PERFORMANCE EVALUATION OF AGRIBAZAAR

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ABSTRACT

Many collective ICT initiatives and specific Internet applications has been implemented since the launch of the Multimedia Super Corridor in 1996 by the Malaysian government to offer support to the rural community. Implementing successful rural ICT applications is crucial to help bring services to the rural and also to improve the socio-economic status of the community. The agricultural sector has been given greater emphasis in Ninth Malaysian Plan, where the sector has been revitalized to become the third engine of growth in a New Agriculture.

Agribazaar is a portal developed by the Malaysian Government to provide support and assistance to the agribusiness sector through multiple agencies, led by Ministry of Agriculture and Agro-Based Industry. This initiative was implemented to help improve the agriculture industry in Malaysia. The portal has opened up more opportunities for conducting agribusiness and related industry from the local and international community. However, the review of the literature showed little work has been done on this study.

An evaluation has been carried out with the users of Agribazaar through analyzing portal user comments, interviews, and focus group discussions. This research has revealed many issues and challenges although the Agribazaar has been successfully implemented and accepted by the users. Therefore, the research provides feedback from the users to the Department of Agriculture and as well as specify the requirement for future enhancement conducted by MIMOS who is the developer.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

ABBREVIATION AND ACRONYMS

IS	Information Systems
IT	Information Technology
ICT	Information and Communication Technologies
TAM	Technology Acceptance Model
TAM2	Extension of Technology Acceptance Model
PU	Perceived Usefulness
MM	Motivational Model
UTAT	United Theory of Acceptance and Use of Technology
TPB	Theory of Planned Behavior
IDT	Innovation Diffusion Theory
SCT	Social Cognitive Theory
MPCU	Model of PC Utilization
IBM	International Business Machines
EOU	Ease of Use
AgriTIGeR	Agriculture Technology Industry-Government-Electronic Revolution
IDC	Internet data center
e-Business	Electronic Business
e-Government	Electronic Government
e-Commerce	Electronic Commerce
TRA	Theory of Reasoned Action
UTAUT	United Theory of Acceptance and Use of Technology
SCM	Supply Chain Management
MIMOS	Malaysian Institute of Microelectronic Systems

CHAPTER 1

INTRODUCTION

1.1   Introduction

Internet based applications are currently considered as amongst the best solution to meet the requirements of the rural community due to lack of infrastructure availability and the remote locality. The Malaysian government has implemented many collective ICT initiatives and specific Internet applications to offer support to the rural, particularly the agricultural sector to improve the socio-economic status of the community. Implementing successful rural ICT applications is thus crucial to help bring services to the rural. The provision of services will help increase agricultural productivity and sustainability of the farming community.

Agriculture has long been part of Malaysia's economic sectors. However, in 1980's the focus has been diverted to industrial developments. Nevertheless, the importance of agricultural sectors to the development of the country is undeniable. This has been strongly proven when agriculture receives a very significant emphasis in the Ninth Malaysian Plan. Throughout the period, the agriculture sector will be revitalized to become the third engine of growth where emphasis will be on *New Agriculture*. This involves large scale commercial farming, wider application of modern technology, production of high quality and value-added products, biotechnology discovery, increased convergence with information and communications technology (ICT), and participation of entrepreneurial farmers and skilled workforce (Wong, 2007; Pade et al., 2006).

In line with the emphasis made on *New Agriculture*, Malaysia has moved to consider agriculture as a business. This has resulted in the formation of agribusiness. The term

"agribusiness" has existed since the mid-1950s and implies the shift from "farming as a way of life" to "farming as a business" (Sutton, 2001). The paradigm shifts have made Malaysia move one more step ahead in producing agricultural products not only for the sustainability of local food consumption but at the same time expand the economics growth development.

While agribusiness is normally associated with western multinational companies, Malaysia provides an alternative example of a Third World agribusiness (Sutton, 2001). The technology of ICT has opened up more opportunities for agribusiness to spread its wing both locally and internationally. These days agribusiness is conducted via the Web, taking advantage of the Internet technologies and facilities. Thus, it has made possible for entrepreneurial farmers to market their products outside Malaysia and increase their market share internationally.

In Malaysia, a one stop center to meet the needs of agriculture sector has been developed through the initiatives of several government agencies, where farmers are encouraged to market their produce online. Known as the Agribazaar, the online center has become one of the portals developed for the agricultural community for the purpose of buying and selling of agricultural products. Besides that, the portal was intended to enable the agricultural community to obtain, disseminate, promote, and make transactions related to agriculture and business. Since the launch in June 2004, the number of registered users had grown and had given numerous feedbacks via the portal.

The Agribazaar is an information-based portal provided by the Department of Agriculture, Ministry of Agriculture and Agri-based Industry. It is intended to offer an Internet based trade communications for buyers and sellers of farming products. Agribazaar started with 3 essentials modules which are eMake, eSupport and ePayment.

The central objective of this portal is to enhance market reach, efficiency, and productivity for farmers in the buying or selling of farming products. The application has been implemented and utilized by a considerable number of users from Malaysia and other countries across the globe.

ICT technology is believed to be a catalyst in providing more opportunities for positive expansion of agribusiness. This study begins with overview of ICT and Internet based applications, agribusiness and later discuss the role of ICT technology focusing on web based application as a platform for conducting agribusiness. Agribazaar has been chosen as a case study in this study as it is the most widely used application for the community. The portal has been designed to offer an Internet based commerce infrastructure for buyers and sellers of agricultural products (Mimos Berhad, n.d). Analysis on the implementation of Agribazaar will be presented in the later section. Thus the research aims to evaluate the portal, study its evolution and impact, and provide feedback to developers and policymakers.

1.2   Problem Statement

ICT initiative is seen as the alternative platform for the agriculture business to promote and market their services and products online. In light of this, the Government of Malaysia has implemented Internet based applications to help small scale farmers to benefit from the current Internet technology. Among the initiatives which have been undertaken by various agencies for example;

i)   AgriBazaar, which operates under AgriTIGeR (Agriculture Technology Industry Government-Electronic Revolution), intiated by MIMOS and Jabatan Pertanian.

ii) Myfruits.org initiated by MARDI.

iii) FAMAExchange initiated by FAMA.

The main objective of these applications is to increase farmers' productivity competitiveness as well as to bridge the digital divide. In spite of having these initiatives, many literatures have shown that farmers still face problems to market their products to customers and many are not aware of the existence of the applications (Zulkhairi et al., 2008; Elaish, 2008; Zahurin et al., 2007). This problem is compounded by the limitation of Internet access whereby the rural has access of only 14.7% as compared to 85.3% for urban (Suruhanjaya Komunikasi dan Multimedia Malaysia, 2008). Thus to ensure that the agriculture community benefits

from the ICT initiatives, the study serves to evaluate the performance of the portal in terms of utilization and identify the barriers to successful adoption of the application.

1.3   Objectives

The main objective of this study is to conduct a research on performance of Agribazaar. The study will seek to achieve the following sub-objectives;

i)   To identify existing ICT tools currently available for small scale farmers.

ii) To examine the acceptance of Agribazaar for conducting agricultural business.

iii) To examine the satisfactory level of Agribazaar in terms of agricultural business usage.

iv) To examine the success of Agribazaar in terms of agricultural business.

v)   To identify issues and challenges of successful implementation of Agribazaar.

1.4   Scope of Research

Secondary data from literature and other documents and primary data has been used to evaluate the performance of Agribazaar portal based on users' perspective through a survey, portal user comments, interviews, and focus group discussions. The unit of analysis is the user who is registered with the administrator of Agribazaar. The feedback from users received through the portal has been analyzed through qualitative analysis. Developers who developed and administer the portal are interviewed and last but not least, feedback from the development teams and users in a focus group discussion session are discussed.

1.5   Significance of the Research

Although 70% of Malaysia are considered as rural, only 30% of the population stays in these areas. Studies done in Malaysia showed that the rural agricultural community does not have the same opportunity and support as the counterparts in developed countries and those who have access and connectivity (Zulkhairi et al., 2008; Elaish, 2008; Amundsveen and Solvoll, 2005). Thus by studying the implemented Internet based application performance, the findings intend to provide better understanding

and feedback for developers, policymakers and related agencies to improve facilities and support for the farmers.

1.6   Report Organization

This research report consists of five chapters. Chapter 1 discusses the background and problem statement of the study. The research objectives and scope are identified also in this chapter. Chapter 2 describes related works on the study, whilst Chapter 3 presents the methodology of the research. Chapter 4 discusses on data collected and analysis. Chapter 5 presents the contribution of the research and recommendation for future work.

CHAPTER 2

LITREATURE REVIEW

This chapter presents definitions and researches related to this study.

2.1   Agribusiness

Several definitions of agribusiness are found from the literature. Stone (2005) defined agribusiness as the generation of income from the sale of a product or service or both, which facilitates the decision making of a farmer or land manager. Agribusiness has also been described as the activities that occur after harvest and prior to final sale to consumers (Stanton, 2006). Johnson et al. (2006) defined agribusiness as the sum of all operations in the economy involved in the production, processing and wholesale marketing of agricultural products. Another definition of agribusiness by the U.S Agribusiness Council refers to aspects of agricultural production, processing and distribution. This includes food, forest and fiber production including their byproduct utilization, agricultural chemicals and pharmaceuticals, agricultural finance and trade, agribusiness/farm management, agro-environmental considerations, and land development. In short, it comprises of all major elements essential to the establishment and operation of efficient agro-food enterprises (U.S. Agribusiness Council, 2006). Though all definitions stated above are true to the meaning of agribusiness, in this research agribusiness will be refereed to as any activities that are conducted to produce, distribute, market, or transport agricultural products to generate income.

According to Kinsey (1987), agribusiness enterprises in developing countries are typically in the range from small to medium-scale operations and their businesses

covers from processing raw agricultural materials to providing marketing, transport, and other services.

The scenario of agribusiness in Malaysia is no different from other parts of the world. The agribusiness entities in Malaysia cover various types of agricultural products from fresh fruits and vegetables to handicraft products made of agriculture waste. The agribusiness entities have generated incomes for millions of Malaysian and have contributed to the economic growth of the country. Heading towards the sustainability of agriculture and agribusiness sectors in Malaysia, the government provides support and assistance through multiple agencies, led by the Ministry of Agriculture and Agri-based Industry. The ministry has organized numerous approaches in promoting agriculture and agribusiness as a fundamental economic sector. One of the strategies is to provide an electronic platform for marketing products through Internet.

2.2   ICT in Malaysia

According to Zahurin et al. (2007), Malaysian government has identified information technologies (ICTs) as the major determinants of national development in order to achieved the proposed developed status by 2020. In addition to its impacts in moving the economy forward, ICTs are now employed as a means of reducing the socio-economic gaps of the less privileged sections of the society.

The Malaysian government aims at establishing more community-based telecentres to achieve the coverage of all districts within the country, a project of multi-million dollars. This will break the barrier between living in the rural areas and urban areas since location will no longer be referred to as being remote. Malaysia's approach to the problem is viewed from three main perspectives: Access (making ICTs infrastructure available to all), Adoption (encouraging ICTs usage in everybody's daily life) and Inclusion (achieving social-economic value of ICTs by all Malaysians).

The digital gap can be measured by the number of people using ICTs infrastructure such as telephones, computers and internet. The recent survey jointly financed by Economic Planning Unit (EPU) of Malaysia and United Nations Development

Programme (UNDP) between 2005 and 2006 measures the rate at which ICTs is reachable to households in Malaysia which was termed as the ICTs household penetration rate. The ICTs infrastructure of reference includes mobile phones, computers and internet subscription. The result of the findings showed that the digital divide/gap is more noticed in Malaysia when it comes to technologies related to information age such as computer and internet. It was revealed that the rate of computer and internet subscription per 100 households are 24.2 and 10.4 respectively on the average. For the best served areas, the penetration rate for the household computer was 59.3 per 100 households and 3.6 per 100 households for the least served areas. The internet subscription ranges from 52.8 (best mukims) to 2.2 (worst mukims) per 100 households as at year 2000.

The Malaysian economy has witnessed a series of noticeable structural changes in the last four and half decades. Immediately after independence in 1957, Malaysia has to depend on the export agricultural products mainly rubber and tin to be precise for her economy. Shortly after the independence the government invested in planting more of agricultural export-based products to survive the economy. This really assisted in the development of the country to be able to achieve the industrialization stage. Malaysian economy now depends more on manufacturing than agricultural products. As at the year of independence, the primary sectors (agriculture, forestry and mining) contributed 45% to the Gross Domestic Product (GDP) of the country while the secondary sector (manufacturing and constructions) contributed only 11% to the GDP. As a result of industrialization, there is a decline in agriculture's contribution to GDP, which as at 2000 measured 10.5% as against 37.5% contribution from manufacturing.

According to Kementerian Penerangan, Komunikasi dan Kebudayaan (2008), connecting rural people to the internet was the initiative of Ministry's Rural Internet Centres (RIC) programme and Universal Service provision (USP). The initiative being one of the earliest rural internet initiatives in Malaysia was launched on 3rd of April, 2000. This programme was designed to present a radical approach of making internet accessible to people of rural areas by looking into areas such as infrastructure needs, capacity building and content development. The private sectors (financed by government) procure the computers and internet connectivity while local post offices

provided the site, security and electricity. Training was also organized for RIC supervisors and users to enhance judicious utilization of the resources. As a way of committing people to the use of internet, a programme was formulated where a local committee will be constituted , the committee will be charged with the responsibilities of designing the community website to showcase their local products and services and in addition to provide content relevant to the local community. During the first phase, RICs were deployed to post offices in the semi-rural areas within the reach of ISDN enabled exchange. As at now, 42 RICs have been equipped with five to six personal computers connected to internet via ISDN throughout the country. According to the result of the statistics compiled in July 2004, it was revealed that more than 53,000 users now use RIC services while more than 35,000 users have undergone training under RIC programme training scheme since its inception.

2.3   Internet-Based Applications versus Web-Based Applications

The rapid growth of telecommunication and communication technologies currently has permitted various type of activities occurred virtually beyond the geographical boundary. The most common type of technology is the Internet; whereby it is extensively accepted for communication and information dissemination channel. It provides benefits to organization and even individual. By using the Internet, people can communicate at a lower cost and in faster way. Most of the organizations today are taking advantage of the opportunity with the intention of improving the organizations' overall performance. The major trend of today's Internet technology utilization is having online businesses. Business activities such as product marketing, supply chain, payment of sales transactions and customer relations are possible to be conducted over the Internet.

The World Wide Web (www or web) is always associated with the Internet technology. It is a platform for distributing software resources across the Internet, which is then presented as rich, consistent content by applications on the client (usually browser) (Evan et al., 1999). The application in this context is referring to a piece of software that sits on a personal computer and accomplishes some tasks for the user (Knuckles and Yuen, 2004).

Organizations have developed various types of web-based applications which can easily be accessed over the web-browser. The confusion between web-based applications and internet-based applications always happened everywhere. There is an often-overlooked distinct between the Web and Internet. The line between the two is often blurred, partially because the web is rooted in the fundamental protocols associated with the Internet (Shklar and Rosen, 2003).

Examples of Internet applications include e-mail, file transfer, instant messaging and www. On the other hand, a web-based application refers to an application rendered using a web-browser and run over the Internet. The web-based application communicates with web server and process data requested or provided by users. The communication between web server and client is using Hypertext Transfer Protocol (Knuckles and Yuen, 2004). Current web-based application is something more than just a "web site". A web-based application presents dynamically tailored content on request parameters, track user behaviors and security considerations (Shklar and Rosen, 2003).

The web-based application can be categorized into web portals or specific applications such as web storefronts. A web portal is a website that collects information for a group of users that have common interests (Heflin, 2003; Lausen et al., 2005). In the year 2000, free web portal services was dominated by four firms; Excite, InfoSeek, Lycos, and Yahoo. These firms dominated the majority of advertising revenues and controlled visitor traffic to various free and general interest portals (Gallaugher, 2000).

In Malaysia, various web portals have been developed by government and commercial organizations ranging from general to specialized interest. An example of a web portal for specialized interest is Agribazaar. The portal is for individuals or businesses who are interested in purchasing or selling agricultural-based products. Since this research focuses on Agribazaar as a case study, a detailed section on the portal is discussed in section 2.6.

The government of Malaysia has spent millions of Malaysian Ringgit to develop web portals for the benefit of the Malaysian society. Whether the portal has been

successful or otherwise, the review of the literature revealed little work has been carried out. In fact, how effective the portal has been are not known. Evaluations on these portals are necessary in order to know the performance of the Malaysian government's initiatives program. Several approaches to evaluate performances are hence discussed in the following section.

2.4 Performance Evaluation

This section explains the concept of qualitative and quantitative research, variables used in the study and the Technology Acceptance Model (TAM) which relates to this study.

2.4.1 Qualitative and Quantitative Research

Performance evaluation proposed in this research has been carried out using mix method which combines both qualitative and quantitative analysis. This section will briefly discuss the qualitative and quantitative research relevant to this research.

Qualitative research seeks to provide understanding of human experience, perceptions, motivations, intentions, and behaviors based on description and observation and utilizing a naturalistic interpretative approach to a subject and its contextual setting (Oxford University Press, 2008). Qualitative findings grow out of three kinds of data collections; in-depth open ended interviews, direct observations and written documents. The data for qualitative analysis normally comes from fieldwork whereby the researchers spent time in the setting under study situations. Its findings may be presented alone or in combination of quantitative data. In current research practice, qualitative methods are frequently used in evaluations because they tell the program's story by capturing and communicating the participants' stories. Qualitative findings in evaluation illuminate people behind the numbers and put faces on the statistics (Patton, 2001).

On the other hand, quantitative research is based on traditional scientific methods, which generates numerical data and usually seeks to establish causal relationships

between two or more variables, using statistical methods to test the strength and significance of the relationships (Oxford University Press, 2008). Quantitative research has typically been more directed at theory generation and theory verification (Punch, 2005). In the case of this research, variables used to measure the performance of internet-based application for Agribusiness in Malaysia are explained in the next section.

2.4.2 Variables of Performance Evaluation: Acceptance & Satisfaction

This section explains general concept and definition of two variables used in the quantitative analysis. They are acceptance and satisfaction of Agribazaar. The explanation of these two words is restricted to the research objectives as stated in the previous chapter.

The first word which relates to this research is acceptance of information technology (IT). It has been the subject of much research in the past two decades. Several theories have emerged that offer new insights into acceptance and use, at both the individual and organizational levels such as Technology Acceptance Model (TAM) (Lai and Li, 2005). Researchers are generally agreed that an individual's beliefs and perceptions of IT have a significant influence on their usage (Saade and Bahlee, 2005).

The concept of satisfaction has been a major subject of psychologists, and there is general agreement that satisfaction is an attitude (Pearson and Bailey, 1980; Schwab and Cummings, 1973; Wanous and Lawler; 1972). An attitude is characterized by both the direction (positive or negative) of an individual's feeling toward something and the intensity of that feeling.

In this study, the performance of Agribazaar has been evaluated based on these two variables.

2.4.3 Technology Acceptance Model

Technology Acceptance Model (TAM) is an adaptation of the Theory of Reasoned Action (TRA) to the field of Information System. TAM was developed to explain computer usage behaviors. According to TAM, perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use. Perceived usefulness is also seen as being directly impacted by perceived ease of use.

Researchers have simplified TAM by removing the attitude construct found in TRA from the current specification (Venkatesh et al., 2003). Attempts to extend TAM have generally taken one of three approaches:

i)   By introducing factors from related models

ii) By introducing additional or alternative belief factors

iii) By examining antecedents and moderators of perceived usefulness and perceived ease of use (Wixom and Todd, 2005).

TRA and TAM, both of which have strong behavioral elements, assume that when someone forms an intention to act, that they will be free to act without limitation. In practice constraints such as limited ability, time, environmental or organizational limits, and unconscious habits will limit the freedom to act. Attitude towards adoption is influenced by factors such as:

i)   Perceived ease of adoption;

ii) Apprehensiveness

iii) Perceived utilities of technology (extrinsic motivation)

iv) Enjoyment (intrinsic motivation)

In addition, individual characteristics like age, qualification, their prior experiences in adopting technology, technology suppliers' commitment, compatibility with existing technology and enhanced value are also important factors.

2.5 Web-based Applications for Agribusiness in Malaysia

Web-based applications for agribusiness in Malaysia are generally accomplished by government agencies. The Ministry of Agriculture and Agro-based Industry (MOA) is the key government agency which persistently providing supports via multiple channels in improving and sustaining the agriculture sector in Malaysia. The ministry performs its roles through various agencies which responsible for specific roles in supporting the agriculture sector. Table 2.1 depicts the MOA's agencies and their roles.

Table 2.1: The MOA's Agencies

Agencies	Roles
Department of Agriculture	Supporting various agricultural fields, particularly in food crops and agro-processing industries to ensure sufficient food production.
Department of Fisheries	Managing and developing the fisheries sector of Malaysia.
Department of Veterinary Services	Managing and monitoring the animal industry and food from animal products.
Federal Agricultural Marketing Authority (FAMA)	Coordinator of food marketing and agricultural resources.
Malaysia Agricultural Research and Development Institute(MARDI)	Implementing research activities on food and agriculture.
Malaysia Fisheries Development Authority (LKIM)	Improving the social-economic status of fishermen with focusing on enhancement and development of the fisheries sectors.
Farmer Association Authority(LPP)	Improving farmers' economic and social perspectives.
Malaysia Agricultural Bank	Providing financial assistance for the agricultural activities.

Muda Agricultural Development Authority (MADA)	Supporting and managing the economic development of Muda Irrigation area.
Kemubu Agricultural Development Authority (KADA)	Supporting and managing the economic development of Kemubu area.
Malaysia Pineapple Industry Board (MPIB)	Managing and monitoring pineapple industry

All agencies listed in Table 2.1 are vital to the agriculture growth in Malaysia. Various efforts have been carried out to ensure that the agriculture sector is constantly raised to achieve the government's visions. The current catalyst towards achieving the government's vision is by utilizing the information and communication technology (ICT). The deployment of ICT has been established as a mean to improve productivity of businesses in the other economic sectors in the world. It has been used as marketing channel for numerous types of products and services which are part of the cause to the globalization of businesses. The major implementations of the technology are the web-based applications and the mobile applications.

An early observation has been done to comprehend the web-based agribusiness applications initiative for the MOA's agencies. Table 2.2 shows the result of the observation.

Table 2.2: Web-based Applications Initiative by MOA's Agencies

Agencies	Web-based Applications
Department of Agriculture	Agribazaar
FAMA	AgrobasedProduct.com
MARDI	MyFruits.org

Information listed in Table 2.2 shows that ICT initiatives have been done by the government to support the business activities for agriculture sector in Malaysia. One of them is known as Agribazaar, which has been chosen as a case study for this

research. The following section elaborates further on Agribazaar, a web-based application for agribusiness in Malaysia.

2.6   Agribazaar (http://www.agribazaar.com.my)

The Agribazaar is a web portal provided by the Department of Agriculture, Ministry of Agriculture and Agri-based Industry. It is designed to offer an internet-based commerce infrastructure for buyers and sellers of agriculture products (Mimos Berhad, n.d.). Agribazaar has been launched on 2003 with 3 basics modules which are e-Make, e-Support and e-Payment. The aim of this portal is to improve market reach, efficiency, and productivity among individuals or businesses involve in buying or selling agriculture products. The portal has undergone further enhancement, in terms of the number features with the inclusion of modules e-Buy/Sell, e-Logistic (Mimos Berhad, n.d.). Appendix A presents screenshots of the portal, which has remain as it is over the period of this study.

The Agribazaar is considered as a marketing channel which allows individual or organizations to register with the application in order to promote their businesses. Marketing channels can be of different types, ranging from advertising channels, order processing channels, to customer support channels (Chaudhury et al., 2001). Promoting the agricultural products is a challenging tasks due to the nature of the products itself. This requires a good strategy of marketing. Agribazaar has been designed to support the agribusiness entity via providing a platform to promote agriculture-based products and services.

The opportunity given by the Department of Agriculture (DOA) will broaden of market size of agriculture products. This is due to the fact that a web-based applications are easy to access anytime at anywhere in the world. It is proven by the number of foreign registered users of Agribazaar. These registered users are from various countries in the world which includes Bahrain, Bangladesh, China, Indonesia, India, Maldives, Mexico, Morocco, Mongolia, Nigeria, Netherlands, New Zealand, Pakistan, Switzerland, Spain, Vietnam, Sri Lanka, South Africa, Syria, Taiwan, The United States of America, the United Kingdom and some other countries in the world (Mimos Berhad, n.d.).

Based on the profile of Agribazaar users found in the portal, the number of registered users of Agribazaar is compiled. An observation has been conducted to fulfill this objective. According to Norliza et al. (2007), in the observation accomplished on 12 and 13 August 2007, the registered users of the Agribazaar increased approximately 15 users within a day. The number of registered users according to the states in Malaysia as at 13 August 2007 is presented in Table 2.3.
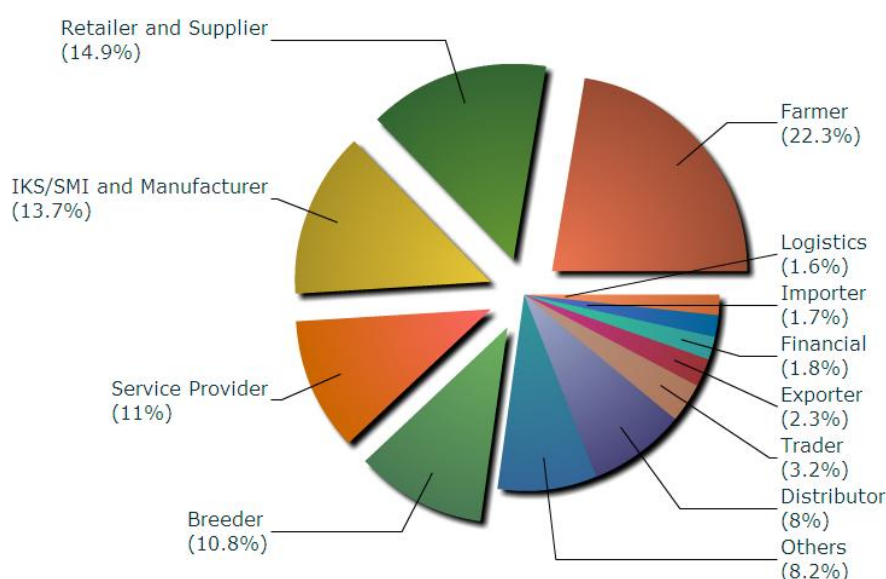
Table 2.3: Agribazaar registered users according to states in Malaysia as at 13 August 2007

States	Number of Users	Percentage (%)
Selangor	7021	29.1
Kuala Lumpur	2772	11.49
Johor	2303	9.55
Terengganu	1778	7.37
Perak	1725	7.15
Kedah	1445	5.99
Kelantan	1203	4.99
Pahang	1205	4.99
Pulau Pinang	999	4.14
Negeri Sembilan	903	3.74
Melaka	695	2.88
Sarawak	599	2.48
Sabah	459	1.9
Others	420	1.74
Putrajaya	261	1.08
Perlis	243	1.01
Wilayah Persekutuan Labuan	94	0.39

|		
Total Number of Users	**24125**	**100**

According to Table 2.3, the state with the highest number of users is Selangor with 7,021 agribusiness entities which contributed to 29.10% of the total users. It is then followed by Kuala Lumpur and Johor with 11.49% and 9.55% respectively. The state with the lowest number of users is Wilayah Persekutuan Labuan with 0.39%. In total there were 24,125 registered users in the entire country and 420 from the other countries in the world.

The number of registered users has increased gradually over the period of this study. As reported in the portal (Mimos Berhad, n.d.), the total of registered number of users as at 23 December 2009 is 55,632 members. Back in 2007, the total of registered user reached at 28,371 members and increased to 41,737 members in 2008. Collectively, within three years, the average number of newly registered user per month was between 1,100 to 1,160 users. They can be classified according to business types or subsectors, as presented in the Figure 2.1. The proportion of users according to states in Malaysia as at 23 December 2009 stood as similar as back in 2007, as depicted in Figure 2.2 with Selangor, Kuala Lumpur, Terengganu, and Johor to be the top four states, where most of Agribazaar's users are located.

Source: Agribazaar Portal

Figure 2.1: Percentage of Agribazaar registered users according to business type as at 23 December 2009
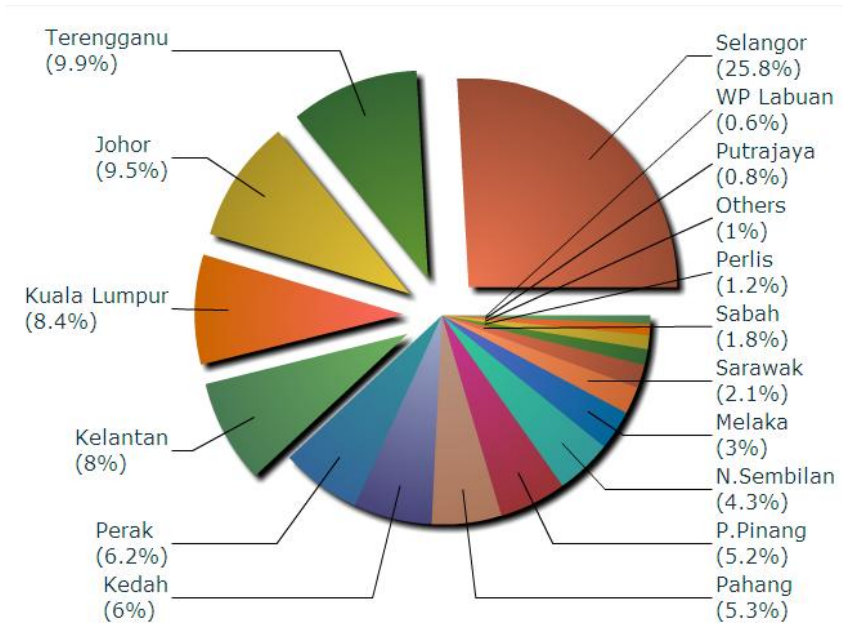
Source: Agribazaar Portal

Figure 2.2: Percentage of Agribazaar registered users according to states in Malaysia as at 23 December 2009

2.7   Chapter Summary

Agriculture business is one of key economic sectors in Malaysia which has contributed to a great amount of revenue to Malaysians. The advancement of information and communication technology (ICT) drives the traditional method of agriculture business to the borderless transactions. As a result, Agribazaar has been setup by Government of Malaysia to be a platform for agriculture traders to conduct business electronically. As it has been the dominant portal for conducting business among agriculture traders for more than seven years, it is important to measure the performance of such internet-based application and its effectiveness to users, society and national economy.

CHAPTER 3

METHODOLOGY

This chapter describes the research design, research hypothesis and methodology used in this study. It includes descriptions on the sampling of the study, survey instrument, data collection procedures and statistical techniques for data analysis. This research is an exploratory research study as its major purpose is to gain a better understanding of the performance and acceptance of Agribazaar portal amongst agriculture community. The research has been conducted in several phases. Figure 3.1 presents the approach used.
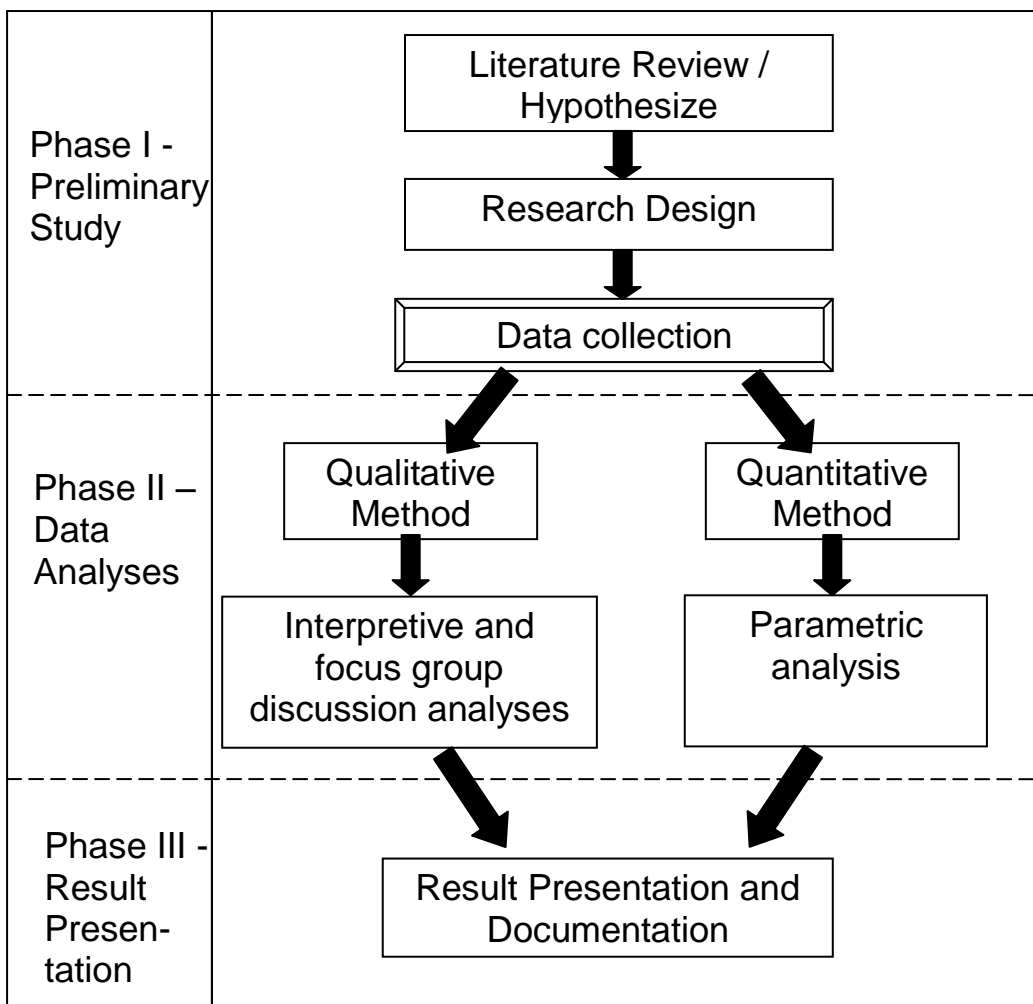

Figure 3.1 Research Phases

3.1 Phase I - Preliminary Study, Research Design and Data Collection

The research begins with preliminary study from which the factors or constructs for determining the use and acceptance of Agribazaar are drawn from. The research framework for this study is adopted from Venkatesh et al. (2003). This framework has been popularly referred by other researches and has been used to evaluate internet websites (Fritz & Schiefer, 2003; Fritz & Schiefer, 2002).

Technology Acceptance Model (TAM) has also been incorporated in the framework to perform the analysis. The motivation behind the integration of technology acceptance research with the criteria identified is to have a better understanding of the acceptance and use of internet website specifically internet based applications for agribusiness.

There are many factors as suggested by Venkatesh et al. (2003), Lesley University Library (2007) and Schrock (2006) to determine the use and acceptance of internet website. Most of which can be grouped into four major constructs: Performance Expectance, Effort Expectancy, Social Influence and Facilitating Conditions. Since these constructs have been largely used for related research works, this research uses the same four constructs. These constructs are hypothesized to directly influence User Acceptance. When employed together these constructs are identified as the factors that determine the technology use.

Behavioral Intention has been omitted as suggested by Ajzen (1991) and Straub, Limayem & Karahanna (1995). The reason lies in the role of behavior itself, or the use of the system is more important than the intention to use it. Therefore, the most important aspect of this study is to find out whether the users actually use the technology and not concentrating on their intention towards using it.

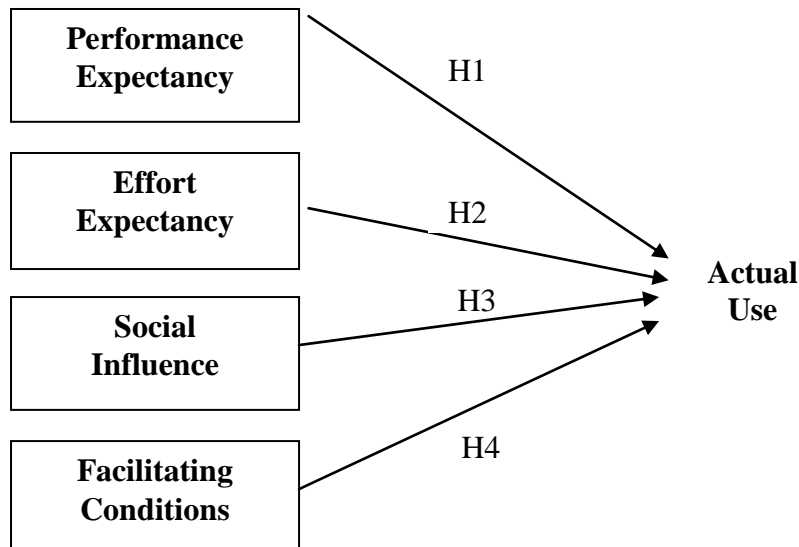Figure 3.2 represents the research framework used in this study.

21

Figure 3.2: Hypothesized Model

The following sections explains the constructs used.

3.1.1 Performance Expectancy

Based on many website evaluation criteria from various researches (e.g. Fritz & Schiefer, 2003; Fritz & Schiefer, 2002; Lesley University Library, 2007; Schrock, 2006), performance expectancy plays important role in influencing the use of a website. Some of the related criteria which falls under performance expectancy such as the comprehensiveness and the reliability of the information, whether or not the use of the agribusiness website can increase the productivity (Lesley University Library, 2007; Schrock, 2006), and whether or not the use of the agribusiness website can increase the chance of getting business (Fritz & Schiefer, 2003). Performance expectancy therefore can be described as the confidence level of a person to increase his or her job performance when using a system (Venkatesh et al., 2003). When most of the criteria meet the expectation of users in using agribusiness website, users will feel confident that they will get business and meet trusted people on the website to do business with.

3.1.2 Effort Expectancy

This construct is related to how far users believe that the website is easy to use (Venkatesh et al., 2003). Some criteria including perceive ease of use (Davis, Bagozzi & Warshaw, 1989), complexity including coverage and clarity of the website content, and ease of use including the accessibility and availability of the information on the website (Lesley University Library, 2007). The ease of use of agribusiness website is important in order not to give difficulty and hamper users, especially the inexperience users to use it. Criteria evaluated on Agribazaar portal includes whether or not working with the system is complicated, the clarity of the information on the website, whether or not the website load easily and quickly, and whether or not it is free to obtain the information from the website.

3.1.3 Social Influence

According to (Venkatesh et al., 2003), social influence is "defined as the degree to which an individual perceives that important others believe he or she should use the system". This construct describes the individual's behaviour, influenced by how the surrounding people will judge him or her when they are using a particular technology. Some criteria employed in evaluating Agribazaar portal includes whether or not there are people who are important to the user encourage the use of the website, whether or not any organization support the use of the website, whether or not it will improve the credibility/reputation and position of the user, and whether or not it will improve the interactivity between seller/buyer over the websites at anytime.

3.1.4 Facilitating Conditions

This construct relates to how far an individual believes the existence of proper technical and organizational structure to support and maintain the system (Venkatesh et al., 2003). In agribusiness website context, this factor is important to determine the reputable organization is there behind the system to support it (Fritz & Schiefer, 2003; Fritz & Schiefer, 2002). Another aspect is the attractiveness, design and navigation system of the website, whether or not the menu items are logically grouped and the

website is compatible with all matters related to individual's work (Schrock, 2006). In the context of agribusiness website, for example, whether or not the website offers facility to categorize all agriculture products advertised in the selling page, according to easy-to-understand categories.

Based on the constructs several hypotheses have been made. The hypotheses are required to test the assumptions of the influential factors. The following are the hypotheses:

H1: Performance Expectancy will positively influence Agribazaar portal use.
H2: Effort Expectancy will positively influence Agribazaar portal use.
H3: Social Influence will positively influence Agribazaar portal use.
H4: Facilitating Conditions will positively influence Agribazaar portal use.

This study has been conducted amongst the Agribazaar portal users and data has been collected by means of a survey conducted online in Malaysia in 2008. Convenient sampling has been used for data collection. A total of 1200 questionnaire forms (Appendix B) have been delivered to respondents of which 119 were returned giving a response rate of 10%. To exclude incomplete and inappropriate questioners a simple cleansing method was used and this resulted in a sample that was well distributed in terms of demographic information (e.g. age, and education level) was used for data presentation and analysis.

3.2   Phase II – Data Analyses

Two methods of analysis have been used in the study. Quantitative method is used to perform various statistical measures. The measures aim to identify the influential factors of Agribazaar usage. The qualitative method has been applied on analyzing the feedbacks obtained from users in the portal and focus group discussion. The qualitative findings are to support the numerical analysis. The following sections explain both methods.

3.2.1 Quantitative Method

Quantitative method such as descriptive statistics, regression, and correlation have been used on data collected through questionnaires. The questionnaires were distributed to a broad range of users in the portal to create variances in terms of gender, age, educational level and the portal's usage experience.

The survey instrument has been developed based on constructs identified from literature review (Venkatesh et al., 2003; Lesley University Library, 2007 and Schrock, 2006). A pilot test with the first group (5 participants) was conducted to ensure the content validity of the measures is applicable in the current context. Based on the feedback, the questionnaire has been revised accordingly. The updated questionnaire has then been validated with a second group of pilot test participants (5 participants) and feedback has been requested. No significant suggestion has been received and therefore, no further changes have been made. Subsequently, the questionnaire has been distributed to users by sending an invitation email prompting them to respond in a dedicated website.

All determinants are measured using a scale adopted from study by Dennis, Venkatesh & Ramesh (2007). In addition to the above measures, gender, age, educational level and Agribazaar portal usage experience are measured using single items, which are acceptable given the factual nature of these constructs.   The questionnaire (Appendix B) consists of two parts: Part 1 requests the respondents to provide some background information e.g. age, gender, educational level, monthly income and years of experience using Agribazaar; and Part 2 consists of 21 questions on a 6-point Likert scale (ranging from 'strongly agree' (coded 5) to 'strongly disagree (coded 1) and 'not applicable' (coded 6)), which represents the items to measure the awareness and satisfactory level of using Agribazaar.

Respondents were given ample time to answer the questionnaire. In each phase of the survey, the timeframe is set to one month to complete the questionnaire. The survey was administered on a dedicated website and the data were kept in a database. This is to ensure that, the respondents can access the questionnaire conveniently and are

recruited from a random list of contacts obtained from Agribazaar portal. After collecting all the responses, a statistical software package is used to analyze the data.

The following section describes the statistical measures used for data analysis.

3.2.1.1 Descriptive Statistic

The important role of statistics is data gathering, formulating and providing formulation that can be easily understand by projecting group. Descriptive statistic can be used to describe the sample pattern. As mentioned earlier, this study is set to test the hypotheses, in order to determine which factor is most related. Every factor's Mean is calculated to measure the importance of each of them respectively.

3.2.1.2 Reliability and Validity

The first step is to examine the reliability and validity of the questionnaire. Reliability and validity tests are conducted to determine the reliability of the questionnaire. According to Sekaran (2000), the value of Cronbach Alpha range between the coefficient value of .70 to .98 shows that the questionnaire is considered highly reliable. On the other hand, if the coefficient value of reliability is lower than .60, the questionnaire has low reliability and must be rejected (Sekaran, 2000). Therefore, given the exploratory nature of this study, .70 is chosen as the cut-off point for the reliability test.

3.2.1.3 Regression Analysis

The regression analysis was chosen to test the proposed hypotheses in this study and analyzed how dependent variables can be used to predict a dependent linear regression variable based on the correlation between the variables. The null-hypothesis is rejected, if the p-value is lower than .05. The regression scores for each of the dependent variables are categorized as high, medium and low. Assumption for the relation's power between variables can be seen in Table 3.1.

Table 3.1: Assumption for the relation's power between variables

Regression Coefficient	Relation's Power
.00 - .20	Can be disregarded
.20 - .40	Low
.40 - .60	Middle
.60 -.80	High
.80 -1.00	Very High

3.2.1.4 Pearson Correlation Coefficient

This correlation measure is used to further examine how much the dependent variable selected correlate with Actual Use. The scale used in this study has been suggested by Sekaran (2000), which is used to describe the intensity of relationships between the dependent and the independent variables of the study as shown in Table 3.2.

Table 3.2: Person's r indices of Correlation

Pearson's r	Indication
Between ± 0.80 to ± 1.00	High correlation
Between ± 0.60 to ± 0.79	Moderately high correlation
Between ± 0.40 to ± 0.59	Moderate correlation
Between ± 0.20 to ± 0.39	Low correlation
Between ± 0.01 to ± 0.19	Negligible correlation

3.2.2   Qualitative Method

In addition to the quantitative method, interpretive analysis has been employed by analyzing the comments posted by the users in the User Feedback section on the Agribazaar portal. In order to conduct the interpretive analysis, the comments and feedback has been obtained freely and no permission from the portal administrator is needed to obtain the data. A specific date is set, as the comments kept increasing each day. As at 8 August 2007, 372 comments were extracted and analyzed. The comments

have been taken after deducting the duplicate entrees, and irrelevant comments. Issues raised by the users have been identified.

The interpretive analysis has been employed to further understand the Agribazaar portal's user and their point of view when using the portal. According to Kaplan & Maxwell (1994) as cited in Myers (1997), the goal of interpretive analysis is to understand the phenomenon from the point of view of the participants and its particular social and institutional context, when the quantified textual data is unable to explain this. In addition, qualitative findings in evaluation put people in perspective and take consider the people's point of view to support the numbers (Patton, 2001).

Therefore, in order to further support overall findings, the study also employed feedbacks obtained from a focus group discussion to verify the quantitative and interpretive findings. The discussion was organized by MIMOS on 18 and 19 November 2009 in Port Dickson, Negeri Sembilan. The workshop was attended by the officers from the related agencies of Ministry of Agriculture, selected users of Agribazaar according to business types defined in the portal (e.g. IKS/SMI and Manufacturer, Retailer and Supplier, Farmer and Breeder) and was facilitated by MIMOS. The main objective of the workshop was to conduct a post-mortem of the existing Agribazaar portal and as well as to get feedbacks from the users for future enhancement of the portal.

3.3   Phase III – Result Presentation

In this phase, the result from Data Analyses are interpreted and presented. The results aim to answer the all research objectives as mentioned in Chapter 1. Details of the result are presented and discussed in Chapter 4.

CHAPTER 4

DATA ANALYSIS AND RESULTS

In this chapter, activities conducted for Phase I and results of analysis conducted in Phase II of the research methodology are presented.

4.1   Quantitative Method

4.1.1   Demographic and Descriptive Statistics

The statistics of the total registered users over the period of this study has been discussed in detail in Chapter 2. The current number of registered users of Agribazaar has increased gradually to a hefty number of 55,821 members as of 4 January 2010. A survey was conducted online from 1ˢᵗ of June until 31ˢᵗ of July amongst Agribazaar users in 2008. The first phase was conducted from 1ˢᵗ June until 30ᵗʰ June, 2008. However the response rate was very low with only 1.8%. Only 35 responses recorded from 1876 invitations sent via email, prompting the users to answer the questionnaire. To overcome this issue, the second phase was carried out from 1ˢᵗ of July until 31ˢᵗ of July, 2008 with different approaches such as sending out new invitation email in Bahasa Malaysia version in order to increase response rate and sending out the invitation to primary email addresses, excluding secondary email addresses such as the one registered under Agribazaar portal.

As a result, the response rate increased to 10%. The number of usable respondents has increased to 119, with 84% of the respondents being male and 16% of the respondents being female. Majority of the respondents are between 31 and 40 years of age (46%). In terms of their educational level, majority of them have completed their Bachelor degree (34%). In addition, from the respondents who are working (N=104), 40% of

them work in the private sector and earn around RM1,001 – RM3,000. The demographic profile of the respondents is shown in Table 4.1.

Table 4.1: Demographic Profile

Demographic profile	Frequency	Percentage (%)
Gender		
Female	19	16
Male	100	84
Age (in year)		
Below 21	0	0
21-30	36	30
31-40	55	46
41-50	19	16
Above 50	9	8
Education level		
PMR	1	0.8
SPM	24	20
STPM	9	8
Bachelor Degree	40	34
Master Degree	12	10
Others	33	28
Organization's Type		
Government	20	19
Semi-Goverment	10	10
Private	41	40
Personal Business	12	11
Not Mentioned	21	20
Income Level		
RM 1,000 and below	0	0
RM1,001 – RM3,000	42	40
RM3,001 – RM5,000	30	29
Above RM5,001	11	11
Not Mentioned	21	20

4.1.2 Agribazaar Portal Usage

The respondents have been enquired on the usage of the portal, in terms of years of experience using Agribazaar. Majority of respondents have between 1 to 3 years of experience (39%). The internet (email, search engine and links from other website)

plays an important role as the main marketing channel of Agribazaar as 42% users have revealed that they first knew about the portal from this channel. Meanwhile, Brochure and Magazines play the least role in this context with only 2% of users. A number of 104 respondents (87%) are registered users while the remaining is not. Table 4.2 shows the statistics.

Table 4.2: Usage Information

Agribazaar usage	Frequency	Percentage (%)
Experience using Agribazaar (in year)		
Less than 1	25	21
1-3	46	39
4-5	4	3
More than 5	3	3
Cannot be determined	41	34
Registered user		
Yes	104	87
No	15	13

4.1.3 Reliability and Validity of Questionnaire

For the data analysis, Cronbach Alpha reliability coefficients for the questionnaire (20 indicators) and each construct has been used. Results are shown in Table 4.3. According to Sekaran (2000), Cronbach Alpha's value of 0.70 and above is acceptable, and lower than 0.70 indicates an unreliable scale. A value of 0.866 has been obtained for the test which shows that all 20 indicators used in this study seems reliable.

Table 4.3: Cronbach's Alpha reliability test for the hypothesized model

Cronbach's Alpha	Cronbach's Alpha Based On Standardized Items	No of Items
.866	.872	20

Cronbach's Alpha reliability test has also been conducted on the constructs. Table 4.4 presents the results. From the table, it can be seen that the four constructs obtained values of more than 0.70 indicating that the reliability of all measurement scales was above the recommended minimum level of 0.70.

Table 4.4: Cronbach's Alpha reliability test for constructs

Constructs	Cronbach's Alpha	No. of Items
Performance Expectancy	0.782	5
Effort Expectancy	0.823	5
Social Influence	0.793	5
Facilitating Condition	0.742	5

4.1.4 Regression Analysis

Due to the limited sample size, statistical analysis was limited to correlation and regression analysis. Correlation analysis results appear in Table 4.6 which includes the observed correlations. Table 4.5 also depicts the results and the associated p-values in accordance with the research model.

The regression analysis has been used to expose how different factors affect the use of Agribazaar portal. Statistically, the model used for this study is statistically significant when the p-value is .000, which is less than .001. The results of the regression analysis are presented in Appendix C. Table 4.5 depicts the summary of the result obtained.

Table 4.5: Summary of Hypotheses Test

Hypotheses Tested	Coefficient	Supported? Y/N
H1	0.214	Y
H2	0.282	Y
H3	0.242	Y
H4	0.267	Y

User acceptance to utilization of Agribazaar is positively affected by Performance Expectancy (PRE) (β=0.214 P<0.01) thereby supporting hypothesis one. This indicates that utilization of the portal will increase if an individual believes that using the system will help him or her to get business leads and increase productivity, thus help them to increase sales.

In terms of Effort Expectancy (EFE), result in the Appendix C shows that user acceptance to utilization of the portal is positively affected by effort expectancy (β=0.282 P<0.01) thereby supporting hypothesis two. This indicates that utilization of Agribazaar will increase if the users feel the portal is easy to use thus making it easier to market their products. Another aspect is when the navigation of the system is simple, the users will feel more likely to use the portal.

The users also feel that their credibility will improve by using the website. User acceptance to utilization of Agribazaar is positively affected by Social Influence (SOE) (β=0.242 P<0.01) thereby supporting hypothesis three. This indicates that utilization of Agribazaar will increase if the users perceive that others believe he or she should use the portal to market their products. On another aspect, the interaction between seller and buyer on the portal also influence the utilization.

Facilitating Condition (FCC) also positively affects the utilization (β=0.367 P<0.01) thereby supporting hypothesis four. The utilization of Agribazaar will increase if the user believes that an organizational and technical infrastructure exists to support use of the portal. With the support from the DOA and MIMOS, the users feel more confident to use the portal. In summary, the result from this analysis shows all hypotheses are supported. Effort Expectancy had the strongest effect with a path coefficient of 0.282 emphasizing the important role of the user friendliness of the portal in driving his/her acceptance toward using Agribazaar.

4.1.5   Pearson Correlation Coefficient Analysis

This study runs a correlation analysis to further test the hypotheses. The results indicate that all the purposed factors are positively correlated with Actual Use. The score of importance of factors are shown in Table 4.6 and Appendix C. Other factors

such as background variables (gender, age, educational level and income level) showed low correlation with use and therefore have been disregarded in the model.

Table 4.6: Ranking of Factors according to the Correlation score

Factor	Correlation score
EFE	.831
SOE	.818
PRE	.786
SOC	.730

4.2   Qualitative Method

This section presents results obtained from interpretive analysis and focus group discussion.

4.2.1   Interpretive Analysis

Based on the information gathered from users feedback found in the portal, interpretive analysis has been conducted. Table 4.7 shows the statistics of data gathered as of 8 August 2007.

Table 4.7: Statistics on data gathered

Description	Total
Comments	590
Duplicate Entries	20
Irrelevant Comments	217
Entries Analyzed	353
Comments Analyzed	372
Number of Issues Raised	32

From the analysis of the total comments (N=372) a number of issues can be highlighted:

i)   Account accessibility.

23.66% of users could not access their account. Most of them could not access their accounts due to incorrect login id or password. There is no facility in the portal to retrieve forgotten logins or passwords. A few users could not login even when the correct login ids and password have been used.

ii)   Portal Content.

10.75% of the users found that the portal provides inadequate information. Users suggest various agricultural/farming materials to be included in the portal. These are:

- Herbs for traditional medication
- Landscaping plants
- Product packaging and marketing services
- Pesticide
- Aquatic products
- Daily market price for vegetables and fruits
- Agricultural techniques and technologies
- Horse breeding
- Hydroponics planting
- Mushroom planting
- More categories in the tender/offer section
- Recipes trading in general
- Training courses
- Advertisements on agricultural products or services

Further feedback from the users also raised the issue of knowledge sharing amongst the registered users as currently there is no Forum or Chat feature to communicate and share ideas between the interested parties. Hence, the users feel less interactivity on the portal.

Furthermore, the legitimate company registration information for a registered user in most cases is unavailable under each user profile. According to the findings, company registration number is important to determine between individuals whom are interested to do business, or individuals whom are

casually registered with the portal and not actively or directly involved in getting business leads from the portal.

iii)   Registration.

9.41% of the total comments are related to registration problem. Among the issues concern are registration could not be done using the 3G phone, international candidate could not register as he is without an identification number, users receive no confirmation/ acknowledgement after registration, application rejected, unsuccessful registration, compulsory columns could not be filled, and waiting period after registration is too long as user can only receive the login id and password after 3 days of registration.

iv)   Software features.

4.84% of the users highlighted their concern on the efficiency of the software. Most of them felt that the loading of pages is slow reaching up to 10 minutes for one page at certain times. Several suggestions have been made to upgrade the services. These include offering after office services, increase categories on products/services displayed on the website, user friendlier interface, speed up response from web master or web administrator, and encourage users to be more active in discussion or interaction.

v)   Emails accessibility.

4.30% of the users have problems with their emails. Users could not access their emails, emails could not be sent to the portal administrator and users receive many spam emails.

vi)   Information accuracy.

General information such as contact details e.g. telephone and fax numbers and address of the State Agriculture Department is not up to date. The respondents (3.49%) also highlighted the needs to filter old postings in the portal especially in comment and e-Buy/Sell sections.

vii)   Portal promotion.

3.49% users highlight the issue of portal promotion. Users suggest the government to promote the website extensively as in their opinion; there are many people who are unaware of the portal existence. Users perceived that there will be more activities/offerings for selling and purchasing when the portal is publicly and widely known.

viii)   Other issues

Other problems highlighted by the users consist include non user-friendliness interface, language barrier as all offerings are mostly in native language (Bahasa Malaysia), difficulty to edit the postings e.g. selling and purchasing, unorganized website content, static information on the website, difficulty in searching for specific information, lack of pictures, computer illiteracy amongst the users, and broken links.

Nevertheless, 15.32% of the users agree that the Agribazaar portal provides useful information such as product directory for trading activities.   Examples are information on contacts of prospect buyers or sellers.   Appendix D represents result of the interpretive analysis based from the comments taken for from the portal.

4.2.2   Focus Group Discussion

In addition to the findings obtained through interpretive analysis, the study also discovered interesting facts related to the usability problems of the Agribazaar portal, obtained from a focus group discussion. It has been found that findings obtained from the discussion supported the findings from the quantitative and interpretive analyses, in terms of usability aspect of the portal.

Technical issues such as slow page loadings, complicated registration process, are too cluttered pages with information and unrelated images, and password recovery problem have also been highlighted by the users. In addition, it has been found that only the e-Buy/Sell feature is preferred.   Other features such as e-Stock, e-Logistic, e-Support and e-Make have not been utilized.

Privacy issue has been another important issue highlighted by a user. Examples of privacy issue include dissemination of personal details, such as full name, telephone number, and address of the business owner. The portal has no control of exposing users profile to the public. Collectively, all members in the focus group agree to the fact that the DOA has never promoted the portal extensively to the public, which results to little awareness on the existence of the portal.

The role of portal administrator was also queried in terms of slow and sometimes no response to requests and complaints made by users. As a result, users are not able to get a new password if they forgot their existing password, and thus, could not personalize their offers in the e-Buy/Sell section. For example, to add a new category in the e-Buy/Sell offer form, a user need to wait for the portal administrator to approve the new category first before they can post a new offer on the portal. Without a password they are not able make a request to the portal administrator and thus, could not post a new offer.

The focus group members also agreed that some important information such as company's registration number is unavailable causing problems in making business deals. Chat and forums are also two important features that are missing in the portal, thus making Agribazaar to be less attractive to potential business users.

4.3   Conclusion of the findings

Conclusion and implications of the overall findings will be discussed in Chapter 5. The final part of the conclusion will also touch on the limitations and suggestions for future research.

CHAPTER 5

CONCLUSION

This chapter discusses findings of the study, highlights issues and provides recommendations.

5.1   Implication of the Study on Research Objectives

The main objective of this study is to evaluate the performance of Agribazaar. The study seeks to achieve the following sub-objectives;

i)   To identify existing ICT tools currently available for small scale farmers.

Due to the limitation of funds, data to fulfill the first objective has been collected from secondary sources. Particularly, from researches carried out by Zulkhairi et al. (2008); Elaish (2008); and Zahurin et al. (2007) in the rural northern region of Malaysia. The studies found that the agriculture community do not have high education background, and have little ICT knowledge. The highest education level is SPM. This is expected as most of the young people who are educated had left their villages to study in the higher institution of learning in towns and cities. The people who are involved in the agriculture sector comprises mainly of the remnants of the uneducated youth and older members of the community.

The findings obtained from this showed that the percentage of farmers and breeders using Agribazaar are 22.3% and 10.8% respectively forming a small portion of the users using the portal (www.agribazaar.com.my). The majority of the respondents (42%) revealed that they knew about the portal from surfing the internet, whilst a mere 2% discovered the portal from brochure and magazines.

This findings has been supported by Zulkhairi et al. (2008) and Elaish (2008) which stated that less than 10% of farmers in the paddy, rubber, fishing, and tropical fruits sectors in selected villages have heard about Agribazaar. In fact, less than 50% of the Agriculture College students interviewed in FELDA Bukit Tangga have heard of the portal. Thus it can be concluded that the awareness level amongst the agricultural community is still very low.

ii) To examine the acceptance of Agribazaar for conducting agricultural business.

The performance expectancy, effort expectancy, social influence, perceived facilitating condition has positive effect on user acceptance for utilization of Agribazaar's portal. This shows that respondents have accepted the web based application for marketing their products. The four constructs of utilization of Agribazaar accounted for more than 59.2% of the variance in this variable. This indicates that the four constructs are acceptable measures to evaluate actual use of Agribazaar.

iii) To examine the satisfactory level of Agribazaar in terms of agriculture business usage.

The portal have not been upgraded or enhanced since it was implemented six years ago. Thus there have been many dissatisfactions and limitations of the application. The current version of the portal is slow, and unfriendly. Mainly, usability issues have been the concerns of users. The comments posted on the portal showed that users have been unhappy with the usability of the portal and services facilitated by the administrator. These complaints have also been raised in the focus group discussion.

The new version of Agribazaar is in the pipeline as the Department of Agriculture who is the owner of the portal and together with the developer, MIMOS have decided to upgrade the application in order to address the dissatisfaction and limitation provided by the users.

iv) To examine the success of Agribazaar in terms of agriculture business usage.

Feedback from the focus group discussion revealed that the portal has created business leads. Through the portal, customers contacted business entrepreneurs via email or telephone after posting information on their products or offerings. Although Agribazaar was designed to allow buying, and selling online, the portal only allows information of the products to be posted, while the transactions occurs through secondary channels such as email, telephones or face-to-face.

Thus it can be seen that the portal is still in stage 1 of an e-Business model. According to Applegate et al. (2002) in stage 1, sellers are able to go direct to the customers without having to go through the middleman. However, in spite of the limitations, users of the Agribazaar portal have grown from 28,371 in 2007 to 55,821 members as of January 2010. This shows that the web based application has allowed farmers and other related agencies to increase their business opportunities.

v) To identify issues and challenges of successful implementation of Agribazaar.

(a) Most of the users have been unhappy with poor systems support. 23.66% of the users commented on their account inaccessibility due to account being blocked or slow feedback obtained from the system administrator.

(b) Technical issues on the system have also been highlighted. These include slow page loadings, inaccessibility to emails, and cluttered pages.

(c) The accuracy of the information in the portal is a concern for most users. One example is the contact details, telephone or address of officers in charged is not updated. In addition, old postings are not filtered in the comment and e-Buy/Sell section.

(d) The e-Buy/Sell feature has been preferred but not e-Stock, e-Logistics, e-Support, e-Plan, e-Payment, and e-Make.

(e) Forum or chat section to discuss and share knowledge amongst users is not available.

(f) Little awareness on the portal existence. The Department of Agricultural has done little effort in promoting the portal and provides inadequate training sessions to targeted users.

5.2   Proposition for Theory

This study validates four constructs as proposed by Venkatesh (2003). The model explains 59.26 % of the variance in user acceptance of Agribazaar's portal. Thus, the findings will expectantly spark more research into factors that influence adoption of other technological innovations.

5.3   Proposition for Practice

This study has shed light on some of the major factors which influence user acceptance for utilization of Agribazaar portal. The findings serve as feedback to the developer of Agribazaar and the Department of Agriculture. There is a need to promote the portal and provide training to targeted users such as farmers and middlemen.

A number of factors have been identified to be the reason for the low number of users. Among the factors are the diversity of agriculture sub-sectors, the number of people involved in agriculture, ICT literacy rate among the people involved in agriculture sectors, ICT infrastructure and promotional activity of Agribazaar.

5.4   Limitations and suggestions for future research

The sample used in this study consisted of a survey conducted online in 2007. In future, it is recommended that a research on determining factors affecting the actual usage of Agribazaar portal among users to be conducted. Additionally, the applicability of UTAT constructs in the context of needs can be explored.

Respondents in this study evaluated their usage intentions based on their perceptions of the portal and as a result factors that have been found are less significant. Other

factors such as Facilitating Condition may be significant if subjects were surveyed for actual usage. A study using a pre-implemented and post-implemented method would be another way of analyzing the successfulness of the portal.

Finally, other factors affecting user acceptance towards the utilization of Agribazaar may exist and further investigation on new factors is most desirable. Further testing and expansion of the model in this study thus, may capture factors not contemplated herein.

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Appendix A: Screenshots of Agribazaar Portal

Insentif	**Bantuan Kewangan**
• **Insentif untuk IKS** • **Skim Bantuan Khas Untuk Usahawan Wanita**	• **Skim Mikro Kredit Bank Pertanian** • **Institusi Kewangan Kerajaan** • **Bank Komersial** • **Tekun**
Peluang Perniagaan	**Direktori Halal**
• **Perniagaan berkaitan Pertanian** • **Industri Asas Tani**	• **Sijil Pengesahan Halal** • **Portal Halal Jakim**
Persijilan	**Kursus & Latihan**
• **Amalan Pertanian Baik (APB)** • **Skim Organik Malaysia (SOM)**	• **Kambing boer** • **Lembu Feedlot** • **Industri Asas Tani** • **Usahawan tani**

Selangor ....*Klik sini*
Negeri Sembilan ....*Klik sini*
Melaka ....*Klik sini*
Pahang   Johor
....*Klik sini*
Labuan
Putrajaya ....*Klik sini*

Kursus Pertanian *Percuma*

Anjuran: JabatanPertanian
Masa: 10.00 pg - 2.00 ptg
Tempat: Rumah Johor, Tapak MAHA,
Serdang, Selangor
Hubungi: 03-88703000

Kursus Ternak Belut
(Tawaran Skim Contract
Farming)

"Pelajari Teknik Perternakan Belut yang Mudah, Murah dan Efisen"

Anjuran: Meliza Bio Agro Resources
Hubungi: Liza (016-5587074)

Apa komen anda?

Nama : *

Email :

Komen : *

[Hantar]

Lihat komen pengguna

International Tropical Fruits Network

KEMENTERIAN PERTANIAN DAN INDUSTRI ASAS TANI MALAYSIA
Teknologi - Peneraju Pertanian Komersial

Welcome to the Official Site of
Department of Agriculture
Peninsular Malaysia

BDC

Paparan terbaik dengan Internet Explorer 5.0 dan ke atas ATAU Netscape 6.0 dan ke atas

Appendix B: Online Questionnaire

Part 1: Respondent's Background

Gender	: ◉ Male ○ Female
Age	: [:: Please choose your age :: ▾]
Marital Status	: [:: Please choose your marital status :: ▾]
Race	: ○ Malay ○ Chinese ○ Indian ○ Others
Education Level	: ○ PMR ◉ SPM ○ STPM ○ Bachelor Degree ○ Master Degree ○ Others
Are you working?	: ◉ Yes ○ No
Organization's Type	: [:: Please choose the type of organization :: ▾]
Monthly Income	: [:: Please choose your monthly income :: ▾]
Do you use Agribazaar?	: ○ Yes ◉ No
How long have you used Agribazaar?	: [:: Please choose the lenght of using Agribazaar :: ▾]
How did you know about Agribazaar?	: [:: Please choose Agribazaar source of information :: ▾]
Do you register with Agribazaar?	: ○ Yes ◉ No

Part 2: Respondent's Level of Acceptance

53

Survey on Acceptance Level of Agribazaar

Part 2: Respondent's Level of Acceptance		The following questions aim to determine your satisfactory level when using Agribazaar portal. Please choose the most appropriate rating. Your rating should range from **1** (**strongly disagree**) to **5** (**strongly agree**) For items that are not applicable, use **N/A**
	1.	The content in the website is comprehensive. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	2.	Using the website increases my productivity. ● 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	3.	I will increase my chances of getting a business by using the website. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	4.	The information is reliable and error-free. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	5.	There is a way to contact the buyer/seller through the website. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	6.	Using the website is so complicated, it is difficult to understand what is going on. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	7.	The information is clearly presented. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	8.	There is a fee to obtain the information. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	9.	You can move around the website easily and quickly. ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	10.	The website loads quickly. ○ 1 ○ 2 ○ 3 ○ 4

			5 ○ N/A
11.	People who are important to me (family, friends & business partners) think that I should use the website.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
12.	In general, the government (Department of Agriculture, Malaysia) has supported the use of the website.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
13.	I am in a better position than those who do not use the website.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
14.	My reputation/credibility with stakeholders has improved by using the website (i.e. relationship with government agency, banks, customers, retailers)		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
15.	I can interact with other buyers/sellers over the website at anytime.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
16.	Given the resources, opportunities and knowledge it takes to use the website, it would be easy for me to use the website.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
17.	The resources in the website have a reputable expert behind it.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
18.	The website "grabs me" and makes me want to read more.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
19.	Menu items are logically grouped.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
20.	Using the website is compatible with all aspects of my work.		○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ N/A
	We would like to hear your suggestions on how Agribazaar can be expanded or improved. What additional information or features would you like to see added to the site?		

Your comments on Agribazaar: (Up to 50 characters)

Your e-mail address:

Submit   Cancel

Appendix C: SPSS Output

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FCC, PRE, SOE, EFE[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: USE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.892[a]	.796	.789	.32017

a. Predictors: (Constant), FCC, PRE, SOE, EFE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.049	.201		.244	.807
	PRE	.770	.067	.214	2.888	.005
	EFE	.259	.082	.282	3.165	.002
	SOE	.239	.087	.242	2.744	.007
	FCC	.312	.067	.267	4.657	.000

a. Dependent Variable: USE

Correlations

		PRE	EFE	SOE	FCC	Gender	Age	Education Level	Income	USE
PRE	Pearson Correlation	1	.781**	.788**	.599**	-.010	-.037	.017	-.103	.786**
	Sig. (2-tailed)	.	.000	.000	.000	.917	.689	.858	.284	.000
	N	118	118	118	118	116	118	118	109	118
EFE	Pearson Correlation	.781**	1	.853**	.653**	.073	-.031	.040	-.023	.831**
	Sig. (2-tailed)	.000	.	.000	.000	.438	.737	.667	.810	.000
	N	118	118	118	118	116	118	118	109	118
SOE	Pearson Correlation	.788**	.853**	1	.620**	-.045	-.047	.053	.005	.818**
	Sig. (2-tailed)	.000	.000	.	.000	.628	.613	.571	.958	.000
	N	118	118	118	118	116	118	118	109	118
FCC	Pearson Correlation	.599**	.653**	.620**	1	.016	.035	.068	-.066	.730**
	Sig. (2-tailed)	.000	.000	.000	.	.867	.703	.466	.492	.000
	N	118	118	118	118	116	118	118	109	118
Gender	Pearson Correlation	-.010	.073	-.045	.016	1	.073	-.001	-.072	.041
	Sig. (2-tailed)	.917	.438	.628	.867	.	.435	.993	.459	.664
	N	116	116	116	116	117	117	117	108	116
Age	Pearson Correlation	-.037	-.031	-.047	.035	.073	1	-.018	.074	.018
	Sig. (2-tailed)	.689	.737	.613	.703	.435	.	.850	.442	.843
	N	118	118	118	118	117	119	119	110	118
Education Level	Pearson Correlation	.017	.040	.053	.068	-.001	-.018	1	.056	.048
	Sig. (2-tailed)	.858	.667	.571	.466	.993	.850	.	.561	.604
	N	118	118	118	118	117	119	119	110	118
Income	Pearson Correlation	-.103	-.023	.005	-.066	-.072	.074	.056	1	-.054
	Sig. (2-tailed)	.284	.810	.958	.492	.459	.442	.561	.	.579
	N	109	109	109	109	108	110	110	110	109
USE	Pearson Correlation	.786**	.831**	.818**	.730**	.041	.018	.048	-.054	1
	Sig. (2-tailed)	.000	.000	.000	.000	.664	.843	.604	.579	.
	N	118	118	118	118	116	118	118	109	118

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix D: Interpretive Result

Comments from agribazaar users

ID = 4-593   *as of from last reading (+ 3)*
Total Comments = 590
Duplicate entries = 20
Irrelevant comments = 217 (most of the users used this platform to advertise products, post messages/announcement, responses from agribazaar administrator)
Total Entries Analyzed = 353
Total Comments Analyzed = 372
The total number of issues raised = 32

Issues highlighted from users' comments

No	Issues	Reasons	Frequency
1	account blocked	incorrect password/login, certificate error, difficult/unable to log in (even though the password & log-in id is correct, sometimes the system asked users to re-register), tidak log-in selama sebulan, asked for help (i.e. to unblok) but did not get response, have been given user id but still could not log-in	86
2	website need to be regularly updated	date, inactive fax number, delete the garbage post, incomplete/wrong address, list of State Agriculture Dept. (tel. no, address, etc), links	13
3	more promotion of the websites	better/more transactions (buying & selling), many people are unaware of the portal existence	13
4	services need to be upgraded	speed getting slower: browsing from page to page took longer time (10 minutes), after office hour service, should include more categories, filling up tender form should be easier, not properly maintained	8
5	online forum	for discussions on agriculture related matters	7

6	registration problem	filing up the registration form (using a 3G phone), international candidate-->do not have IC number, do not receive any confirmation, application rejected, tried 3 times but to no avail, after 3 months still to unsuccessful, some of the column cannot be filled.	26
7	problem sending e-mail	e-mail cannot be sent to the administrator	1
8	acknowledgement of username & password after registration takes 3 days	too long	9
9	congratulation: good website/portal	provide a lot of help, useful for the farmers, useful directory	57
10	unorganized categories of business directory	difficulties in registering type of business, list of livestock breeders should be categorized by states	6
11	make it more user friendly	difficulties in understanding certain procedures, difficulties in getting information	10
12	display link to other pages on the current page		2
13	log-in only for those who want to do business transaction (not for those who just want to browse the site --> unregistered users)		9
14	more advertisement on products & training courses		2
15	problems with users e-mail @agribazaar.com.my	e-mail cannot be accessed, problem with spam	15
16	more information should be included in the website	incomplete information on various product (leech, palm, pokok misai kucing, landscape plants etc.), product marketing, product packaging, pesticide, lists of product in the market price column is limited, makanan ikan, aquarium & aquatic plant, price of vegetables & fruits, agricultural techniques & technologies, horse breeding, hydroponic planting, mushroom planting, agriculture/farming info., more advertisement on products & training courses (ayam kampung),	30
17	portal should include more animation (not static)		3
18	portal can be more interesting if given support by successful businessmen/organizations		2
19	use more appropriate symbol for submenu	e-mail symbol is confusing	2
20	problem in editing/updating users information	e-stock, market price	4
21	tambah produk di bawah tajuk hasil buah untuk dijadikan tepung		1
22	terms & conditions should be in Bahasa	most of the users is not good in English language	1

23	product descriptions should include with pictures		1
24	portal should include English version	for international user & Malaysian Chinese	6
25	computer and internet training should be given to the farmers		3
26	add another function that will enable the users to upload pictures of their products		4
27	should enable linkages to other agriculture agencies, international traders		2
28	the system does not provide ways to recall password		2
29	please include section for recipes		1
30	if possible to include hardware trading		1
31	market price page cannot be opened		2
32	should have a full time agriculture officer to response to users' queries		1
33	seharusnya semua iklan jualan/belian yang lalu, yang masih sah tawarannya, diiklan secara berterusan melalui rolling screen		1
34	no/slow action/response from MIMOS/admin regarding comments/feedbacks from users		7
35	include a section of general trading		1
36	unorganized websites		2
37	problem with tender/offer (tawaran)/advertisement	cannot be accessed/opened/done (problem with calendar), editing cannot be done, cannot activate the tender form that has been filled, index is not included-->do no know the number of people hit the offer, price of the product need to be stated	12
38	more categories should be included in the tender/offer section,	unable to find the herbs category, cocoa, fishball, bull frog	5
39	bahagian pertanyaan pada penawar tidak boleh digunakan		1
40	agriculture dept. at all states should provide access to agribazaar for		1

	farmers		
41	response from users are very slow	lots of manufacturers & farmers do not participate	1
42	how to list product in the catalog		1
43	change the format in the sell/buy page so that more names can be displayed		1
44	security		2
45	catalog	search, the product management button is not functioning, should be in a pdf form	3
46	searching functions	not working, could not find "serai wangi"	4
		TOTAL	372