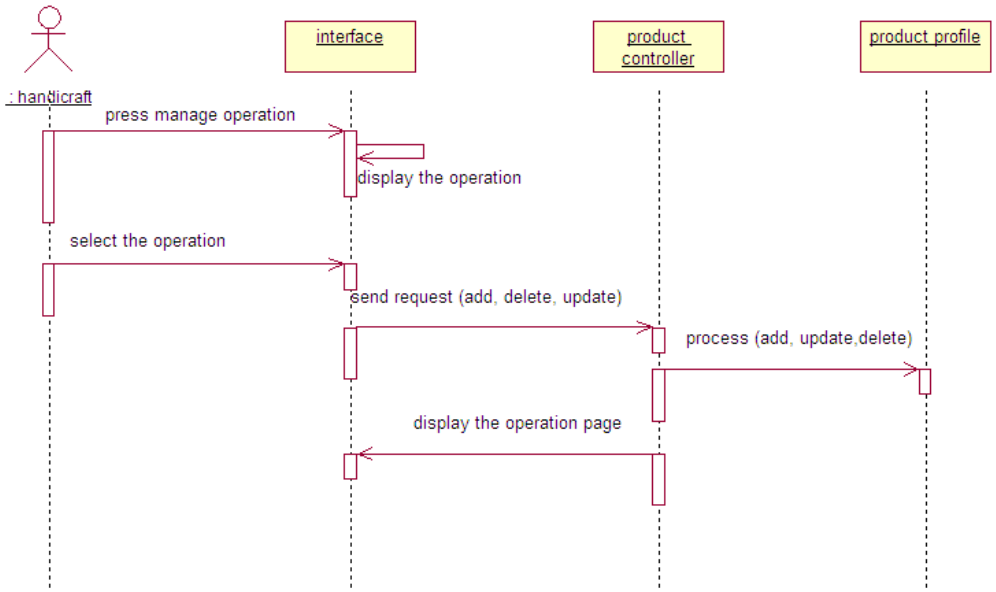


Figure 4.11: Sequence Diagram for manage ()Product Information

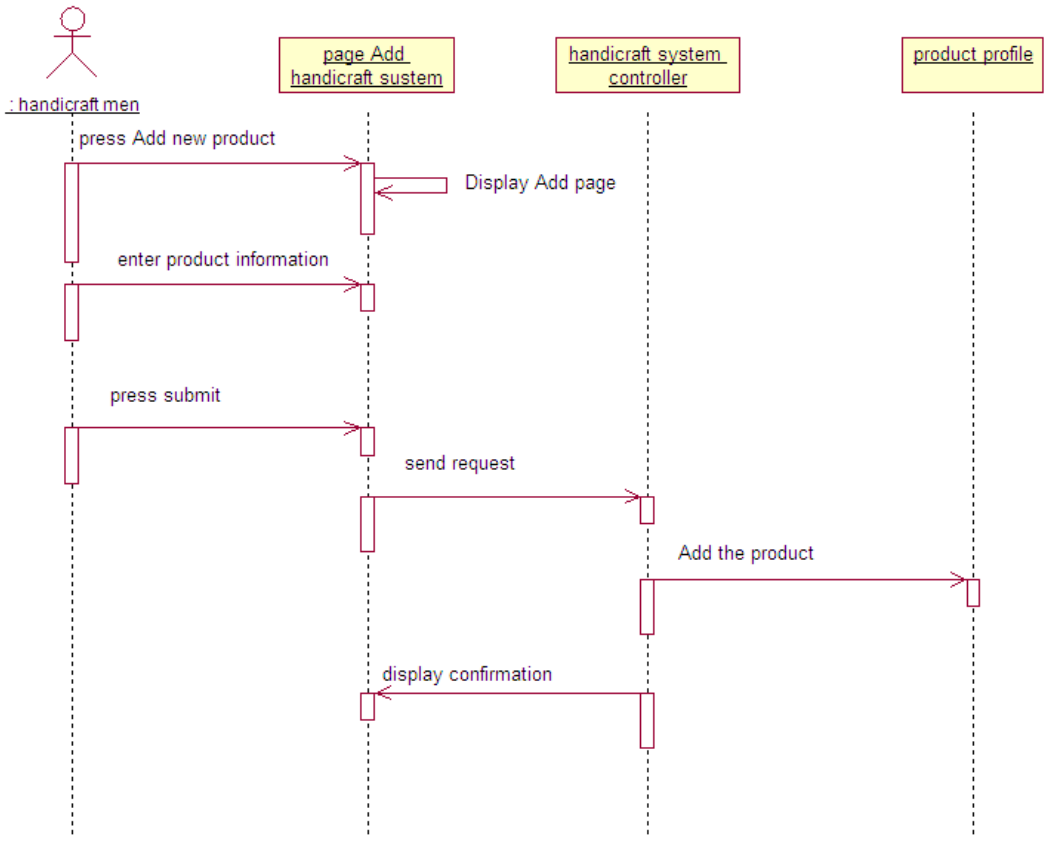


Figure 4.12: Sequence Diagram for Add Product Information

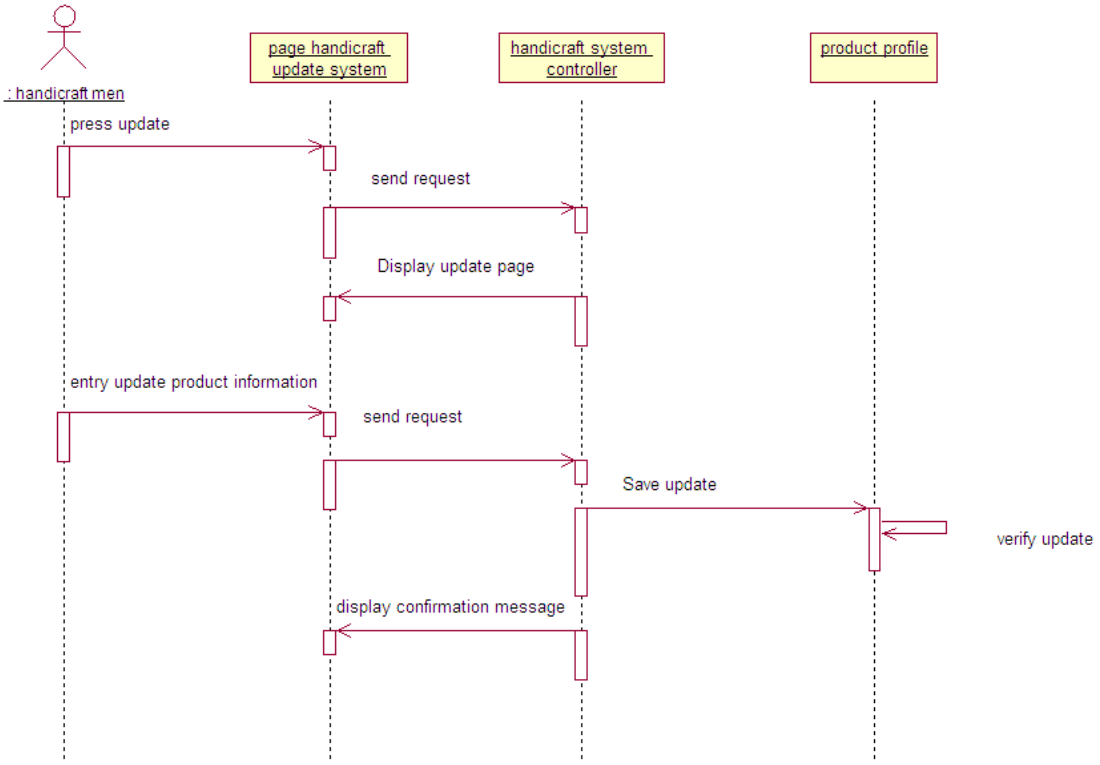


Figure 4.13: Sequence Diagram for Update Product Information

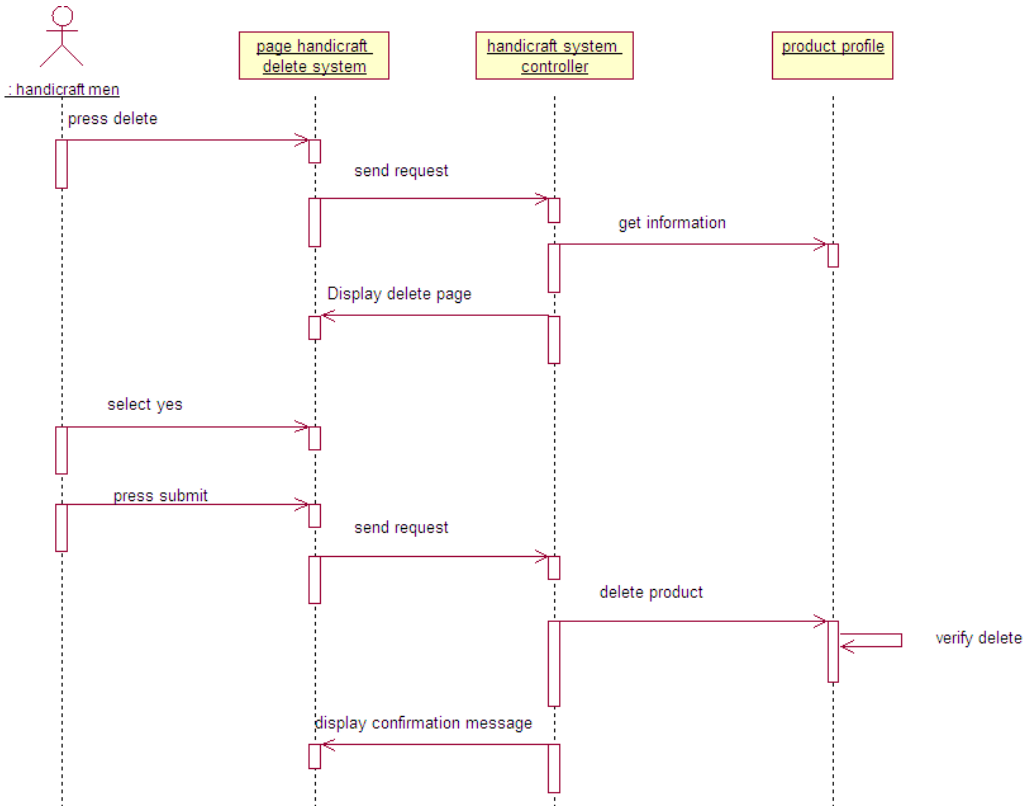


Figure 4.14: Sequence Diagram for Delete Product Information

4.3.2 Sequence Diagram for WAP application

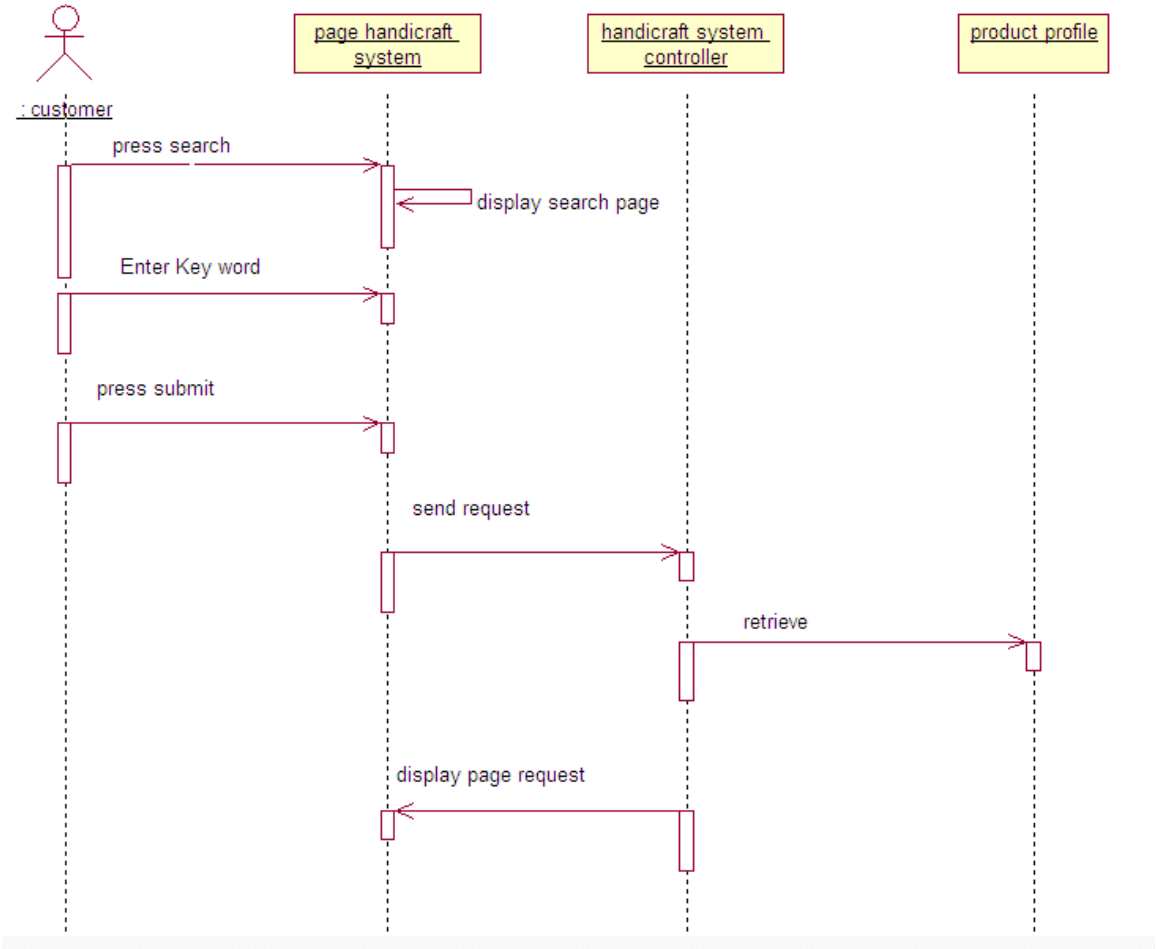


Figure 4.15: Sequence Diagram for Search Product Information

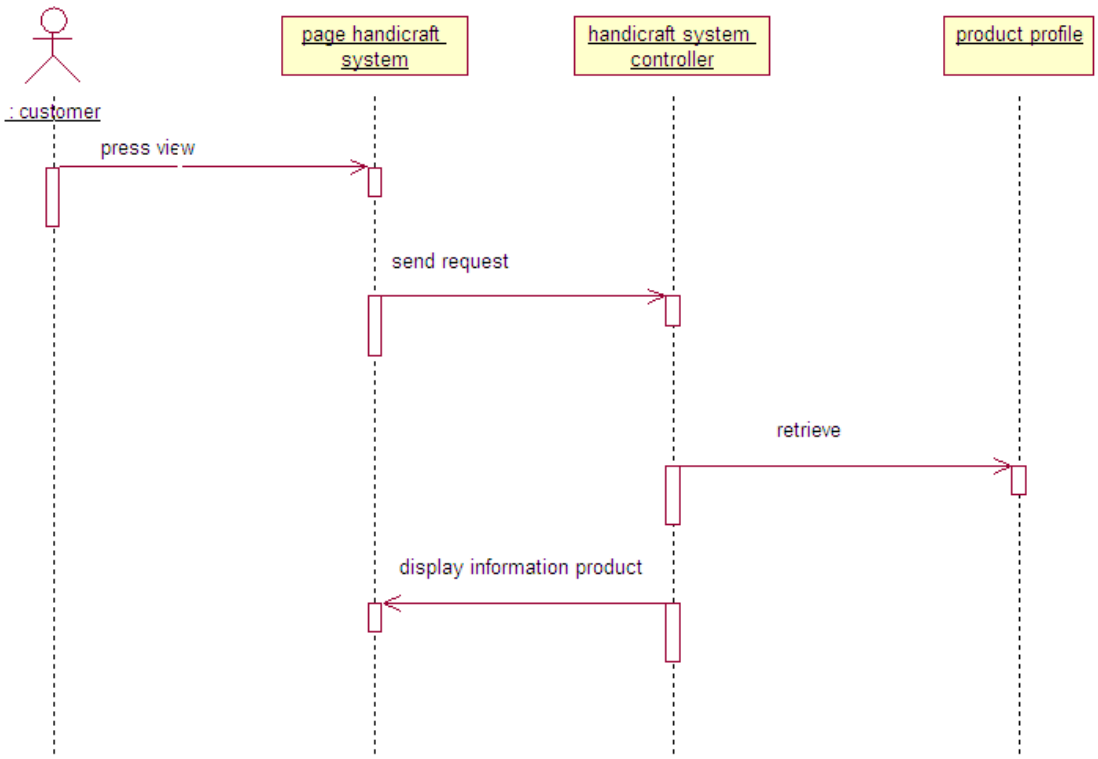


Figure 4.16: Sequence Diagram for View Product Information

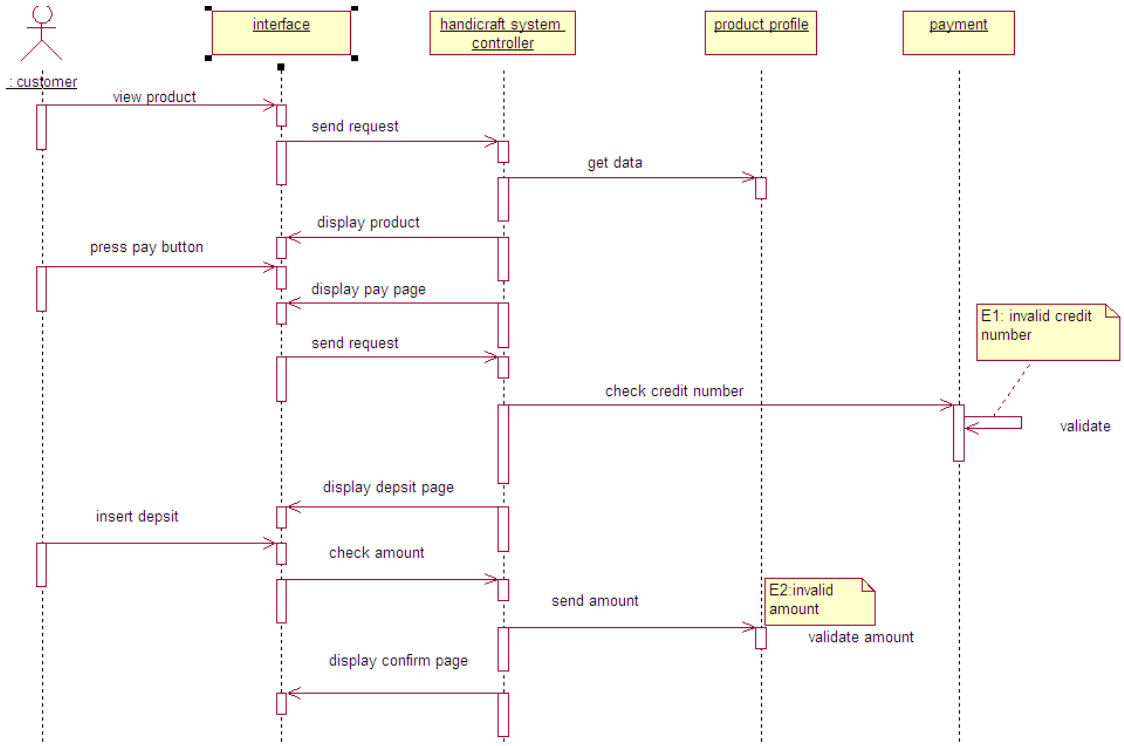
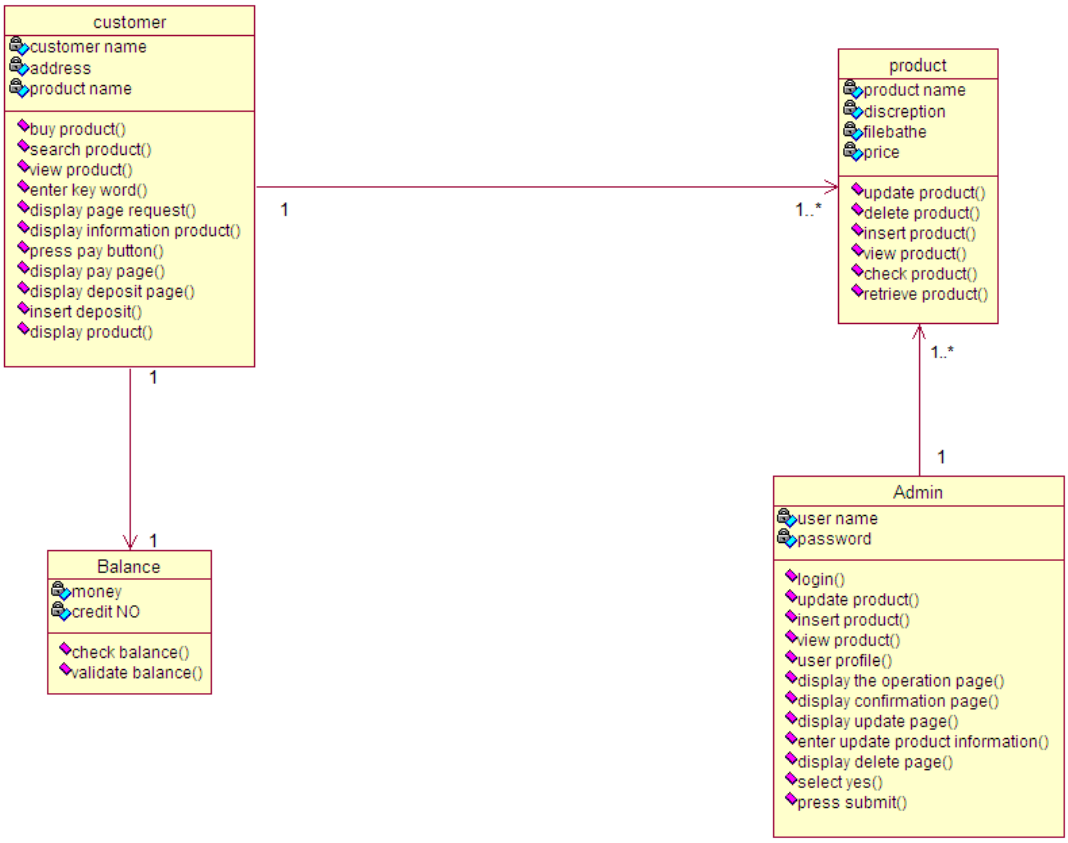


Figure 4.17: Sequence Diagram for Buy Product

4.4 Class diagram



4.5 Implementation

According to Kendall (1996) claimed that after controlling all the requirement and wants of the system, the physical system specifications can be converting to programmers in the performance phase. The functioning of a system consists of coding, testing and installation.

4.6 Coding

Coding is the most important part of the requirements which should be written in order to construct well the system through the programming coding. A study models of system development process is supported by Centre for Technology in government, University at Albany (1998) believed that coding is a programming method phases which is creativity and innovative of the system software. The condition, wants and systems specifications from the design system phases can be transferred into machine readable code of the computer. Therefore, the execution is the critical phase in the study. The prototype of the WAP application for Handicrafts to prompting their product was successful developed.

4.7 Testing

After writing the coding for the requirement model for handicrafts products, then this system necessary to test to ensure is an appropriate service system. Therefore, a formal system testing is performed based on the data testing which is vital to this process. The testing system comprise software problem and hardware configuration. The questionnaire is designed and gives to the customer of handicrafts in ensuring that the proposed system is appropriate to be applied.

SI. No	Test Data Input	Expected Results	Defect (Y/N)	Severity
1	Main page (login) link in the admin main page is clicked	Admin main page is displayed.	N	L
2	Main page (login) link in the admin main page is clicked	If any exception occurs, error message is displayed.	N	L
3	Uploade button in the admin main page is clicked	Add information, and then press submits. Success message is displayed.	N	M
4	Uploade button in the admin main page is clicked	If any exception occurs, error message is displayed.	N	M
5	View button in the admin main page is clicked	Product information page is displayed.	N	M
6	View button in the admin main page is clicked	If any exception occurs, error message is displayed.	N	M
7	Delete button in the admin main page is clicked	Press yes deletes product information, and then press submits. Success displayed.	N	M
8	Delete button in the admin main page is clicked	If any exception occurs, error message is displayed.	N	M
9	Customer main page link in the view products page is clicked	Product page is displayed.	N	L
10	Customer main page link in the view products page is clicked	If any exception occurs, error message is displayed.	N	M
11	View page link in the pay page is clicked	Pay page is displayed. key-in the credit No. and submit, if the No. is correct then display deposit page if incorrect invalid No. displayed	N	M
12	View page link in the pay page is clicked	If any exception occurs, error message is displayed.	N	M
13	Pay page link in the deposit page is clicked	Deposit page displayed. Enter amount, if correct success displayed. If incorrect enter require money displayed	N	M
14	Customer main page link in the search products page is clicked	Search product page is displayed. key-in the product name and submit, display product information	N	L
15	Customer main page link in the search products page is clicked	If any exception occurs, error message is displayed.	N	L

Table 4.10: Description of the test case

The errors can be prioritized into high, medium or low.

Low priority (L): Aesthetics, Message wording, Menu options, Wrong alarms, Help problem etc.

Medium priority (M): When an error occurred leads to another error resulting in a variation in the functionality.

High priority (H): When the application completely stops, the system gets hanged etc.

4.8 Conclusion

This chapter was discussing the middle stages development phases of the system. The implementation use case diagram and sequence diagrams to construct the system are discussed. Requirement model of Handicraft utilize WAP application for handicraftsmen to promoting their product through mobile device is successful developed and implementation.

CHAPTER FIVE

FINDING

5.0 Usability Testing

Usability testing is the development of operational with end-users directly and indirectly in accessing how the user perceives a software package and how they interact with it. The aim of usability testing is to border and remove difficulties for users and to control areas of strength for maximum usability.

Nielsen (2001) noted that the usability is as a narrow concern compared to the larger idea of system satisfactoriness, which basically the question is whether the system is good in fulfilling all the requests and necessities of the handicraftsmen and customer.

5.1 Usability testing methods

Nielsen (2000) stated that the usability testing can be performed in the field experiments method normally depended on the standard tests followed by interviews executed in a closed environment with video equipment. Testing for the potential users can get the efficient feedback as well as the in short time frame it is also unsuitable to request people in a focus group to forecast whether they would like something which they did not endeavor before. Thus, the only method to get valid data is to agree to users experience the technology before opinions are wanted.

Usability testing is carried out based on three sections, firstly, general information, secondly, perceived usefulness, thirdly, attributes of usability. The reason of carrying out the interviews is to collect information through filling out the questionnaire about the user's attitude towards the system.

5.2 Usability testing result

In this section, there are fifteen respondents attended from cutomer. Figure 5.1 demonstrates the respondents' general information which there are three question sequncly status, gender and age, the result of general infromation in the following tables.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Staff	3	20.0	20.0	20.0
	Lecturer	3	20.0	20.0	40.0
	Student	9	60.0	60.0	100.0
	Total	15	100.0	100.0	

Table 5.1: Stats

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	7	46.7	46.7	46.7
	Female	8	53.3	53.3	100.0
	Total	15	100.0	100.0	

Table 5.2: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Certificate	4	26.7	26.7	26.7
	Diploma	5	33.3	33.3	60.0
	Degree	6	40.0	40.0	100.0
	Total	15	100.0	100.0	

Table 5.3: The Respondents' Background

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	telephone	2	13.3	13.3	13.3
	mobile only	9	60.0	60.0	73.3
	both mobile and web site	3	20.0	20.0	93.3
	web site only	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Table 5.4: The Results of Preference of Alternative

Nearly all respondents strongly agree that the system would enhance the effectiveness of the Viewing and searching handicrafts products. Table 5.5 shows that 9.0 percentages of the respondents Neutral. 45.5 percentages of the respondents agree and 45.5 percentages of the respondents strongly agree that the system would enhance my effectiveness.

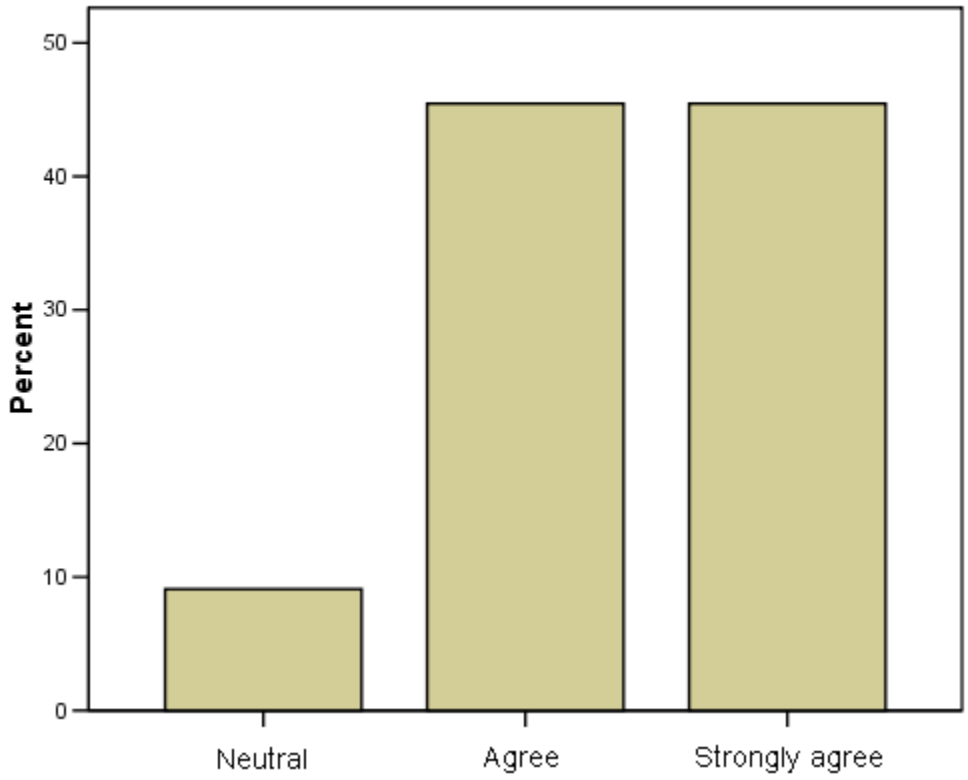


Figure 5.1: Using it would enhance my effectiveness

5.3 Features of the system

The prototype of handicrafts products interface is very attractive and user friendly. 86.7 percentages (15 respondents) of the respondents strongly agree that it is easy to understand what is needed to interact with it. Therefore, WAP-Based Application for Handicrafts products is greatly recommended.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	disagree	2	13.3	13.3	100.0
	strongly agree	13	86.7	86.7	86.7
	Total	15	100.0	100.0	

Table 5.5: It is easy to understand what is needed to interact with it

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
q1	15	3	5	61	4.07	.458
q2	15	3	5	63	4.20	.561
q3	15	3	5	69	4.60	.632
q4	15	3	5	65	4.33	.724
q5	15	3	5	62	4.13	.743
q6	15	3	5	64	4.27	.594
q7	15	4	5	62	4.13	.352
q8	15	3	5	61	4.07	.704
q9	15	3	5	68	4.53	.640
q10	15	4	5	62	4.13	.352
q11	15	3	5	62	4.13	.640
q12	15	3	5	64	4.27	.704
q13	15	4	5	66	4.40	.507
q14	15	3	5	65	4.33	.724
q15	15	3	5	63	4.20	.561
Valid N (listwise)	15					

Table 5.6: Descriptive Statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	s1	1	6.7	6.7	6.7
	s10	1	6.7	6.7	13.3
	s11	1	6.7	6.7	20.0
	s12	1	6.7	6.7	26.7
	s13	1	6.7	6.7	86.7
	s14	1	6.7	6.7	40.0
	s15	1	6.7	6.7	46.7
	s2	1	6.7	6.7	53.3
	s3	1	6.7	6.7	60.0
	s4	1	6.7	6.7	66.7
	s5	1	6.7	6.7	73.3
	s6	1	6.7	6.7	80.0
	s7	1	6.7	6.7	33.3
	s8	1	6.7	6.7	93.3
	s9	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

Table 5.7: Total of analyses

5.4 Conclusion

The results accomplished the research objective successfully that is the second research objective; to develop a prototype of WAP-based application for customers to view and search details about the handicraft products in rural area. Besides that, this proposed system for handicrafts products with high performance and faster way compare with before using the system. The result of this study can be guide lines to design WAP-Based application for handicrafts products in rural Area for other similar landscapes in the future proposed.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.0 Introduction

As described in Chapter One, The primary objective of this study is to reduce the cost of promoting and improve the sell processes at rural area in business landscape.

Research Objective 1:

To design WAP-based application for handicrafts products in rural area, the results are discussed in Chapter Four that is use case and sequence diagram. The objective has been achieved.

Research Objective 2:

To develop a prototype of WAP-Based Application for customers to view and search details about the handicraft products in rural area, results are discussed in chapter four that is build the prototype using JAVA and database tools. Prototype has developed and tested by end-user.

Research Objective 3:

To test the prototype, the results are discussed in chapter five.

6.1 Future Work

Based on the finding there are two recommendations of this study, which are:

i. WAP-based application for customers to view and search details about the handicraft products should be execute and tested via the real wireless application protocol (WAP) connection on real mobile devices.
ii. WAP-based application for customers to view and search details about the handicraft products can enhance the performance by improvement some of prototype features and helpful functions based on the requirements, needs of handicraftsmen and customers.

6.2 Limitation

i. WAP-based application of handicrafts products can function only for those who have a mobile phone with GPRS enable only.
ii. The limitation of mobile phone's signal for certain location only.
iii. This prototype can be applied by mobile emulator as Sony-Ericson, Nokia, Motorola and laptop only.

6.3 Conclusion

The WAP-based application for handicrafts products by using mobile devices obtains the obtained the information for customer is developed. It is wished that with the combination of the WAP- technology, the WAP-based application for handicrafts will enhance the efficiency and effectiveness of services. Thus, it can reduce the time and improve the promoting process for handicraft products in rural area.

7.0 Reference

Abdualromae Hawor (2004). User's satisfaction of using mobile reservation technology case study: Mobile ticketing reservation system. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Abdul Hamid @ Hamid bin Haji Hassan (2003). Requirement analysis on wireless network infrastructure in UUM College. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Agrawal, D.P. & Zeng, Q.-A. (2003), Introduction to wireless and mobile systems, Brooks/Cole Publishing, Pacific Grove, Calif.

Ahmad Hisham Bin Zainal Abidin (2002). ATM in your pocket: A proposed framework for Mobile Internet banking. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Alvani, M.V., & shahrokh, Z.D. (1994). Introductions to tourism (first print).Economic and programming assistance of poor and devotees foundation.

Antovski, L. & Gusev, M. (2003). M-Payments. Information Technology Interfaces, 2003.ITI 2003. *Proceedings of the 25th International Conference*, pp,95-100.

Barnes & Scornavacca (2004). Mobile marketing: the role of permission and acceptance. *International Journal of Mobile Communications*, Vol.2, No.2, pp. 128-139.

Bojkovic, Z. and Milovanovic, D. (2005). Challenges in mobile multimedia: technologies and Qos requirements. *7th WSEAS Int. Conf. on Mathematical Methods and Computational Techniques In Electrical Engineering*, Sofia, pp. 7-12.

Binh, N. H., Chuong, D. K., Hien, H. M. and Huong, D. L. (2002). Application of XML web service and mobile web form technology in building applications for mobile devices in e-business solutions.

Carroll, A., Barnes, S., J., and Scornavacca, E (2005). Consumers perceptions and attitudes towards sms mobile marketing in New Zealand, *International Conference on Mobile Business, ICMB*, pp. 434-440.

Cervera, A. (2002). Analysis of J2ME for developing Mobile Payment Systems, Retrieved August 1, 2009 from www.microjaya.com/articles/techtalk/mpayment?content_id=3734.

Csete, J., Wong, Y. H., Vogel, D. (2004). Mobile devices in and out of the classroom, Educational Development Centre, Hong Kong Polytechic University.

Clarke, I. (2001). Emerging value propositions for MCommerce. *Journal of Business Strategies*, Vol. 18, No. 2, pp. 133-148.

Dickinger, A. & Haghirian, P., Murphy, J., Scharl, A. (2004). An Investigation and Conceptual Model of SMS Marketing. *Proceedings of the 37th Hawaii International Conference on System Sciences*.

Elliott, G. & Phillips, N. (2004). Mobile commerce and wireless computing system: Pearson Educateion Limited.

Haghirian, P., Madlberger, M., Tanuskova, A. (2005). Increasing advertising value of mobile marketing – an empirical study of antecedents. *Proceedings of the 38th Hawaii International Conference on System Sciences.*

Gan Chin Lay (2006). Development of mobile messaging application using wifi technology: A study in promoting classroom participation and interaction. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Hannula, S. Schiefloe, A. (2000). Mobile ticketing- the test-bed for mobile transactions. Retrieved August 1, 2009 from: www.banners.noticiasdotcom/termometro/boletines/docs/telcos/varios/2000/Mobile_Ticketing.pdf

Hassim, M. Y., Gao, J. Z. & Shim, S. (2003). Wireless advertising's challenges and opportunities. *IEEE* Computer Society.

Hu, B., & Yo, H. (2007).Segmentation by craft selection criteria and shopping involvement. Segmentation by craft selection and shopping involvement, *Tourism Management Journal* Retrieved July 12, 2009, from: http:// www Sciencedirect. Com.

Iran handicrafts organization. (1983), The role of rural handicrafts on the economic development, Iran: handicrafts organization.

Irshadwap (2008). Introduction. Retrieved August 6, 2009 from: (**irshadwap.com/web/archives/category/wap**).

Ishii, K. (2004). Internet use via mobile phone in Japan. Telecommunications Policy, 28, 43–58.

Jonker, W. J. (2003). M-commerce and M-payment: Combining technology. Retrieved August 9, 2009 from:www.csdl.computer.org/comp/proceedings/hicss/2004/2056/08/20560262c.pdf.

Kalliola, M. (2005). Mobile payment. Retrieved August 10, 2009 from: www.tml.hut.fi/Opinnot/T-109.551/2005/reports/Mobile_payments.doc.

Kamal Imran mohd Sharif (2006). Mobile fleet management system for petrol transportation: A requirement model. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Kim, P. J. & Noh, Y. J. (2003). Mobile Agent System Architecture for supporting Mobile Market Application Service in Mobile Computing Environment. *Proceedings of the 2003 International Conference on Geometric Modeling and Graphics.*

Kumar, V., Parimi, S. and Agrawal, D. P. (2003). WAP: Present and Future .IEEE CS and IEEE Communications Society. Retrieved June 1, 2009 from: *http://www.sis.pitt.edu/~dtipper/wap_paper.pdf*

Lim chee chian, (2004). Multimodal-based mobile application: a development of prototypes for accessing students academic result at UUM. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Leet, P. (2001). Wireless advertising: The ad in your Pocket. Gartner Group, p. 4.

Littrell, M.A. (1996).Shopping experiences and marketing of culture to tourists .In M. Robinson, N.Evans and P .Callaghan (eds) *Tourism and Culture: Image, Identity and Marketing* pp.107-20).Newcastle: University of North Umbria.

Littrell, M.A., Anderson, L.F. & Brown, P.J. (1993). What makes a craft souvenir authentic? *Annals of Tourism Research*, 20(1), 197-215.

Majyambere, G., (2005), Only handicrafts benefit from AGOA. Retrieved August 11, 2009 From: http://www.rwandagateway.org/article.php3?id_article=509

Marmaridis, I. & Unhelkar, B. (2005). Challenges in mobile transformations: A requirements modeling perspective for small and medium enterprises. *Proceedings of the International Conference on Mobile Business (ICMB'05).*

McManus, P. & Scornavacca, E. (2005). Mobile marketing: killer application or new hype? *Proceedings of the International Conference on Mobile Business (ICMB'05),* pp294-300.

Met (2003). Mobile ticketing. Retrieved August 11, 2009 from: www.mobiletransaction.org.

Mohd Yusuf Bin Md Saad (2005). Requirements analysis and proposed model for a wireless network infranstructure in Bukit Kachi student college UUM. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Nadia Diyana Binti Muhaiyuddin (2006). Modeling final driving test system for JPJ using mobile technology. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia.

Nor Shahriza Abdul Karim, Siti Hawa Darus & Ramlah Hussin (2006) Mobile phone applications in academic library services: a students' feedback survey, Vol. 23 No. 1, 2006. pp. 35-51 Gombak, Kuala Lumpur, Malaysia.

Nielsen, J. & Landauer, T. (2001). A mathematical model of the finding of Usability problems. In ACM INTERCHI'93. Netherlands: Amsterdam.

Nielsen, J. (2000). *Scenarios in Discount Usability Engineering.* Envisioning work and Technology. Book under preparation. Netherlands: Amsterdam.

O'Donnell J., Jackson M., Shelly M. & Ligertwood J. (2007) Australian Case Studies in Mobile Commerce *Journal of Theoretical and Applied Electronic Commerce ResearchISSN 0718–1876 Electronic Version.* vol. 2, issue 2, pp 1 – 18.

Pousttchi, K., Wiedemann, D. G. (2006). A contribution to theory building for mobile marketing: Categorizing mobile marketing campaigns through case study research. *Proceedings of the International Conference on Mobile Business (ICMB'06),* pp.1.

Schaumann, J. (2002). WAP vs i-MODE. Retrieved August 11, 2009 From www.netmeister.org/palm/WAP_iMODE/

Scharl, A., Dickinger, A., Murphy, J. (2005). Diffusion and success factors of mobile marketing. *Electronic Commerce Research and Applications*. No. 4. pp. 159–173.

Teng, Y. L., Tan, K. L., Lim, E. P., Zhang, J., Goh, D. H. L., Chatterjea, K., Chang, C. H., Sun, A., Han, Y., Dang, N. H., Li, Y. Y. & Vo., M. C. (2007). Mobile G-portal supporting collaborative sharing and learning on geography fieldwork: An Empirical Study, Vancouver, British Columbia, Canada.

Vaishnavi & Kuechler (2004). Design research in information system. Retrieved June 15, 2009, From Http://www.Isworld.Org/Researchdesign/Drisisworld.Htm.

Wireless Application Protocol Forum (1999). Wireless application protocol, wireless markup language specification Version 1.2. Retrieved August 12, 2009 from: http://www.wapforum.org/what/technical/SPEC-WML-19991104.pdf

Wan Mohd Rashidi Bin Wan Abd Ghani (2005). Modeling mobile payment process flow for buying e-book. A master project in partial fulfillment of the requirements for the degree of Master of Science (Information Technology), University Utara Malaysia

WAP Forum (2002). WAP 2.0 Technical White Paper. Retrieved August 1, 2009 from www.**wapforum.org**/what/WAPWhite_Paper1.**pdf**

APPENDIX A

WAP-Based Application for Handicrafts in Rural Area

Dear Respondent,

The interview is designed in order to understand existing and new proposed for promoting handicrafts product. This study is being conducted as a partial fulfilment to complete the Master of Science (Information Technology) program. Completed questionnaires would not be published and it is used for research purposes only.

Contact

If you require assistance or have any question in completing this questionnaire, please contact:

Hani fawzi mohsen alshomarry (801572)

Faculty of Information Technology,

Universiti Utara Malaysia,

06010 Sintok, Kedah Darul Aman.

Email address: alshomarry@hotmail.com

SECTION 1

1. **What is the background and History of Handicrafts?**

2. **What is the current business operation to promote/market the product? Is it costly? Please kindly mention it.**

3. **Are handicraftsmen hire employees to spread out the catalog? How much is cost and how many employees?**

4. **How much the handicraftsmen expect to advertising product, let say in year 2008?**

5. **What is the viewpoint of the new proposed (use mobile for customers and web application for Handicrafts products)?**

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SECTION 2: COMMENT

Any suggestions or comments please state:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for taking the precious time to answer this questionnaire

APPENDIX A

Senarai tema ramah ini dibuat khas untuk memahami sistem yang sedia-ada dan sistem yang dicadangkan bagi mempromosi produk kraftangan. Kajian ini dijalankan sebagai menunaikan separuh dari melengkapkan program Master of Science (Information Technology). Senarai soalan yang di lengkapkan tidak akan diterbitkan dan digunakan hanya untuk tujuan kajian.

Hubungi

Jikalau anda memerlukan bantuan atau ada apa-apa persoalan dalam melengkapkan senarai soalan ini bolehlah menghubungi saya di:-

Hani fawzi mohsen alshomarry (801572)
Faculty of Information Technology,
Universiti Utara Malaysia,
06010 Sintok, Kedah Darul Aman.
Email address: alshomarry@**hotmail.com**

SECTION 1

1. **Apakah latar belakang dan sejarah kraftangan?**

2. **Apakah operasi perniagaan asal untuk mempromosi/ memasark an produck itu? Adakah ianyu mahal? Harganya? Treangkan .**

3. **Adakahpembuat kraftangan mengambil perkerja untuk menyebarkan catalog? Berapakah kos dan berapa ramai pekerja?**

4. **Berapakah yang diperlukan oleh pembuat kraftangan untuk mempromosi dan mengiklankan produk, contohnya pada tahun 2008?**

5- Apakah pandangan bagi promosi itu?(gunakan telethon untuk pelanggan dan aplikasi web untuk barangan kraftangan)?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SECTION 2: bahagan

Sebarang cadangan atau komen sila nyatakan:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Terima kasih kerang mengambil masa yang terluang untuk menjauab soalan ini

APPENDIX B

Questionnaire No.

WAP-Based Application for Handicrafts in Rural Area

Dear Respondent,

The questionnaire is designed in order to understand existing and new proposed for promoting handicrafts product. This study is being conducted as a partial fulfilment to complete the Master of Science (Information Technology) program. Completed questionnaires would not be published and it is used for research purposes only.

Contact

If you require assistance or have any question in completing this questionnaire, please contact:

Hani fawzi mohsen alshomarry (801572)

Faculty of Information Technology,

Universiti Utara Malaysia,

06010 Sintok, Kedah Darul Aman.

Email address: alshomarry@**hotmail.com**

QUESTIONNARIE

SECTION A: General Information

1. **Status:**
   - ☐ 1. Staff
   - ☐ 2. Lecturer
   - ☐ 3. Student
   - ☐ 4. Other (please mention) _____

2. **Gender:**
   - ☐ 1. Male
   - ☐ 2. Female

3. **Education background**
   - ☐ 1. Certificate or below
   - ☐ 2. Diploma
   - ☐ 3. Degree
   - ☐ 4. Other (please mention) _____

Section B: Perception on the Preference

Arrange from 1-4 based on the the priority.

1. In which way you prefer most in searching products?

[ ] mobile only

[ ] both mobile and web site

[ ] web site only

Section C: Perception on current system

This part is planned to get your opinion on the system aspects of the view and searching products for Handicrafts. Please state [√] where is appropriate to your answer.

1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree

	Perceived usefulness	Measurement				
		1	2	3	4	5
1.	I would find WAP-Based Application for Handicrafts products practical in my daily tasks.	□	□	□	□	□
2.	Using WAP-Based Application for Searching Handicrafts products to accomplish the appointment checking is quick.	□	□	□	□	□
3.	By Using WAP-Based Application for searching Handicrafts products would enhance my effectiveness	□	□	□	□	□
4.	Using WAP-Based Application for searching Handicrafts products would increase my productivity.	□	□	□	□	□
5.	Using WAP-Based Application for Handicrafts products would make it easier to do my tasks.	□	□	□	□	□
6.	Learning to operate WAP-Based Application for Handicrafts products would be easy for me	□	□	□	□	□
7.	I would find WAP-Based Application for Handicrafts products easy to get it to do what I intend to do.	□	□	□	□	□
8.	My interaction with WAP-Based Application for searching Handicrafts products would be clear and Understandable	□	□	□	□	□
9.	I would find the WAP-Based Application for Handicrafts products to be flexible to interact with	□	□	□	□	□
10.	WAP-Based Application for Handicrafts products would be easy for me to become skilful at using it	□	□	□	□	□
11.	I would find WAP-Based Application for searching Handicrafts products easy to use.	□	□	□	□	□

Section D: User interaction satisfaction.

	Attributes of Usability	Measurement 1	2	3	4	5
1.	I am satisfied with the number of steps included in WAP-Based Application for Handicrafts products.	□	□	□	□	□
2.	WAP-Based Application for Handicrafts products is easy to understand what is needed to interact with it	□	□	□	□	□
3.	The procedure through WAP-Based Application for Handicrafts products was clear.	□	□	□	□	□
4.	WAP-Based Application for Handicrafts products is more complex than most others.	□	□	□	□	□
5.	WAP-Based Application for Handicrafts products was easy to remember the steps in it.	□	□	□	□	□

APPENDIX B

Questionnaire No.

WAP-Based Application (Sistem Kraftangan untuk kawasan pedalaman)

Pengguna yang dihormati

Senarai soalan ini dibuat khas untuk memahami sistem yang sedia-ada dan sistem yang dicadangkan bagi mempromosi produk kraftangan. Kajian ini dijalankan sebagai menunaikan separuh dari melengkapkan program Master of Science (Information Technology). Senarai soalan yang di lengkapkan tidak akan diterbitkan dan digunakan hanya untuk tujuan kajian.

Hubungi

Jikalau anda memerlukan bantuan atau ada apa-apa persoalan dalam melengkapkan senarai soalan ini bolehlah menghubungi saya di:-

Hani fawzi mohsen alshomarry (801572)

Faculty of Information Technology,

Universiti Utara Malaysia,

06010 Sintok, Kedah Darul Aman.

Email address: alshomarry@**hotmail.com**

SENARAI SOALAN

BAHGAIAN A: Maklumat Umum

1. Status:

☐ 1. Kakitangan

☐ 2. Pensyarah

☐ 3. Pelajar

☐ 4. Cikgu

☐ 5. Lain-lain(Tolong sebutkan) _____

2. Jantina:

☐ 1.Lelaki

☐ 2. Perempuan

3. Latar Belakang Pembelajaran

☐ 1. Sijil Dan Kebawah

☐ 2. Diploma

☐ 3. Ijazah Sarjana Muda

☐ 4. Lain-lain(Tolong sebutkan) _____

BAHAGIAN B: persepsi mengikut pilihan dan kecenderungan

Susun dari 1-4 mengikut keutamaan.

1.Apakah cara carian produk yang kamu minati?

[ ] Telefon bimbit

[ ] Kedua-dua (Telefon bimbit dan laman web)

[ ] laman web sahaja

BAHAGIAN C : Persepsi system sedia ada

Bahagian ini adalah untuk mendapatkan pandangan anda tentang carian dan kelihatan produk bagi kraftangan. Tolong tanda [√] bagi mana-mana yang sesuai anda rasakan.

1 = Sangat Tidak setuju ; 2 = Tidak setuju ; 3 = Biasa ; 4 =Setuju; 5 = Sangat Setuju

	Faedah yang dirasai	Ukuran				
		1	2	3	4	5
12.	Saya dapat rasakan bahawa sistem WAP-Based Application untuk produk kraftangan sangat berguna secara praktikal dalam pekerjaan harian saya.	□	□	□	□	□
13.	sistem WAP-Based Application untuk carian produk kraftangan sangat cepat dalam membuat temujanji	□	□	□	□	□
14.	Dengan Menggunakan Sistem WAP-Based Application untuk carian produk adalah sangat efektif	□	□	□	□	□
15.	sistem WAP-Based Application untuk carian produk sangat produktif.	□	□	□	□	□
16.	Dengan Menggunakan Sistem WAP-Based Application untuk carian produk sangat senang dalam membuat kerja.	□	□	□	□	□
17.	Belajar cara beroperasi dengan sistem WAP-Based Application adalah senang bagi saya	□	□	□	□	□
18.	Saya dapat rasakan Sistem WAP-Based Application untuk produk kraftangan senang digunakan untuk membuat kerja yang diperlukan.	□	□	□	□	□
19.	Interaksi saya dengan Sistem WAP-Based Application untuk carian produk kraftangan adalah sangat jelas dan senang difahami .	□	□	□	□	□
20.	Saya dapat rasakan Sistem WAP-Based Application untuk produk kraftangan adalah mudah untuk berinteraksi	□	□	□	□	□
21.	Sistem WAP-Based Application untuk produk kraftangan memudahkan saya untuk menjadikan saya cekap dalam menggunakannya .	□	□	□	□	□
22.	Sistem WAP-Based Application untuk produk kraftangan sangat senang digunakan.	□	□	□	□	□

BAHAGIAN D : Kepuasan interaksi pengguna

	Ciri-ciri penggunaanya	Measurement 1	2	3	4	5
1.	Saya puasa hati dengan langkah-langkah yang dimasukkan dalam Sistem WAP-Based Application untuk produk kraftangan .	□	□	□	□	□
2.	Sistem WAP-Based Application untuk produk kraftangan senang difahami apa yang diperlukan untuk berinteraksi dengan sistem .	□	□	□	□	□
3.	Prosedur dalam Sistem WAP-Based Application untuk produk kraftangan adalah jelas	□	□	□	□	□
4.	Sistem WAP-Based Application untuk produk kraftangan adalah susah dibandingkan dengan sistem lain.	□	□	□	□	□
5.	Sistem WAP-Based Application untuk produk kraftangan adalah senang mengingat langkah-langkahnya.	□	□	□	□	□

APPENDIX C

Q 1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	6.7	6.7	6.7
	4	12	80.0	80.0	86.7
	5	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

Q 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	6.7	6.7	6.7
	4	10	66.7	66.7	73.3
	5	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Q 4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	13.3	13.3	13.3
	4	6	40.0	40.0	53.3
	5	7	46.7	46.7	100.0
	Total	15	100.0	100.0	

Q 5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	20.0	20.0	20.0
	4	7	46.7	46.7	66.7
	5	5	33.3	33.3	100.0
	Total	15	100.0	100.0	

Q 6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	6.7	6.7	6.7
	4	9	60.0	60.0	66.7
	5	5	33.3	33.3	100.0
	Total	15	100.0	100.0	

Q7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	9	60.0	60.0	60.0
	5	6	40.0	40.0	100.0
	Total	15	100.0	100.0	

Q8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	20.0	20.0	20.0
	4	8	53.3	53.3	73.3
	5	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Q9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	6.7	6.7	6.7
	4	5	33.3	33.3	40.0
	5	9	60.0	60.0	100.0
	Total	15	100.0	100.0	

Q 10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	13	86.7	86.7	86.7
	5	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

Q11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	13.3	13.3	13.3
	4	9	60.0	60.0	73.3
	5	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

Q12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	13.3	13.3	13.3

	4	7	46.7	46.7	60.0
	5	6	40.0	40.0	100.0
	Total	15	100.0	100.0	

Q13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	13	86.7	86.7	86.7
	5	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

Q14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	13.3	13.3	13.3
	4	6	40.0	40.0	53.3
	5	7	46.7	46.7	100.0
	Total	15	100.0	100.0	

Q15

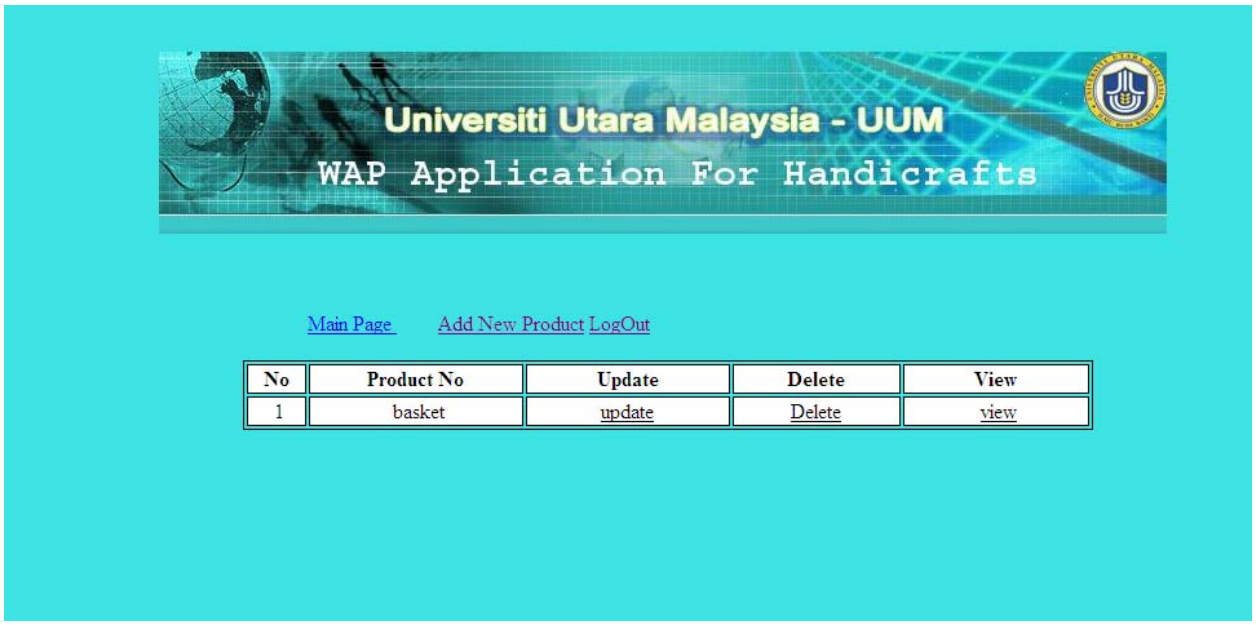
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	6.7	6.7	6.7
	4	10	66.7	66.7	73.3
	5	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

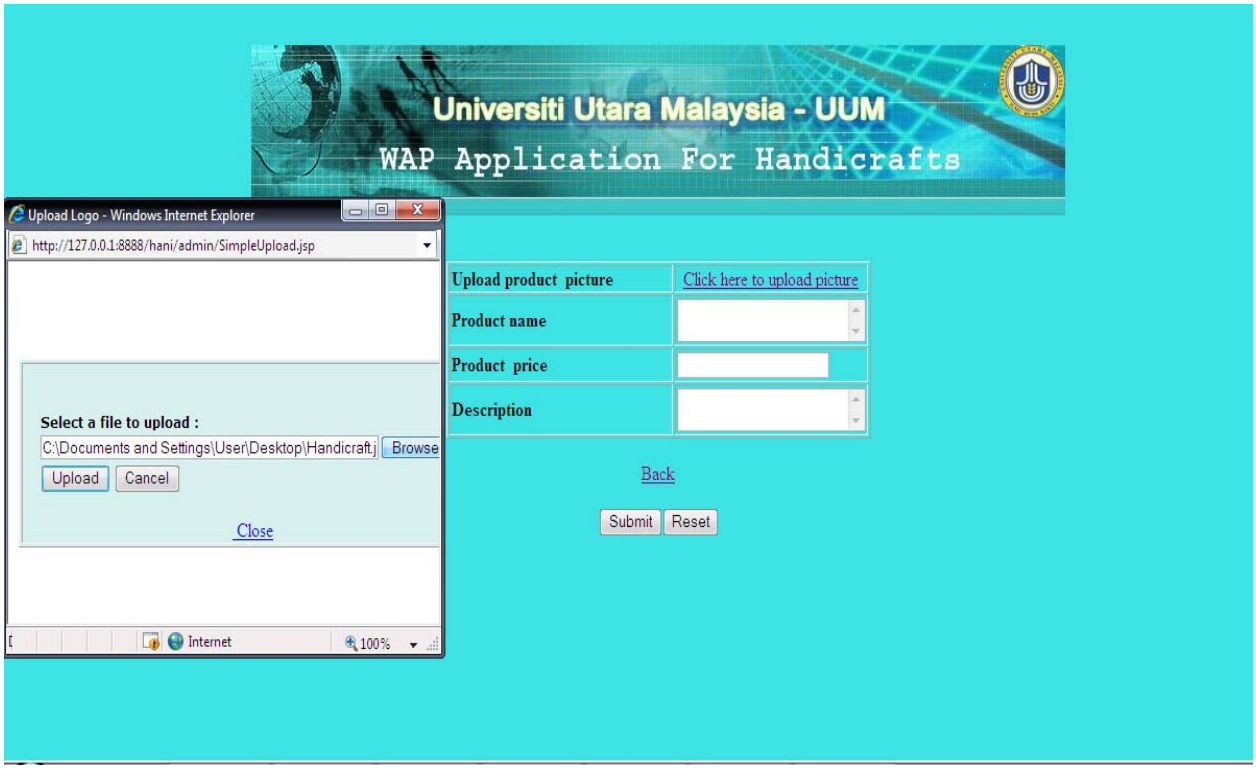
Q16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	6.7	6.7	6.7
	4	10	66.7	66.7	73.3
	5	4	26.7	26.7	100.0
	Total	15	100.0	100.0	

APPENDIX D


Universiti Utara Malaysia - UUM
WAP Application For Handicrafts
Login
Password
Go!
Last Five Product Added
basket
Handicrafts consider as a one of the most important component to develop the rural areas, the majority of the people who stay in the rural area they face much challenge in business landscape and a lot of difficulties to communicate with wholesaler or directly to the customer in order to promote their products in the market. Moreover, it needs time to distribute catalogs of the product and quite costly also for them because they need to pay some amount with the intention to promote their products
List of products


Universiti Utara Malaysia - UUM
WAP Application For Handicrafts
Main Page
Add New Product
LogOut
No
Product No
Update
Delete
View
1
basket
update
Delete
view


Universiti Utara Malaysia - UUM
WAP Application For Handicrafts
Upload Logo - Windows Internet Explorer
http://127.0.0.1:8888/hani/admin/SimpleUpload.jsp
Select a file to upload :
C:\Documents and Settings\User\Desktop\Handicraft.j
Browse
Upload
Cancel
Close
Internet
100%
Upload product picture
Click here to upload picture
Product name
Product price
Description
Back
Submit
Reset

Universiti Utara Malaysia - UUM

WAP Application For Handicrafts

upload product picture	Click here to upload picture
Product name	basket
Product price	122
Description	this is the good quality

Back

Submit Reset

Universiti Utara Malaysia - UUM

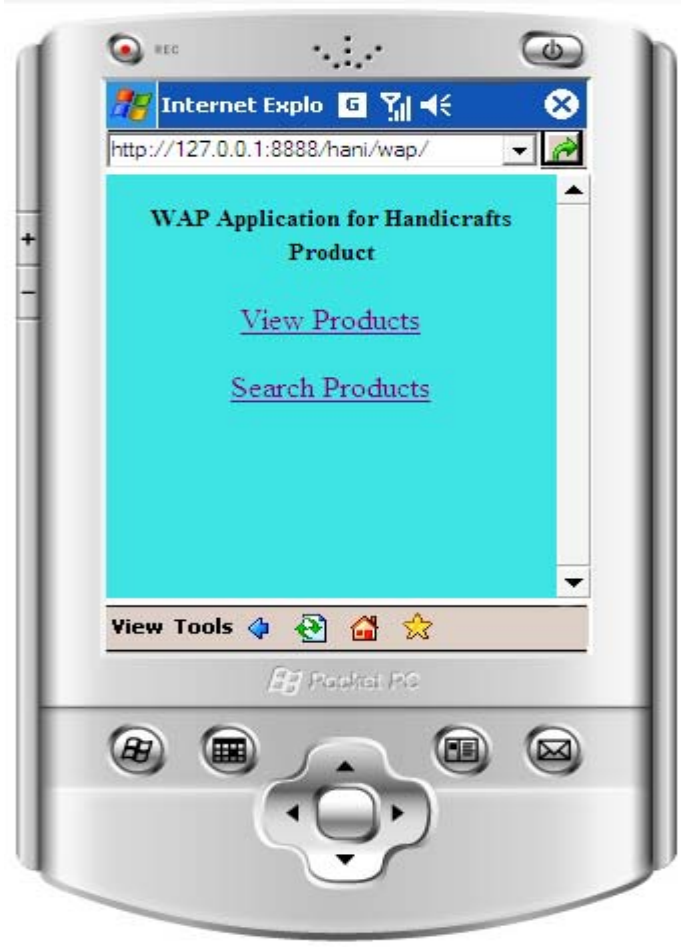
WAP Application For Handicrafts

Back

No	Product name	Product Price	Description	Image
1	basket	122	this is the good quality	

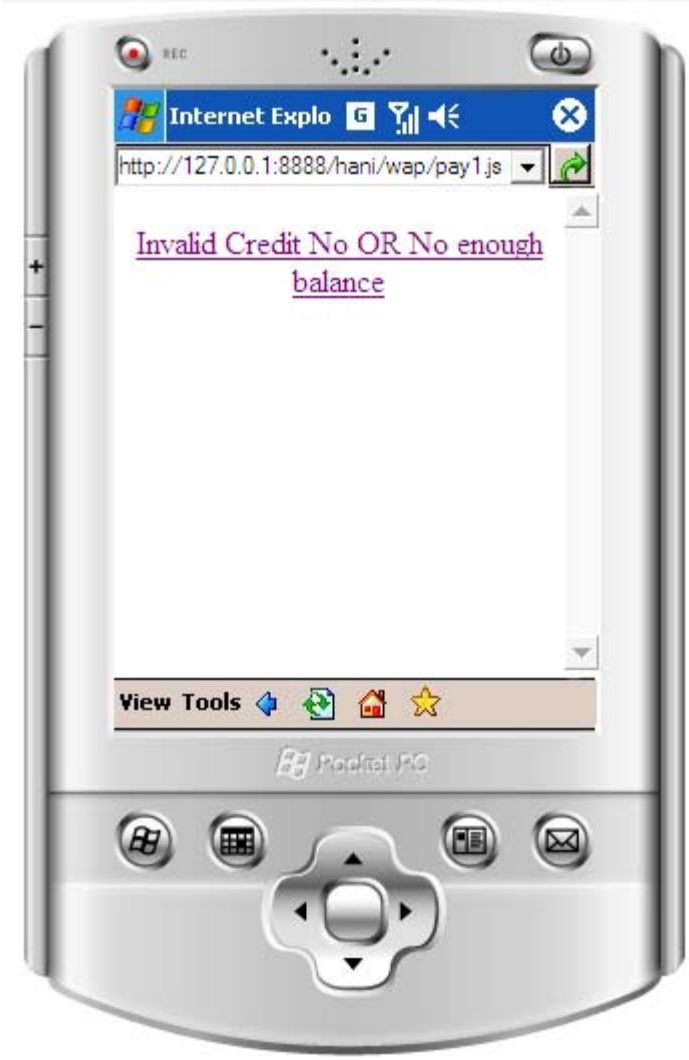
Main


Universiti Utara Malaysia - UUM
WAP Application For Handicrafts
Are you sure you want delete ?
Yes
No
Submit
Reset

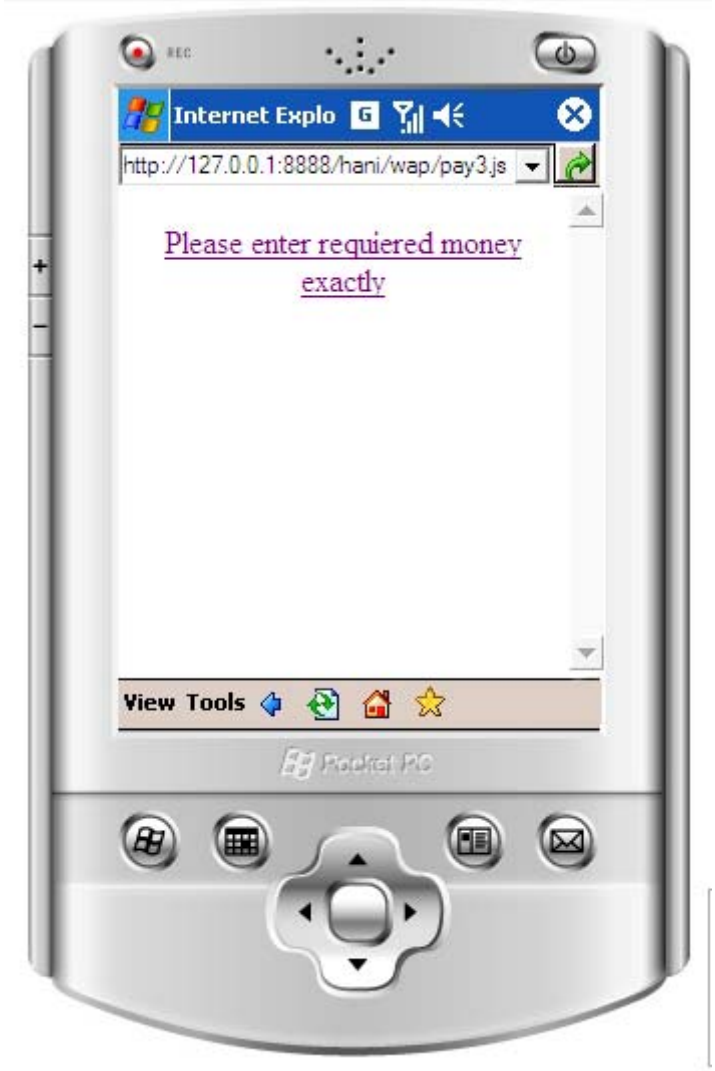

Internet Explo
http://127.0.0.1:8888/hani/wap/
WAP Application for Handicrafts Product
View Products
Search Products
View Tools

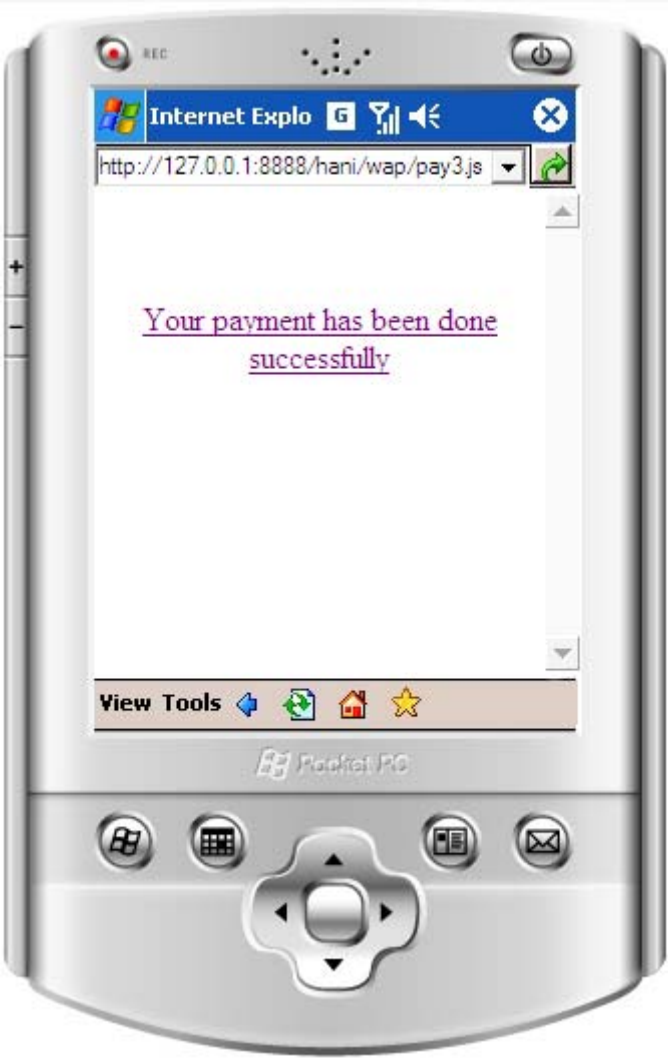

Internet Explo
http://127.0.0.1:8888/hani/wap/viewPr
Product Name
basket
Product Price
122
Description
this is the good quality
<1-1 >
Pay
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/pay.jsp
Credit NO
Submit
Reset
Back
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/pay1.js
Invalid Credit No OR No enough balance
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/pay2.js
Deposit
Submit
Reset
Back
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/pay3.js
Please enter requiered money exactly
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/pay3.js
Your payment has been done successfully
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/search.
WAP Application for Handicrafts Product
Product name
Submit
Reset
Back
View Tools


Internet Explo
http://127.0.0.1:8888/hani/wap/update
Product name
basket
Description
this is the good quality
View Tools