E-COMMUNITY SYSTEM
FOR MASTER OF INFORMATION TECHNOLOGY
STUDENTS (MIT)

HILAL ABDULLAH ALI AL-ALAWI

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Name of Candidate: Nila Abdullin Bt. Al-Abdullin (NR/Passport No: 00519672)
Registration/Matrícul No: WGD070034
Name of Degree: Master of Information Technology (MIT)
Field of Study: Information System

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FACULTY OF SCIENCE & INFORMATION TECHNOLOGY
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ABSTRACT

This research focuses on building an e-community website for Master Information Technology students who have no IT backgrounds. This research probes to present a clear picture of e-community website. It takes into consideration to provide substantial benefits for MIT students in at universities around the world. MIT students should know and learn more about IT fields. The current technology allows the MIT Students who have no IT background and the students who have IT background to work together through the e-community website. This research will present how the MIT students can find information by using an e-community website. This research also allows the students to look for information by themselves from reliable sources and gather them in a particular place.

This work uses quantitative method, because an e-community website development is based on participant's responses and analysis of the data that was collected during a survey. This process requires a measurable method, which helps to identify the requirements and answer the research questions. It uses simple random samples of five universities in deferent locations that offered the MIT program for students who have no IT backgrounds.

The objectives of this research are to develop an interactive e-community system. The system covers all MIT student's requirements. This research concentrates on these main objectives: To investigate that there is no specific academic e-community websites for MIT students on the internet. To determine the possibility of developing an e-community website. To find out the functional requirements of the MIT e-community system. To study the services and frameworks that are suitable for an academic e-
community website and develop the academic e-community website. To develop an academic e-community website and test the system.

This research identifies specific e-community services and framework that are suitable for an academic e-community. The e-community website will be developed using the content management system (CMS) with many extented services. The e-community system uses PHP (Hypertext Preprocessor) programming language and MYSQL database. The e-community will provide students with academic services to contact people who are doing the same studies. This e-community website will also provide a system of collaboration to assist students to share information, in order to improve the student's knowledge. Developing an e-community website will help MIT students all over the world to communicate with colleagues and lecturers at other universities. An e-community website includes a variety of community services such as: shared files, shared articles, latest IT news, chat rooms, a download center, watching tutorials videos, broadcast of live lectures, discussion forums, electronic whiteboard and mailboxes using community tools. Most of these services will be available in the MIT e-community website.
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CHAPTER-1 INTRODUCTION

1.1 Introduction / Background

Recently, the world has started changing rapidly. People are living under the umbrella of globalization. People nowadays can communicate easily wherever they are and whenever they want, by using the facilities that have been provided by technology. The internet has now become one of the most important devices of communication and information for students all over the world, because there are a wide variety of sciences at the universities around the world having students from different countries.

This research focuses on building an e-community system for students in Master of Information Technology (Non-IT Graduates). This research probes to present a clear picture on how the MIT students can share IT knowledge.

This idea was born when we noticed that MIT students came to study a master degree at the University of Malaya, without having any IT background. The MIT program at the University of Malaya has devised the programme specifically for students who have no formal background in computer technology. Many universities offer the same program. Queensland University Technology applies Master of Information Technology tailored for non-IT graduates. The students who have no IT background needs help to find the information to improve their knowledge. (Queensland University, 2008).

On the other hand there are many universities who offers the MSc in the IT programme. The University of Liverpool offers a Master of Science in Information Technology. To enter the program, the university requires two years professional
experience related to the degree programme or two years working directly in an IT-related environment (www.liv.ac.uk, 2008).

The current technology allows the MIT students who have no IT background and the students who have IT background, to work together through the e-community website. This research will help the MIT students that come from non-IT backgrounds. This research will identify the problems and present the solutions.

The main goal of the dissertation is how the MIT students can find the information by using an electronic community website. The MIT students should know and learn more about software in many IT fields. This involves programming, designing, web programming, database, analysis data, network, Internet skills, security, hardware and multimedia etc. But unfortunately, many of students do not know the basics. This issue requires analyzing the problem and finding the solutions.

This dissertation identifies how the MIT master students at the universities can look for information by themselves from reliable sources and gather in a particular place. Also, we are interested in which field the students study.

The students in various IT fields are able to find particular information or file by searching in the system. Also, all the fields are organized as groups. Electronic communities have been a feature of the Internet since its earliest days – in fact they preceded the web. E-community includes a variety of disparate community tools including: shared files, shared articles, latest IT news, chat rooms, downloaded materials, e-learning, watching tutorials videos, discussion groups, private mailboxes, group e-mail management, and instant messaging (Marathe, 2002).
This study especially provides additional insights into the process of e-community adoption, specifically from the point of view of developing people, in this case, the MIT students. Also the study will identify a way for MIT students to communicate. Developing an online community website, will help MIT students around the world to communicate with colleagues and lecturers at other universities. Following are some of the importance of e-community:

i. E-community helps the MIT students to locate information from particular IT websites and to find the information fast and convenient.

ii. E-community upgrades MIT students to be aware of many new and useful applications, articles and tutorials in all IT fields.

iii. Students will increase their knowledge by using the website and help them to learn by communication.

iv. The e-community website organises the information to make it easily accessible communication.

Finally, with this study the universities will be able to determine and build formal e-communities for a lot of particular subjects such as sciences, geography, medicine, art, music, engineering, maths, pharmaceutics and others specialisations.

1.2 Statement of Problem

Everyone wants to communicate on a reliable websites to find and get authentic information. Without the e-community system, the MIT students will use many unreliable websites.

Today, most people who use the internet, can write, provide, and give information over the internet. The users can also easily build a website or an online community. The internet is used widely and it contains a huge amount of data; and if we
ignore this problem, we will find a lot of different information and the users cannot find specific resource.

Sometimes MIT students are trying to search or locate information from the internet which is not academic or the websites that are do not have specialists in the same area. The current websites contains pluralism opinions and the students did not know whether the information was correct or not.

Because of this it is an important to build a platform or a community environment to enable the MIT students around the world to communicate with MIT lecturers and colleagues from different parts in the world. By using the e-community system MIT students can communicate with others at many universities. Developing an e-community website makes the information globally available for each part of the study.

1.3 Research Objectives:

The goals of this research are to develop an interactive virtual community system to cover the MIT student's requirements. This research will concentrate on the following objectives:

a) To investigate if there are any specific academic e-community websites available for MIT students on the internet.

b) To determine the possibility of developing an e-community website.

c) To determine the functional requirements of MIT e-community system.

d) To study the services and frameworks that are suitable for an academic e-community website and develop the academic e-community website.

e) To develop an academic e-community website and test the system.
1.4 Research Questions

In specific, this study answers the following research questions:

a) What are the e-communities websites that are currently available on the internet?

b) Which IT application areas are MIT student's interested in and what is the level of computer utilization of MIT students?

c) What are the perceptions of MIT students on e-community website?

d) What are the functional requirements, to create an e-community website for MIT students?

e) Which services are suitable to develop an academic e-community website?

1.5 Scope

The scope of this research covers the Master Information Technology (MIT) students at all universities especially universities where applied for MIT students from non IT backgrounds. The scope of this research identify a framework to build MIT e-community that will assist the students to collaborate, share information and to improve the efficiency of the students for MIT.

The scope of the e-community website is especially has chosen for MIT students because the MIT came from different areas. This work is unique in the quality and quantity of tools and services to provide Master Information Technology students academic main information resources. The e-community aims to target a global community and not just a particular state or university.

The aim of this research is also to identify a specific e-community structure for academics. This structure will be developed to be an e-community website. This e-
community website will assist all people involved in MIT studies; students as well as lecturer.

The result of this research aims to provide useful and helpful information to develop an e-community for MIT students. There were some limitations that were identified by this research. First, the scope of this research is limited to the MIT students at the universities (Non IT background). Secondly, this research is limited in creating a website to bring MIT students together; therefore, further studies are needed to study each element to build a framework for each of them.

1.6 The significance the study:

This study is significant to most people who are interested in IT. It is also important for MIT students and the lecturers who wants to learn or teach more by using an e-community website. Also the significance of this study is to identify an academic e-community framework for MIT and present the tools and models that will be used for the e-community. This study provides a background (literature review) of an e-community. This study presents updated percentages of e-community website in each category in the WWW. This study also gives a practical picture of an academic e-community to update their information. Moreover the study discusses the obstacles ways that could delay the learning process. This study wants to identifying needs of MIT students.

Finally this study deals with the idea of gathering each community within a specific organization. Through this e-community website, users can benefit from the community. The flowing are some of the significance of the MIT e-community website for MIT students:
a) The website will be purely an academic community aimed at MIT students around the world.

b) The community website will be under lecturer’s supervision.

c) The students can solve the problems by discussions with others.

d) At the beginning of the study the students can follow up the courses by using the e-community website because the MIT system will cover most information technology applications. To be easy to them to go on the study.

e) Some students can study the materials and application before or during joining the academic study program which will facilitate the learning process.

f) Participants in an e-community have the opportunity to meet and transact with other people who share the same interests. (Marathe, 2002).
1.7 Definition of Terms

The terms listed below are used frequently within the text. The terms are defined with respect to the specific field of the e-community. The terms are:

**Community:** Community is a group of interacting organisms sharing an environment or living area in a common location (Walailak University, 2008).

**E-community / Virtual Community / Online community:**
A virtual group of people who are interacting in an electronic online system through the internet. They communicate, share, learn, collaborate, work, discover and exchange information together.

**Framework:** Hypothetical description of a complex entity or process. (www.glossary.com, 2008).

**E-collaboration:** Allows people to work together in organizations through the Internet.

**E-learning:** An application that allows people to create their own electronic learning courseware.

**CMS:** A Content Management System is a computer application used to create, edit, manage, and publish content in a consistently organized fashion.

**WWW:** (World Wide Web) is a computer network system consisting of a collection of internet sites that offer text and graphics and sound and animation resources through the hypertext transfer protocol.

**MIT:** Master of Information Technology students.

**Communities of practice (COP):** a group with a common interest working in an environment which encourages sharing of information.
1.8 Organization of Dissertation

The outline of the organization of this dissertation:

Chapter 1: **Introduction**

This chapter gives the significance of the e-community system, statement of the problems research, objectives, the scope of the research, the research questions, the definition of important terms, the limitation of study, the significance of study and the expected research outcomes.

Chapter 2: **Literature Review**

This chapter reviews and discusses published information, in a particular subject area, and information in a particular subject area within a certain time period.

Chapter 3: **Research Methodology**

This chapter describes and explains the research methodology which is used in the study. This chapter includes research approach, qualitative research, the sample, data collection format of the questionnaire and data analysis.

Chapter 4: **Result of Data Analysis**

This chapter discusses the outcomes of the data collection. Based on the results of the survey, this chapter discusses the findings of the study from the data analysis.

Chapter 5: **Development of a MIT E-community system**

This chapter will include the framework for an e-community website and developing of new system for MIT students.

Chapter 6: **Conclusion**

This chapter concludes with the outcomes of the research, the research and the future work that can be expected from this study. It summarizes what was learned and how it can be applied.
CHAPTER-2 LITERATURE REVIEW

2.1 Introduction:

This chapter focuses on reviewing the literature to understand scholars' and researchers' attempts to examine the development of electronic community system for MIT students around the world. There are many prior studies that talked about an electronic community and collaboration between people. The researcher may use many methods to analyse and discuss this chapter. The following are the literature review sources for this work:

a) Journals and books.

b) Dissertation and thesis.

c) Online books and magazine.

d) Internet websites.

This chapter focuses on why people need e-community website and why the MIT students need it as well. The next section is about e-community websites in the WWW. The chapter also presents the e-community services and framework. Finally the chapter is summarised in brief.

In general the e-community is raising and solving social problems in many fields, such as: health, education, e-commerce, economy, and knowledge management etc (Preece et al, 2004).

Online discussions also play an important role in student learning. Currently, asynchronous learning courses and some primarily face-to-face courses at New Jersey Institute of Technology, require asynchronous online discussions (Wu, 2004). An e-Community is a module designed to allow people to focus on the needs of e-community
development and to help groups, or networks of people, to take joint action for the public good by forming effective group online group relationships (Kim, Jo, 2000).

2.1.1 E-community

Think of e-community like a virtual village, a city without borders. Generally the e-community should include a specific geographic area, such as a neighborhood, culture, town, city or state, or it may be a group of people across the country or even around the globe who share a common concern. (eprevco community, 2008)

In specific e-community is a virtual group of people who are interacting in an electronic online system through the Internet. They communicate, share, learn, collaborate, work, discover and exchange information together.

2.1.2 Users of E-community:

Any organisation can have their own e-community. Users of each organisation are composed of the same community members. For example Ulrike Pfeil (2007) identified the components of social support in online support communities for older people. There are many web portals developed to support e-community of special interest groups (SIG) that provide the platforms to communicate, share ideas and knowledge among the members. Existing SIG portals provide the information by listing the names of the related people in a textual form (Sahni, 2008).

The users of an e-community system for MIT students will be lecturers, students and IT experts around the world.
2.2 Need for E-community:

All people around the world are part of a community. All of them need to communicate and to collaborate with each other. People have been using online spaces since the beginning of the Internet to communicate (Sue, 2002). Preece and Diane (2003) said "particularly potent indicators of community that have been adopted by many online community researchers include: the concepts of people with shared interests, experiences and/or needs, engaged in supportive and sociable relations, where they obtain important resources, developing strong interpersonal feelings of belonging and shared identity".

Budapest (2003) mentioned about the community informatics he said: "The design and application of information and communications technologies help to develop the community processes and fasten the achievement of community objectives, such as overcoming digital divides, wiring and ensuring connectivity for the farthest reaches of a far-flung nation, creating on-line communities of practice, and others." Even more important, community informatics involves working to find ways of making the enormous opportunities of the Internet connectivity of real value to various communities local and virtual, in achieving their economic, social and cultural objectives. Community informatics traditionally has been applied to local communities, which address the needs and interests of particular geographical areas.

D. Maloney and J. Preece (2004) determined the important needs of e-community as the following:

- Flexible access to the community.
- Flexible time management.
- The ability to communicate across time and distance barriers.
• Access to a wide variety of members, information, and experiences.

• The ability to think about and edit responses.

• The ability to store and retrieve messages.

• Access to research articles and hyperlinks within the community related to the focus of the community.

• The ability to establish permanent social presence through photographs, textual profiles, and archived messages, and the ability to easily control one’s level of participation in the community.

Pfeil (2007) said “nowadays, typical online activities include communicating with each other in virtual settings in order to socialise and/or to collaborate. She found in a survey that 84% of Internet users participate in online communities, people use online communities to meet other people, develop friendships, play, exchange experiences and support”.

“Info change Australia Services” is an e-community website which works to provide information communication technology to different individuals and communities. Moreover, the website has the electronic service partnerships unit incorporates. There are six teams working together to provide the following products and services: web and multimedia design, technical development, online news boards and electronic newsletters, search directories, online employment resources, co-ordination tools, training and skills audit services (Infoxchange Australia Services, 2005).

The “University of British Columbia”, (2005) developed an e-community for everyone at the university. The e-community helps the people at UBC to work together to achieve their goals. The university determines the important IT tools and web services to support the e-community:
- Support online communities that enhance learning and student development.
- Provide common calendars and scheduling tools to make it easier to arrange meetings.
- Support collaborative projects and groups.
- Make it easier to create and maintain Web sites for departments, committees and programs.

2.2.1 Why do people need e-communities?

Summing up what is mentioned above in general, people need an e-community when they want to:

i. Meet online
ii. Discuss
iii. Solve problems
iv. Collaborate
v. Work as a team
vi. Share information
vii. Contact others in different locations.

If we look out important points mentioned in section 2.2 we find many suitable things that could be considered in our e-community system. In specific, an academic e-community website may help MIT students by:

i. Studying academic courses online.
ii. Sharing knowledge with others.
iii. Asking guidance from IT experiences.
iv. Working together as a team.
v. Getting the latest news.
vi. Socializing.
vii. Having discussions.
viii. Searching for information.
ix. Incising information.

x. Download course materials.

xi. Watch videos tutorials.

xii. Keep document repository.

**2.2.2 Where is an e-community needed?**

The e-community is a place where a community, with a desire and aims to communicate, in order to achieve the objectives of that community. It is needed when the people of that community have common factors.

The e-community is needed for the universities that have students who are interested in information technology.

**2.3 The e-community Websites on the WWW:**

In order to study the e-community websites on the World Wide Web, we found more than 400 e-community websites used, using three search engines: Google, Yahoo and Bing. The keywords that are used to locate the communities website are (e-community, electronic community, online community, virtual community, web community, website community and communities).

After analysing all the websites, we found that 6% of them concern with academic e-communities, 30% are concerned with social e-communities. In contrast, 38% of e-community websites are for fun. We also found 6% of e-community website concerns governments. Furthermore we found 7% health related e-communities. E-communities websites for IT are about 5% from the samples.
This chart (Figure 2.1) indicates academic e-community website are very few little if we compares them with between the fun community websites and other e-communities.

**Figure 2.1**

E-Community categorise Websites on the WWW
The following table provides some examples of e-community websites in each category.

<table>
<thead>
<tr>
<th>Category of e-community</th>
<th>Example (URL)</th>
</tr>
</thead>
</table>
| Academic                | i. www.ecommunity.ucf.edu  
                           | ii. www.zitexweb.com/eutm  
                           | iii. www.community.elearningontario.ca |
| IT                      | i. www.tazzu.com  
                           | ii. www.it.toolbox.com |
| Health                  | i. www.ecomunity.com  
                           | ii. www.hec-va.com  
                           | iii. www.ucisa.ac.uk |
| Social                  | i. www.reefnet.gov.sy  
                           | ii. www.cafemom.com  
                           | iii. www.classmates.com |
| School                  | i. www.communityschool.k12.nj.us  
                           | ii. www.perryschool.org  
                           | iii. www.devstu.org |
| Government              | i. www.community.gov.au  
                           | ii. www.communities.gov.uk  
                           | iii. www.communities.idea.gov.uk |
| Fun                     | i. www.facebook.com  
                           | ii. www.gamerdna.com  
                           | iii. www.amiestreet.com |

The following presents examples of an academic e-community and one of social e-community, for the reason that the social elements are related to the academic e-community.

2.3.1 Examples of Academic E-community:

University of Central Florida builds e-communities for students. The e-community system automatically creates an account for student in each semester, for all classes. The students can view a list of all students in each class they are taking. Faculty and students can e-mail any or all students in their class. Moreover, the students and faculty can learn about each other and can see photos of each other.

In UCF’s e-community students approve of the system because they get to know each other better, they can contact each other more easily and they don’t have to fill out a
“getting to know you” sheet in every class they take. In addition the faculty approves UCF’s e-community, because they can learn the names and faces of all their students even before class begins, they can contact the entire class, or individual students even before class begins and they get to know their students even before class begins. This helps the faculty to manage large classes.

The e-community system allows students to:

- Post and control biographic information.
- Choose a picture to represent them.
- Send e-mail to any, some, or everyone listed in the course. This feature facilitates group work.
- View biographies, pictures and e-mail to help build learning communities especially in large or fully online courses (UCF, 2008).

Ministry of Education in Ontario designed e-community: The system allows educators to communicate and collaborate with colleagues around the province. The educators also use it to collaborate about the ways to integrate information and
Clark University builds online community “the community offers a place for current seniors/juniors and alumni to share interests and experiences, gather and exchange career information and ideas, locate one to another and keep informed of upcoming campus and regional alumni community events” (Clark University, 2008).

This e-community website is helpful in this research. There are two main things we can get it from this website. First is sharing interests and gathering experiences, and secondly to exchange career information and ideas.

University Technology of Malaysia (2008) developed an e-Community website for all Faculty of Computer Science and Information (FSKSM) Systems communities. This website helps them to get tutorials on Drupal, search engine optimization, forums discussion, blogging and downloads etc see Figure 2.3. This e-community is only for students of the FSKSM (UTM, 2008). The UTM’s e-community is useful for the MIT e-community. The website includes many services related with MIT such as: forums discussions, search engines, tutorials, blogs and downloads.

Figure 2.3

The UTM E-Community website
2.3.2 Examples of Social E-communities:

The third example is for social e-communities: Syria developed an e-community website via http://www.reefnet.gov.sy see Figure 3.3, operating the gate as an entry point for the people of different communities to give information on topics concerning them in their daily lives and enabling them to take advantage of opportunities and possibilities for additional social and economic issues; and provide them with the knowledge and services they require.

Contents of this e-community includes portal information, particularly in terms of history, geography and economic activity for the region, as well as information such as doctors, telephone service, engineers, lawyers, local authorities and public administrations in the province, health institutions in the province; as well as information on certain transactions, governmental organizations (often required by the citizen) and a forum for discussion and so on. (Taulab, 2005). The same designs can be applied e-community websites for MIT.

![Figure 2.4](syria_e-community.png)

* Note: The website was translated from Arabic to English by Google Translate website.
2.3.3 Features and characteristics of an academic and social e-community:

The table 2.1 below gives the features and the characteristics of an academic e-community and social e-community from various studies, in order to apply features and characteristics for the e-community website.

Table 2.1

<table>
<thead>
<tr>
<th>E-community</th>
<th>Characteristics</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic e-community</strong></td>
<td>- Specially for academic students and faculty can join.</td>
<td>- Collaboration platform</td>
</tr>
<tr>
<td></td>
<td>- Under supervision of faculty.</td>
<td>- Must always be up-to-date.</td>
</tr>
<tr>
<td></td>
<td>- Usually formal.</td>
<td>- Enhances computer and Internet skills.</td>
</tr>
<tr>
<td></td>
<td>- Concerned with the academic studies.</td>
<td>- Online learning</td>
</tr>
<tr>
<td></td>
<td>- Contain many tools</td>
<td>- Communication skills</td>
</tr>
<tr>
<td></td>
<td>- Distinct characteristics and requirements</td>
<td>- Knowledge management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Allows to share and store students documents.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Search features</td>
</tr>
<tr>
<td><strong>Social E-community</strong></td>
<td>- Generally for all people in the community.</td>
<td>- Ability to create groups</td>
</tr>
<tr>
<td></td>
<td>- Anyone can join.</td>
<td>- Uploads or streams live videos</td>
</tr>
<tr>
<td></td>
<td>- Concerned with the social side.</td>
<td>- Discussions forums</td>
</tr>
<tr>
<td></td>
<td>- Share interests and activities</td>
<td>- Interoperability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Create a profile for themselves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Member Features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Chat features</td>
</tr>
</tbody>
</table>
2.4 How to develop an e-community system:

Many of e-communities website use community-based portals. The e-community website for MIT will be build by "Joomla". Joomla is a content management system (CMS) and it is an open source under the General Public License (GPL license). Joomla also is based on PHP and MySQL. Following some of aspects that creator of MIT e-community website should consider it.

The e-community framework is a service-oriented factor of the core services required to support e-community applications. Each service defined by the framework, is envisaged as being provided as a networked service within an organisation, typically using either web services or a REST style HTTP protocol. The ultimate aim of the framework is, for each identified service, to be able to reference an open specification or standard that can be used to implement the service, and also to be able to provide open-source implementation toolkits such as PHP, ASP, or Java to assist developers. (E-learning framework, 2004).

Development e-community applications have been hindered by the lack of bandwidth available to the business community. Audio, video and interactive whiteboard data streams have a heavy bandwidth overhead and run very slowly on a 56K modem over a dial up connection. ISDN, ADSL, T1, T3, and 3G cell phone broadband connectivity is exhibiting exponential growth and is fast becoming the norm for the target market. This in turn creates the conditions in which an Internet based collaboration tool can be very successful (Currnan, 2004).

There are many models used for e-community Rutkowski, et al (2002) said to enable e-teams to work together and share information in a project, they can use distance education tools such as GSSs, Blackboard and WebCT.

j. Marathe, (2002) explained four types of online communities:
Communities of purpose

Communities of practice

Communities of circumstance

Communities of interest

For the MIT e-community system the communities of practice (COP) is suitable, because as he said "There are communities of people who are going through the same process, or are trying to achieve a similar objective".

Also Kimble (2008) said the COP is: “The collaboration across learning institutions, as exemplified by the network-enabled CoPs, is also beneficial to these institutions in terms of bridging the divide between theory and practice”. That is an important factor for MIT students to do practice in their field of study.

Preece and Diane (2003) described the characteristic, advantages and disadvantages of various technologies that are used on online communities (newsroups, Mailing lists, Discussion or Forum, Chats, Immersive Graphic Environments). Also Sue (2002) presented the advantages and disadvantages of community building tools including email, newsgroups, chat, and message boards. This advantages and disadvantages are incumbents for a MIT e-community website. For example, the advantage of chat is good for meetings where you want to come to a conclusion with everyone there. It is difficult to schedule a time if you have users around the globe. The forum provides good technical information, when students need to find answers to a particular question easily.

2.4.1 Example of an e-community Framework

Varlamis (2006) presented a framework for Virtual Communities for Education. The framework was for a learning community system for students or the trainees. The users join to the community in order to attend an educational program and obtain
knowledge. Universities and educational institutes are the community motors. They assemble educational modules into targeted programs and guide students and trainees to improve their skills. Individual educators and researchers are able to offer their expertise to the community under the administrators’ control. A knowledge base will contain educational material organized by topic, course scenarios, educational solutions, program evaluation reports, and answers to users. The power of the community resides in the ability of members to collaborate (Maureen Tam, 1997). The main idea of this framework will be used for the e-community system for MIT.

This framework indicates how to organise and build an e-community system for MIT students by using the same technology as in the above e-community system. The framework also explains the working of an e-community system for MIT students.
2.5 Summary:

Firstly, this chapter describes the definition of the e-community. Next it shows who the e-community is for. It explains the need of e-communities in general and why MIT students need it as well. It also shows when and where the e-community is needed.

This chapter also reviews the literature and provides the parentage of e-community websites on the Internet; in addition this chapter presents academics e-communities and social e-communities as examples. The chapter also presents an overview of e-community services and how the e-community can be developed. Finally the chapter shows an example of community framework that may be used to show how an e-community system for MIT work and develop.

This chapter points out some weaknesses in current literature. There are many types of e-communities concerned in many fields. Not all of these communities fields are concerned with academics. Most of the communities that we found are not universal communities. The current literature also does not offer framework or services for academic e-communities.

The chapter indicates the content management system (CMS) technology as technique for many e-communities portals.

The following chapter shows the research methodology.
CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction:

This chapter presents the research methodology which is used to identify the determinants of developing an e-community system adoption for Master Information Technology (MIT) students.

This chapter contains the following sections; the first section discusses the general research approach while the second section explains why the quantitative method is used for this research. The third section explains the population and a sample. Then, describes of the data collection process. Finally, it presents the format of the questionnaire and the data analyses.

3.2 Research Approach

According to Michael D. Myers, (1997) there are different research approaches: quantitative and qualitative approaches or both types. Every method which aims to determine statistical techniques can be considered as a quantitative approach. In order to use this method, scientists need to find and measure different variables which make it possible to compare the results from different studies.

Quantitative methods provide information which is easy to analyse statistically and fairly reliable. Moreover, quantitative methods are associated with the scientific and experimental approach but they are criticised for not providing deep description. The qualitative approach, on the other hand, is characterized by the process of gathering sufficient data in a few research areas. The primary goal of this approach is to gain a deeper understanding of the studied problem, while the quantitative method focuses on the numbers and the frequencies rather than on meaning and experience.
3.3 Quantitative Research

For this research, an e-community website is developed based on participant's responses and an analysis of data collected during a survey. This process requires a measurable method which helps to identify the requirements and answer the research questions. Quantitative research refers to counts and measures of things and the final report statistical analysis.

There are a numbers of reasons why the quantitative approach has been chosen for this research. The main reason is the sample size of a survey. It is calculated by statistics using formulas, to determine how large a sample size will be needed from a given population, in order to achieve findings with an acceptable degree of accuracy. The quantitative research is confirmatory and deductive in nature. Also the quantitative generates numerical data or data that can be converted into numbers. Moreover quantitative research is involves the use of structured questions where the response options have been predetermined and a large number of respondents are involved. (Al Alawi, 2006)
3.4 The Sample:

First we have to identify the difference between a population and the drawn sample of population. The population is the entire group of individuals that we want information about. The population in this work is the Master Information Technology students (MIT) in five universities around the world.

The sample is the part of the population that we actually examine in order to gather information (Payne, 2008). We have chosen simple random samples in five universities that offered MIT for students who have no IT backgrounds such as: (Bond University, university of Malaya, Universiti Kebangsaan Malaysia, University of Bedfordshire and Mazoon College). Table 3.1 presents the population in our work. There is a 95%, probability that in survey responses will not vary more than 7%. We applied the following sample size formula for data that will be reported as percentages (Creative Research Systems, 2008).

Here are the formulas that used to calculate the sample size:

\[ SS = \frac{Z^2 \times Pe \times (1 - Pe)}{C^2} \]

Where:

\( Z = 1.96 \) for 95% confidence level.

\( Pe = \) Preliminary estimate of percentage of people in population who possess attribute of interest.

\( c = \) confidence interval, expressed as decimal (.07 = ±7)

New sample size = \[ \frac{SS}{1 + \frac{SS - 1}{P}} \]
Where: P = Population

<table>
<thead>
<tr>
<th>Participation</th>
<th>Population of MIT students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond University (Australia)</td>
<td>40</td>
</tr>
<tr>
<td>University of Malaya (Malaysia)</td>
<td>109</td>
</tr>
<tr>
<td>Universiti Kebangsaan Malaysia (Malaysia)</td>
<td>80</td>
</tr>
<tr>
<td>University of Bedfordshire (United Kingdom)</td>
<td>70</td>
</tr>
<tr>
<td>Mazoon College (Oman)</td>
<td>10</td>
</tr>
</tbody>
</table>

Total population are = 309

When applied the above formulas to the simple size equal to 120
3.5 Data collection

Many of the universities in the world are presents the Master of Information Technology program (MIT). The researcher randomly chose five universities from four countries around the world (Australia, Malaysia, United Kingdom, and Sultanate of Oman). The five universities are in different locations around the world. The sample is based on equal hypothesis for all people in the society, and there are common characteristics between the people in the original society.

To apply the survey the researcher distributed two kinds of surveys: an online survey and a traditional survey. The questionnaire was distributed in middle of July 2008 and we received back the responses at the end of the same month. The table 3.2 shows the numbers of the response of the online survey and the traditional survey.

<table>
<thead>
<tr>
<th></th>
<th>Online Survey</th>
<th>Traditional Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of surveys</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Number of responses</td>
<td>37</td>
<td>79</td>
</tr>
<tr>
<td>Total Number of surveys</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Total Number of responses</td>
<td>116</td>
<td></td>
</tr>
</tbody>
</table>
3.6 Format of the questionnaire:

The survey includes four sections, section one provides general information about the Master Information Technology students. The information which was collected at this stage covers the gender, bachelor degree, the background, current semester, and the period of time of using computer and Internet. In this section nominal scales will be used. The last two questions in this section are answer question (b) in research questions.

The second section, is about the IT application areas that MIT students are interested in. This section asks the participants ten questions to identify the areas that are MIT students interested in IT application. There is a five points scale regarding the questions, 1 = Never, 2 = Few, 3 = Moderate, 4 = High and 5 = Very High. This section is the answer to question (a) in research questions.

The third section provides ten questions about the perceptions of MIT students about an e-community website. This will help the students to validate the problem statements and make it easy to determine the benefits of the e-community system. The five points Likert-type (from strongly agree to strongly disagree) will be used to measure the perspective benefits of MIT e-community system. This section is the answer to question (c) in research questions.

The final section gives eleven questions about the requirements of an e-community website, to adopt the new system for MIT students. The five point Likert-type (from strongly agree to strongly disagree) will be used to measure the requirements of the e-community to adopt the system. The last question in this section will be an open question, asking the participant to write other requirements, regarding the e-community website. This section is answer to question (d) in research question.
A survey cover page includes definitions and explanations of the e-community and other new terminologies, in order to understand the subject.

3.7 Data Analysis:

The data is analyzed by SPSS (Statistical Package for the Social Sciences) and interpreted by the researcher in order to approve this study. SPSS also will be used to analyse the evolution of the system in chapter 5.

The following chapter shows the outcomes of this study based on the results of the survey and building of an e-community system.
CHAPTER 4: RESULTS OF DATA ANALYSIS

4.1 Introduction

This chapter describes the data analysis process used to interpret the data collected from the two types of surveys: the traditional survey and the online survey. In order to identify the determinants, the participant's responses were analyzed and codes emerged from the participant's responses. The data is presented in four sections. The first section describes participant's general information. The second section discusses the areas of interested in IT applications. The third section presents the perceptions of MIT students about an e-community website. The final section presents the requirements of an e-community website for MIT students to build the new system. Figure 4.1 shows the four main sections on the survey.

![Figure 4.1]

Data analysis presentation
4.2 Analysis and Discusses:

4.2.1 Description of general information

The first section contains five questions and covers the participants’ general information as depicted in Table 4.1. From the sample 78.3 % of respondents are male and 21.7 % of the respondents are female. In this research the gender is not considered independent variable, for that we do not carry out the questionnaire distributed equally among males and females. Since the variable gender does not impact on the study. Table 4.1 shows the sample divided between students who have an IT background, 50 %, and those whose come from non IT background, 50 %. The MIT background degree is an independent factor in this study. Figure 4.2 shows participants were mostly from semester two, 36.7%, semester three, 31.7 % and no one from semester six or more.

![Figure 4.2](image.png)

**Figure 4.2**  
Participation semesters chart
Table 4.1 indicates that MIT students use computers every day by 93.3 %. 6.7 % of the MIT students use the computer two or three times per week, as well as 90 % of the participants use the Internet every day and 10 % of them use it two or three times per week. This shows that the computer and the Internet widely used by MIT students and this are also prepared to communicate through a MIT e-community website.

### Table 4.1

Participation general information analysis

<table>
<thead>
<tr>
<th>General Information</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>29</td>
<td>78.3 %</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>21.7 %</td>
</tr>
<tr>
<td><strong>Background Degree</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>58</td>
<td>50 %</td>
</tr>
<tr>
<td>Non IT</td>
<td>58</td>
<td>50 %</td>
</tr>
<tr>
<td><strong>Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>19</td>
<td>16 %</td>
</tr>
<tr>
<td>two</td>
<td>13</td>
<td>37 %</td>
</tr>
<tr>
<td>three</td>
<td>7</td>
<td>32 %</td>
</tr>
<tr>
<td>four</td>
<td>12</td>
<td>10.2 %</td>
</tr>
<tr>
<td>five</td>
<td>5</td>
<td>4.0 %</td>
</tr>
<tr>
<td>six or more</td>
<td>0</td>
<td>0 %</td>
</tr>
<tr>
<td><strong>Use computer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>every day</td>
<td>110</td>
<td>93.3 %</td>
</tr>
<tr>
<td>two or three times per week</td>
<td>6</td>
<td>6.7 %</td>
</tr>
<tr>
<td>not at all</td>
<td>0</td>
<td>0 %</td>
</tr>
<tr>
<td><strong>Use Internet</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>every day</td>
<td>106</td>
<td>90 %</td>
</tr>
<tr>
<td>two or three times per week</td>
<td>10</td>
<td>10 %</td>
</tr>
<tr>
<td>not at all</td>
<td>0</td>
<td>0 %</td>
</tr>
</tbody>
</table>
4.2.2 Description of IT application areas that MIT students are interested in:

This section describes the IT application areas that MIT students are interested in. This section examined ten questions covering most IT fields such as: creating an interacting website using database, programming languages, maintaining the computer, using the Internet, computer network, multimedia application and the database management system (DBMS).

Figure 4.3 presents the means of section two, the charts shows that 85.4 % of students prefer to find the knowledge by using the search engines on the Internet and 82% the students use the Internet to improve their skills in IT fields. The charts below shows that 55 % of the students can create interacting websites using database and 64 % of them are familiar with one or more of programming languages.

![Figure 4.3: IT application areas that MIT students are interested in](image)

the IT application areas that MIT students are interested in
Moreover 60 % of the students communicate with other colleagues through e-community website to share information. By studding these percentages, we focused on all aspects that students are interested in as well as the weaknesses.

(Note: mean percentage= mean/5*100).

4.2.3 Description of the perspective benefits of using a MIT e-community website:

This section describes the perceptions benefits of using a MIT e-community system in order to validate the problem statements and to answer some of research questions.

The charts below (Figure 4.4), shows 86.5 % of the participants agree with the importance of MIT to build MIT e-community website, 11.5 % of them were not sure and 2.0 % disagree.

![Figure 4.4](image)

Significance of building an MIT e-community website Frequency chart
Figure 4.5 shows the percentage of the mean; most of responses are above 80%. This means that most of MIT students strongly agree with the usefulness and importance of building a MIT e-community website. The figure also shows 73.6% of the respondents think that a MIT e-community website could be the main resource for MIT students. (Note: Mean percentage = mean/5*100)

![Figure 4.5](image)

The means of the perceptions of MIT students on e-community website

4.2.4 Description of the requirements of an e-community website:

This section describes the requirements of an e-community website for MIT students, to create the MIT e-community website. This section includes eleven questions, in order to answer the problem statements. The last question is an open question. It asks the respondents to note down other MIT e-community requirements.
Figure 4.6 shows the frequencies of question one: "There is no specified place in the Internet to discuss and share knowledge for MIT students". 37 % of participants are not sure, 32 % of them agree and 12 % strongly agree.

![Figure 4.6](image)

MIT Specified place in the Internet frequency

Table 4.2 shows the requirements of MIT e-community website. The following is the requirements that MIT students determined:

- Upload and storage facilities to learning materials in an e-community website.
- Chatting facilities to discuss the issues with other colleagues.
- Short Message Service (SMS) on the e-community website to communicate with others.
- Articles related to the MIT programs.
- Tutorials concerning MIT programs.
- Groups e-mail facilities.
- Voice over Internet Protocol (VoIP) to communicate with other students or lecturers around the world.
- Latest news facilities concerning MIT programs at universities.
- Discussion forums to write and discuss MIT issues.
Table 4.2

areas required by MIT students on an e-community website.

<table>
<thead>
<tr>
<th></th>
<th>Learning materials</th>
<th>Chatting</th>
<th>SMS</th>
<th>Articles</th>
<th>Tutorials</th>
<th>Groups e-mail</th>
<th>VoIP</th>
<th>IT news</th>
<th>Discussion forums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Not sure</td>
<td>12</td>
<td>8</td>
<td>22</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>23</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Agree</td>
<td>53</td>
<td>48</td>
<td>37</td>
<td>54</td>
<td>52</td>
<td>48</td>
<td>42</td>
<td>52</td>
<td>34</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>30</td>
<td>36</td>
<td>31</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>30</td>
<td>35</td>
<td>50</td>
</tr>
</tbody>
</table>

4.2.4.1 Other requirements to build an e-community website:

This section answers the eleven questions in the survey (open question): "From your point of view what are the other required to build an e-community website?" The following are the answers:

- Suppose that the governments and the universities are important in providing the e-community requirements.
- Suggest that the location of the re-recording lectures in order to facilitate a full understanding of the lecture, a student easier…
- To be updated frequently with the last trends in IT field.
- Availability in the Internet
- Privacy
- Links to downloading software
- Latest or current IT news
4.3 Reliability Analyses:

Cronbach's (alpha) has an important use as a measurement of the reliability of a psychometric instrument. It indicates to which extent a set of test items can be treated as measuring a single latent variable. Cronbach's (alpha) is based the average correlation of items within a test, if the items are standardised. If the items are not standardised, it is based on the average covariance among the items. Because Cronbach's alpha can be interpreted as a correlation coefficient, it ranges in value from 0 to 1 (Wiley, 2008).

Table 4.3 shows an overall of Cronbach's alpha for three sections. In section one the output of an overall alpha is .87 which means very good. In section two the value of an overall Cronbach's alpha is 0.9309 which is also very good, as well as section three, where the value is 0.839.

**Table 4.3**

<table>
<thead>
<tr>
<th>sections</th>
<th>Cronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT application areas that MIT students are interested in.</td>
<td>0.87</td>
</tr>
<tr>
<td>The perceptions of MIT students on an e-community website.</td>
<td>0.9309</td>
</tr>
<tr>
<td>The requirements of e-community website for MIT students to adopt the new system.</td>
<td>0.839</td>
</tr>
</tbody>
</table>
4.4 Summary:

This chapter presents the results of the data analysis. The chapter also answers the research questions. The following are the question and the answer of each question based on the results.

a) Which IT applications areas are MIT students interested in?

Based on Figure 4.3 the students are interested in many IT applications such as: computer network, creating a database, finding information by use of search engines on the Internet, multimedia application and using the Internet. Moreover, the students are not too familiar with: creating interacting website using database, maintaining the computer and programming languages.

b) What is the level of computer utilization of MIT students?

Table 4.1 showed the students are following the information technology news constantly and use the computer and Internet daily. This, of course, will benefit the students in the use of an e-community website.

c) What are the perceptions of MIT students about an e-community website?

The students feel positive about the e-community website. The students expect the followings from the e-community:

- That it will help them to communicate with colleagues and lecturers at other universities around the world.
- It will enable them to share your information online.
- It will help them to find information from particular IT websites.
- To be aware of many new and useful applications, articles and tutorials in all IT fields.
- Improve the competencies of the IT master students’ graduates.
- Find information fast and easily.
- To communicate with MIT lecturers around the world.

d) What are the requirements to adopt an e-community website for MIT students?

There are many e-community requirements determined by the MIT students such as: storage learning materials, chatting facilities, articles related to MIT, tutorials, news and discussion forums. These requirements will be used on the e-community website.
CHAPTER 5 – DEVELOPMENT OF A MIT E-COMMUNITY SYSTEM

5.1 Introduction:

This chapter focuses on the development of a MIT e-community system. The chapter contains the following sections: The first section is about outlines the framework and a service. The second section is an overview of the system, and the other sections are about the objectives of the system and the users of the system. Finally, this chapter focuses on the system design and how to develop an e-community website.

The system will be purely an academic community, concerned aimed at MIT students around the world.

5.2 The MIT E-community Framework and Services:

According to what was mentioned in chapter two section 2.4, and after analysing other e-community websites from various categories; we have found the following services which are suitable for an academic e-community website framework:

a) Latest news: To provide MIT students with latest IT news, symposia and exhibitions news around the world, to bring them up to date.

b) Forum: online discussion groups, where participants with common interests can exchange and open messages. This forum allows MIT students to post messages in many IT fields.

c) Articles: To enable MIT students IT facilities to read or add articles.

d) Live chat: To allow MIT students have discussion online

e) Videos: To allow universities, student and lectures to share and watch tutorials.
f) Email: To allow all MIT students to communicate by e-mail.

g) Collaborate: This a recursive process where two or more MIT students work together toward an intersection of common goals. The students can use the whiteboard or the forums to collaborate.

h) Download: To allow MIT students to download articles, reports etc.

All these services are organised in the framework as shown in Figure 5.1.

![Diagram showing e-community service and framework]

**Figure 5.1**

The e-community service and framework.

The framework comes from the literature of review and from the participants. It has shows all the services that will appear on the e-community system.
5.3 System Overview:

The MIT e-community is a web based application. It is an academic e-community concerning MIT students. The website is also available for lecturers and IT experts. The e-community system uses PHP (Hypertext Preprocessor) programming language. The e-community database is builds by MYSQL to manage the database of the system. The system contains several services to help the MIT students. The users must have an ISP (Internet service provider) to access to the system. A user also can access the system using any Internet browser such as: Internet Explorer, Mozilla Firefox, and Opera etc. The administrator can manage the system online. Figure 5.2 shows the process to deliver the system to the users and control it by the administrator.

Figure 5.2

A Process of showing the delivery system to users and control by an Administrator.
5.4 System Objective:

The e-community system has many objectives. One of the objectives are that the system tries to achieve is to make the website the main recourse of MIT students around the world. Also the system will be a repository for MIT documents, lectures, notes and articles.

5.5 Users of the System:

Since the e-community website is not for a particular university or institute, any students around the world can use the e-community as well as the lecturers. In addition the website is available for IT experts' and anyone related to IT. These stockholders could be as guests, authors, editors, publishers, managers or administrators.

5.6 System Design:

5.6.1 Functional Requirements

Functional requirement defines a function of a software-system. The components are described as a set of inputs, the behaviour, and the outputs. Functional requirements are calculations, technical details, data manipulation and processing and other specific functionality that shows how a case can be fulfilled in an e-community website. The followings are the functional requirements of an e-community website:

- Register: To allows MIT students and other guest to register on the MIT e-community website system

- Log in: To allow the users and administrators to login.

- Submit Articles: To allow users to submit articles or news in each section and category.

- Read Articles: To allow all users to read articles and news that appear on the e-community system.
- Downloading Materials: To allow the user to download the PowerPoint slides, documents, software and files.

- Watch video: To allow the user to watch tutorial videos.

- Upload video: To allow the user to upload tutorial videos.

- Discusses: To allow user to discuss IT issues in discussion forums.

- Post comments: To allow all users to post comments about articles.

- Send message: To allow user to send messages to each other.

- Chats: To allow users to chat with others.

- Polls: To allow users to poll.

- Search: To allow all users to search for information or files on the e-community website.

- Administrator tools: To allow the administrator to control the e-community such as: users, articles, comments, files, styles, menus, components, extension, and forums etc.

- Whiteboard: The board developed by JavaScript Groupboard. The whiteboard is a set of multi-user java applets including whiteboard, chat, and message, which enables the MIT students to write codes, discuss, and write the algorithms.

5.6.2 Context Diagram:

A context diagram is a data flow diagram, with only one massive central process that subsumes everything inside the scope of the system. It shows how the e-community receives and sends data flows to the external entities involved. Here's a theoretical example in Figure 5.3
Figure 5.3
E-community Context Diagram
5.6.3 Architectural Design:

The e-community based on Joomla and it is a three tiered system. The bottom tier is the framework level and consists of the libraries and plugins. The second tier is the application level and consists of the JApplication class. Currently there are three applications that ship with Joomla: JInstallation, JAdministrator and JSite. The application acts as the main controller for the page. The third tier is the extension level. This level is where all component, module, and template logic is executed and rendered (Joomla.org, 2008). Figure 5.4 shows the e-community architecture design.

![Diagram of e-community architecture](image-url)
5.6.4 Decomposition Diagram

A decomposition diagram shows a high level function, process, organization, data subject area, or another type of object broken down into lower levels, and more detailed components. Decomposition diagrams may represent organisational structure or functional decompositions into processes. Figure 5.5 shows the decomposition diagram for the e-community system.

![The e-community decomposition diagram](image)

**Figure 5.5**
The e-community decomposition diagram
5.6.5 Database Design:

The e-community website implements Joomla. It is designed to use the MySQL database. The usage of functions and syntax, in queries is specific to MySQL. Much of the data in Joomla is stored in the database. A base installation has thirty five tables (without the extension components). Some of these are related to core extensions and others to the inner workings of Joomla. There is also an official database schema, which describes the tables created during the installation. If the administrator wants to create extensions fields or tables, it should generally store data in some forms. If the administrator is using the database, it is important to extend it in the correct way. (James Kennard, 2007). Table 5.1 below shows the important database tables:

<table>
<thead>
<tr>
<th>Table name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hwdvidscategories</td>
<td>stores information about video categories</td>
</tr>
<tr>
<td>banner</td>
<td>stores banner details the type, the name, imageurl, ordering etc</td>
</tr>
<tr>
<td>phocadownload</td>
<td>for download center to store the file name, the file section and the file itself etc</td>
</tr>
<tr>
<td>comment</td>
<td>to store the comments of the articles</td>
</tr>
<tr>
<td>whoisonline</td>
<td>stores who is online on the first page</td>
</tr>
<tr>
<td>contact_details</td>
<td>stores the details about the contact</td>
</tr>
<tr>
<td>menu</td>
<td>stores information about the menus such as name, link, type, published, positions right or left etc</td>
</tr>
<tr>
<td>menu_types</td>
<td>stores information about menu types title, description etc</td>
</tr>
<tr>
<td>modules</td>
<td>stores information about all modules in the system</td>
</tr>
<tr>
<td>modules_menu</td>
<td>stores information to arrange the menu of modules</td>
</tr>
<tr>
<td>newsfeeds</td>
<td>stores data to providing users with frequently updated content</td>
</tr>
<tr>
<td>plugins</td>
<td>stores information about plugins installed in the system and their configuration details</td>
</tr>
<tr>
<td>sessions</td>
<td>stores information about pools</td>
</tr>
<tr>
<td>sections</td>
<td>stores sections titles, published, ordering and access …information</td>
</tr>
<tr>
<td>templates_menu</td>
<td>present the templates to allow the admin to change it</td>
</tr>
<tr>
<td>users</td>
<td>stores information about the users when the users register to the system</td>
</tr>
<tr>
<td>modules</td>
<td>modules table is designed to hold all modules installed into system</td>
</tr>
</tbody>
</table>
5.6.5.1 Schema Example:

The figure 5.6 is present table #__contact_details. The schema describes the table.

**Schema Example Table**

This table uses all of the common fields and uses a primary key ID field. The SQL displayed below will create the table described in the above schema figure 5.6:

```sql
CREATE TABLE `#__contact_details` `id` int(11) NOT NULL auto_increment, `name` varchar(255) NOT NULL default,
`alias` varchar(255) NOT NULL default,
`con_position` varchar(255) default NULL,
`address` text,
`suburb` varchar(100) default NULL,
`state` varchar(100) default NULL,
`country` varchar(100) default NULL,
`postcode` varchar(100) default NULL,
`telephone` varchar(255) default NULL,
`fax` varchar(255) default NULL
```
`misc` mediumtext,
`image` varchar(255) default NULL,
`imagepos` varchar(20) default NULL,
`email_to` varchar(255) default NULL,

PRIMARY KEY (`id`),
KEY `catid` (`catid`)

(TYPE=MyISAM CHARACTER SET 'utf8')
5.7 System Installation:

5.7.1 Tools of Installation:

The followings are the tools and software that are used to install and configure the e-community website:

- Joomla files: version 1.5.7 full package it available at www.joomla.org
- WampServer : version 2.0 it is available at www.wampserver.com WampServer includes the PhpMyAdmin, Apache 2.2.8, MySQL 5.0.51b and PHP 5.2.6
- Photoshop: CS3 to design the logos and banners.

The above software is supported on windows platform. The system configuration requires running at least 1 GB RAM, 20 GH Hard disk and at least 1GHz processor.

5.7.2 System Development:

After installing the WampServer and downloading the Joomla files, the followings steps describe the steps of insulation the system in local host server:

**Step 1:** Create a new database using PhpMyAdmin as Figure 5.7

![Figure 5.7](image.png)

creating a new database in PhpMyAdmin
Step 2: Import the SQL file from Joomla folder to create all the tables and the data and manage all the table and fields as Figure 5.8.
**Step 3:** Copy Joomla folders and files to WWW directory local host root. Then, open the folder using the WampServer to start the system setup. After that, follows the wizard until you finish all the steps see figures 5.9, 5.10 and 5.11

![First page of Joomla installation wizard](image)

**Figure 5.9**

First page of Joomla installation wizard

![Database configuration](image)

**Figure 5.10**

Database configuration
**Step 4:** Setup the administrator menus and control the site by control panel using admin user. Also add the extension, the components and the modules to the website. The admin user also controls all menus, articles and users. Figure 5.12 shows the MIT e-community administrator login page.

![MIT e-community Administration Login](image)

**Figure 5.12**

Admin login page

Finally the users can register and login to use the system services from the FrontPage.
5.8 An e-community website overview:

The followings are screen snapshots of the e-community system and brief description of each Figure.

**Figure 5.13** An e-community main page includes all services.
**Figure 5.14** Administrator main pages. It is the system control room.

![Figure 5.14](image1.png)

**Figure 5.14** Administrator’s page

**Figure 5.15** Add new articles. It is allow the administrator or authors to insert the articles.

![Figure 5.15](image2.png)

**Figure 5.15** Add New Article
Figure 5.16 Download Center it is repository of MIT PowerPoint slides, tutorials files, articles and software.

![Download Center](image)

**Figure 5.16**
Download Center

**Figure 5.17** Administrator uploads the files into each section or category.

![Upload files](image)

**Figure 5.17**
Upload files
Figure 5.18

MIT Forums: Discussions forum includes many sections and categories related with IT fields. The administrator manages the Forum.
**Figure 5.19** Create account for MIT students and guests. The figure shows the fields that are required for the registration process.

**Figure 5.19**

Registration form

**Figure 5.20** User Profile: This service shows the users profile. It allows the user to edit his profile, send message to other users, edit user picture and shows profile information to other users.

**Figure 5.20**

User Profile
**Figure 5.21** This e-community allows user to display the user's list (Figure 5.21). Also allows users to send message and connect with others (Figure 5.22).

**Figure 5.21**

Users list

**Figure 5.22**

Users: send message
**Figure 5.23** Chat: Allows the MIT students to chat online with other users.

![Chat Service](image)

**Figure 5.24** Live broadcast lessons: This service works through the Streaming Server. It allows the MIT students to watch online lessons, course, and conference. It provides the MIT students with various types of lessons from many universities around the world.

![Live Broadcasting](image)
**Figure 5.25** Video: This service allows the users to watch and upload videos related to IT.

**Figure 5.26** The users can choose the method of uploading and follow the wizard to upload the video.
Figure 5.27 Whiteboard: It enables MIT students to write codes, discuss, and write the algorithm. It can be used for tutoring, distance learning, training, and drawing. All the MIT students who are connected to the board will see the changes in real time. It is available from www.groupboard.com

![Whiteboard Image]

Figure 5.27 Whiteboard

5.9 Evaluating of the system:

Twenty MIT students from the main participants in this study have been used to evaluate the e-community website. The data was analysed by SPSS. Appendix C shows the evaluation forum. It includes three sections: contents, usability and design. The student’s evaluation results gave a clear and positive message. 84% of the
participants said the e-community is useful for MIT students. 80% of the participants found the e-community was easy to use and 86 % of them said the interfaces of e-community website were clear. 93 % of the participants said the screen displays were readable, logically arranged and pleasing to look at. 85% of the participants found the e-community design good. Furthermore 82% of the participants said there were enough services on the e-community website. The results showed the mean of contents as (4.13), the mean of usability as (4.1) and the mean of design is (4.3). That indicates the results of evaluation of system were good.

**Table 5.2**

The results of evaluation form

<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The amount of E-community website services presented was appropriate.</td>
<td>3.9</td>
<td>78</td>
</tr>
<tr>
<td>The E-community was interesting which motivates learning.</td>
<td>4.2</td>
<td>84</td>
</tr>
<tr>
<td>I would recommend this e-community to my friends.</td>
<td>4.25</td>
<td>85</td>
</tr>
<tr>
<td>There were enough services on the e-community website.</td>
<td>4.1</td>
<td>82</td>
</tr>
<tr>
<td>Overall, I found the e-community is useful for MIT students.</td>
<td>4.2</td>
<td>84</td>
</tr>
<tr>
<td><strong>Average of Contents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.13</td>
<td>82.6</td>
</tr>
<tr>
<td>The E-community ran properly</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>The E-community directions were clear.</td>
<td>4.1</td>
<td>82</td>
</tr>
<tr>
<td>The E-community was free from programming errors.</td>
<td>4.25</td>
<td>85</td>
</tr>
<tr>
<td>The information can easily be found.</td>
<td>4.05</td>
<td>81</td>
</tr>
<tr>
<td>Using of the e-community will help me to share information with other.</td>
<td>4.3</td>
<td>86</td>
</tr>
<tr>
<td>Overall, I found the e-community easy to use</td>
<td>4.3</td>
<td>86</td>
</tr>
<tr>
<td><strong>Average of Usability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.1</td>
<td>83.3</td>
</tr>
<tr>
<td>The services were easy to find.</td>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>The interfaces of the e-community website were clear.</td>
<td>4.3</td>
<td>86</td>
</tr>
<tr>
<td>The screen displays were readable, logically arranged and pleasing to look at</td>
<td>4.65</td>
<td>93</td>
</tr>
<tr>
<td>Overall, I found the e-community design good</td>
<td>4.25</td>
<td>85</td>
</tr>
<tr>
<td><strong>Average of Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.3</td>
<td>86</td>
</tr>
</tbody>
</table>
CHAPTER 6 – CONCLUSION

6.1 Introduction:

There are thousands of interesting e-community websites on the internet. Diversity and different community websites may make current websites untrustworthy and it is not usable for the MIT community. This research is an example of an academic e-community website. The research has presented six chapters in order to find the solutions for research problems and to identify the e-community methods.

In this work the researcher used the quantitative method. An e-community website was developed based on participant's responses and analysis of the data which was collected during a survey questions. Chapter 3 explained the population and the sample. Then, it described the data collection process. Finally, it presented the format of the questionnaire and how the data was analysed.

6.2 Summary of chapters:

This section presents a summary of this research. The section includes how each the research objectives was achieved.

a) To investigate if there are any specific academic e-community websites available for MIT students on the internet.

There are many e-communities websites on the internet concerned with many fields. Chapter 4 found that websites and analysed as categories in section 2.3. The research has found several IT and academic e-communities. It also there was no found that particular academic e-community for MIT students.

b) To determine the possibility of developing an e-community website.

It is possible develop an e-community website for MIT. Chapter 2 showed the important things to develop the system and it determined possibility of e-communities.
c) To determine the functional requirements of MIT e-community system.

The functional requirements of the e-community website were determined by two methods. The first one was done by the participants through a survey. Section four in the survey presented the requirements of an e-community website for MIT students. Analysis of the survey showed good results in chapter four. The other method was a literature review in chapter two. The chapter presented some of the requirements, which was derived from various literature reviews.

d) To study the services and frameworks that are suitable for an academic e-community website and develop the academic e-community website.

There are many services suitable for e-community websites. The literature review in chapter two presented two types of e-communities. One was the academic e-community and the other was the social e-community in order to determine the characteristics and features of the website. The chapter also studied the e-community services and framework to determine the MIT services and framework.

e) To develop an academic e-community website and test the system.

Development of the system went through several stages. Chapter five focused on the development of an academic MIT e-community system. The chapter found out the best academic framework and services related with to MIT students. The chapter showed the system overview, the system objective and users of the system. The chapter presented the system design and showed how to develop an e-community website. Finally the chapter showed screen snapshots of the E-community website. After developing the system, twenty MIT students evaluated it. The students evaluated the system through a survey. Chapter five section 5.9 presented the results of the survey. The student's evaluation results gave a clear and positive message.
6.3 Future Work in this Research

After the development of an e-community website for MIT students, the website must be linked to the universities and the IT institutions in order to have official status around the world. The e-community can also be extended to provide online courses (e-learning) for MIT students.

The research suggests that future work will be needed to study each element and find out a framework for each program. Moreover, e-communities could be developed of specific communities in other eras of study.

6.4 Conclusion

There are thousands of e-community websites available on the internet. Diversity and difference of community websites makes the current websites untrustworthy and it is not always suitable for the MIT community. Universities around the world should build main academic e-community for the students. This work is an example of an academic e-community for MIT students. The MIT e-community system will help them to be up-to-date and improve their knowledge.
APPENDIX A - TRADITIONAL SURVEY

Dear Respondent,

I am a student preparing my Master degree in the Faculty of Computer Science and Information Technology at the University of Malaya. My dissertation in:

E-community System for Master Information Technology (MIT) Students.

E-community: is an electronic online community for group of people interacting organisms sharing an environment. E-community refers to enabling communities of people to work, learn, discover, collaborate, and communicate together.

My research includes a questionnaire in order to make some points clear and to share your points of view my research. Filling the questionnaire will take 10 minutes. Participation in this research is completely voluntary. Please answer all the questions.

All the information that you will provide through your participation in this study will be kept confidential. Further, you will not be identified in the thesis or in any report or publication based on this research. There are no known or anticipated risks to participate in this study. The data collected through this study will be kept for a period of one year in a secure location.

Thank you in advance for your co-operation in my research.

Yours sincerely,

Hilal Al-Alawi

Instructions for the completion of the questionnaire

- Please do not write your name.
- Your co-operation in answering all questions honestly, objectively and to the best of your ability is greatly appreciated.
- Please read each statement carefully and indicate your response then tick (√) the best option
The Questionnaire

Section 1: General Information:

1- Gender:  ☐ male   ☐ female

2- Your bachelor degree background in: ...........................................................

3- In which semester you are now?
   o semester one
   o semester two
   o semester three
   o semester four
   o semester five
   o semester six or more

4- How often do you use computer?
   o every day
   o two or three times per week
   o not at all

5- How often do you use Internet?
   o every day
   o two or three times per week
   o not at all
Section 2: The following statements ask you about the IT application areas that you are interested in. Please indicate your agreement with the next set of statements using the following rating scale:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Very High 5</th>
<th>High 4</th>
<th>Moderate 3</th>
<th>Few 2</th>
<th>Never 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am following the information technology news</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>1 I can create interacting website using database.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2 I am familiar with one or more of programming languages.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3 I can maintain my computer by myself.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4 I can find the knowledge by using the search engines in the Internet.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5 I communicate with other colleagues through e-community website to share the information.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6 I use the Internet to improve my skills in IT fields.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8 I am familiar with computer network.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9 I am familiar with multimedia application.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10 I can create database by using database management system (DBMS).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Section 3: The following statements ask you about the perceptions of e-community website. Please indicate your agreement with the next set of statements using the following rating scale:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  It is important for us to build an e-community website for MIT students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2  The e-community website will help you to communicate with colleagues and lecturers in other universities around the world.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3  Developing e-community website will help you to be able to share your information online.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4  The e-community website will help you to find information from particular IT websites.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  The e-community website will organize the information to be easy for communication.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6  The e-community website will upgrade professionally MIT students’ to be aware of many new and useful applications, articles and tutorials in all IT fields.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7  E-community website will improve the competencies of the IT master students’ graduates.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8  E-community website will be the main resource of the MIT information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9  E-community website will enable me to find the information in convenient and fast.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 E-community website will enable me to communicate with MIT lecturers around the world.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 4: The following statements ask you about the requirements of e-community website for MIT students to adopt the new system. Please indicate your agreement with the next set of statements using the following rating scale:

<table>
<thead>
<tr>
<th>statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not sure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There is no specified place in the Internet to discuss and share knowledge for MIT students.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. I need facilities to upload and storage learning materials in e-community website.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. I need chatting facilities to discuss the issues with other colleagues.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. I need Short Message Service (SMS) in the e-community website to communicate with others.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. I need articles related to the MIT programs.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. I need tutorials concern about the MIT programs.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. I need e-mail facilities in the e-community website.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. I need Voice Over Internet Protocol (VoIP) to communicate with other students or lecturers around the world.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. I need news facilities concern about the MIT programs in the universities.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. I need discussion forums to write and discuss the MIT issues.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

11. From your point of view what are the other requirements to adopt the e-community website?
APPENDIX B – ONLINE SURVEY

Examples of online survey:

3. In which semester you are now? *
   - semester one
   - semester two
   - semester three
   - semester four
   - semester five
   - semester six or more

4. How often do you use computer? *
   - every day
   - two or three times per week
   - not at all

5. How often do you use internet? *
   - every day
   - two or three times per week
   - not at all

6. I am following the information technology news constantly.
   - 5 Very high
   - 4 High
   - 3 Moderate
   - 2 Few
   - 1 Never

7. I can create interacting website using database.
   - 5 Very high
   - 4 High
   - 3 Moderate
   - 2 Few
   - 1 Never

8. I am familiar with one or more of programming languages
   - 5 Very high
   - 4 High
   - 3 Moderate
   - 2 Few
   - 1 Never
### 3. Section 3:
The following statements ask you about the perceived benefits of using e-community website for MIT students. Please indicate your agreement with the next set of statements using the following rating scale.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Rating Scale</th>
</tr>
</thead>
</table>
| 16. It is important for us to build an e-community website for MIT students. | 1. Strongly agree  
2. Agree  
3. Not sure  
4. Disagree  
5. Strongly disagree |
| 17. The e-community website will help you to communicate with colleagues and lecturers in other universities around the world. | 1. Strongly agree  
2. Agree  
3. Not sure  
4. Disagree  
5. Strongly disagree |
| 18. Developing e-community website will help you to be able to share your information online. | 1. Strongly agree  
2. Agree  
3. Not sure  
4. Disagree  
5. Strongly disagree |
APPENDIX C – SYSTEM EVALUATION FORM

Evaluation Form
E-Community Website for MIT Students

This survey is a part of study to evaluate the "E-community System for Master Information Technology Students (MIT)"

E-community: is an electronic online community for MIT students. The e-community allows the students to interact, work, learn, discover, share the knowledge, and communicate together.

Thank you for your participation.

Yours Sincerely
Hilal Al-Alalwi
Master of Information Technology
University of Malaya

Name: .................................................................

Matric No: .................
- Please read each statement carefully and indicate your response then tick (✓) the best option.

<table>
<thead>
<tr>
<th>NO</th>
<th>Statements</th>
<th>Contents</th>
<th>strongly disagree ↔ strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>a1</td>
<td>The amount of E-community website services presented was appropriate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a2</td>
<td>The E-community was interesting which motivates learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a3</td>
<td>I would recommend this e-community to my friends.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a4</td>
<td>There were enough services on the e-community website.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a5</td>
<td>Overall, I found the e-community is useful for MIT students.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Usability</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>a6</td>
<td>The E-community ran properly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a7</td>
<td>The E-community directions were clear.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a8</td>
<td>The E-community was free from programming errors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a9</td>
<td>The E-community website is easily find the information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a10</td>
<td>Using of e-community will help me to share the information with other.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a11</td>
<td>Overall, I found the e-community was easy to use</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>a12</td>
<td>The services of e-community were easy to find.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a13</td>
<td>The interfaces of e-community website were clear.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a14</td>
<td>The screen displays were readable, logically arranged and pleasing to look at</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a15</td>
<td>Overall, I found the e-community design is good</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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