THE JOB REQUIREMENTS INFORMATION SYSTEM FOR RURAL COMMUNITIES

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Abstract

The rural communities take 37 percent of the population in Malaysia (9th Malaysia Plan, 2006), the income gap between the urban areas and the rural areas is very big. Even though the government has tried a lot of policies to develop the rural area, the income gap between the rural and urban continued to be wide. Many people live in the rural area try all means to go out and find a job since their job requirement can not be satisfied in the rural area. However, the problem of unemployment of the rural people is still very serious. The purpose of this study is therefore to understand and identify the job requirements of the rural community in Changlun. An online system will be proposed to store and manage information about job requirements for rural communities. With this system, the company can search for the employees they need and thus create more job opportunities for the rural communities. The information of the rural communities including their job requirements and ICT literacy can indicate the gap between their qualification and their desired job, so the specific training can be provided to rural communities to improve their competitive advantage and lead to job enlargement.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

A rural community is a group of people who live in the country which is far away from a big city or town (geocities, 2008). These people perform different kinds of jobs for a living. The economy in the rural communities, however, is not as developed as the urban communities. Most of the industries in the rural communities are related to natural resources such as the plant, mine, hunting and fishing (Takashi, 2008). Thus, the income of the rural people is lower than residents of the urban area. Since agriculture is the very important part to these communities, many of the works people do for a living depend on it. Some of them work in a farm or ranch, some of them work in a garden; other people may mine the earth for materials like coal, some of them log trees, at the same time, rural communities also work as teacher in school, doctor, nurse, small businessman, sales, government officer and so on.

As presented in the Dewan Rakyat on March 2006, there is about 37% of Malaysian population live in rural areas (Prime Minister, 2006). Large tracts of rural land can be found in seven states in Malaysia and about 12 percent of poverty in Malaysia occurs in

rural areas. Except the poverty, limited resources to access to education are also a big problem in the rural communities in Malaysia. With 4.37 million youth located in the rural area, their education must be highly considered (National Census, 2000). Every year, the number of youth in the rural area increases. In the national census in 2000, the number is 4.37 million, while in the national census in 2005, it become 4.98 million. This statistical fact denotes the important role rural youth play in the development of the nation. One of the target achievements in 9th Malaysia Plan is toward human development which is especially focused towards the youth (Hazita, 2008). Only when the generation is well educated, can they get the qualification to find a better job and improve the living standard of the rural communities finally.

Malaysia has experienced a fundamental shift in employment patterns over the last 20 years. Though previously major sources of Malaysian people' employment was agriculture, forestry, livestock and fishing, these sectors in 1995 employed just 15.9 percent of female workers and 20.3 percent of male workers. As shown in table 1.1 below(Fatimah & Mad, 1997), these years, drastic population outflow take place in rural area (Sang, Young, Rhee, Young & Kim, 2009). These people used to be in charge of caring the agricultural and natural environment and the socio-cultural resources of rural community, but now they cannot be satisfied by these jobs. This fact shows that the promotion of non-agricultural activities is needed. The industry which is non-agricultural but will take advantage of the natural resources can be developed to reduce the speed of population outflow, the involvement of the local material and human resource also enable this kind of industry to get great success (Kamalapur, 2008). In order to solve this

problem from the origin, the psychology of the rural communities and the rural communities' job requirements need to be researched as soon as possible to curb the trend of population outflow. Therefore a study is needed to understand the situation and to identify the rural communities' information on the

Table 1.1: Distribution of Rural-Urban Population, 1957, 1970, 1980, 1990 and 1995(Fatimah & Mad, 1997)

Sector	1957		1970		1980		1990		1995	
	mn	%	mn	%	mn	%	mn	%	mn	%
Urban	1.6	26.5	2.5	28.7	4.5	34.2	7.2	40.7	11.3	54.7
Rural	4.6	73.5	6.3	71.3	8.6	65.8	10.5	59.3	9.4	45.3
Total	6.2	100.0	8.8	100.0	13.1	100.0	17.7	100.0	20.7	100.0

1.2 Problem Statement

The rural communities' economies evolve from dependence on agriculture and natural-resource-based industries to dependence on less traditional sources such as light manufacturing and service-oriented businesses. This change makes them face difficult choices (Mitch, 2009). The large number of unemployment in the rural communities shows that people haven't adapted to this change. The rural communities' income is less than half of the urban residents. With the decline in the farm population, closing of businesses, and temporary or permanent layoffs in industry, this income gap is becoming

wider and wider, the unemployment make families face the situation of having one or both of the wage earners without employment (Paul Lasley, 1984). A study on chosen rural areas such as Pagoh in Johor, Pamah Kulat in Pahang and Ijok in Perak (table 1.1) for examples, more than one-third of the families' monthly income is less than RM500, and most rural families' income is below RM1500 per month. This situation has resulted from the limited access to education in the rural area.

Without education, the rural communities have limitation to get good job with high income. Without education also, rural people have difficulties in learning and applying high-technology to develop their agriculture. Without good employment among rural people especially among the youth, the aberration is likely to happen especially when they compare their life with the urban residents, with little money on hand but a lot of time because of unemployment, more social problems will occur in rural areas such as loitering, drugs addict, and crimes. These problems have very negative impact to the country and once a young people conduct a crime, his life can be ruined by it. Since the rural people are a major part of the Malaysia population especially the youth is the one who will construct the nation in the near future, the unemployment problem of the rural communities must be taken into deep consideration.

In the academic field, rare research has been done about the job requirement and employment situation of the rural community in Malaysia. In order to develop the job enlargement of rural communities, more research must be done to further understand, identify and share the employment situation and the job requirements among rural people.

Table 1.2: Demographic details of rural youth according to location (%)

(Kamalapur, 2008)

No	Details		Pagoh	Pamah Kulat	Ijok
1	Gender	Male	34.1	34.1	64.7
		Female	65.9	65.9	35.3
2	Race	Malay	92.9	92.9	97.1
		Chinese	2.4	2.4	2.9
		Indian	3.5	3.5	0.0
3	Mother Tongue	Bahasa Melayu	96.5	96.5	97.1
		Chinese	1.2	1.2	2.9
		Tamil	2.4	2.4	0.0
4	Age	18-20 years	70.6	70.6	38.2
		21-25 years	22.4	22.4	32.4
		26-30 years	7.1	7.1	29.4
5	English Language skill	Very competent	0	0	5.9
		Competent	8.3	8.3	11.8
		Moderately competent	78.6	78.6	61.8
		Not competent	13.1	13.1	17.6
6.	Highest Academic Qualification	Degree	3.6	3.6	8.8
		Diploma	7.1	7.1	5.9
		Certificate	7.1	7.1	5.9
		STP/STPM	13.1	13.1	8.8
		SPM	61.9	61.9	47.1
		PMR	2.4	2.4	20.6
		UPSR	4.8	4.8	2.9
7	Employment Status	Studying	61.0	61.0	23.5
		Unemployed	15.9	15.9	32.4
		Employed	14.6	14.6	35.3
		Working while studying	8.5	8.5	5.9
8	Family income (monthly)	< RM500	35.1	35.1	38.2
		RM500 – RM1500	54.1	54.1	26.5
		RM1500 - RM2500	4.1	4.1	8.8
		>RM2500	6.8	6.8	11.8

1.3 Research Questions

The research questions are as following:

A. What are the job requirements among the rural communities?

B. How to save their job requirements and present them to the public?

1.4 Research Objectives

The following are the objectives of this study:

- To identify job requirements among the rural communities.
- To propose and develop a prototype of job requirements information system to save and present job requirements among rural communities

1.5 Scope Of The Study

This study will focus to collect the data in small villages in Kedah. For this purpose, a case study of one small village in Changlun, the northern part of Kedah is chosen. In this study, the data about the job requirements of the rural communities will be collected and analyzed. A prototype of an on-line system will be developed for the villagers to enter their job requirements.

1.6 Significance Of The study

The two major significance of this study include the knowledge contribution and access construction. First this study collects the information of job requirements among the rural communities which is very lacking in Malaysia to offer to other researchers and the

government of Malaysia. Secondly, this study also build a system to store and share this data, so it enables people who need it to access it in an easy and convenient way.

1.7 Summary

This chapter explains the background of this study. The information of the rural communities especially the job-related information is presented in this chapter to state the problem about the job enlargement among rural communities. This study is aimed to collect the job requirements among rural communities and develop a prototype to save this information and present it to the public. The scope and significance of this study are also shown in this chapter. In the next chapter, the related literature review will be discussed.

CHAPTER TWO

LITERATURE REVIEW

The background and motivation of this study is introduced in the previous chapter, in this chapter, literature review will be made on related study. This chapter starts with the introduction of rural communities in Malaysia, followed by jobs in non-farm sectors and Government effort to develop the rural areas. To develop a system to save the job requirements collected, information technology will be used in this study, so the related information technology will also be presented in this chapter.

2. 1The Rural Communities in Malaysia

Rural areas (referred to as "the countryside") are large and isolated areas of a country, often with low population density (Wikipedia, 2009). A "rural community" is a group of people living in an area that is in the country, away from a big town or city (Geocities, 2008).

Malaysia has seven states possess large tracts of rural land, and there are 37 percent of Malaysians live in these rural areas (9^{th} Malaysia Plan, 2006). These people have limited resource to education, commerce and recreation, undeveloped public transportation and

low income. Among all the problems, the poverty is one of the biggest ones (9th Malaysia Plan, 2006).

The table in Table 2.1 and Table 2.2 show the incidence of poverty and number of poor in Malaysia from 1985 to 1990 and from 1995 to 2000 (Various Malaysia Plans). In 1985, the incidence of poverty in Malaysia is 27.3 percent in the rural area, and it's just 8.5 in urban area. After five years, this number becomes 11.2 in the rural areas and 3.1 in urban areas. In 2000, the poverty in rural area decreased to 10.3, meanwhile, the poverty in urban areas become 2.2. Such trend shows the enlargement of income gap between rural communities and urban communities (4th Malaysia plan, 5th Malaysia Plan & 6th Malaysia Plan).

Except the widening of income gap, poverty is still the biggest problem. In 2005, the number of poverty increased instead of becoming less. There are about 12% of poverty occurs in rural areas; it's more than twice the national average (9th Malaysia Plan, 2006).

Since most rural people work for a living depend on the agriculture, agricultural sector development can help to narrow national socioeconomic divides and generate new sources of growth. According to the speech regarding the 9th Malaysia Plan, the government will develop the "New Agriculture" program which focus on enhancing the value chain, cultivating high value added agricultural activities and large-scale

commercial farming, ICT and biotechnology will be utilized in this program (9th Malaysia Plan, 2006).

Table 2.1: Incidence of Poverty and Number of Poor by Region, in 1985 and 1990(Fatimah & Mad, 2000)

	1985		1990	
	Urban	Rural	Urban	Rural
PENINSULAR MALAYSIA				
Incidence of Poverty (%)	8.2	24.7	3.0	8.0
Number of Households ('000)	81.3	402.0	69.8	160.2
Incidence of Hardcore Poverty (%)	2.4	8.7	0.3	0.8
Number of Hardcore poverty ('000)	23.8	141.8	7.0	16.0
Total Households ('000)	991.7	1629.4	2326.1	2001.2
SABAH				
Incidence of Poverty (%)	14.3	14.3	6.5	27.3
Number of Households ('000)	7.5	68.5	9.6	74.4
Incidence of Hardcore Poverty (%)	2.9	11.7	0.9	4.1
Number of Hardcore Poor ('000)	1.5	20.8	1.4	11.2
Total Households ('000)	52.4	177.4	147.3	272.5
SARAWAK				
Incidence of Poverty (%)	8.2	37.3	0.8	16.5
Number of Households ('000)	4.2	85.9	0.9	59.0
Incidence of Hardcore Poverty (%)	1.7	11.9	0.2	1.5
Number of Hardcore Poor ('000)	0.9	27.3	0.2	5.4
Total Households ('000)	51.2	231.2	114.6	357.2
MALAYSIA				
Incidence of Poverty (%)	8.5	27.3	3.1	11.2
Number of Households ('000)	93.0	556.4	80.3	293.6
Incidence of Hardcore Poverty (%)	2.4	9.3	0.3	1.2
Number of Hardcore Poor ('000)	26.2	89.9	8.6	32.6
Total Households ('000)	1095.3	2038.0	2588.0	2630.6

Source: Second Outline Perspective Plan 1991-2000.

Table 2.2: Malaysia: Incidence of Poverty and Number of Poor in 1995 and 2000

(Fatimah & Mad, 2000)

	1995			2000		
	Urban	Rural	Total	Urban	Rural	Total
Incidence of poverty (%)	3.7	15.3	8.9	2.2	10.3	5.4
No. of household('000)	84.6	285.6	370.2	59.9	193.5	253.4
Incidence of hardcore poverty(%)	0.8	3.7	2.1	0.1	1.0	0.5
No. of hardcore poverty ('000)	19.2	69.2	88.4	3.2	19.8	23.0
Total households('000)	2270.3	1870.3	4140.6	2732.6	1874.6	4607.2

2.2 The Jobs in the Non-farm Sector in Rural Communities

The non-farm sector means the work not related to the traditional agriculture like the agriculture, livestock, fishing and hunting (Jean, 2000). There are many types of non-farm work in the rural communities, including non-farm activity undertaken by farm households as independent producers in their homes, the subcontracting of work to farm

families by urban-based firms, non-farm activity in village and rural town enterprises, and commuting between rural residences and urban non-farm jobs (Jean, 2000).

The difference between rural and urban employment is based on the place of residence of the worker, so those who get a job in a nearby urban center is also considered as rural workers (Jean, 2000). In a survey of rural employment in the Indian State of Gujarat, about 25% of rural male non-agricultural workers commuted to urban areas for work (Basant, 1994). Most of them work as the builder and security because of a lack of education and qualification.

The most common way to create a lot non-farm job opportunity is when a new factory or corporation set in the rural area. People can go to work as the worker or officer. This situation could expand the employment opportunities among the rural community. Normally the better educated in the village tend to catch the chance to work non-farm job, but their change of the job also bring the benefit to the rest because they reduced the number of people who will compete with them, so the people work in the farm work free from the strong competition (Lanjouw & Stern, 1998).

2.3 Government Effort in Developing the Rural Areas

Malaysia Government plays a vital role in developing the rural areas. Many strategies and programmes have been set, such as the Agrarian Reform, In Situ Development, Integrated Rural Development, Rural Industrialisation and Rural Growth Centres. Among all of these strategies and programmes, Agrarian Reform is the key strategy to transform

the rural sector by bringing structural and institutional changes in the agricultural sector (Fatimah & Mad, 2000).

2.3.1 Previous Effort

In every Malaysia Plan, the development of rural areas is an important topic. There are many allocation and expenditure are on Agriculture and Rural Development, the data from 1986-2000 is shown in table 2.3. It is a good presentation of the Government's effort.

In the fifth Malaysia Plan, there are 20.8 percent of Government expenditure paid to Agriculture and Rural Development, but in the seventh Malaysia Plan, it reduced to 8.1, it's because the rapid development continuous reduces the amount of rural areas by change them into urban areas. The detailed information of the expenditure is shown in Table 2.4.

Table 2.3: Federal Government Development Allocation and Expenditure on Agriculture & Rural Development 1986-2000 (RM million) (Fatimah & Mad, 2000)

5 MP(1986-1990)			6MP(1991-1995)			7MP(1996-2000)	
Revised Allocation	Expenditure	%	Revised Allocation	Expenditure	%	Revised Allocation	%
7427	7325	20.8	6.685	6,344	11.6	5,460	8.1

Table 2.4: Development Allocation for Agriculture and Rural Development Programmes, 1986-2000 (RM million) (Fatimah & Mad, 2000)

	5MP		6MP	7MP
	Allocation	Expenditure	Allocation	Allocation
In-situ Development	2739.3	2693.2	4117.3	1736.0[2/]
Integrated Agricultural Development Projects	1030.6	1021.8	1439.4	-
Drainage and Irrigation	202.3	200.3	463.3	1,500[3/]
Rural Flood Mitigation and Coastal Protection	82.6	77.2	347.3	-
Replanting	595.8	581.2	905.0	-
Rehabilitation	828.0	812.7	962.3	-
Land and Regional Development	2801.4	2774.6	2383.3	-
New Land Development	2129.7	2117.5	1315.5	590.0
Regional Development	671.7	657.1	1064.5	1054.2
Forestry	125.2	120.8	198.6	171.8
Fishery	270.1	264.4	375.8	609.7
Livestock	139.8	130.9	271.1	242.0
Support Services	1028.8	1011.8	1081.2	1221.3[4/]
Input Subsidies for Padi	396.8	396.8	398.0	-
Agricultural Credit Processing and Marketing	597.5	586.1	540.9	-
Extension and Other services	34.4	28.9	142.1	-
Other Programmes of MOA	325.5	329.3	591.9	441.3
Total	7427.0	7325.0	7325.0[1/]	7566.3

2.3.2 Current Effort from 9th Malaysian Plan to Develop the Rural Community

From the economic aspect, the government of Malaysia has set some targets to elect the Government's commitment to address this issue. The income gap between Bumiputera and the ethnic Chinese will be narrowed from a ratio of 1:1.64 in 2004 to 1:1.50 in 2010 and between Bumiputera and ethnic Indians from a ratio of 1:1.27 in 2004 to 1:1.15 in 2010. The income gap between rural and urban areas will be reduced from 1:2.11 in 2004 to 1:2 in 2010. The government also aimed to increase the share of household income of the bottom 40 per cent of the population (9th Malaysia Plan, 2006).

Secondly, the transborder will be developed to enable the benefits of development projects to be enjoyed by several states at once. Thirdly, regional growth centres will be identified in several regions to spearhead development. For example, the southern Johor Economic Region and the Second Penang Bridge will boost the economic development in their region. The regional development is aimed to reach the final goal--- integrated development (9th Malaysia Plan, 2006).

The Government will improve infrastructure and facilities as well as create new economic opportunities to generate income and employment, particularly in modern agriculture, agro-based industries, and the services sector. Rural communities are highly considered by government, RM 1.2 billion is planned to be utilized to improve water supply to rural areas; RM1 billion is for rural electrification, RM2.7 billion is for rural road construction and RM900 million for construction of village roads , the government

is aimed to boost the economic development in rural area (9th Malaysia Plan, 2006).

2.4 Use of ICT in Rural Malaysia

Information and communication technology is used to develop the rural communities and has the potential to boost the economic development in the third world. However, any deployment should be backed by a positive economic activity to be sustainable (Sayandeep, et al, 2006)

There are many ICT programs have been carried out in rural Malaysia such as the smart schools, e-learning for life and so on. Among all these projects, the ones aimed to help the rural communities to find better jobs make a significant contribution to the job enlargement of the rural communities. These programs reach this goal by provide training and knowledge to the rural communities to improve their skills and knowledge to be qualified for a better job.

First one is the sm@sy project, it is started by Worldview Foundation aiming to provide ICTs access to rural areas to help these communities develop their knowledge and skills for a better living (UNESO Website, 2009).

The second one is e-learning for life. It is launched in 2002 and supported by the Asia Pacific Development Information Program (APDIP). It emphasize on the suburban and

rural areas to boost its development. More than 10,000 students, as well as the local communities and teachers get the ICT training from it (UNESO Website., 2009).

The third one is the free ICT Training Course for women in Sabah. The course is offered by Family Development and Sabah Skills and Technology Centre (SSTC) and the Federal Ministry of Women from 2003. This course covers the needs of different group of women. The one do not have job can learn the skill to find a job, the one has her career can choose the course which is beneficial to her career (Tian, 2003).

Besides all these programs, the usage of web application and mobile phones also give the rural communities the opportunities to start their career by an e-enterprise such as open an e-shop (Goddard, 1999), as well as finding jobs by new channels in a more convenient and easier way (Rangaswamy, 2006).

2.5 Previous Studies on Job Requirements among Rural Communities

The job requirement of rural communities is a meaningful topic in the research area, but not so much work has been done on it. In 1995, Michael made a job study of rural communities, according to his findings, unemployment is a big problem for the rural communities, it is experienced by those marginal to the job market such as the unskilled, disabled, the elderly, and increasingly, never-employed school leaver. He also found that the rural communities require working in the promising industry, because their

experience of working in declining traditional industries (such as agriculture) just brings them very low wages (Michael, 1995).

Another requirement research is done by Milutinovich and Tsaklanganos in 1976. From the result of their research, it is found that compared with the urban employees who require jobs with less personal interaction, rural employees are requiring jobs which demand autonomy, responsibility, interaction and skill (Milutinovich & Tsaklanganos, 1976).

The rural communities also have their requirements to the job training. Nowadays, the tuition-free job training for the rural communities has been provided; the requirement to the current job training programs is transportation to and from the training site (Hughes, 1987).

Women in rural area have played a role in the human recourse market. More women tend to go out to work to get income, but they are facing the problem of child care. According to the study done by Hughes (1987), one third of the women who had worked before will leave her job to solve the problem of child care. It is also indicated that 40% of these women are seeking for jobs which do not affect their care to the children (Hughes, 1987). In this case, the informal jobs such as housework for their neighbours and friends are good choice to them according to the research done by Williams in 2001.

Besides that, another research has been done on job requirements on women in rural areas by Lo in 1990. They require for equality of job opportunity in different gender to get the equal chance to get a job without the gender discrimination bases.

2.6 Summary

This chapter make a review of the related information of this study. The definition and general information of rural communities are introduced first. They are poor and need to find better job except the traditional jobs in farming sector, so jobs in the non-farm sector are discussed to offer more information on their job opportunities. Since the development of rural areas is boost by the government, the effort to develop rural areas from government is presented in two aspects: previous effort and current effort. At last, the information technology used in rural areas is discussed as well as related works.

In the next chapter, a methodology used in this study will be discussed.

CHAPTER THREE

METHODOLOGY

According to the problem statement, the lack of the data about rural communities' job requirement was what the researcher wanted to solve. Therefore, in this section, the researcher described how the data was acquired and prepared. This chapter is a about methodology that contains two major steps: (i) data gathering and data analysis, and (ii) information system development. A case study approach was chosen with the focus is on one small village in Changlun, Kedah.

3.1 Data Gathering

The data was collected by conducting a survey on the community in a small village in Changlun. The respondents were all the races, genders and background, their age needed to between 18 and 50.

The questionnaires were distributed to the rural people in Changlun; face to face interview were conducted to get the in-depth information. The researcher recorded the information he got from the interview if he thought it was important. The questions in the

questionnaires contained the requirements from a wide variety such as expected salary, preferred industries, department and location, annual holiday expected, specific training they need and so on.

3.2 Data Analysis

The Statistical Package for the Social Sciences (SPSS) system was used to analyze the data. With the help of software packages, statistics can be dealt with very quickly. By entering the answers from each respondent, the result was calculated fast and correct. Answers of every question were presented in table and pie chart to show the exact frequency and display them in a vivid way.

3.3 System Development

In order to develop a good system to make the information in a more organized way, the researcher applied a Waterfall Methodology. This methodology had been introduced for a long time (Vlaran, 1997), as time goes by, many kinds of new waterfall methodology derived from it (Worlff, 1989), so the researcher selected the most suitable one. This one was chosen because its four steps were very simple and clear for the researcher to follow, and these steps matched the needs of the development of the proposed prototype, besides

that, there were many previous research had been done by using this methodology, so the researcher could refer to the previous study when he faced problem.

According to Luciano (2005) the Waterfall Model was an engineering model designed to be applied in software development, it started from requirements analysis and ended with the verification (Yamamichi, et al, 1996).The main idea that derived from it is that the different development stages follow a sequence:

1. Requirements

2. Design

3. Implementation

4. Verification

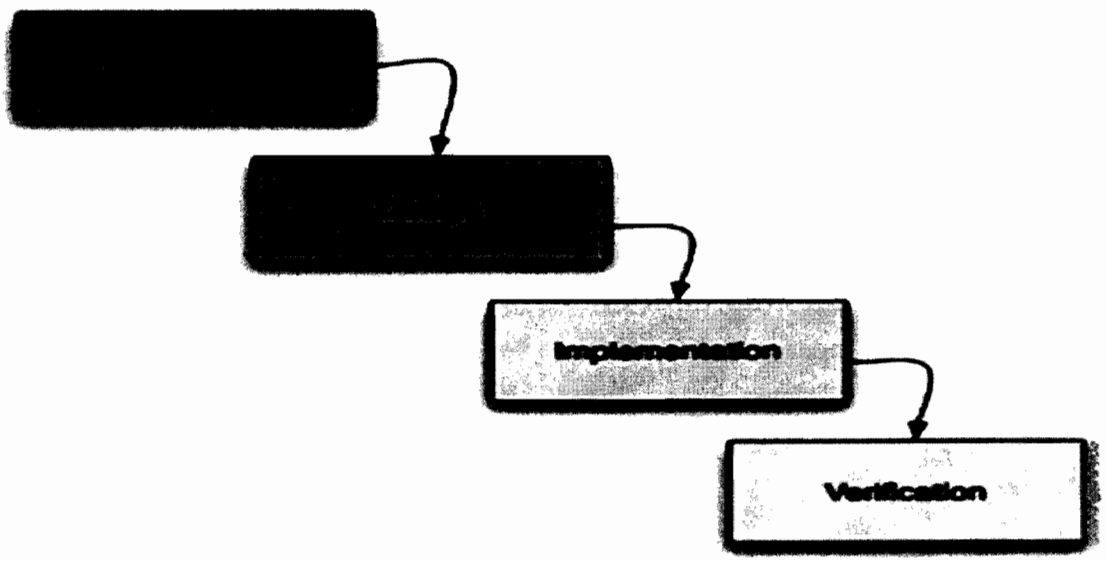


Figure 3.1: The waterfall methodology (Luciano, 2005)

Phase 1: Requirement

In this phase, the requirement of this system was decided. The researcher decided it after making a literature review of the relevant work and a comparison between similar systems. The data gathered from the rural communities was used to understand their unemployment problem deeply. This information became the requirements for the system design.

Phase 2: Design

The researcher designed the prototype of the system according to the requirements listed in the last phase. The system stored the job requirements of the rural communities in different categories such as the payment, welfare, leave, working place and so on to ensure the job requirements of the rural communities is organized and clear to others, so in this phase, the categories were listed, the distribution of every categories in the homepage was also designed. Since this prototype saved and displayed the data collected, there were two main functionalities in this prototype, the arrangement of functionality was also designed in this phase.

Phase 3: Implementation

In this phase, the design became fact with the usage of the Information Technology. The PHP, HTML and Mysql were used to develop the structure of this system (Chung, 2003). The HomeSite editor, photoshop, APPSERVE (virtual local server) and other technology were used to develop the prototype (Singh & Slous, 1998). The data of the job requirements among the rural communities was put into suitable area in database, the key words in the homepage leaded people to find the data they wanted in an easy way. The security of this prototype was well designed to protect the database not be harmed by the hackers.

Phase 4: Verification

No system could be perfect when it was fist build, so verification was needed in all the development (Becker & Berkemeyer, 2002). In this phase, the usability of this system was evaluated.

Usability was the capability of the software product to be understood, learned, used and attractive to the user, when used under specified conditions (Conte, et al, 2007).

According to Whitehead (2006), usability testing was the most effective way to asses a site's usability. There were two methods to evaluate the usability of the prototype: (1) Usability Inspections - evaluation methods based on Experts' Analyses; and (2) Evaluation Methods involving User Participation, such as: Laboratory studies, Think Aloud, Cooperative Evaluation, Protocol Analysis, Post-task Walkthroughs, Interviews and Questionnaires, and Physiological measurement (Conte, et al, 2007).

In this study, the researcher chose the Evaluation methods involving User Participation, so usability problems were discovered by means of observation and interaction with users, while they performing tasks or providing suggestions about the interface design and its usability.

Usability evaluation was simple in this study compared with other system since this system just focus on saving and displaying the job requirements among the rural communities. There were five usability criteria to be evaluated in this study as shown in Table 3.2. Underatandability and Learnability were the basic criteria to evaluate the prototype, Operability and Compliance were most considered for the administrator while attractiveness was for the users.

Table 3.2: Usability evaluation criteria (Conte, et al, 2007).

Criteria	Explanation
Understandability	The system is easy to be understood, the tasks are not so complex to make the users confused.
Learnability	It is easy to learn to use the functions in this prototype; the learning does not take a lot of time and can be remembered easily.
Operability	The application of the prototype is operable, its easy for people to access or make daily operation of it.
Attractiveness	This web can attract the users to make use of it, page design, music, pay layout is favorable.
Compliance	Orders from the users are carried out by the prototype compliantly.

The information got from the test can offer the researcher two aspects of information: a) what need to be correct in this system; b) what can be added to improve this system. According to the two aspects of information, the researcher modified this system to get better performance.

3.4 Summary

This chapter introduced the methodology used in this study. Due to the aim of this study which was collecting, analysis and save the information of job requirements among the rural communities, the methodology contained two steps. First, data were collected by questionnaires and interview, secondly, data collected was analyzed by SPSS, finally, the result needed to be saved in an information system, so the methodology to develop the system was chosen: the waterfall methodology. It contained four stages: 1) Requirements; 2) Design; 3) Implementation; and 4) Verification.

The requirements analysis leaded to the design of the prototype, then the design was carried out in the implementation phase; finally, verification was done by the usability evaluation and leaded to the final prototype.

In the next chapter, the system design and analysis will be made to introduce the information system to save data about job requirements of the rural communities in one small village in Changlun, Kedah. Diagrams are used to analysis the system.

CHAPTER FOUR

ANALYSIS AND SYSTEM DESIGN

4.1 Introduction

This chapter will discuss about the analysis and system design of the study. First it will present the findings and the analysis of the survey and second is about the design of a prototype of job requirement information system. The list of functional requirements and non-functional requirements are presented to present what the system will do and how it will do it. The diagrams are used to show every use case in this system.

4.2 Findings and Analysis of the Survey

The results of analysis done by the SPSS system are shown in this part. The questions in the questionnaires which are analyzed include two parts: the background of the respondents and job requirement of the respondents. The background of the respondents includes their education level and ICT literature.

4.2.1 Background of the Respondents

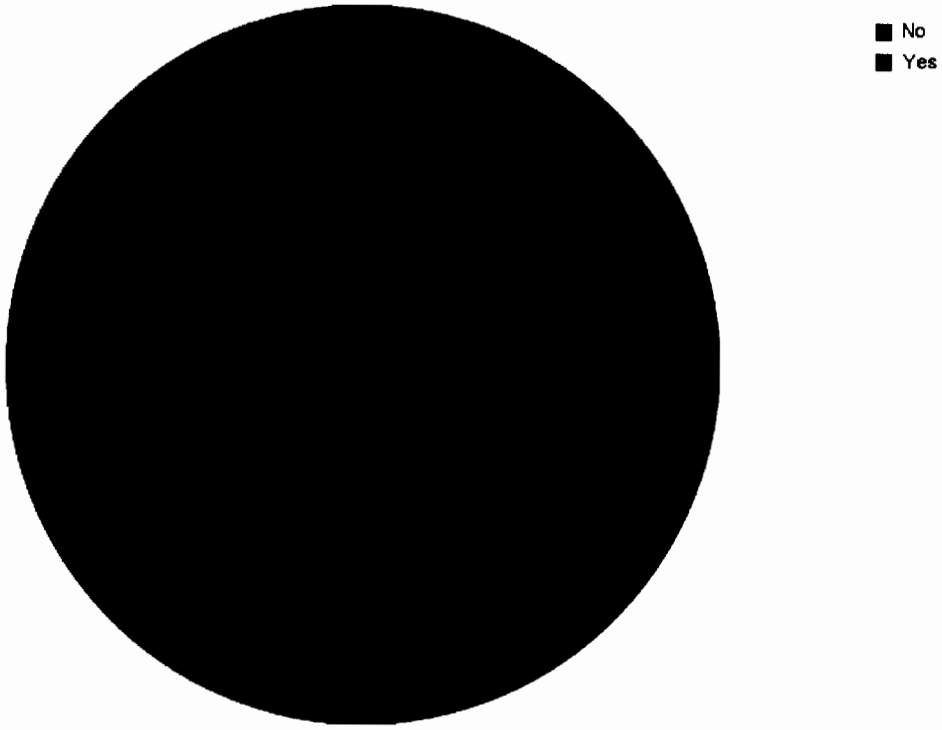


Figure 4.1: Have computer

Table 4.1: Do you have a computer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	13	61.9	61.9	61.9
	Yes	8	38.1	38.1	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 61.9% of respondents choose the option of no, while 38.1 % of respondents choose yes. This result indicates that there is still a large space for the ICT popularization in rural communities.

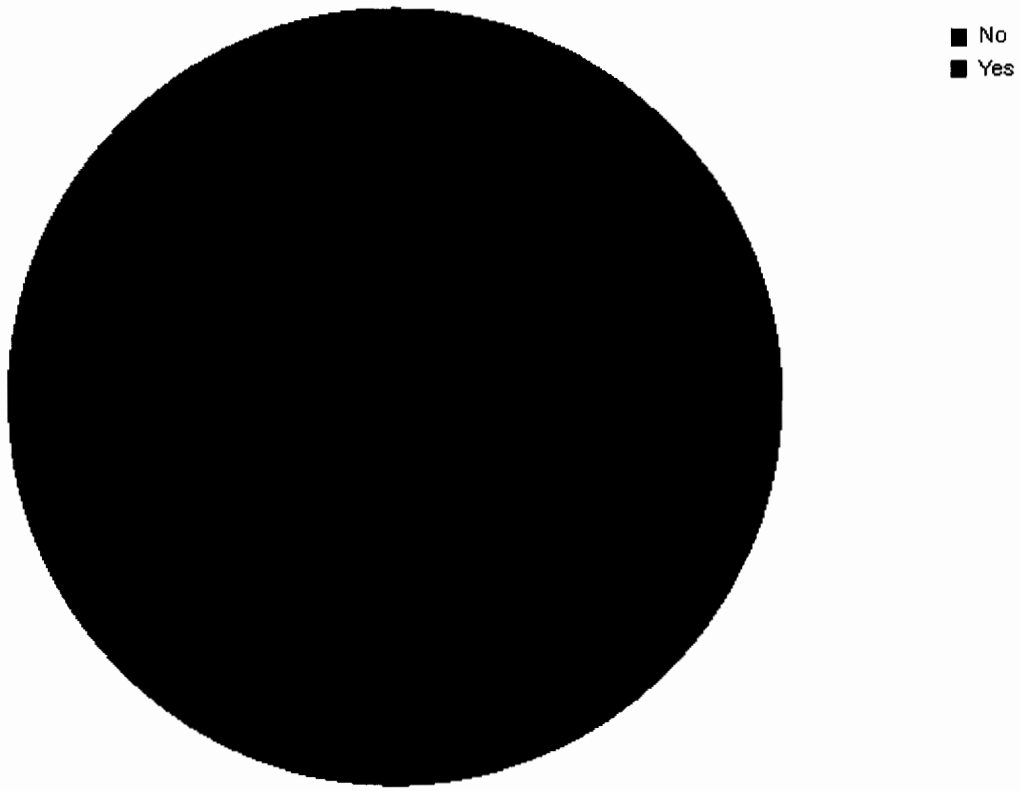


Figure 4.2: Use computer

Table 4.2: Have you ever used computer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	23.8	23.8	23.8
	Yes	16	76.2	76.2	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 23.8% of respondents choose no, while 76.2 % of respondents choose yes, it seems that most of them has ever used computer, but the level still very low.

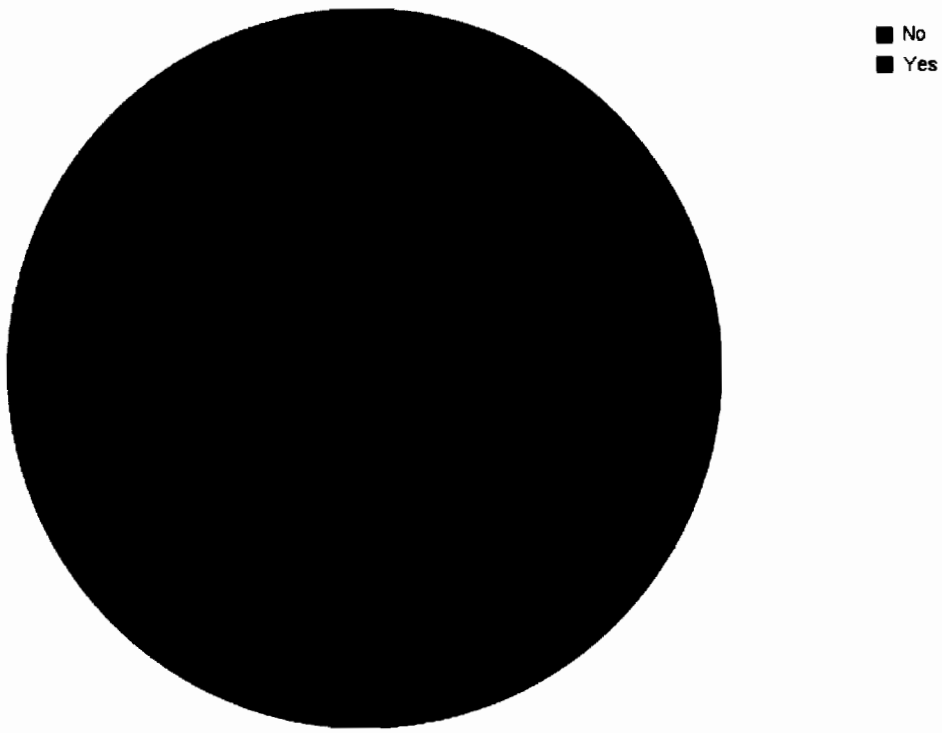


Figure 4.3: Use Internet

Table 4.3: Have you ever used internet?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	33.3	33.3	33.3
	Yes	14	66.7	66.7	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 33.3% of respondents choose no, while 66.7% of respondents choose yes. If one never use internet, we can not expect that he can get information from outside easily, which has negative impact to find a job.

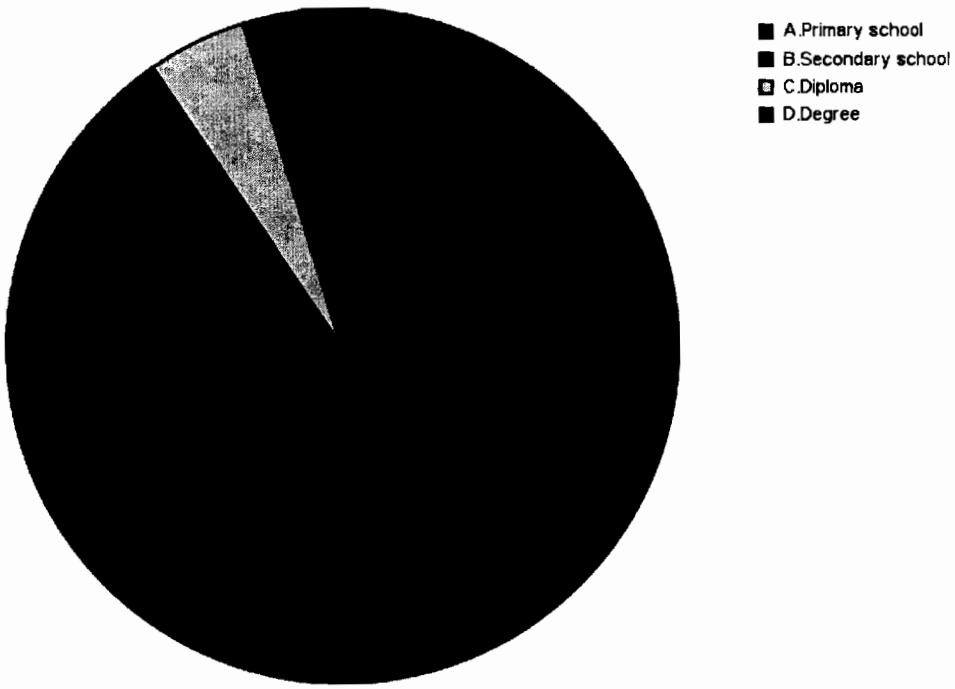


Figure 4.4: Highest education level

Table 4.4: What is your highest education level?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A.Primary school	1	4.8	4.8	4.8
	B.Secondary school	18	85.7	85.7	90.5
	C.Diploma	1	4.8	4.8	95.2
	D.Degree	1	4.8	4.8	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 4.8% of respondents choose primary school, which is the same with diploma and degree, while 85.7% of respondents choose secondary school. Without good education, it's hard for one to find a good job.

4.2.2 Job Requirement of the Respondents

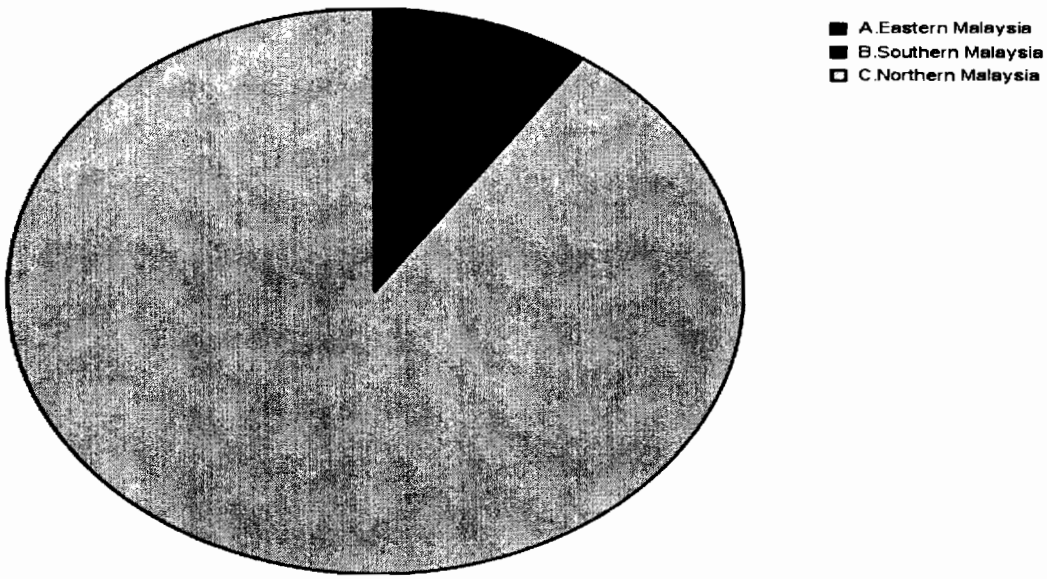


Figure 4.5: Desired working place

Table 4.5: Where do you want to work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A.Eastern Malaysia	1	4.8	4.8	4.8
	B.Southern Malaysia	1	4.8	4.8	9.5
	C.Northern Malaysia	19	90.5	90.5	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 90.5% of respondents choose Northern Malaysia, while4.8 % of respondents choose Eastern Malaysia and Southern Malaysia. Since all the respondents are from Northern Malaysia, it indicates that most rural communities do not want to go far to work.

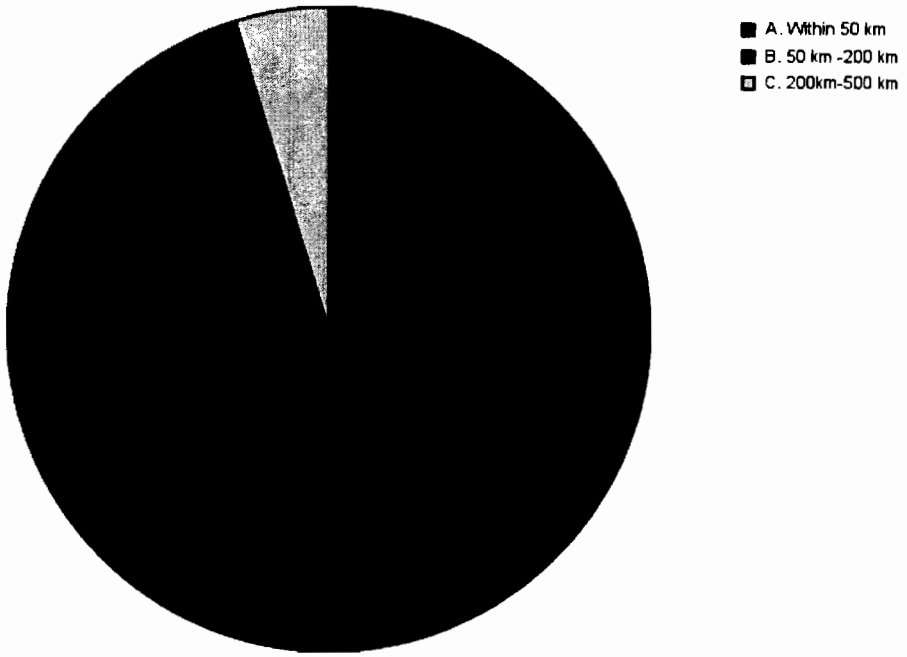


Figure 4.6: Accepted distance between work and home

Table 4.6: How long distance between work and your home can be accepted by you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Within 50 km	19	90.5	90.5	90.5
	B. 50 km -200 km	1	4.8	4.8	95.2
	C. 200km-500 km	1	4.8	4.8	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 90.5% of respondents choose within 50 Km, while 4.8% of respondents choose the range between 50 Km and 200 Km, and 4.8% of respondents choose the range between 200 Km and 500 Km. This result shows that rural communities require jobs near his home.

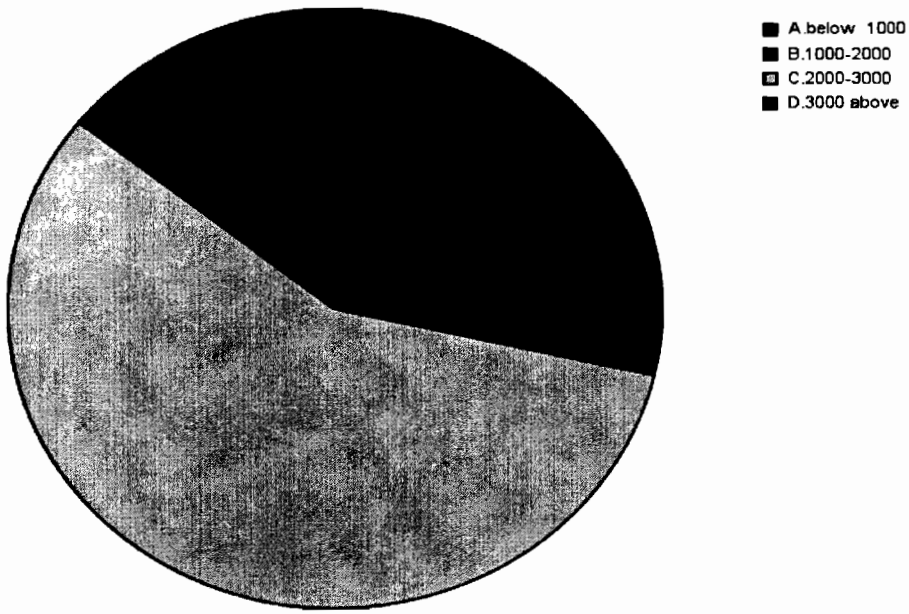


Figure 4.7: Expected salary

Table 4.7: How much is your expected salary?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A.below 1000	1	4.8	4.8	4.8
	B.1000-2000	5	23.8	23.8	28.6
	C.2000-3000	12	57.1	57.1	85.7
	D.3000 above	3	14.3	14.3	100.0
	Total	21	100.0	100.0	

According to the survey result, there are4.8 % of respondents choose salary below RM 1000, while 23.8% of respondents choose salary between RM 1000 and RM 2000. There are 57.1% of respondents expect salary between RM 2000 and RM 3000, and 14.3% expected salary more than RM 3000. It shows that most of rural communities requirement salary more than RM 2000.

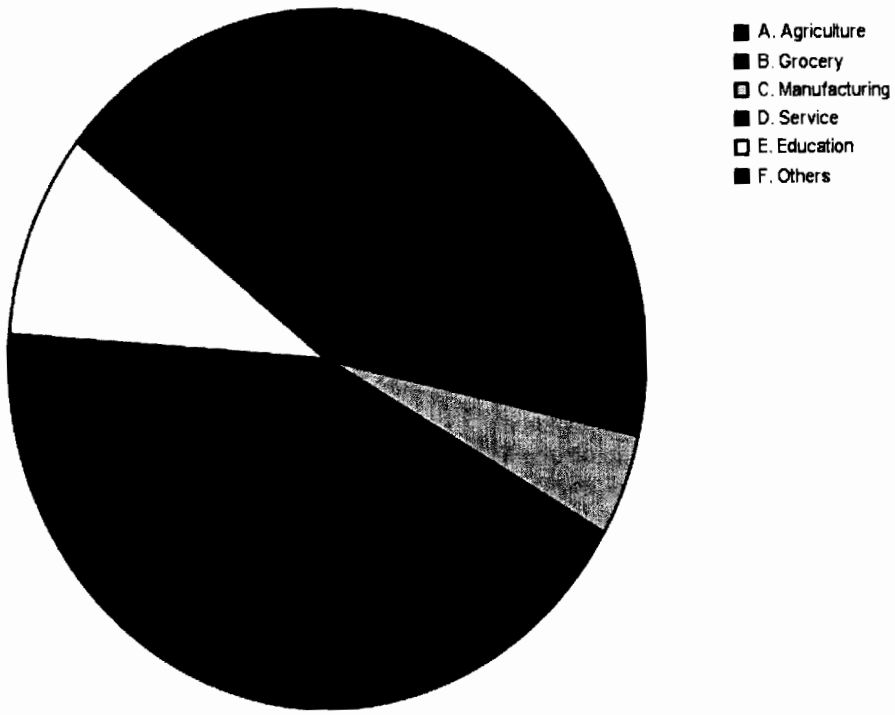


Figure 4.8: Preferred industry

Table 4.8: In which industry do you want to work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Agriculture	2	9.5	9.5	9.5
	B. Grocery	4	19.0	19.0	28.6
	C. Manufacturing	1	4.8	4.8	33.3
	D. Service	9	42.9	42.9	76.2
	E. Education	2	9.5	9.5	85.7
	F. Others	3	14.3	14.3	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 9.5% of respondents choose agriculture , 19 % of respondents choose grocery, 4.8% of respondents choose manufacturing, 42.9 % of respondents choose service, 9.5% of respondents choose education, while 14.3% of respondents choose other industries. This result indicated that the preferred industry of rural communities is quite centralized since nearly half respondents choose the service industry. This may be because that they do not have good qualifications to work in professional fields.

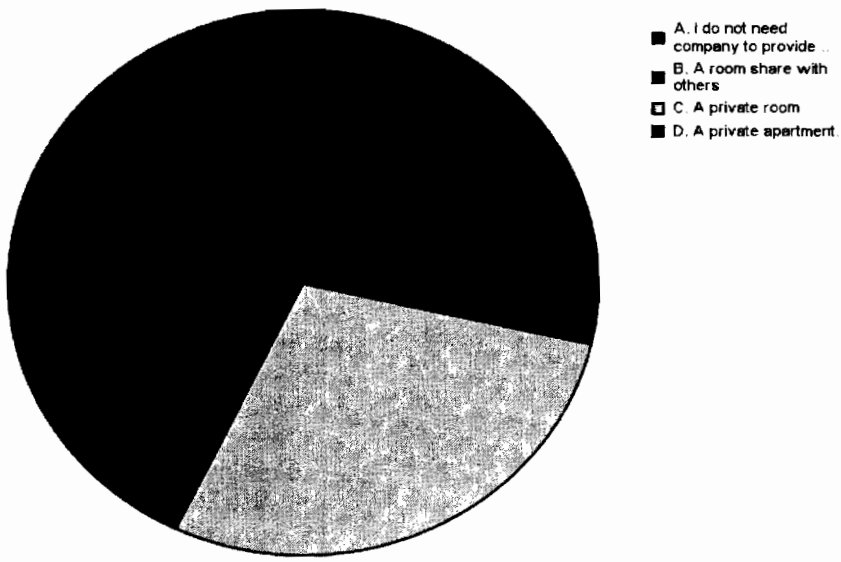


Figure 4.9: Requirement to the accommodation

Table 4.9: What is your requirement to the accommodation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. I do not need company to provide ..	5	23.8	23.8	23.8
	B. A room share with others	1	4.8	4.8	28.6
	C. A private room	6	28.6	28.6	57.1
	D. A private apartment.	9	42.9	42.9	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 23.8% of respondents do not need company to provide accommodation, 4.8 % of respondents require a room share with other, 28.6% of respondents require a private room, while 42.9% of respondents require a private apartment. The result shows that the requirement of accommodation is quite high among the rural communities.

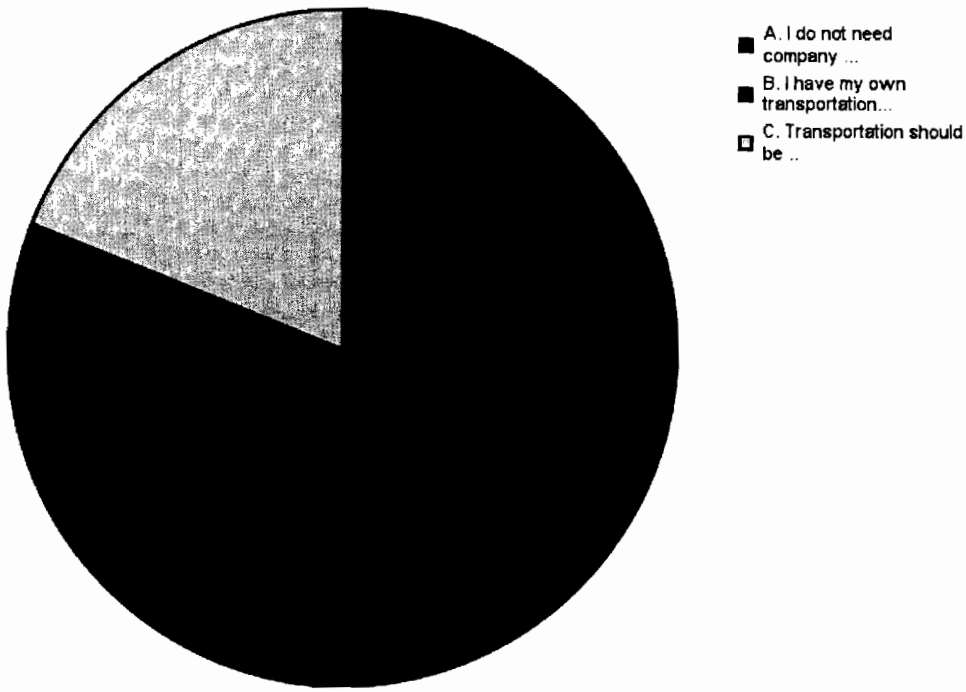


Figure 4.10: Requirement for transportation

Table 4.10: What is your requirement for transportation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. I do not need company ...	3	14.3	14.3	14.3
	B. I have my own transportation...	14	66.7	66.7	81.0
	C. Transportation should be ..	4	19.0	19.0	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 14.3% of respondents do not need company to provide transportation, 66.7% of respondents state that they have their own transportation, while 19% of respondents require transportation to be provided by the company. From

the figure above, it shows that most of respondents do not have requirement of transportation.

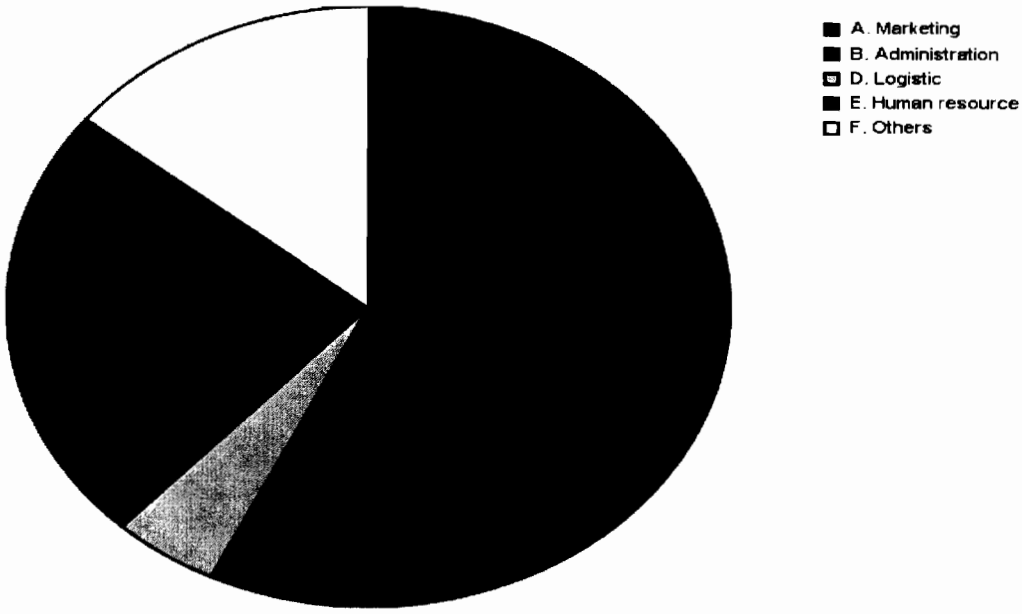


Figure 4.11: Preferred department

Table 4.11: In which department do you want to work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. Marketing	6	28.6	28.6	28.6
	B. Administration	6	28.6	28.6	57.1
	D. Logistic	1	4.8	4.8	61.9
	E. Human resource	5	23.8	23.8	85.7
	F. Others	3	14.3	14.3	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 28.6% of respondents choose to work in marketing department, 28.6% of respondents want to work in the administration department, only 4.8% of respondents want to work in the logistic department, 23.8% of respondents want to work in human resource department, while 14.3% of respondents choose to work in other department. From the figure above, it shows that most of respondents want to work in the marketing, administration and human resource department.

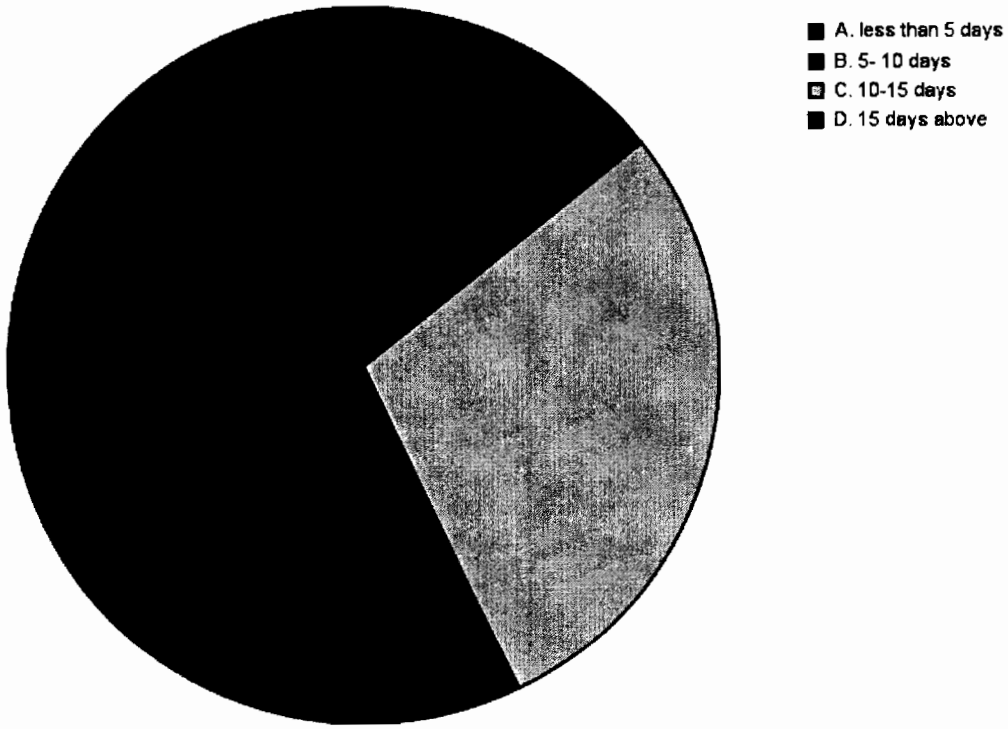


Figure 4.12: Expected annual holidays

Table 4.12: How many days for annual holiday do you want?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A. less than 5 days	1	4.8	4.8	4.8
	B. 5- 10 days	2	9.5	9.5	14.3
	C. 10-15 days	6	28.6	28.6	42.9
	D. 15 days above	12	57.1	57.1	100.0
	Total	21	100.0	100.0	

According to the survey result, there are 4.8% of respondents choose annual holiday less than 5 days, 9.5% of respondents require annual holiday between 5 and 10 days, 28.6% of respondents desire annual holiday between 10 and 15 days, while 57.1% of respondents choose annual holiday more than 15 days. The data shows that the rural communities have a strong demand for the annual holiday.

4.3 Requirements

Specific and precise requirements are very necessary to specify the functions of this system (Kaindl, et al, 1997). Requirements are documented needs of functionalities which the system is compulsory to achieve (Bitpipe, 2009).

There are two kinds of requirements:

1- The functional requirement.

2- The non-functional requirement.

4.3.1 Functional Requirement

Functional requirements are what the system should do (Wikipedia, 2009), in practice, functional requirements are incomplete and imprecise (Kaindl, et al, 1997).

4.3.2 Non Functional Requirement

Non-functional requirements are different from functional requirements because it does not tell what the system is compulsory to do but it will tell how the system will do it (Chung, et al, 1999).

Listed below are the functional requirements and non-functional requirement of the system. In the priority column, the following short hands are used:

- 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 4.13: Functional requirements

No.	Requirement ID	Requirement Description	Priority
	JRIS-01	**Login**	
1.	JRIS_01_01	Admin can key in the user name and password	M
2.	JRIS _01_02	If user key in wrong user name or password the system will display error Message and ask to re-enter the user name and the password again	M
	JRIS _02	**Registration**	
3.	JRIS _02_01	User can click on register.	M
4.	JRIS _02_02	System will display form need to be filled.	M
5.	JRIS_02_03	User may fill the form and specify the membership type and click register system will save the info and assign user name and password for user .	O
	JRIS _03	**Edit My Account**	
6.	JRIS _03_01	User can click on edit my account and system will display for the user his/her basic info.	M
7.	JRIS _03_02	User may update his/her info and click on Edit an system will save the change.	M
	JRIS_04	**Fill in Questionnaire**	
8.	JRIS _04_01	When membership is farmer the farmer can click on fill in questionnaire.	M
9.	JRIS_04_02	System will display for the user questionnaire need to be answered by farmer. Farmer may answered the questions and click on send and the system will save the answere	D

	JRIS_05	**Edit Questionnaire**	
10.	JRIS _05_01	When villager fill the questionnaire once he/she can access to his/her profile and update the questionnaire info.	M
11.		Farmer can click on edit questionnaire and system will display for the farmer the old answers for the questionnaire and farmer may fill in the new info and click on send and the change will be saved.	
	JRIS_05	**Search**	
12.	JRIS_05_01	When the membership type is company, company can click on search and specify several criteria for searching and click send.	O
13.		System will retrieve for the company all those memberships who conformed to the criteria	M

Table 4.14: Non-functional requirement

No.	Requirement ID	Requirement Description	Priority
	JRIS_07	**Reliability issues**	
14.	JRIS_07_01	The proposed system could be have the ability of save hundreds of recorders for villager .	M
	JRIS_09	**Security**	
15.	JRIS_09_01	The system should be able to handle virus threats from outside world.	M

4.4 Design

The design of this system is shown by the use case diagram, sequence diagram, class diagram and collaboration diagram.

4.4.1 Use Case Diagram

A use case diagram describes the use cases related to a system, it contain the name of the use case, the actors and the relationship between both the use cases and the actors and use cases (St'ephane, 2007). Mostly, the use case approach is used in industrial applications (Lee & Cha, 1998). It has two main components: the actors and use cases (Fowler & Scott, 2000). Use case diagrams are very useful for the management to know the software for it presents a graphical overview of the functionalities in the system (Ambler, 2008). For this system, the main functions are presented below.

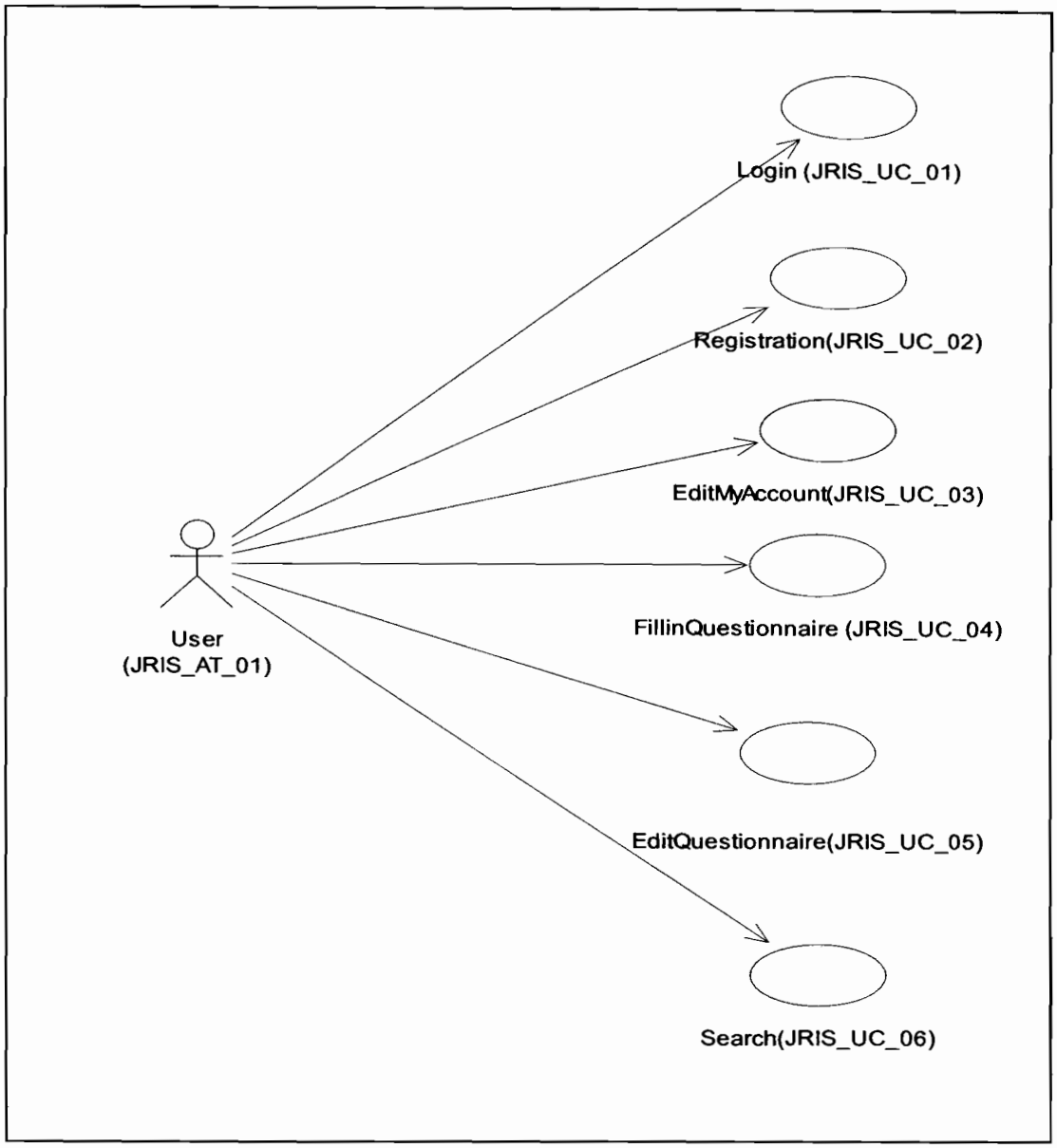
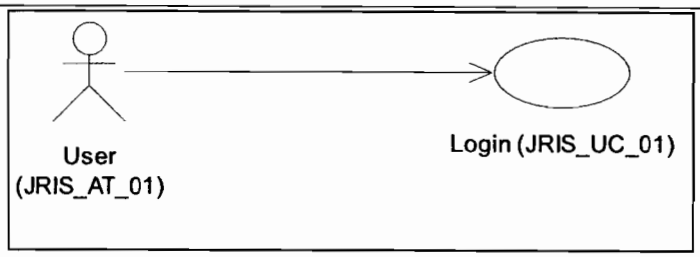


Figure 4.13: Use Case Diagram

4.4.2 Use Case Specification

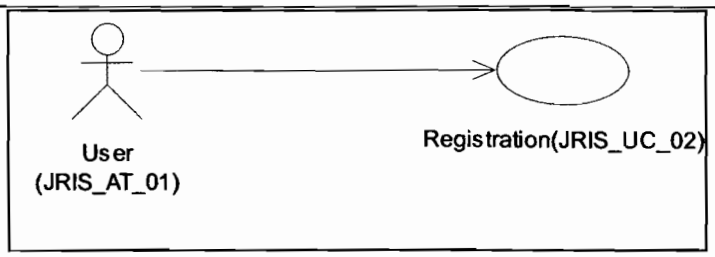
Every specific function in this system will be presented by the use case diagram.

Table 4.15 Use Case Login (UC_01)

Use case Login	
Brief Description	The use case is initiated by the user of the system whether farmer or company at the time he/she wants to enter the system. She/he provides valid user name and password to gain access next use case.
Pre-Conditions	Not applicable.
Characteristic of Activation	Event Driven (on user's demand whether farmer or company).
Flow of Event	**Basic Flow** • The use case begin when the user enter the login interface. • The system shall display login interface form for authorization which includes the user's user name and

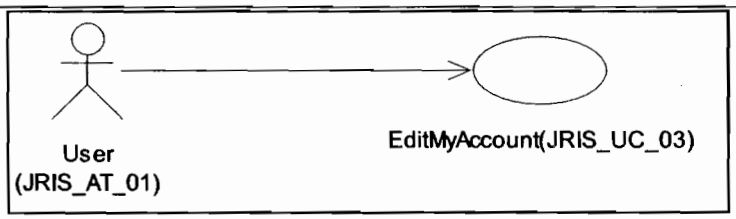
	password. • The user enters his/her user name and password for authorization after which "ok" button is clicked. • Valid authorization activates next use case, incase administrator name or password Entered is invalid (E-1: Invalid Login Message).
	Alternative Flow • The farmer can exit the login interface at any time. • In case of several denial of authentication for logi (E-2: Verify User name and password). **Exceptional Flow** • E1: Invalid Login Message: The system shall display "please enter valid user name and password".
Post-Conditions	• Login Authenticated • All the other use cases become active. • Different passwords and user name will generate different authorization for users and activate different use cases.
Rule(S)	Not applicable.
Constraint(S)	User who has user name and password can have access to login.

Table 4.16: Use Case Registration (UC_02)

Use case Registration	
Brief Description	The use case is initiated by the user at the time he/she wants to Become member in this website.
Pre- Conditions	Successful login.
Characteristic of Activation	Event Driven (on user's demand).
Flow of Event	**Basic Flow** • The use case begin when the user want to become as member in that website. • User could click on Registration and system will display for the user table need to be filled with his/her basic info. • User may fill in the table and determine kind of membership whether company or farmer. • After the info has been filled the user make click

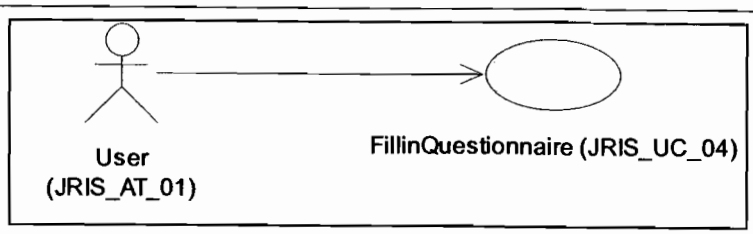
	register and system will save the info in the database and his/her account will be active. **Alternative Flow** The admin cans logout any time. **Exceptional Flow** Not applicable.
Post-Conditions	User can get membership of this website.
Rule(S)	Not applicable.
Constraint(S)	Not applicable.

Table 4.17: Use Case Edit my account (UC_03)

Use case Edit my account	
Brief Description	The use case is initiated by the member of this website at the time he/she wants to update his/her personal info.

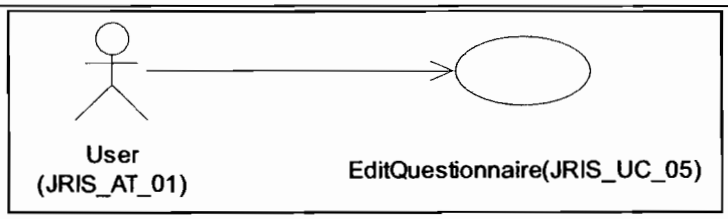
Pre- Conditions	Successful login.
Characteristic of Activation	Event Driven (on user's demand whether farmer or company).
Flow of Event	**Basic Flow** • This use case begin when the user want to modify his/her personal info. • User may click on Edit my account and system will display for the user the table that contains his/her basic info. • User can modify the contained info and click on Edit. • System will update the database and save the changes. **Alternative Flow** The user cans logout any time. **Exceptional Flow** Not applicable.
Post- Conditions	User can modify his/her personal info.
Rule(S)	Not applicable.
Constraint(S)	Not applicable.

Table 4.18: Use Case Fill in Questionnaire (UC_04)

Use case Fill in Questionnaire	
Brief Description	The use case is initiated by the farmer at the time he/she wants to fill in the questionnaire.
Pre- Conditions	• Successful login. • Membership type as farmer.
Characteristic of Activation	Event Driven (on farmer's demand).
Flow of Event	**Basic Flow** • The use case begin when the farmer want to fill in the questionnaire • User may click on fill questionnaire and system will display for farmer questionnaire contain several questions need to answere from the farmer. • After the questions have been answered the farmer ma click send and the form will saved. • **Alternative Flow**

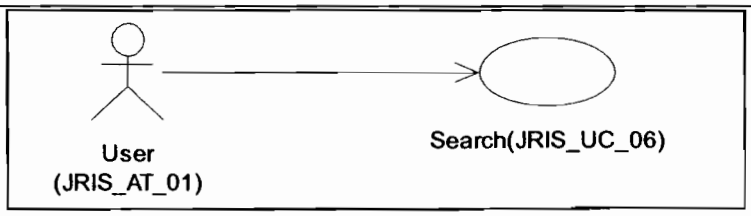
	The user cans logout any time. **Exceptional Flow** Not applicable.
Post- Conditions	Farmer can apply the form.
Rule(S)	Not applicable.
Constraint(S)	Not applicable.

Table 4.19: Use Case Edit questionnaire (UC_05)

Use case Edit questionnaire	
Brief Description	The use case is initiated by the farmer at the time he/she wants to modify his/her questionnaire.
Pre- Conditions	• Successful login. • Membership type as farmer. • Member have been applied the template once before.
Characteristic of Activation	Event Driven (on farmer's demand).

Flow of Event	**Basic Flow** This use case begin when the farmer click on Edit Questionnair The system shall display the questions template and farmer shal modify his/her info and click on send. System will save the new info and update the database. **Alternative Flow** The user cans logout any time. **Exceptional Flow** Not applicable.
Post-Conditions	Farmer updated his/her info.
Rule(S)	Not applicable.
Constraint(S)	Not applicable.

Table 4.20: Use Case Search (UC_06)

Use case search	
Brief Description	This use case initiated by the company when they want to Find info about people for employment purpose.

Pre- Conditions	• Successful login. • Membership type as company.
Characteristic of Activation	Event Driven (on company's demand).
Flow of Event	**Basic Flow** • The use case begins when the company wants to find out info about persons for employment purpose. • Company may click on search and system will display for the company search table contain several criteria. • After the process of specified the criteria have been finished the company may click on search and system will retrieve for the company the result depending on the specified criteria. **Alternative Flow** The user cans logout any time. **Exceptional Flow** Not applicable.
Post- Conditions	Admin update his/her info.
Rule(S)	Not applicable.
Constraint(S)	Not applicable.

4.4.3 Sequence Diagram

Sequence diagram is a clear way to know the order of the functionalities in the system. It is very useful in the design phase and can be considered as the most popular UML artifact for modeling, within it, the sequence in the system is presented (Ambler, 2008).

4.4.3.1 Login

In this step, the user should insert his user name and password to active the next use case.

The sequence of this process, the system displays the main functionalities in this page, login system will check the user name and password to see whether it is valid , if yes, it will active the next use case, if not, the system will ask the user to re-enter the user name or the password. It is shown in Figure 4.14.

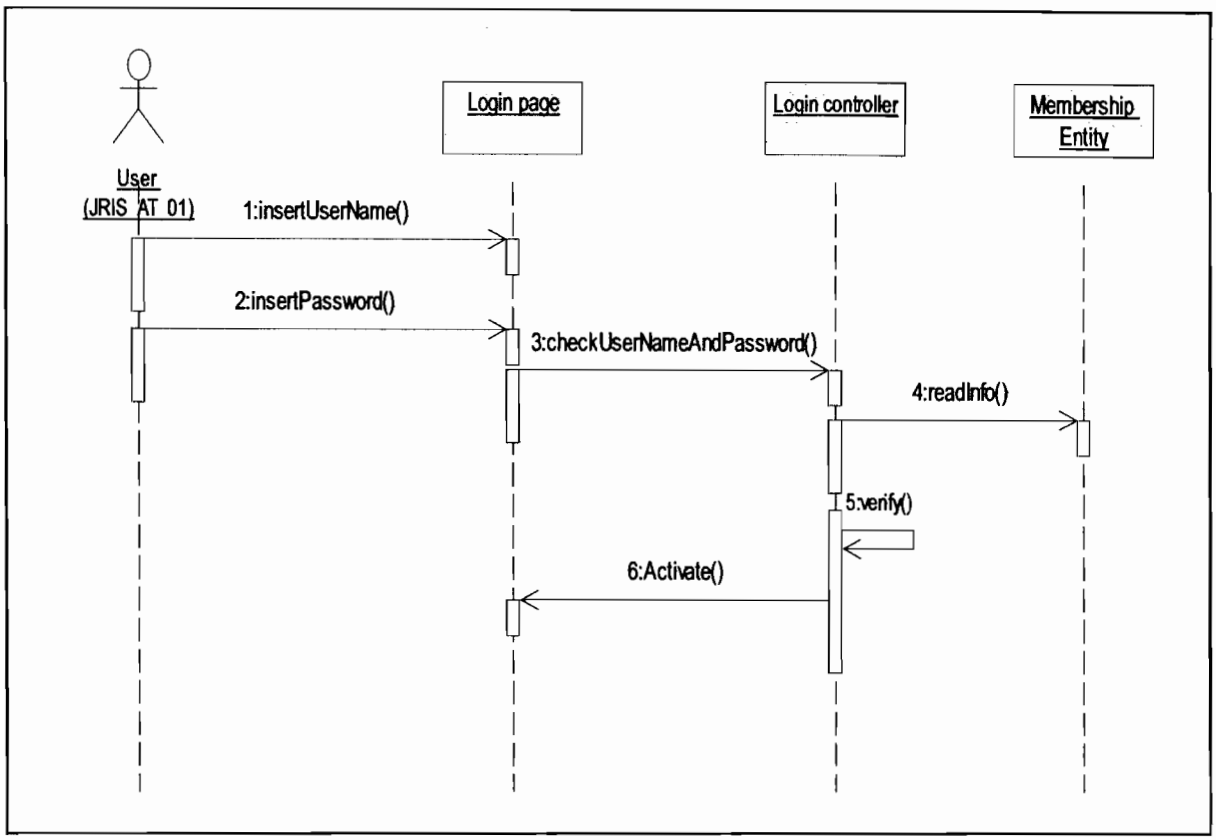


Figure 4.14: Sequence Diagram for login

4.4.3.2 Registration

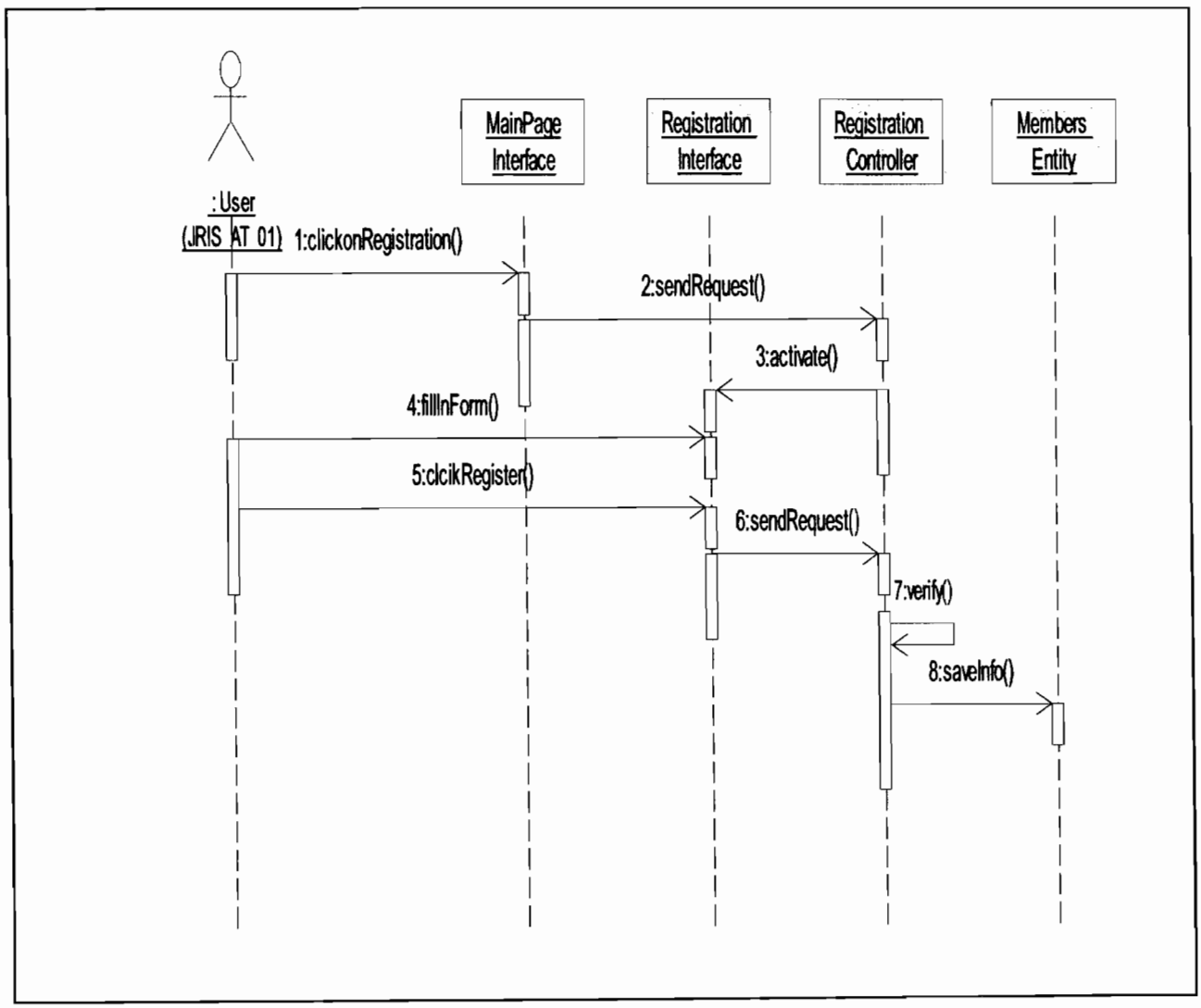


Figure 4.15: Sequence Diagram Registration

4.4.3.3 Edit Account

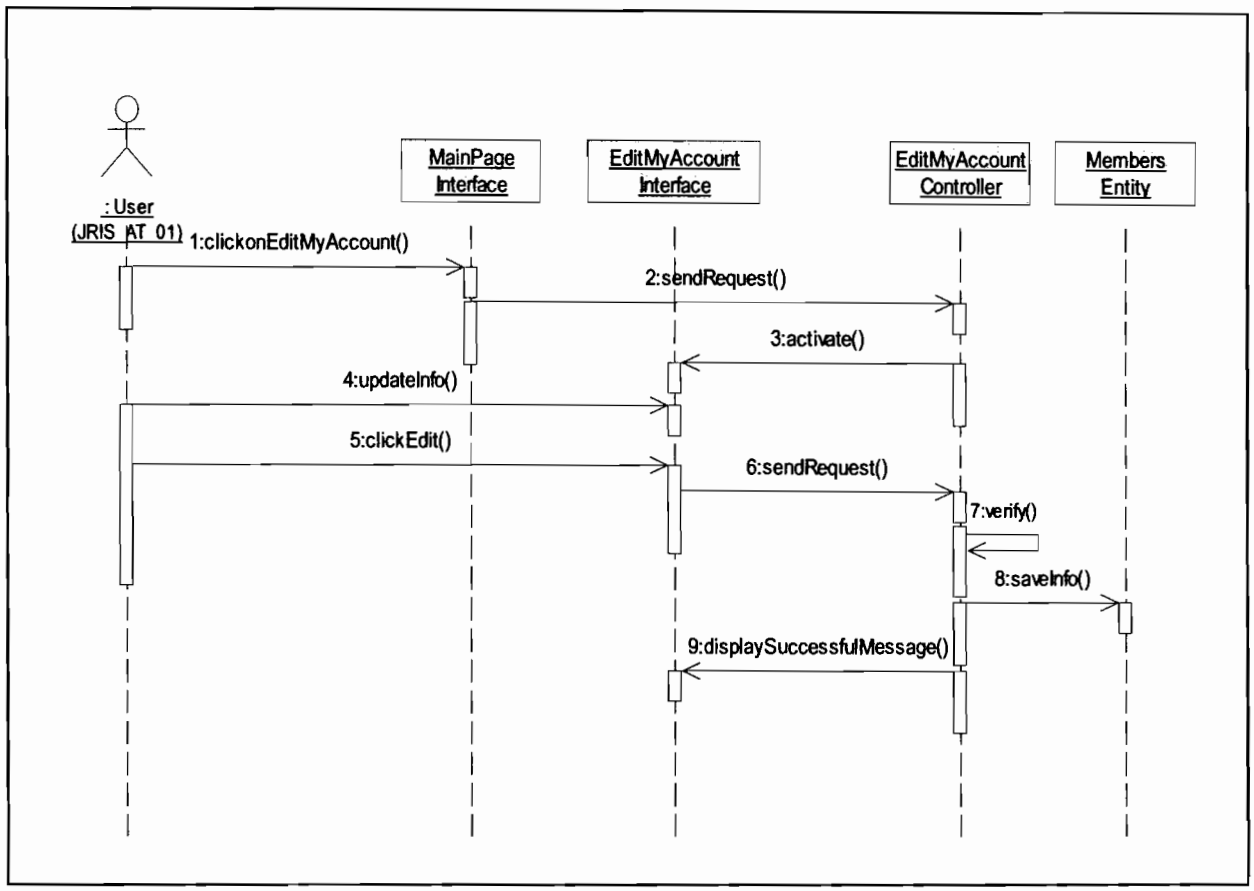


Figure 4.16: Sequence Diagram Edit account

4.4.3.4 Fill in questionnaire

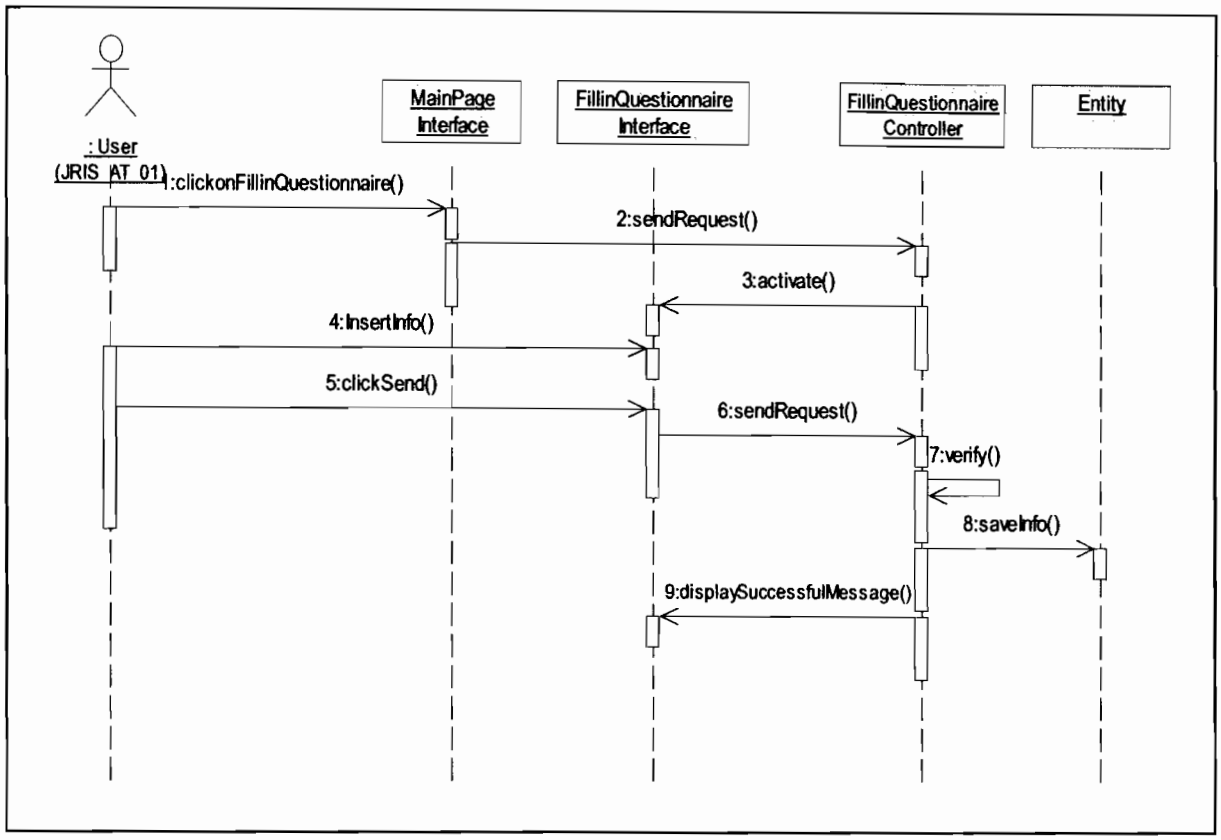


Figure 4.17: Sequence Diagram fills in questionnaire

4.4.4. Collaboration Diagram

Collaboration diagrams belong to a group of UML diagrams called Interaction Diagrams. Collaboration diagrams, like Sequence Diagrams, show how objects interact over the course of time. However, instead of showing the sequence of events by the layout on the diagram, collaboration diagrams show the sequence by numbering the messages on the diagram. This makes it easier to show how the objects are linked

together, but harder to see the sequence at a glance (Website of Visualcase, 2009). Collaboration diagrams for the main functions of the system are shown in figures bellow:

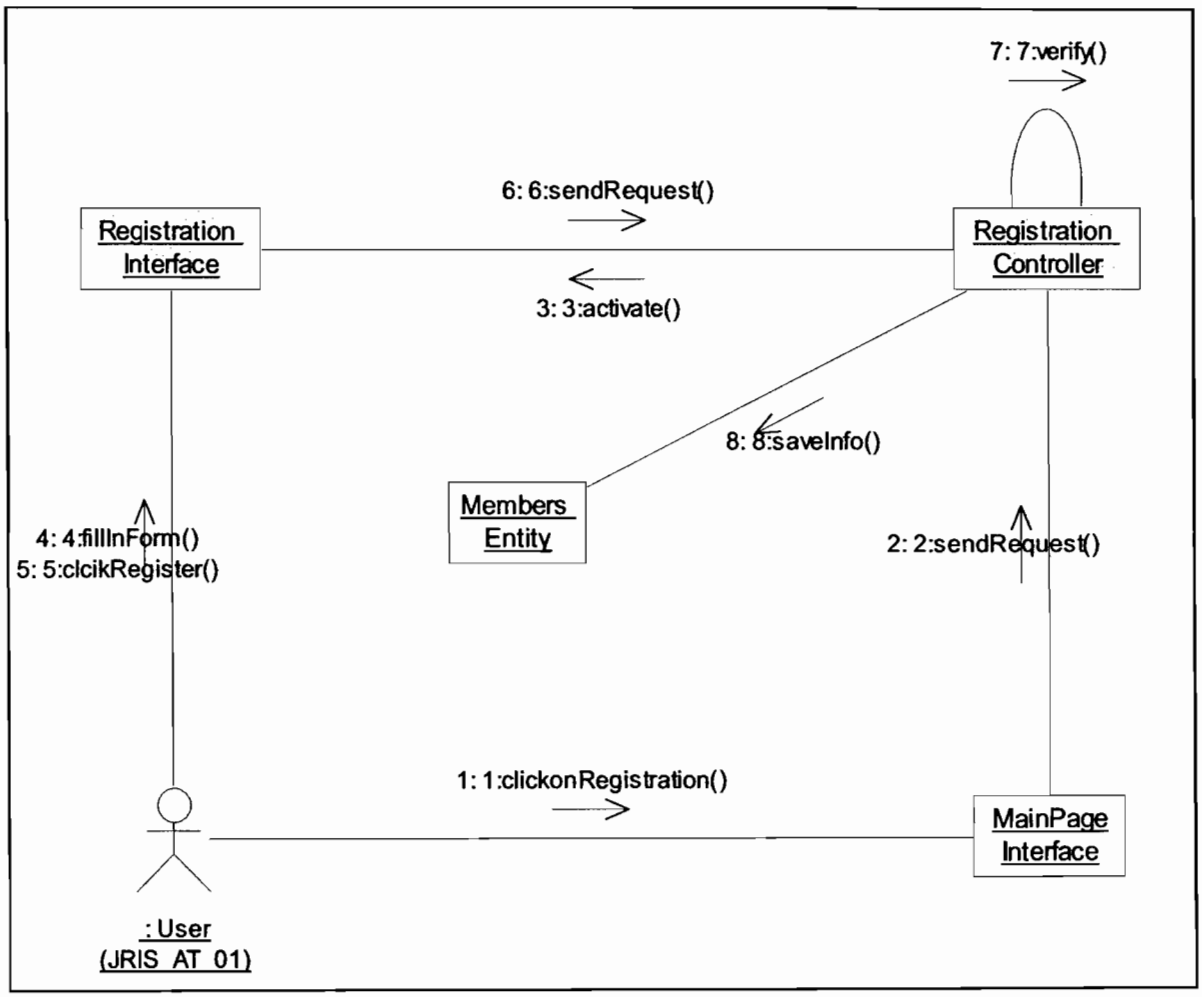


Figure 4.18: Collaboration diagram for Registration

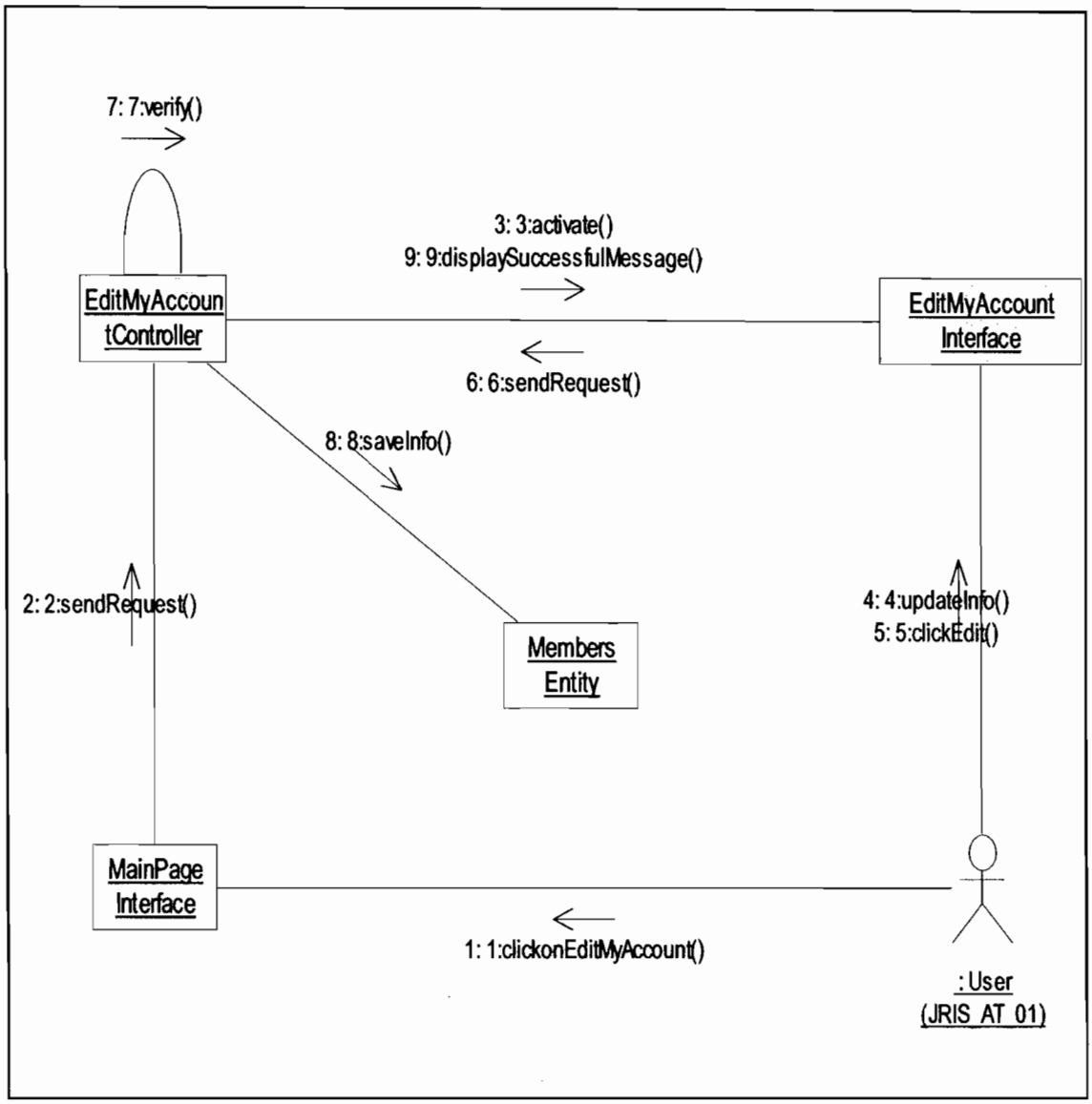


Figure 4.19: Collaboration diagram for Edit my account

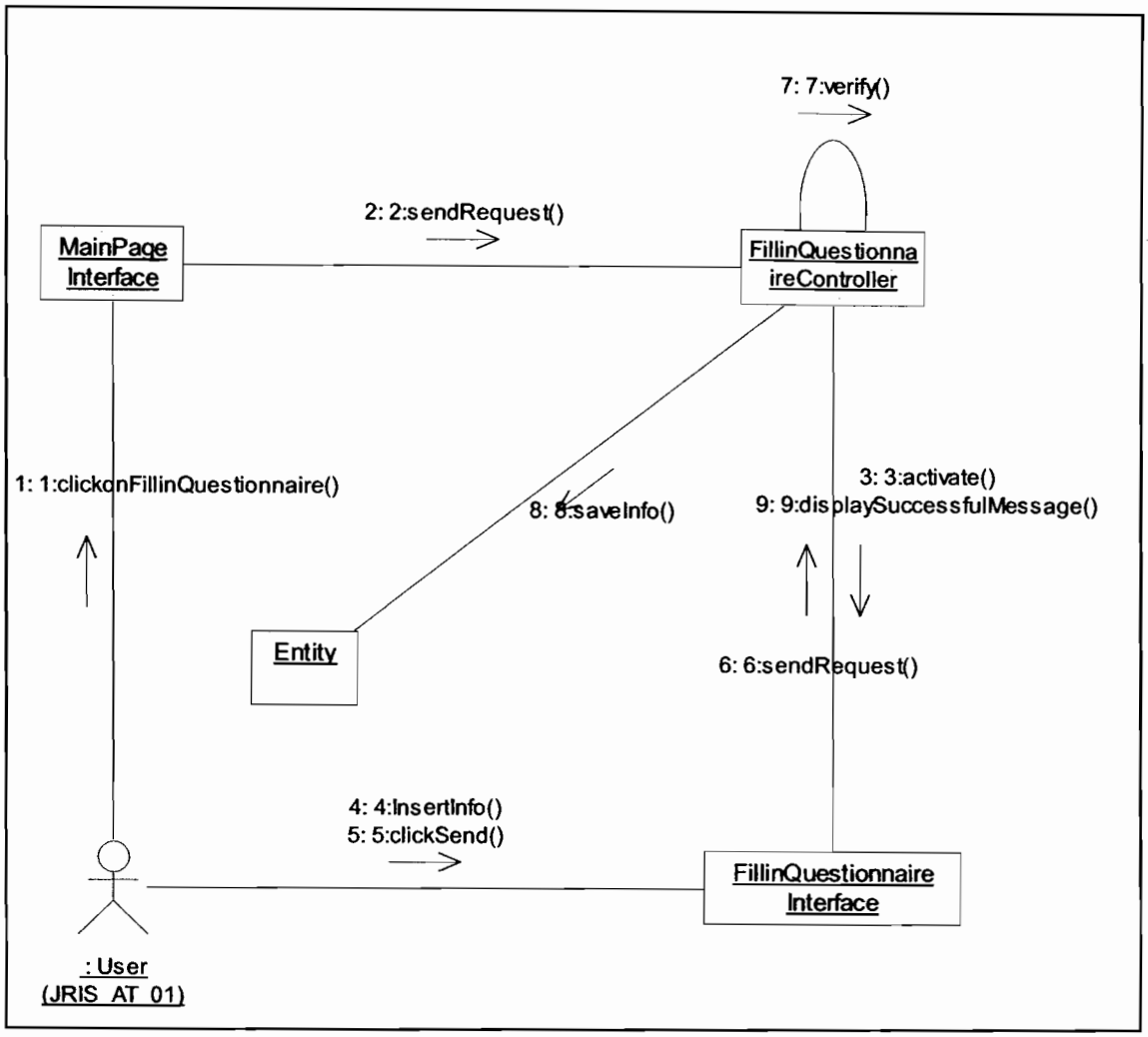


Figure 4.20: Collaboration diagram for fill in questionnaire

4.4.5 Class diagram

There are many classes in one system. In class diagram, a wide of variety components are shown, including classes, attributes and operations of the classes, and the interrelationships of classes (Ambler, 2009). Class diagrams for the proposed system are shown in figures bellow:

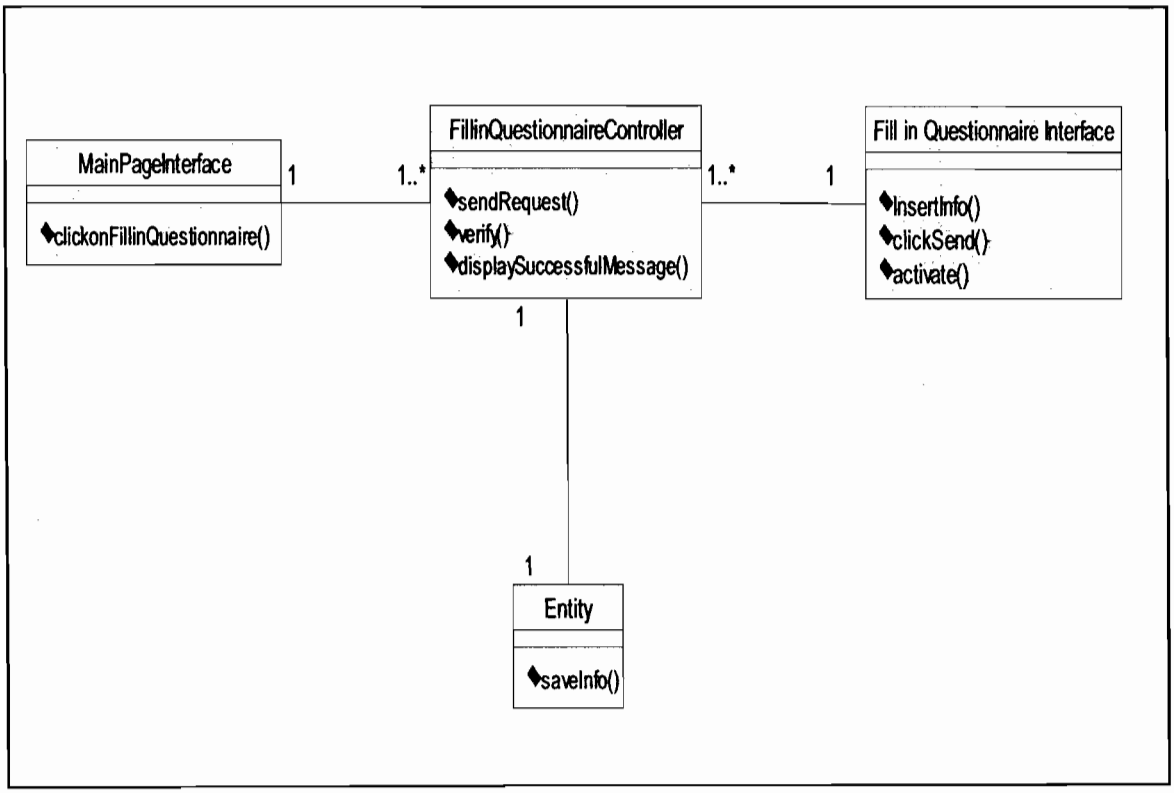


Figure 4.21: Class diagram manage fill in questionnaire

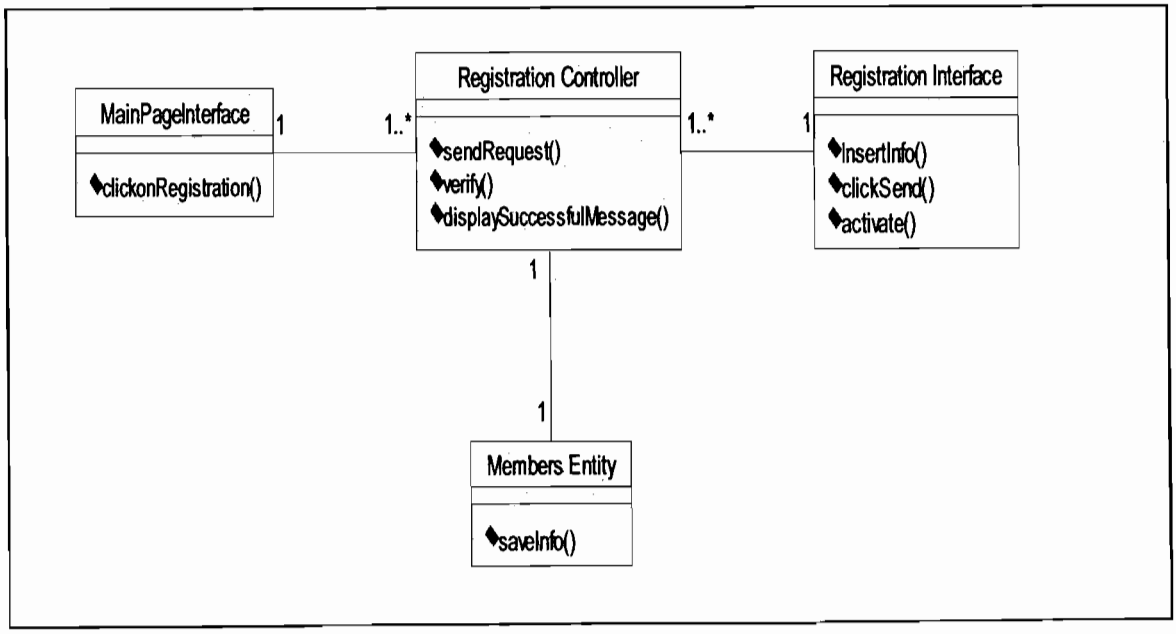


Figure 4.22: Class diagram Registration

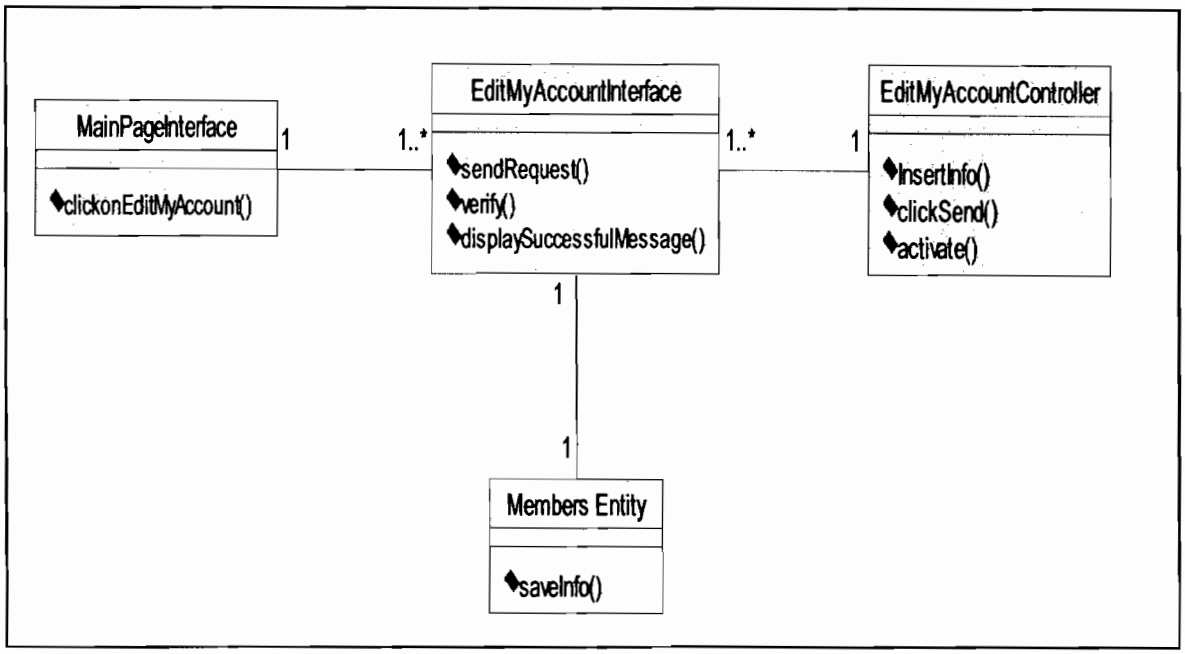


Figure 4.23: Class diagram control Edit my account

4.5 Implementation

In the implementation phase, various technologies are used, including PHP, HTML, MySQL, Home site 5 and Photoshop. According to the design of this prototype, the system is implemented. The screenshots of the prototype is shown to explain its functions. There are two kinds of user of this prototype: company and villager. So both the functionalities used by company and the one used by villager will be explained in detail. Figure 13 is the home page for all users.

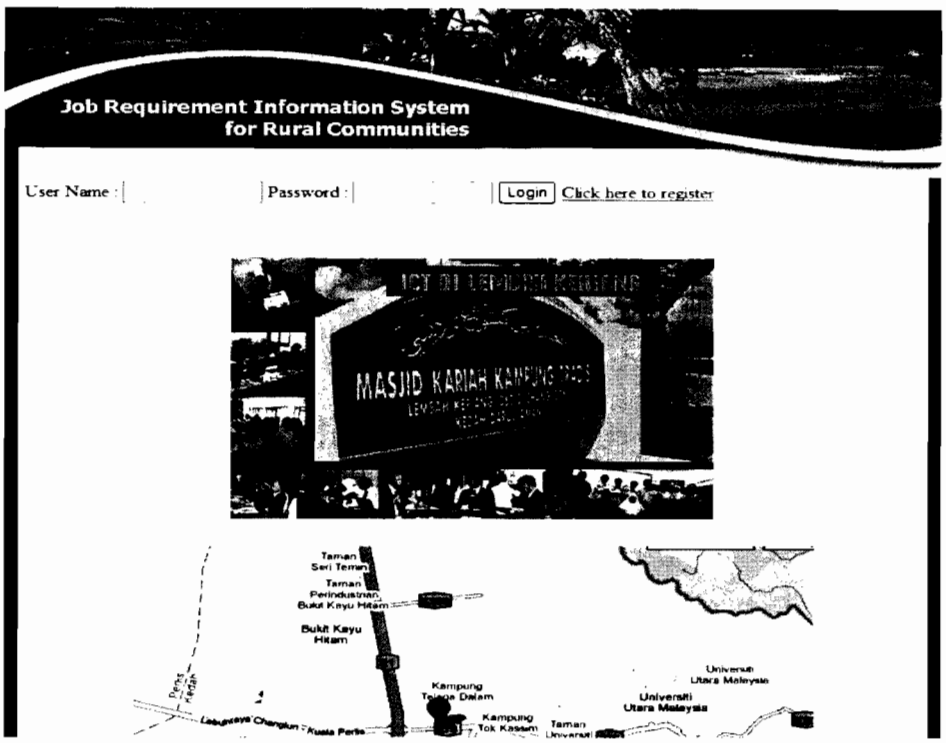


Figure 4.24: Home page

In Figure 4.24, the home page is shown. Members can enter the name and password to login, if one is not member, he can click the register button besides login to become a member. After his login, the page will be shown according to his category, because company user and villager user has different functionalities to use in this prototype. The location of the place where respondents are living is shown in this page by a map.

4.5.1 Screenshots for functionalities used by villager

The functionalities used by villagers are mostly about their information. The villager user can use this prototype to add his questionnaire, edit the questionnaire and edit his own user account. It is expected that by saving his information in this prototype, he can get the job opportunities from the company user of this prototype.

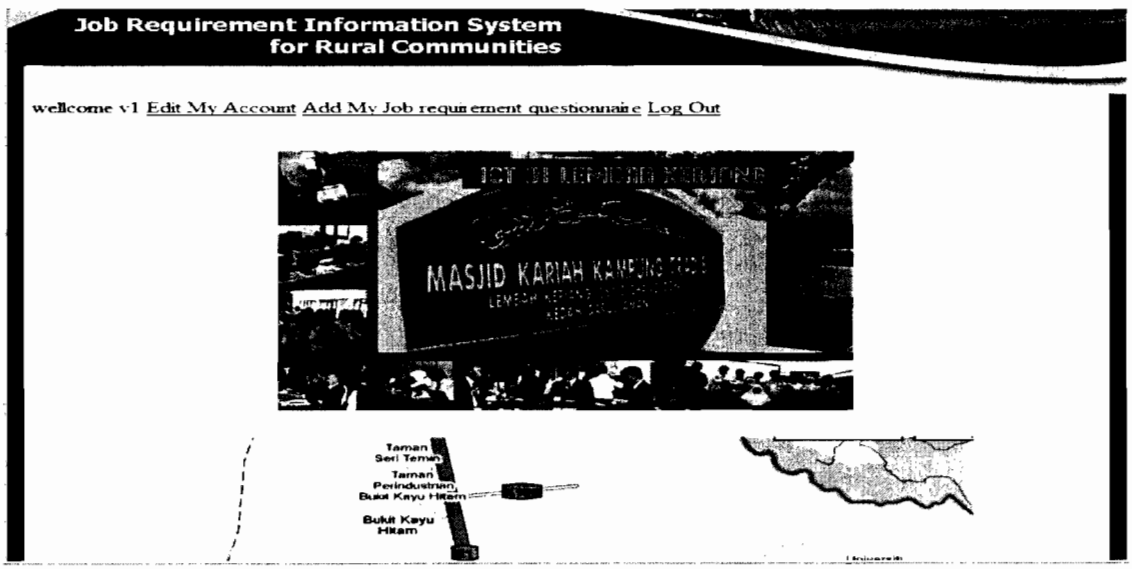


Figure 4.25: Page after login for villager without answering the questionnaire

In Figure 4.25, the page after login for villagers without answering the questionnaire is shown. Since this prototype aimed to collect the job requirement among the rural area, the click to add job requirement questionnaire is shown at the top of this page, by this click, villagers can go to the page to add their questionnaires.

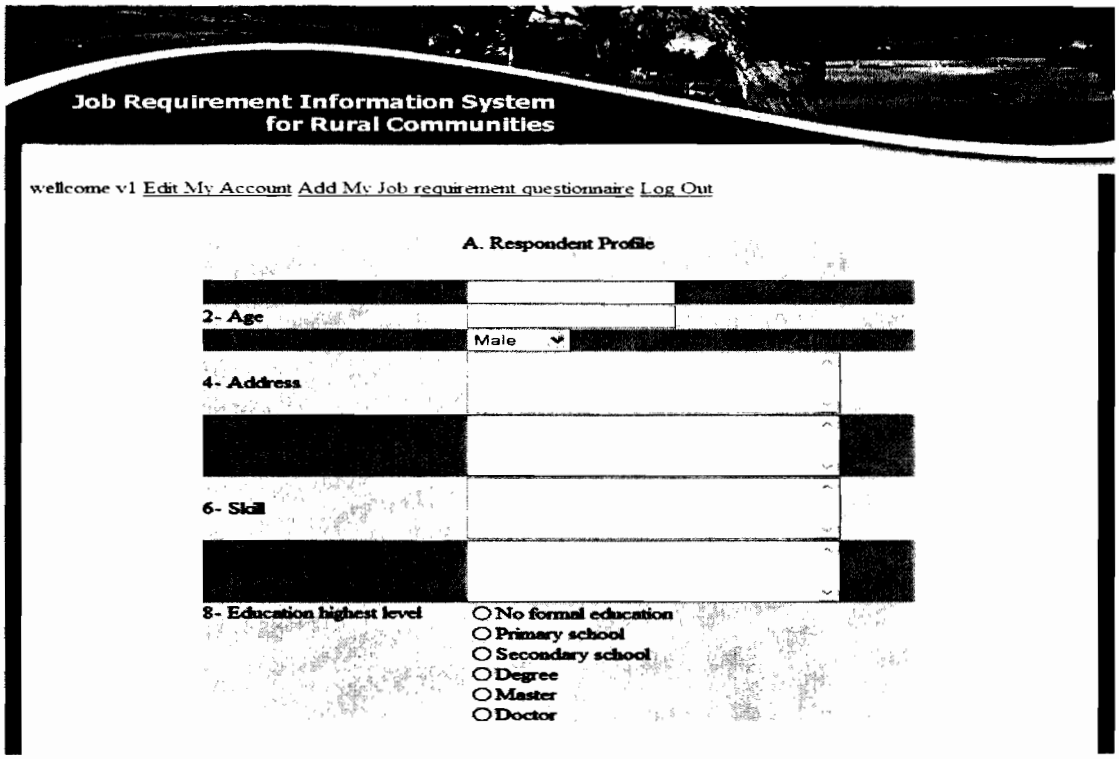


Figure 4.26: Page to add questionnaire

In Figure 4.26, the page to add questionnaire is shown. The villager should fill in his information in the relevant blanket to save it in the prototype. The information includes his personal profile, ICT literacy and job requirement.

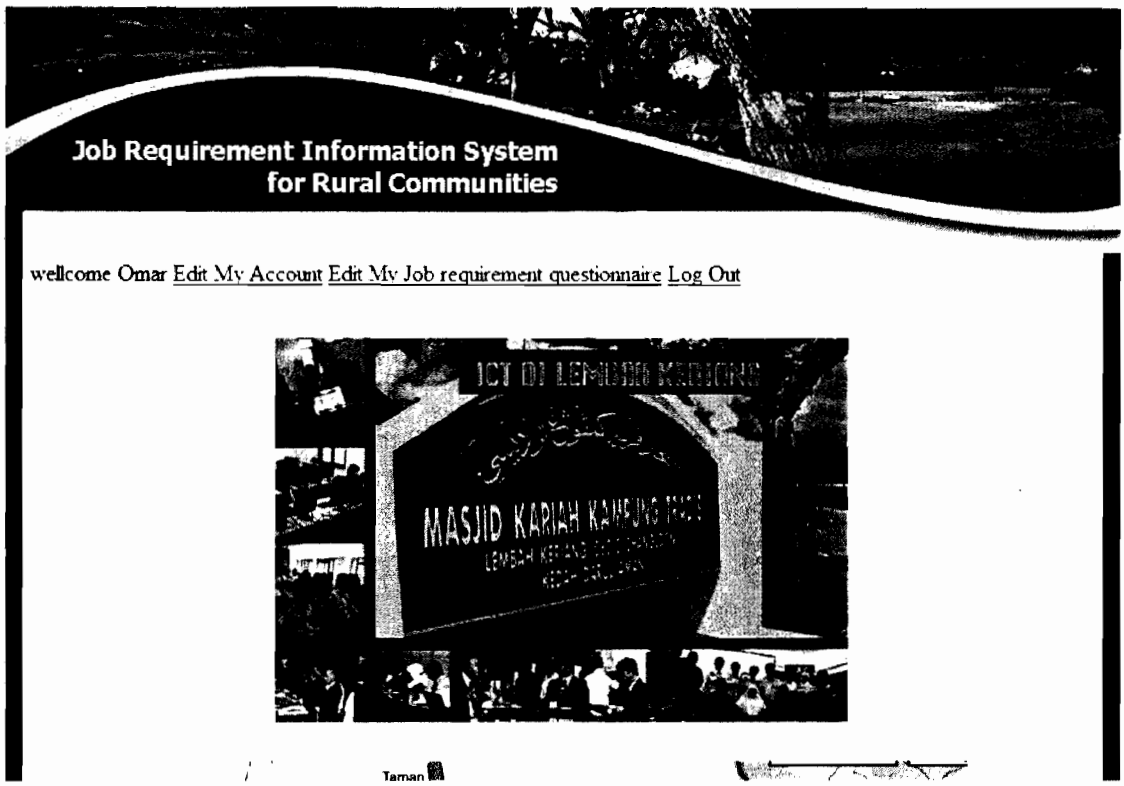


Figure 4.27: Page after login when the member already add the questionnaire

In Figure 4.27, the page after login when the member already adds the questionnaire is shown. When the villager already added his questionnaire, the functionality to edit his questionnaire is shown at the top. By this click, villagers can go to edit there questionnaire as well as log out and edit his account.

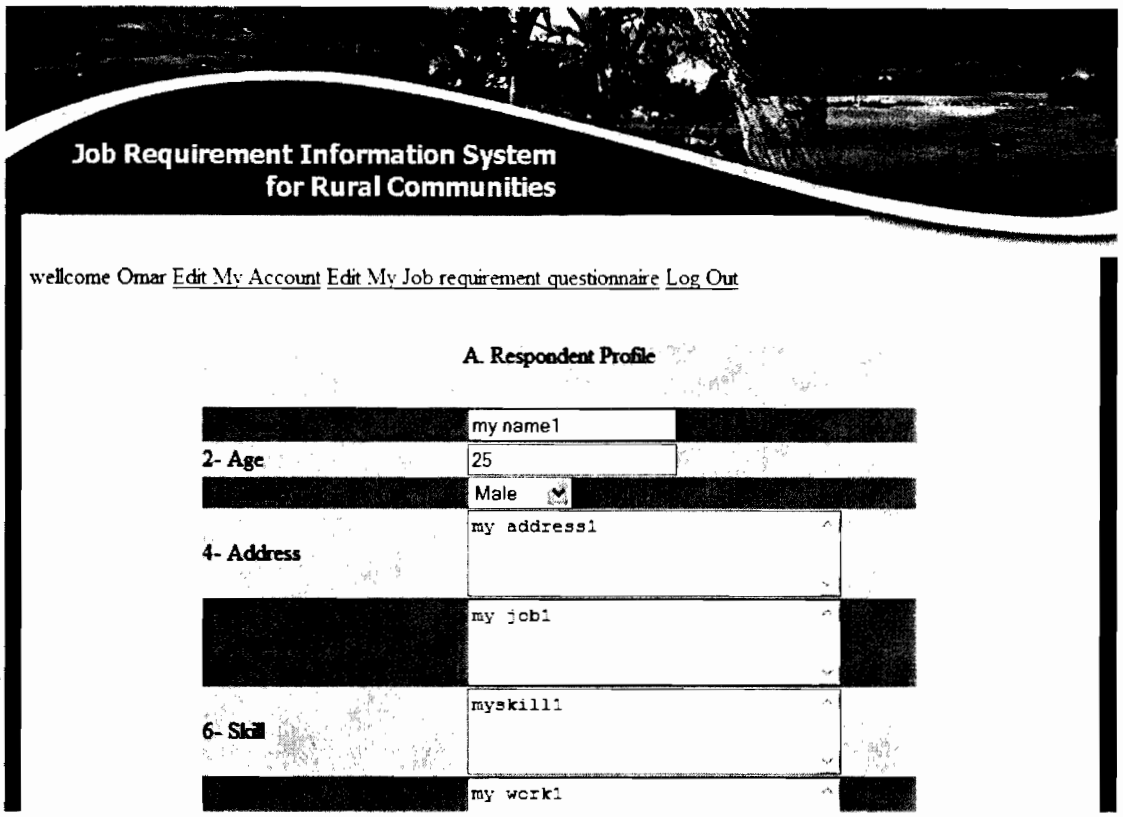


Figure 4.28: Page to edit questionnaire

In Figure 4.28, the page to edit questionnaire is shown. This function enables the villager to update his information easily. For example, when his address and age has changed, he can update it here. Meanwhile, when he learn a new skill or get a higher qualification, he also can update the information here which may lead to more job opportunity for him.

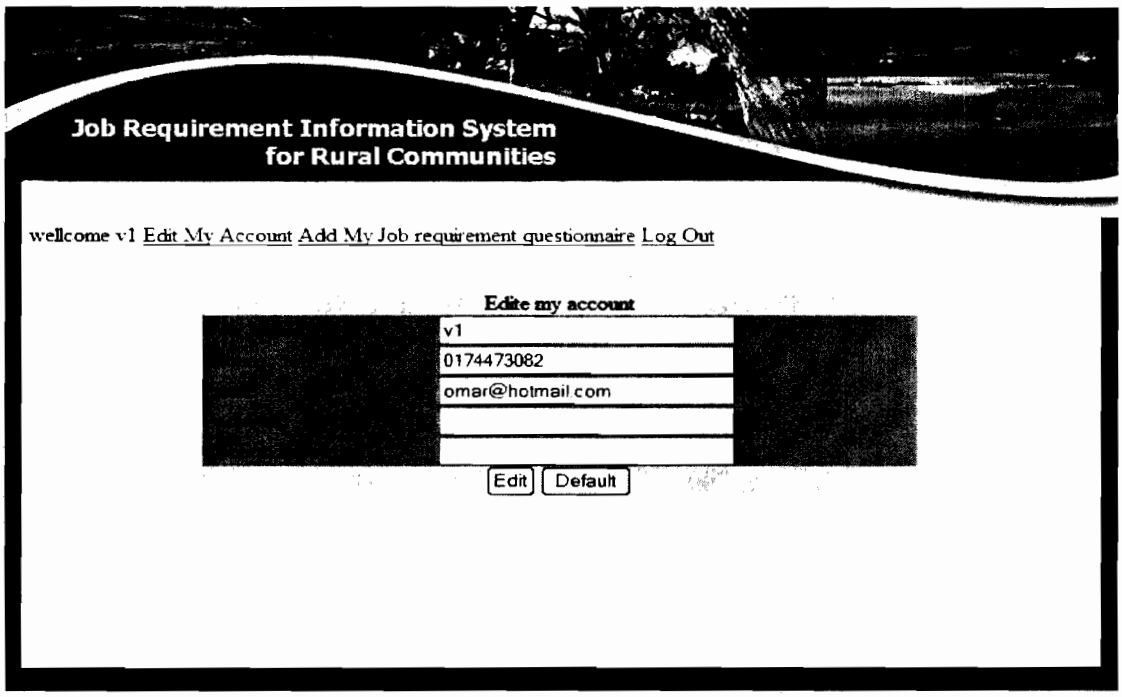


Figure 4.29: Page to edit villager account

In Figure 4.29, the page to edit villager account is shown. Any change of the user information including user name, phone number, email and password can be done in this page.

4.5.2 Screenshots for functionalities used by company

The company user can use the prototype to search for the human resource he needed. The search can be very object-oriented since the functionality in this prototype enables them to search people according to their requirements.

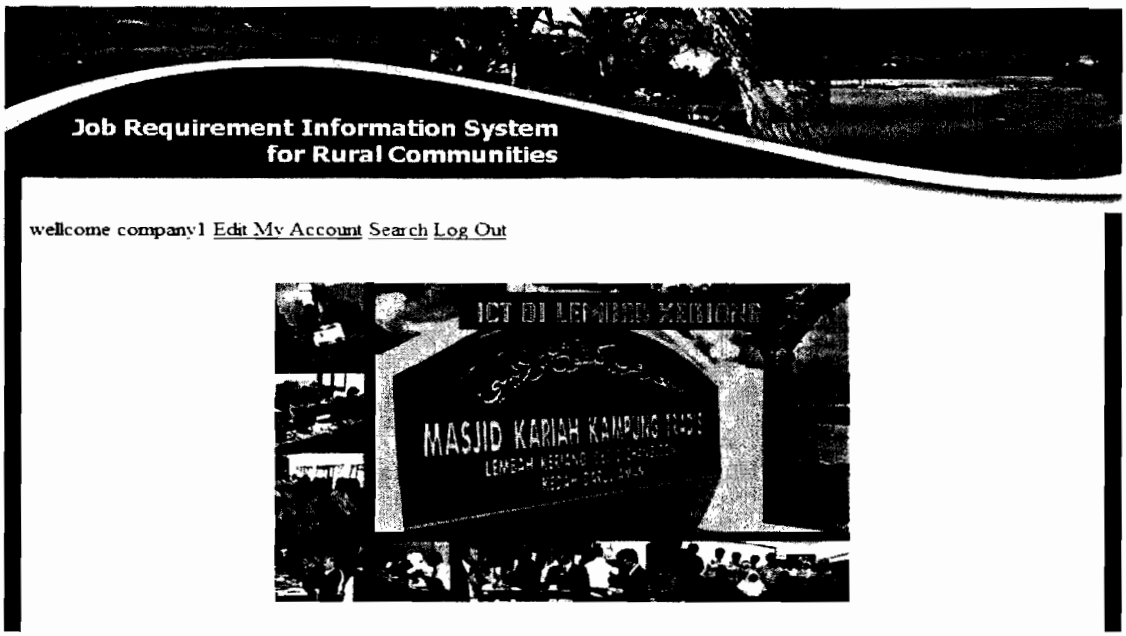


Figure 4.30: Page after login

In Figure 4.30, the page after login of company is shown. As shown at the top of this page, company can choose three functionalities in this page. They are: edit account, search for employees or log out. By clicking the function at the top, company can go to the page he wants.

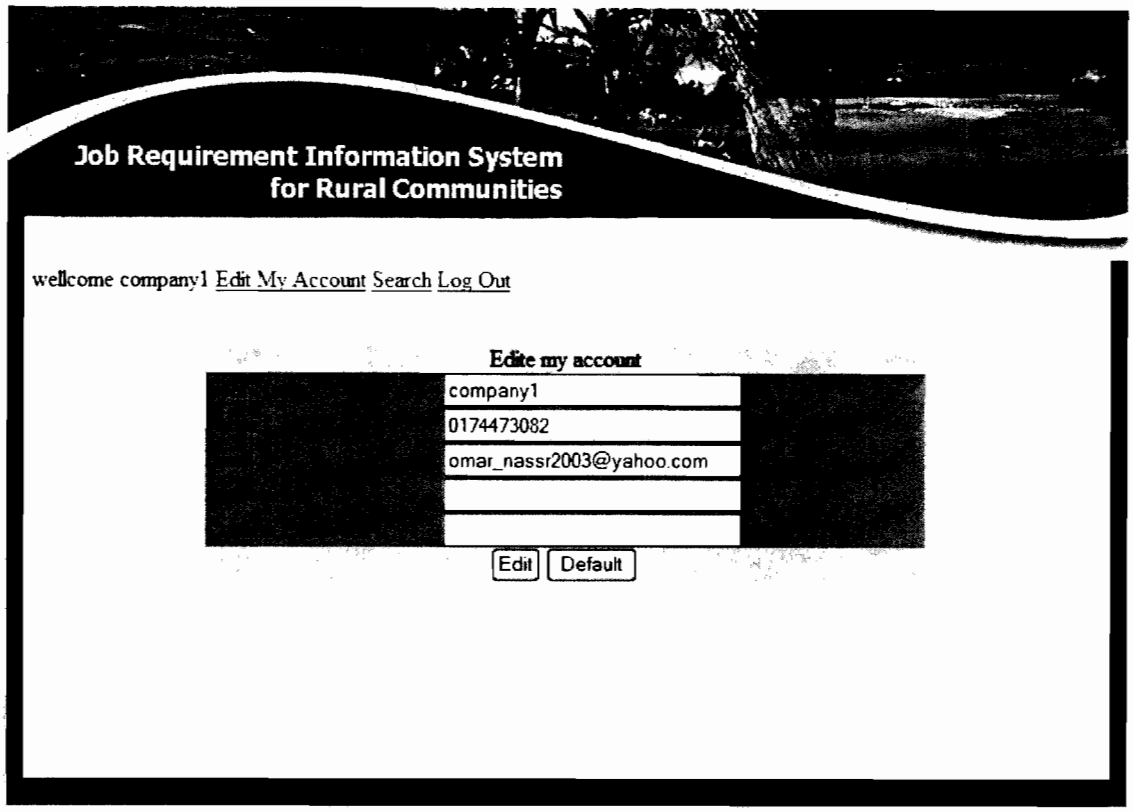


Figure 4.31: Edit company account

In Figure 4.31, the page to edit company account is shown. The information of company includes user name, phone number, email address and password. All of the information can be edited in this page.

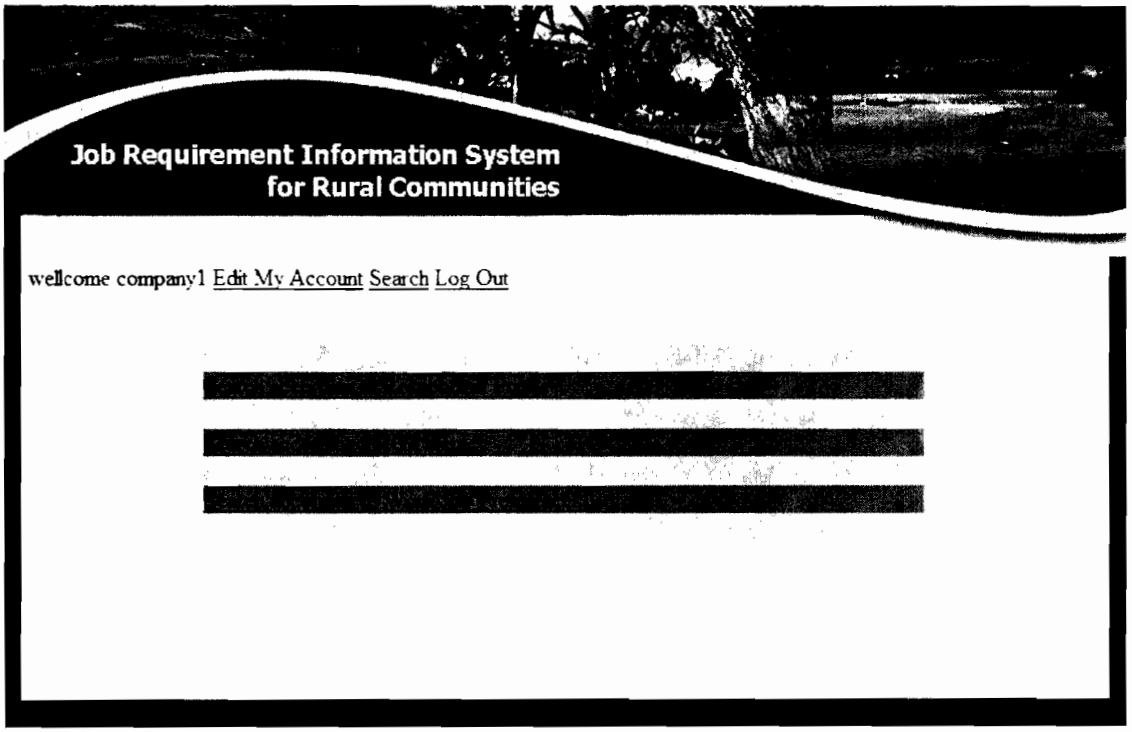


Figure 4.32: Choose search criteria

In Figure 4.32, the page to choose search criteria is shown. It shows three ways to start the search for human resource, which are respondent profile, ICT literacy and job preferences. Company can search for the human resource according to their requirement. For example, when company want to search human resource according to the gender, age or other information saved in respondent profile, he can click to search according to respondent profile.

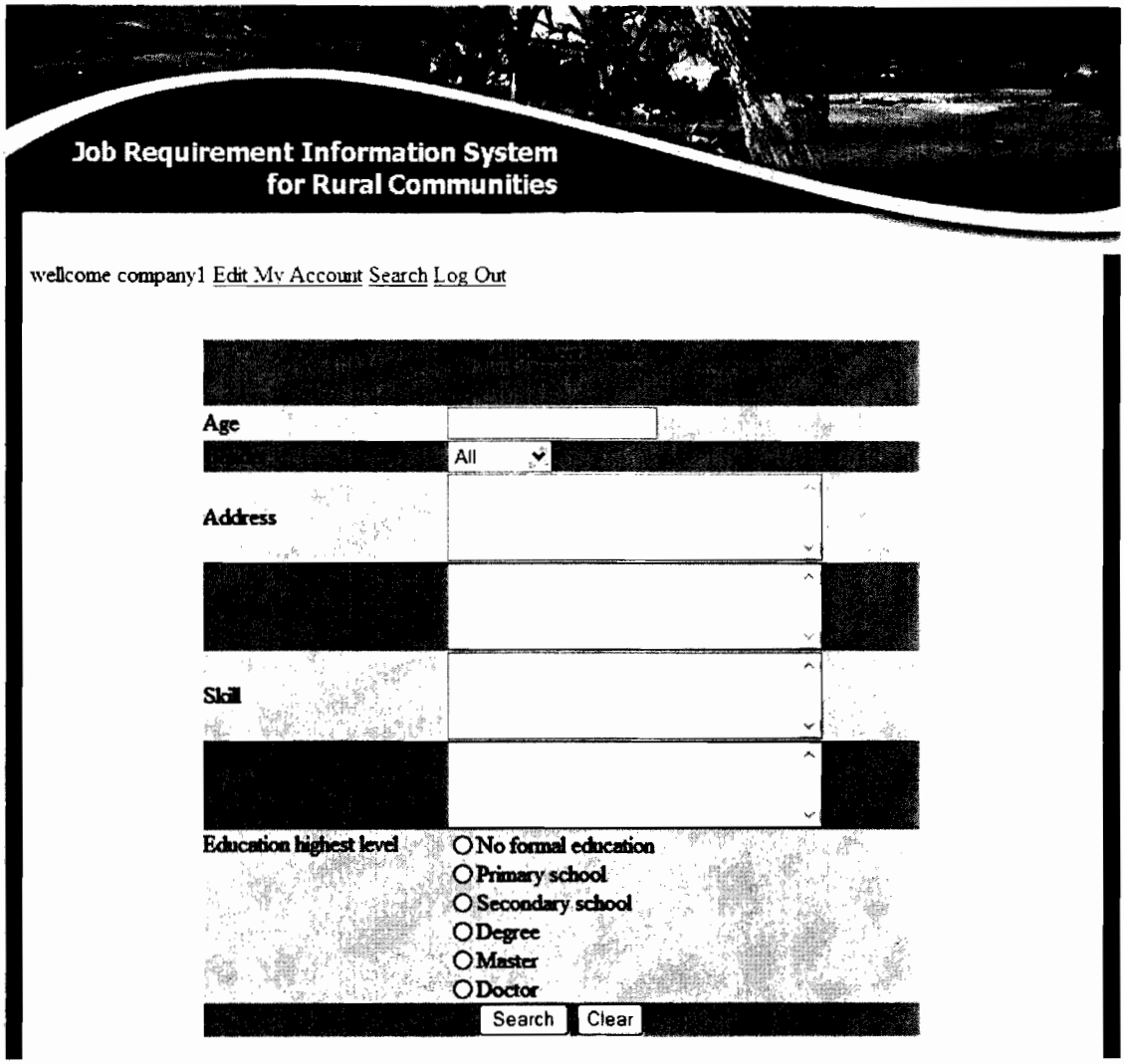


Figure 4.33: Search according to respondent profile

In Figure 4.33, the function to search according to respondent profile is shown. In this page, company can fill in their requirement. For example, when a company need human resource whose highest education level is degree, the company just needs to click the degree choice and start the search, then the result of search will come out.

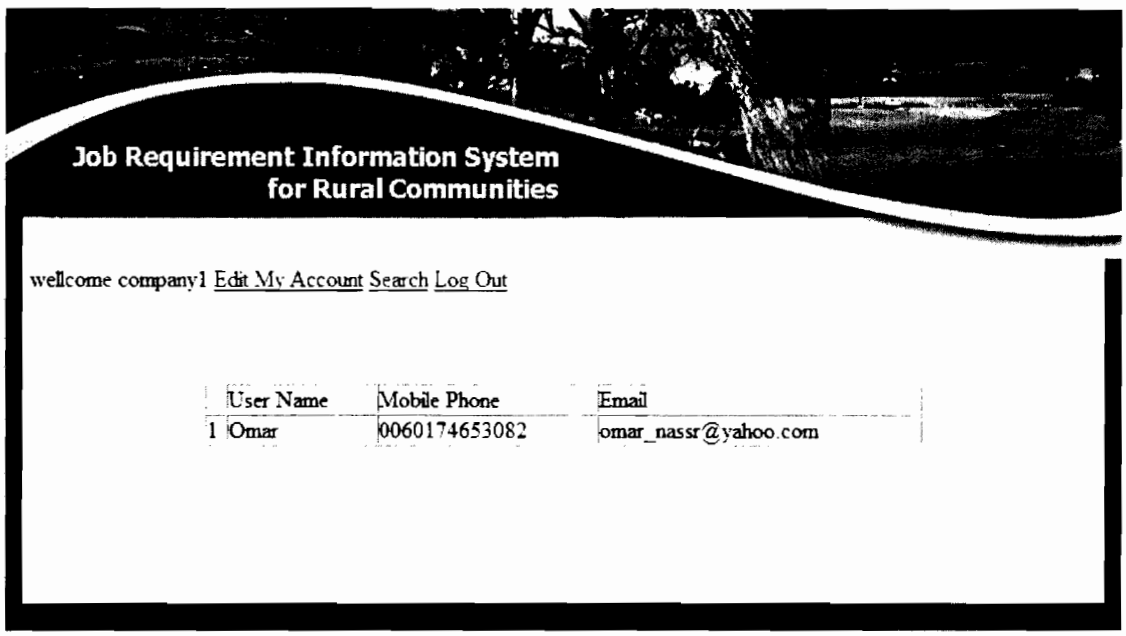


Figure 4.34: Search result

In Figure 4.34, the result of the search is shown. In this page, the prototype will show information of the one who fits the requirement of the company. The way to contact him will also be shown after his name, so the phone number and email address of this villager will be shown to the company to contact him.

4.6 Verification

After the development of this prototype, the testing was conducted. The result is quite good because this prototype satisfy all the requirements listed in the usability requirements. The result is shown in Table 5.15.

Table 4.21: Usability evaluation result (Conte, et al, 2007)

Criteria	Explanation	Performance
Understandability	The system is easy to be understood; the tasks are not so complex to make the users confused.	The operation of the system is easy to be understood by the user.
Learnability	It is easy to learn to use the functions in this prototype; the learning does not take a lot of time and can be remembered easily.	The user can learn to use the system easily and remember how to use it easily.
Operability	The application of the prototype is operable, its easy for people to access or make daily operation of it.	This system is operable and can be easily accessed and operated.
Attractiveness	This web can attract the users to make use of it, page design, music, page layout is favorable.	The web is useful enough to attract the target users and the page design, page layout is favorable.
Compliance	Orders from the users are carried out by the prototype compliantly.	The prototype carries out the orders from users compliantly.

4.7 Summary

This chapter presents the analysis of job requirements among rural area collected by the survey, it also analysis the system according to the waterfall methodology. The requirements of this system are made of both functional requirements and non-functional requirements. Design of system is presented in the use case diagram, collaboration diagram, sequence diagram and class diagram. Implementation of the system is shown by screenshots with detailed explanation and finally, the verification is done to check whether the system has satisfied all requirements.

In next chapter, the conclusion of this study will be made.

CHAPTER FIVE

CONCLUSION

This chapter makes a review of all the findings found in this study based on the research objectives followed by the limitation of the study and recommendations for future works.

5.1 Findings

As described in this research, the objective of this study is to identify information of the job requirements among rural communities and to develop a prototype as a place to store and share that information. The specific objectives are:

Research Objective 1:

To identify job requirements among the rural communities. According to the result, more than half of the respondents have computer, majority of the respondents have ever used computer and surfed internet. But still some of them do not have any ICT literacy. Most respondents' highest education level is secondary level; seldom people go to study the diploma or degree. They prefer to work in places near their home with many annual

holidays and expect salary between RM 2000 and 3000, service industry is preferred by them, the marketing department, administration department and human resource department is most welcomed by them. They also requires for good accommodation such as a private apartment, most of them have own transportation tool, so they do not require it from company. All this information is collected by the questionnaires. The result is discussed in chapter 4.

Research Objective 2:

To propose and develop a prototype of job requirements information system to save and present job requirements among rural communities. The development of this system adopts the waterfall methodology. First, the requirements of the system is set to store and share the information of job requirements among the rural communities, secondly, the design of the system is made to serve for both the company and the rural communities. In the implementation phase, the system is developed according to the design.

The rural communities can register in this prototype and fill in their information in the questionnaire about their background and job requirement. The company user can enter this prototype to search for the employees, by seeing the information from the rural communities, the company can know whether this personnel and the company can satisfy each other. The users can edit their information anytime, so the way to contact them can

also be well updated to enable the rural communities to get the opportunities form the company registered in this prototype. After the development of the system, evaluation is made to ensure its excellent performance. After evaluation, it is indicated that the five criteria: understandability, learnability, operability, attractiveness and compliance have reached a satisfactory level, the objective to develop a prototype to store and share the information is reached. The results are discussed in chapter 4.

5.2 Research Limitation

With limited time, human resource and capital, this study focused to collect the data in small villages in Kedah. For this purpose, a case study of one small village in Changlun, the northern part of Kedah is chosen, so the information collected is not so large and sufficient.

The function in this system can just store and share the information of the background, job requirement and contact number of the rural communities. This information is get by the questionnaires filled by the rural communities, so it just enables the company to get general data of the personnel, to know more about the personnel, company should carry interview by himself. Meanwhile, this prototype just enables the company user to search for employees, the rural community users are not able to use this prototype to search for the companies.

The PHP, HTML, Mysql, HomeSite editor, photoshop are used to develop this sytem, besides the software, the hardware needed are the internet connection and a server.

5.3 Recommended Works

Future researchers can collect the job requirements of rural communities in a larger area to get more accurate and sufficient information about the job requirements among rural communities in Malaysia. Future researchers can also improve the functionalities of the system. The function to store and share the company requirements for employees can also be added in this system, so the rural communities can search for the company or job they like and send their application letter to its human resource department.

Furthermore, the function to subscribe the information of a selected job position or a company can also be added. This is because the rural communities may not surf internet very often, so when his ideal job comes, he may loss the opportunities to know it. This function can save the desired job position of the user, when a job satisfy the needs, the prototype can send SMS to the user's mobile phone to ensure he can get this information as soon as possible. If this service can be added in this system, it will surely boost the job enlargement of rural communities. Besides that, the information collected indicates that the ICT literacy in the rural communities still has a large space to improve, so some

useful ICT knowledge or courses can be provided in this prototype to improve the competitive advantage of the rural communities.

5.4 Summary

The objectives of this study has been reached by the researcher, the information of job requirements among rural communities is collected, a prototype is developed to save this information, the limitation is that the respondents are from a small area, there is not so sufficient capital to make the research in a larger area, so the further collection of the job requirements among other rural communities need to be done by future researchers.

Besides that, more function and service can be added at the base of this prototype. From the information collected from the questionnaire, the ICT literacy among rural communities still need to improve, so this prototype can offer some related information or courses, it can also store and share the information of the companies as well as the rural communities, so both parties can search for its desired target, meanwhile, when the rural communities know the requirement from the company, they can know where they should improve themselves. The system can also open the service help rural communities to subscribe the information of the job they needed, when the suitable jobs come, the prototype can send this information to the users' mobile phones.

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