Master Thesis in Informatics

LibGuides Quality from Students’ Perspective

*Exploratory Case Study of IS students*

**Author:** Nooshin Mehdikashi  
**Supervisor:** Osama Mansour  
**Semester:** Spring 2013  
**Course Code:** 4IK00E
Abstract

Recent developments in the field of research guidance have led to a renewed interest in designing and development of LibGuides, specifically in academic environments. LibGuides and Subject guides are increasingly becoming important technologies in enhancing the quality of research guidance. The research on LibGuides to date has tended to focus on different aspects; however, there have been little discussion about students perspective on using LibGuides. This causes that students’ requirements do not be considered in designing LibGuides, sufficiently. This study seeks to remedy this problem by exploring IS students’ perspective on quality of LibGuides, and their expectations of it, in order to better support of their research guidance. The study is an exploratory qualitative research conducted at Linnaeus University. The focus of study is on perspective of information systems (IS) students, and the analysis is based on quality dimensions (information quality, service quality, system quality) of the DeLone and McLean Information Systems Success Model (D&M ISSM). The result of the study is a framework that represents quality themes of LibGuides from Information Systems students’ perspective.

**Keywords:** LibGuides, Subject guides, Quality, Students’ perspective, Information Systems research, DeLone and McLean Information Systems Success Model (D&M ISSM)
Acknowledgements

Foremost, I would like to acknowledge with much appreciation the crucial role of my supervisor Osama Mansour in successfully finishing this master thesis and thanks him for giving me precious guidance.

Besides appreciation of my supervisor, it is with immense gratitude that I acknowledge the helpful recommendations of Professor Anita Mirijamdotter and Dr. Paivi Jokela.

Moreover, I would like to thank my dear friends and participants of this study for sharing their knowledge and experiences with me, and the Library of Linnaeus University for cooperating and guiding me in acquiring my required information.

Last but not the least, a special gratitude and love goes to my family. This thesis would not happen to be possible without their unfailing support.

*Nooshin Mehdikashi*
# Contents

1 Introduction.................................................................................................................................1

1.1 Previous studies and research problem ....................................................................................2

1.1.1 Studies on LibGuides (Non student-centered) ..................................................................2

1.1.2 Students-centered studies on LibGuides ...........................................................................2

1.2 Research purpose and research questions ...............................................................................3

1.3 Delimitations/Limitation ............................................................................................................3

1.4 Target audience .........................................................................................................................4

1.5 Disposition .................................................................................................................................4

2 Definition of Concepts and Literature Review.............................................................................6

2.1 Definition of concepts ................................................................................................................6

2.1.1 LibGuides ............................................................................................................................6

2.1.2 D&M ISSM ..........................................................................................................................6

2.2 Literature review .......................................................................................................................8

2.2.1 Studies on LibGuides (Non student-centered) ..................................................................8

2.2.2 Students-centered studies on LibGuides ...........................................................................10

2.2.3 Subject-focus studies of LibGuides ....................................................................................12

3 Background/Framework ..............................................................................................................13

3.1 D&M IS Success model background ......................................................................................13

3.2 Application of D&M IS Success model for LibGuides study ...............................................15

3.3 Background studies ................................................................................................................16

3.3.2 Information quality ..........................................................................................................16

3.3.3 System quality ..................................................................................................................17

3.3.4 Service quality ..................................................................................................................17

3.4 Framework ..............................................................................................................................18

4 Methodology .............................................................................................................................20

4.1 Research setting .......................................................................................................................20

4.1.1 Linnaeus LibGuide ............................................................................................................20

4.2 Research Approach ................................................................................................................22

4.2.1 Cognitive constructivism ..................................................................................................24

4.2.2 The application of cognitive constructivism .......................................................................24

4.3 Research method .....................................................................................................................25

4.3.1 Why qualitative case study? .............................................................................................25
Table of Figures

Figure 1.1: Scope of research problem.................................................................3
Figure 3.1: IS Success Model (DeLone and McLean, 1992) ........................................13
Figure 3.2: DeLone and McLean update IS Success model (DeLone and McLean, 2003) ....14
Figure 3.3: Framework of IS success .................................................................19
Figure 4.1: Research procedure........................................................................31

Table of Tables

Table 4.1: Demographics of Participants ............................................................28
Table 5.1: Participants categories based on their backgrounds .........................34
Table 5.2: LibGuides Quality framework: Result and Analysis..........................46
Table 6.1: LibGuides Quality framework: Discussion........................................53

List of Abbreviations

D&M ISSM DeLone and McLean Information Systems Success Model
DL Digital Library
IS Information System
LNU Linnaeus University
API Application Programming Interface
1 Introduction

This chapter presents an overview of the related studies to the research. Moreover, it presents the problem area and the research question, as well as, the research delimitation.

In the current era that researchers are overwhelmed with a vast amount of information resources and databases -from printed to modern online ones- it is a challenging work for students to find their required information for a particular course. Certainly, it would be pretty demanding for students to read through an A-to-Z list of all the databases available and then decide which is/are the best for a particular research problem (Ouellette, 2011). One of the facilities that streamline these challenges for research students is LibGuides.

LibGuides is a well-known library specific tool. It is a Web2.0 content management system that can embrace subject and course-specific guides, social features to facilitate collaboration, and can be applied for library instruction and information literacy (Smith, 2010; LibGuides, 2012). LibGuides are important to the universities since the fact that they provide users with a more coherent and organized environment (Roberts and Hunter, 2011; Katsirikou, 2011).

Over recent decade, LibGuides and Subject guides have become a perennially continuous subject of discussion at the universities; however, the number of studies focusing on quality of LibGuides in Information Systems (IS) research is almost in exploratory stage. The main idea of working on IS students perspective is rooted from the authors’ experience. According to the author’s personal experience, IS students highly need a comprehensive and integrated research guide system for implementing their research projects, but, there is almost no studies regarding quality of LibGuides system from their point of view. In most of the studies librarians, teachers and technical staffs play main role in preparing LibGuides and this may cause that students’ requirements do not be considered in designing LibGuides, sufficiently.

For the purpose of exploring unknown aspects of LibGuides perceived by IS students, I attempt to conduct an exploratory qualitative case study, in IS department of Linnaeus University (LNU). The result of the study is a framework identifying themes that represent quality of LibGuides perceived by IS students, based on DeLone and McLean Information Systems Success Model (D&M ISSM) (DeLone and McLean, 2003). D&M ISSM is applied in this study as a comprehensive success model to consider different aspects of LibGuides quality. This model will be defined and explained in chapters 2 and 3. It is supposed that the study’s findings add to a growing body of literature on LibGuides system designing. It can provide a new overview of the LibGuides from IS students perspectives and good starting point for further research on improving quality of LibGuides.
1.1 Previous studies and research problem

In this section, literature reviews briefly highlights the previous studies on LibGuides and discuss the research problem based on them. The more detailed definition about each of these studies will then be given in chapter 2- section 2.2.

1.1.1 Studies on LibGuides (Non student-centered)

Previous studies reveals that most of the literature on LibGuides concerns the challenges they pose to librarians (e.g. Jackson, Blackburn and McDonald, 2007; McMullin and Hutton, 2010; Robinson and Kim, 2010; Tchangalova and Feigley, 2008; Belcher, Hiom, and Place, 2000) and technical staffs (e.g. Darby, 2006; Robinson and Kim, 2010; Moses and Richard, 2008; Blackburn and Walker, 2010). Most of This category of literature embraces different trends. For example, a trend within this category concerns the technical requirements of staffs to create and maintain LibGuides, another trend discusses about the administrative or service-related issues of LibGuides adoption at universities.

1.1.2 Students-centered studies on LibGuides

There are some students-related studies on LibGuides and Subject guides (e.g. Courtois, Higgins, and Kapur, 2005; Mokia and Rolen, 2012; Hintz et al., 2010; Ouellelte, 2011, Sonsteby and DeJonghe, 2013), among them a few have focus on perspective of students in different fields (Adebonojo, 2010; Miner and Alexander, 2010; Staley, 2005). Most of these studies are in quantitative approach (Courtois, Higgins, and Kapur, 2005; Neves and Dooley, 2011; Staley, 2007; Sonsteby and DeJonghe, 2013).

In spite to my study, I found almost no research with focus on IS students perspective on LibGuides / Subject guides. So, this topic is still in exploratory stage. Moreover, as a result of discussion with IS students, it is revealed that they usually spend noticeable time to find their required information and get guidance from different non comprehensive information resources. Although they have LibGuides at their university but most of them do not use LibGuides, do not know about it, or are not satisfied of it, sufficiently. According to D&M IS Success model (Section 3.1), intension to use and user satisfaction of a system are affected by quality of system (DeLone and McLean, 2003). However, previous studies about students’ perspective on LibGuides do not cover different quality aspect of system. In the following picture the research problem is represented in blue color.
1.2 Research purpose and research questions

The aim of this case study is to understand IS students’ perspective on quality aspects of LibGuides—this case LNU LibGuides. In order to achieve this aim the study develop a framework of quality themes based on IS students’ perception of LibGuides. The research questions that are proposed in the course of this research purpose are:

1. How do IS students define the LNU LibGuides quality in support of their researches?
2. What is IS students’ expectation for improvement of quality of LNU LibGuides?

1.3 Delimitations/Limitation

One of the limitations of this study is the problem of generalizability that is rooted from using case study strategy. According to Yin (2003, p.10) a common concern about case studies put forward by their critics is that they provide little basis for scientific generalization. This study is conducted in a case study in Sweden and it is likely that the study show different result in other countries. Moreover, this study focuses on individual level in order to understand their cognitive mental model. This makes limitation in considering the collaboration searching in groups of two or more students. It is possible that students have different search strategies, requirements and obstacles in using LibGuides when they are doing information searching and sharing contents and knowledge in the group. One of the most striking limitations of the present case study is regarding to applying participants from different nationalities. Because of lack of accessibility to some nationalities in the class, the participants are mainly from Asian and Middle East countries and a few from Sweden.
1.4 Target audience

This study is beneficial for LibGuides system designers, user interface designer and system librarians to take advantage of better understanding the IS students’ perspective on LibGuides and their expectations of LibGuides for improving its success. It may also provide valuable resource for librarians, students and information system faculty to become more familiar with facilities that LibGuides provides them for their research task. Moreover, it may smooth other researchers’ way for further student-focused studies on quality of LibGuides. This study does not cover the causes and effects of using LibGuides, however, it just concern about exploring themes that reveals IS students perspective on its quality. Consequently, this study can be starting point for other researchers to consider the relationship between variables of the study result, or develop theories based on it.

1.5 Disposition

Chapter 1 - this chapter states the reason why the chosen topic is of interest and to whom it maybe. It consists of discussion about research problem, purpose and delimitation of this thesis.

Chapter 2 - This chapter covers the definition of concepts related to this study and previous studies conducted on LibGuides in categories of non students-oriented (administration and technical staff’s perspective) and students-oriented studies.

Chapter 3 - In the current chapter, a preliminary IS success framework (based on D&M success model) for better identifying units of system analysis is proposed. Firstly, it covers more detailed explanation about D&M IS Success Model and its background; The reason why this model is applied for this study is discussed; then the previous studies about LibGuides/ subject guides/ research guides in the scope of dimensions of D&M ISSM are reviewed; last but not the least, the preliminary framework of IS success –that is streamed from D&M Success model and previous studies- is proposed.

Chapter 4 - In this chapter, the research setting and case study are explained, the research approach of the study is outlined, and the reason why it is required to have this research approach in this study is explained. Moreover, the best-suited methodology and inquiry of strategy to adopt for answering the research questions are also discussed. The data collection and data analysis method that are applied in this study are determined. The last part of the chapter embraces the validity and reliability standards that are regarded in this research.

Chapter 5 - This chapter intends to represent and analyse the empirical findings based on D&M ISSM. It will start with presenting IS students’ perspective on LNU LibGuides from different aspects; information quality aspect, system quality aspect, and service quality aspect. It is further with codification based on the concepts in framework 3.3. The emerged themes are categorized to
answer the research questions, and shown in the table 5.

Chapter 6 - In this section, we discuss about the answer of research questions. The difference and common points between findings of the current study and previous studies are being discussed, and the suggestions for enriching LibGuides systems are stated. The IS Success model is evaluated based on the new emerged findings of this case study. Last but not least, a model that resulted from this discussion is represented.

Chapter 7 - In this chapter the thesis is concluded. A description of how IS students define the LNU LibGuides quality in support of their researches and what is IS students’ expectation for improvement of quality of LNU LibGuides, are presented.
2 Definition of Concepts and Literature Review

This chapter covers the definition of concepts related to this study and previous studies conducted on LibGuides, in categories of non-students-oriented (administration and technical staff’s perspective) and students-oriented studies.

2.1 Definition of concepts

In this section and before discussing about previous related studies it would be noteworthy to delineate main concepts that play important role in crystallizing our research.

2.1.1 LibGuides

LibGuides is web-authoring and -hosting software for publishing library subject guides, web portals, or course guides (Neves and Dooley, 2011). According to Smith (2010), LibGuides is “… a subscription-based Web2.0 content management system that can be used to create subject and course-specific guides, can be used for library instruction and information literacy instruction, and contains social features to facilitate collaboration.” (Smith, 2010, p.174). In the website of Springshare LibGuides is introduced as an all-in-one content management platform, yet the content libraries store in LibGuides can be displayed in any other web apps and web pages on their library website (LibGuides, 2012).

There are some different theories in respect to collaborative aspect of the LibGuides. Lascarides (2012), states that LibGuides is not a wiki-like collaboration creation tool and it is mainly applied for adding linked content in many formats and managing the guides by staffs. On the other hand, Mokia and Rolen (2012) believe that because of the feedback capability in LibGuides, using it improve the library’s service by providing connection between students and faculty. He states that this online connection is a step toward the collaboration that Cawthorne (2003) speaks of in his article on building relationships. He writes that through —meaningful partnerships with students, teaching faculty, departments, research centers, and institutes, library outreach can have its greatest impact on the manner in which the educational community deals with lifelong learning. It is designed for classroom instruction and point students to relevant resources, and enables librarians to connect with students even after the class has ended (Smallwood, 2011). LibGuides is about library 2.0 and a “social” web 2.0 library experiences for the patrons (LibGuides, 2012).
LibGuides is for distributing library content and services outside of the library website. Content published in LibGuides is available on Facebook. LibGuides widgets enable users to embed links to their guides into blogs, courseware systems, etc. Twitter also can be integrated to LibGuides. LibGuides comes with set of Application Programming Interface (API) functions which enable librarians to mix and match content inside and outside of LibGuides. With the multitude of API calls and methods users can display LibGuides content in their other library web applications (Why LibGuides? The benefits of LibGuides web 2.0 platform, 2010)

2.1.1.1 Features of LibGuides

Although there is not a unique standard for LibGuides, according to springshare some of the basic features of LibGuides are including: 1. Customizable look and feel, 2. Mobile and smart phone friendly, 3. Email alert and RSS updates, 4. Easily embed multimedia, 5. Built-in Link checker, 6. Social sharing and bookmarking, 7. Instant messenger/chat, 8. Visual API utility. Lascarides (2012), described LibGuides as “... a hosted web service(no software installation necessary) with a wide variety of features, including easily embedding audio and video materials, formatting for easy readability on mobile devices, integrating with chat, social networks, and email, and an API for adding and repurposing LibGuides content onto your other websites.” (Lascarides, 2012, p.14)

Yang (2009) identifies the characteristics of subject guide 2.0 to include the following features:

•” Inclusion of multimedia components
• Content in multiple formats
• The capability to receive and incorporate input from users
• Ease of use by guide developers and by users
• Ability to make global changes to content
• Searchability and browsability
• Link checking
• Social bookmarking
• RSS feeds
• User tagging
• Subscriber e-mail
• Interactive chat
• User evaluation
• Statistics” (Yang, 2009, p.92)

Yang goes on to state that LibGuides is the only program that has all the advance features of a 2.0 subject guide.
The focus of this study is on the features of the LibGuides at Linnaeus University platform. The features will be defined in chapter three, in section 4.3.1.

2.1.2 D&M ISSM

In 1992, DeLone and McLean developed the taxonomy and an interactive model of D&M IS Success Model as a framework for conceptualizing and operationalizing IS success. Later in 2003, they updated their model with six dimensions of “system quality”, “service quality”, “information quality”, “Intention to use/ use”, “user satisfaction” and “Net benefits” (DeLone and McLean, 2003, p.23). This model is based on a process model of IS (DeLone and McLean, 2003, p. 15). In addition, there is an argue that these six dimensions are interrelated, and indicates that causality flows in the direction of information process. This model became popular because it provides a comprehensive and multidimensional framework in order to integrate IS research findings (DeLone and McLean, 2003). More detailed explanation will be given in chapter 3.

2.2 Literature review

In this section, literature review highlights the previous students- centered studies conducted on LibGuides. It covers students’ perspectives on LibGuides, in different context of study.

2.2.1 Studies on LibGuides (Non student-centered)

Most of the literature on LibGuides concerns the challenges they pose to librarians (e.g. Jackson, Blackburn and McDonald, 2007; McMullin and Hutton, 2010; Robinson and Kim, 2010; Tchangalova and Feigley, 2008; Hiom, Belcher and Place, 2000). This category of literature embraces different trends. For example, a trend within this category concerns the technical requirements of staffs to create and maintain LibGuides, another trend discusses about the administrative or service-related issues of LibGuides adoption at universities.

In their research, McMullin and Hutton (2010) described how librarians of West Chester University uses the LibGuides to respond to the need of their university community and how they hope to expand the potential uses of the web guides. Robinson and Kim (2010) accomplished a study on integrating the online library service with LMS in three institutions. They also reviewed librarian’s role and their collaboration with outside partners, as well as the type of technology that would need to be used to enable these systems (Robinson and Kim, 2010).
In 2008, Tchangalova and Feigley conducted a survey with University of Maryland(UM) librarians and subject guide users to determine user expectations of the UM subject guides in order to provide subject librarians with useful tools for creating subject guides in the electronic environment. The goal of their study was to explore the challenges librarians are facing and to identify new technologies to assist them in creating subject guides (Tchangalova and Feigley, 2008).

Cofield and Solon (2012) of the Tarleton Law Library discuss making the Most of LibGuides in Law Libraries. As a result of their study they came to conclusion for leveraging the interactive, multimedia guides for staff training and collaboration, instruction, and Web content management (Cofield and Solon, 2012).

Jackson, Blackburn and McDonald (2007) studied on a wiki project development in the departments of Electronic Resource Management (ERM) and Collection Development in Florida State University. They reviews the organizational structure and the strategies the universities libraries used to implement the wiki platform for creating customized subject guides for domain specific disciplines (Jackson, Blackburn and McDonald, 2007). The reasons for selecting MediaWiki, implementation of the project, training, and plans for customization Strategies and “best practices” for wiki use are also discussed in this article (Jackson, Blackburn and McDonald, 2007). The main focus of this study is on training Librarian for customizing this wiki in the library system of the university.

Arvin and Blevens (2011) focused on cooperation of Librarians and faculties of Indiana State University for improving cohesion in LibGuides of the university. As the LibGuides have been more widely used and the librarians learned more about the needs of teaching departments and programs, new content was tacked onto the existent LibGuides. This has resulted in a lack of cohesion, analogous to a house with odd rooms, windows and doors poking out from unusual positions (Arvin and Blevens , 2011).

As it is clear from literature review most of the studies about LibGuides are conducted in American Universities and research centers. One of the projects conducted on LibGuides that focused on European academic initiatives in particular is conducted in University of Bristol in UK. The project with the name of DESIRE employs the editors who are all subject or information and subject experts to make judgment about the quality of internet site in order to build portal services. The partners of the project are from four European countries- the Netherlands, Norway, Sweden and the UK. DESIRE has been promoting standard practices for gateway developments which will give different gateways the potential to inter-operate in the future to create an international, integrated gateway service (Belcher, Hoim and Place, 2000).

Gonzalez and Westbrook (2010) implemented a study about providing LibGuides platform for distance learning at New Mexico State University. They mainly worked on
administrative and service – oriented aspect of implementation of LibGuides from Librarians and faculties’ perspective. They proposed a working set of best practices for librarians to consider and adopt programs like LibGuides to manage their online guides. They consider challenges, and benefits of implementation of LibGuides, and discuss the administrative support, leadership structure, etc in execution of the project.

From technical and implementation perspective, some researchers (e.g. Darby, 2006; Robinson and Kim, 2010; Moses and Richard, 2008; Blackburn and Walker, 2010) conducted their studies about technical issues of implementing LibGuides. Darby (2006) discussed the steps that are necessary in implementing the open source product of Pirate Source. Pirate Source is an application developed by Joyner Library at East Carolina University to help libraries manage the organization and display of materials that otherwise might be put in a pathfinder or subject guide. In his article he mainly focused on the technical aspects of using the source code of Pirate Source. He focused on two main components of technical and administrative in implementing this open source product; Technical aspects including required technology such as Web scripting language and the database application, and administrative issues such as required staffs’ skill for implementing this product (Darby, 2006). As it is mentioned before, Jackson, Blackburn and McDonald (2008) considered the technological perspective of implementing MedidWiki besides its organizational aspect.

Blackburn and Walker (2010) described the implementation of SubjectsPlus to manage subject guides at the Wichita State University Libraries. They discuss the decision to implement an open source solution, the implementation process and customization to the software. The study covers librarians and education professors’ reactions to the SubjectPlus page. According to the article, librarians and teachers were main actors got involved in creating and customizing course guides and topic guides in SubjectPlus pages.

Moses and Richard (2008), in their article, described two libraries' experiences with the implementation of new software packages to deliver timely, accurate and dynamic content via library subject guides. In their studies they involved librarian and technicians and covered the universities experience in applying technologies such as webserver, database application, etc that required for new subject guides implementation (Moses and Richard, 2008).

2.2.2 Students-centered studies on LibGuides

There are some studies conducted on LibGuides with focus on students use, by some researchers (e.g. Staley, 2007; Courtois, Higgins, and Kapur, 2005; Mokia and Rolen, 2012; Hintz et al., 2010; Ouellelete, 2011). Among these researches, some of them are performed mainly in quantitative approach (Courtois, Higgins, and Kapur, 2005; Neves and Dooley, 2011; Staley, 2007) and a fewer of them in qualitative (Hintz
et al. 2010; Ouellelte, 2011).

In 2011, Ouellelte conducted a qualitative research to investigate how students use subject guides and what students like and dislike about it. He proposed that for designing subject guides for students, one size does not fit all, and librarians should consult with students and faculty to assess their needs and wants to create guides that are more useful, and more used (Ouellelte, 2011).

In 2007, Staley carried out a case study that focused on the actual use and perceived usefulness of subject guides among undergraduate students in Nursing, Journalism and Mass Communication, and Organization and Management as well as among all teaching faculty members at San Jose State University in the spring 2005 semester.

Mokia and Rolen (2012) conducting a research to examine how LibGuides are presently being used to help students learn critical thinking and research skills. Their study is limited to use of LibGuides to support of information literacy (Mokia and Rolen, 2012). This study examines the various Information Literacy web sites.

Another study concerning user-centered approach in evaluating subject guide is conducted by Hintz et al. in 2010. They focused on students’ needs and what they want of library subject guides, in the University of British Columbia (UBC). They applied questionnaire to get feedback about UBC subject guides from undergraduate and graduate students in UBC. The study was conducted in both qualitative and quantitative study. The working group used the questionnaire data to create a “Top Ten” list of student recommendations (Hintz et al., 2010).

In 2008, Neves and Dooley, started executing a research on usefulness of a web-based research portal, designed using LibGuides software and incorporating the architecture of the medical school curriculum, at Dalhousie University Faculty of Medicine (Neves and Dooley, 2011). In their research, they switched from library-centered to students-centered focus. They generated learning issues, and students are expected to learn core concepts of each unit through collaboration, independent research, and problem solving. The research shows that students are infrequent library visitors and librarians were concerned about the lack of opportunity for follow-up with this group (Neves and Dooley, 2011). The study was mainly quantitative and through statistical evidence of use, feedback via the boxes, comments that they received via email, feedback boxes and instant messaging, they tried to have an active partnering with students to increase the use of LibGuides at W. K. Kellogg Health Sciences Library at Dalhousie University.

Kaplowitz and Wilkerson (2002) developed a collaborative, student centered, active learning approach, in UCLA (University of California, Los Angeles). Providing services such as web-based instruction and feedback service for students illustrated a
clear understanding of the resources and their usefulness.

As literature review shows, some studies (e.g. Morris and DelBosque, 2010) set out regarding the application of web 2.0 in LibGuides, subject guides or research guides and a few number of these studies focused on area of students’ perspective on Web 2.0 tools (e.g. Hintz et al., 2010). A recent study by Morris and DelBosque (2010) mainly emphasized on updating Subject guides and role of Web 2.0 in LibGuides. Their studies reveals that most libraries still use subject guides to connect users with resources, but it seems that the subject guides are repeatedly overlooked and infrequently updated. However, Simple changes to guides could greatly enhance their use (Morris and DelBosque, 2010).

2.2.3 Subject-focus studies of LibGuides

In recent years, a number of studies have been conducted regarding LibGuides for special subjects (e.g. political science, Nurse, journalism and mass communication, Organization and management, etc ) by researchers (e.g. Adebonojo,2010; Miner and Alexander, 2010; Staley, 2005).

Adebonojo (2010) conducted a survey at East Tennessee State University's Sherrod Library regarding the usefulness of LibGuides for undergraduate students. Librarians and professors view the use of subject guides attached to a course management system site as an effective educational solution that provide relevant library resources (Adebonojo, 2010). In this connection, they concentrate on creating LibGuides for each of the courses for which East Tennessee State University has a library instruction session. Professors of these courses play main role in using LibGuides.

Miner and Alexander (2010), professors of political science in the South America, conduct a research about LibGuides and their contribution to enhancing students’ research in political science and international affairs. In their study, LibGuides are defined as a gateway for library research that reduces students’ apprehensions and enables the faculty of political science and international affairs to guide inquiry to a variety of sources and a multitude of perspectives. They discussed the experience and adaption of LibGuides at North Georgia College in their study. They believed that LibGuides improve students’ research by promoting the information literacy.
3 Background/Framework

In the current chapter, I propose a preliminary IS success framework (based on D&M success model) for better identifying units of system analysis. Firstly, it covers more detailed explanation about D&M IS Success Model and its background; The reason why this model is applied for this study is discussed; then the previous studies about LibGuides/ subject guides/ research guides in the scope of dimensions of D&M ISSM are reviewed; last but not the least, the preliminary framework of IS success —that is streamed from D&M Success model and previous studies- is proposed.

3.1 D&M IS Success model background

D&M IS Success Model is introduced by DeLone and McLean in 1992. In earlier studies, researchers had identified different aspects of IS success through variety studies. The early models of IS success were ill-defined because of the complex, interdependent and multi-dimensional nature of IS success (Petter, DeLone and McLean, 2008, p.237). In order to organize this diverse and provide an integrated view of the concepts of I/S success, DeLone and McLean introduce a comprehensive taxonomy of I/S success, in 1992. The taxonomy hypothesized six main dimensions of I/S success; System quality, Information quality, Use, User satisfaction, Individual impact, and Organizational impact (DeLone and McLean, 1992, p. 62).

![Figure 3.1: IS Success Model (DeLone and McLean, 1992)](image)

This model is based on theoretical and empirical IS research conducted by a number of researchers in the 1970s and 1980s (DeLone and McLean, 2003). This model is made based upon Mason’s modification of the Shannon and Weaver model (Stacie and McLean, 2009). In the D&M IS Success Model, “systems quality” measures technical success; “information
“quality” measures semantic success; and “use, user satisfaction, individual impacts ”and “organizational impacts” measure effectiveness success (Petter and McLean, 2009, p.159).

In 2003, DeLone and McLean updated their model and evaluated its usefulness under striking changes in IS practice, such as growth of e-commerce (DeLone and McLean, 2003) and knowledge management (Jennex et al., 1998).

The updated D&M IS model is composed of six dimensions of “system quality“, “service quality“, ”information quality“, “Intention to use/ use”, ” user satisfaction” and “Net benefits” (DeLone and McLean, 2003, p.23). The arrows display proposed relations between the success dimensions in a process sense. The model can be interpreted as follows: A system can be evaluated in terms of information, system, and service quality; these characteristics affect the subsequent use or intention to use and user satisfaction. As a result of using the system, certain benefits will be achieved. The net benefits will (positively or negatively) influence user satisfaction and the further use of the information system (DeLone and McLean, 2003, p.23).

![Figure 3.2: DeLone and McLean update IS Success model (DeLone and McLean, 2003)](image)

The dimensions of updated success model include:
- System quality – the desirable characteristics of an information system, such as: relevance, understandability, accuracy, etc. (Petter, DeLone and McLean, 2008, p.239).
- Information quality – the desirable characteristics of the system outputs that is, management reports and Web pages (Petter, DeLone and McLean, 2008, p.239).
• Service quality – the quality of the support that system users receive from the IS department and IT support personnel. SERVQUAL, adapted from the field of marketing, is a popular instrument for measuring IS service quality (Pitter et al., 1995; Petter, DeLone and McLean, 2008, p. 239).

• System use – the degree and manner (e.g. amount of use, frequency of use, nature of use, appropriateness of use, extent of use, and purpose of use) in which staff and customers utilize the capabilities of an information system (Petter, DeLone and McLean, 2008, p.239).

• User satisfaction – users’ level of satisfaction (the most widely used multi-attribute instrument for measuring user information satisfaction) with reports, Web sites, and support services (Petter, DeLone and McLean, 2008, p.239).

• Net benefits – the extent to which IS are contributing to the success of individuals, groups, organizations, industries, and nations (Petter, DeLone and McLean, 2008, p.239).

3.2 Application of D&M IS Success model for LibGuides study

Based on the research problem, previous studies on LibGuides rarely covered different quality aspects of a system, simultaneously. This study applies the quality dimensions of the D&M success model (information quality, system quality and service quality) as a preliminary framework for the study, in order to authorize the study and provide more meaningful interpretation of empirical data. This study does not focus on the correlation between dimensions of the D&M IS success model. The elements in dimensions of the model are used in data collection stage -to assist participants in better answering the interview question; in data analysis -for identifying authorized and meaningful units for codification of empirical data; and in discussion stage -for comparing previous studies with the result of current study in meaningful categorization (Figure 3.1).

It is considered suitable as it shows significant universally. It is developed based on integrating different concepts and findings from previous IS success studies, and so it presents a comprehensive taxonomy of IS success (Dwivedi, 2012). Based on the explanation of this model, it consider different aspects of the IS success such as technical and semantic. These properties of D&M success model assist the author to prepare a more comprehensive initial framework for the study.

Nevertheless, D&M IS success model is a general model for assessment of the information systems, however, the aim of the study is developing a framework of quality themes of LibGuides ground on dimensions of this model.
3.3 Background studies

This section covers previous studies conducted on LibGuides based on the three quality dimensions (information, system and service) of D&M IS success model.

3.3.2 Information quality

According to Petter, DeLone and McLean (2008) relevance, understandability, accuracy, conciseness, completeness, currency, timeliness, and usability are some criteria for information quality.

Regarding using LibGuides, Ouellette (2011) understood that information accessibility as one of the factors of information quality affect on using subject guides. For example, for improving the accessibility to database, databases section should be located in the default page or be linked to the top three databases directly from the homepage. Some researchers (Arvin and Blevens, 2011; Guthrie & Wigfield, 2000) pointed to the factor of Cohesion of content for improving the LibGuides.

It should be considered that this study covers the desirable characteristics of LibGuides for research design. Base on researcher development framework (CRAC, 2010) the required information and knowledge for carrying out an excellent research may include 1- Subject knowledge, 2- Research methods: theoretical knowledge, 3- Information seeking, 4- Information literacy and management, 5- Languages, 6- Academic literacy and numeracy. Consequently, in this study the author use these qualities standards in analysis.

In summary, researchers need to have knowledge about the area of research; core knowledge and basic understanding of key concepts, issues and history of thought. Recent advances within it and its relationships with other research areas should be reviewed. It is also required that they know the methods and experimental techniques appropriate for research design, as well as knowing about source of information, and information technologies. In the process of conducting academic research, students require to have search and discovery skills and techniques (CRAC, 2010). This also entailed guidance for knowing about best practice of information seeking.

In order to gain a suitable result of the research, researchers need to take some factors such as reliability, reputation, currency, authority and relevance of sources into consideration (CRAC, 2010).

Another considerable topic in research design is seeking feedback from relevant groups or individuals to access other insights (CRAC, 2010). In addition, knowledge about legal and ethical standards is also another important element in preparing research by researcher.
3.3.3 System quality

According to D&M IS success model, some factors such as ease of use, system flexibility, system reliability, and ease of learning, as well as system features of intuitiveness, sophistication, flexibility, and response times should be considered for improving system quality (Petter, DeLone and McLean, 2008, p.238).

In 2008, Strutin conducted a research at Santa Clara University Library about making research guides more useful. He demonstrated that near 90 percent of the participants began their research with Google, sometimes Google Scholar to get overview. From there, almost all went to Wikipedia next, explaining that the user-generated online encyclopedia appeared significantly in their Google results (Strutin, 2008). They mainly use Wikipedia because they were quite comfortable with its format. They like the plentitude of links, design plainness, and simplicity. Besides, familiarity and consistency were other two main effective factors in using these technologies. Their expectation of Wikipedia format was clear and navigation was quick. After gaining overview, most then switched to the catalog search box and databases lists at SCU library. Students were not aware of the research guide subject dropdown menu in the web page's center well. Base on student search pathways, the guides group considered wikis as a platform for research guides (Strutin, 2008).

Hintz, et al. (2010) set out a user-centered research on subject guides of University of British Colombia (UBC). They provided “Top Ten” list of student priorities shows the frequency that an element was given positive feedback on the questionnaires (Hintz et al., 2010). In their studies most of the outlined elements by students about LibGuides were related to system quality. As this “Top Ten” list indicates, students more discussed about simplicity and clean layout of the UBC Subject guide, search feature, annotations, easy understanding of content, embedded instruction, librarian content info, tabs, citation info, section headings and length.

3.3.4 Service quality

Petter, DeLone and McLean (2008), pointed to the factors of responsiveness, accuracy, reliability, technical competence, and empathy of the personnel staff. Some researchers (e.g. Choe, 1996; Yoon et al. 1995; Chiu et al., 2007) focused on affects of personnel and training on user satisfaction.

One of the important elements that affect the use of LibGuides is instructor/ supervisors involvement in using system (Ouellette, 2011; Staley, 2005). As Ouellette (2011) found out that students would use other sections of subject guides if an instructor tells them to use a certain section. Study that is conducted by Staley (2005) indicated that teaching faculty members who have used the subject guides are more likely to encourage their students to use them.

Neves and Dooley (2011) suggests "creating subject guides at the course level as it increases library use" (Neves and Dooley, 2011.p.94). Previously, librarians gave a didactic lecture on
search skills to provide advice and instructional support for small tutorial groups of students. Because there are only two librarians splitting time among thirteen simultaneous tutorial groups proved logistically difficult. Later, librarians decided to take a more virtual approach, so they created five modules as webcasts and made available on the guide. It made the works of students more convenient as they could pause the videos whenever they required or refer to the modules repeatedly. In addition to the videos, one librarian was available to reply questions via chat on the LibGuide. They came to the conclusion that "It made librarians more available for a more number of students simultaneously, and also it was less intrusive than a librarian entering and leaving tutorial rooms, and students could ask their questions at the point of need" (p.97). The feedback that librarians received from students showed more positive result of using LibGuides.

In 2002, Kaplowitz and Wilkerson developed a collaborative, student-centered, active learning approach. Students were exposed to a variety of relevant resources and given the opportunity to critique them for appropriateness to their PBL case of the week. Sessions were designed for 50 students, with two or three students sharing each workstation. Instruction started with discussing general services, highlighted special features, including Web-based tutorials and subject guides, and illustrated how to connect to relevant resources. Through active learning, critical thinking and problem solving, they provided a suitable way to reinforce the library's role and introduce students to the library and its resources. Based on students’ reports, it was clear that they enjoyed this experience, and they returned to the librarians for additional help. Their written feedback, which they collected in entire class, demonstrated a clear understanding of the resources and their utility (Kaplowitz and Wilkerson, 2002).

In 2012, Strong, Guillot and Badeau conducted a case study of Senior CHAT (Consumer Health Awareness Training) to improve health information literacy. Senior CHAT consisted of two series of classes with 25 students. Seniors were instructed in the use of MedlinePlus and NIH Senior Health databases. According to the findings, pre- and post-instruction surveys suggest boosted usage of the databases post-instruction among seniors. The result shows that greater than 70 percent of the participants were able to generate a personal health profile (Strong, Guillot and Badeau, 2012).

3.4 Framework

In this section I developed the framework for analyzing findings of the study. This framework is based on the D&M ISSM, and the elements of dimensions are completed by derived information from previous studies, in section 3.3. The elements included in the framework are chosen as they are associated with quality of LibGuides. This framework provides a preliminary schema with the intent of identifying meaningful units for analyzing IS students’ perception on the quality of LibGuides. As it is explained in section 3.2, three dimensions of system, service and information quality are applied for studying participants’ perspective on LibGuides. As it will be shown in figure 4.1, this model is going to be used in different steps of the research.
Figure 3.3: Framework of IS success
4 Methodology

In this chapter, the research setting and case study are explained, the research approach of the study is outlined, and the reason why it is required to have this research approach in this study is explained. Moreover, the best-suited methodology and inquiry of strategy to adopt for answering the research questions are also discussed. The data collection and data analysis method that are applied in this study are determined. The last part of the chapter embraces the validity and reliability standards that are regarded in this research.

4.1 Research setting

The study is conducted in the setting of Linnaeus University. Linnaeus University Faculty of Computer Science and IT offers graduates Information Systems education to approximately 50 students per year. Master program of Information Systems includes some research-based courses, and offers IS students initial course such as information systems research and methodology in order to prepare students with their further researches. The other courses are: knowledge management, participative design, professional ethics, information security, e-business, strategic planning of information systems, systems thinking and Master thesis. In most of these course students get involved the case studies to discover information systems issues in business development, and they are expected to learn the core concepts of Information Systems in related to the research field, find the research problems in collaboration with other students or independently, do problem solving, etc. The Linnaeus University Library provided the LNU Library platform to serve students, faculty, and staff in different undergraduate and graduate programs.

As it is represented in Appendix A, the library platform contains different parts including search engines, subject guides, links, blog, schedules, etc. Moreover, the library offers varied information literacy instruction, including mandatory course of Technical Information Communication and writing for usually undergraduate students, and one introduction session at the initial days of the program. The library can also organize instruction session for students under the request of teachers. Teachers can book it at the library. The purpose of this session is helping students to get instructions for choosing the best topic and getting started with the task.

4.1.1 Linnaeus LibGuide

Linnaeus University library website involves a LibGuides including different sections that provides students with research assistance, subject guides, different information resources and etc. the LibGuides has been provided for informatics program helps information systems students to find information resources in informatics and tips on how to search for books and articles. It contains different guides for searching articles and databases, books, journals, links, websites and blogs, librarians contact information, etc. The main part of the LibGuides is
Subject guide that is made of five tabs, including: Home, Articles and Databases, Books, Journals, Links.

Article and Database Tab:

This tab consists of tips about 10 databases for Informatics topic search. It also contains a short movie regarding scientific articles, in Swedish. There is links of Ulrichsweb (for finding journals, magazines, newspapers, etc), Google scholar and OneSearch search engine.

Books tab:

In the tab of Books, students can get tips on how to find books (hard copy books and E-books) in the subject of informatics. In this page categorization of subjects in the shelves of the library are presented. Guidance about interlibrary loan is included. In the left part of the page, there is a simple list that represents new informatics books that recently entered to the university’s library.

The Journal tab:

This tab represents guidance for finding electronic and printed journals, with linking to some databases such as LibHub, Google Scholar (for e-journals) and Link of the Library catalogue (for printed journals).

The Links tab:

In this tab, visitors can see the links to popular websites for Electronic engineers, Business, Information Technology, Knowledge management, Mathematic, Computer Science.

In the main page of the subject guide, visitors can access the contact person information including E-mail address. Additionally, LNU LibGuides platform provides some Web 2.0 functionalities, such as RSS for keeping students updated of new contents, sound and vision search, email alert, etc. It provides students with the possibility to receive email alerts whenever guides of interest to them are published. Moreover, LNU website is linked to the Facebook and students can get general information about library, and put their comments and give their feedbacks through page of LNU library at Facebook.

Base on interviews with some librarians at Linnaeus University library, it becomes clear that it has not been conducted any research on students’ perspective about subject guides. Interview with two of librarians represents that the actors who get involved in developing subject guides and play main role in designing it are faculties, librarians and librarians researchers. According to their explanations, students’ point of view about subject guides is not considered for designing and developing it.
4.2 Research Approach

The research approach of this study is interpretivism. Interpretive studies generally challenge to understand phenomena through the meanings that people assign to them and interpretive methods of research in IS are "aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context" (Walsham, 1993, p. 4-5). In the current study, involvement of IS students in interpretation and putting their perception in the center of the study is so important, and basically the perception about LibGuides quality is mainly constructed by participants. So, according to Williamson (2002) definition, this approach is helpful to achieve the purpose of the study.

The interpretive understanding of action help us to realizes phenomena – that is quality of LNU LibGuides in support of students’ research- in the context of Information Systems, taking account of the subjects- that are IS students-’ views and trying to understand their concepts in the situation at hand- in an international class (Grant et al., 1999, Walsham, 1993, p. 4-5). The researcher’s intent is to make sense of (or interpret) the meanings others have about the world. Rather than starting the study with a predetermined theory (as in postpositivism), I inductively generate a quality themes of LibGuides with the help of this research approach (Creswell, 2008).

Williamson (2002) believes that the central tenet of interpretivism is that people are constantly involved in interpreting their ever-changing world; researchers who are interpretivists believe that the social world is constructed by people and is therefore different from the world of nature. According to Geertz (1973), the view of data in interpretive approach is “What we call our data are really our own constructions of other people’s constructions of what they and their compatriots are up to” (Geertz, 1973, p.9). Thus, according to Geertz (1973) and Williamson (2002), this research approach is based on constructive worldview.

Constructivism can be represented by “cognitive constructivism” and “social constructivism” (Willis, 2000). “Constructivism,” is concerned with the ways in which people construct their worlds. The constructivist approach enables the meanings or perspectives of participants to be studied in depth and their particular words to be used to convey their meanings directly to the reader. Ways of thinking about issues, which may not have occurred to the researchers, are often revealed. Thus, the complexities of the real world have some chance of emerging (Williamson, 2006).

Klein and Myers (1999) determined some principals for interpretive research; 1-The Fundamental Principle of the Hermeneutic Circle, 2- The Principle of Contextualization, 3-The Principle of Interaction between the Researchers and the Subjects, 4- The Principle of Abstraction and Generalization, 5- The Principle of Dialogical Reasoning, 6- The Principle of
Multiple Interpretations, 7- The Principle of Suspicion.

I have considered some of those that are matched with the circumstance of the study to prove the suitability of the interpretivism for my research.

- Based on the second factor, it requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged. Researchers recognize that their own backgrounds shape their interpretation, and they position themselves in the research to acknowledge how their interpretation flows from their personal, cultural, and historical experiences (Cresswell, 2003). Since the fact that the study is conducted in an international setting- interviewees are IS students with different nationalities, knowledge, experience and cultural background in research- so this approach is considered suitable for this study as it can consider the influence of social and historical background of the IS students in their interpretation about LibGuides quality. Having constructive worldview helps us to address the processes of interaction among individual and focus on the specific contexts (Information Systems) in which people live and work, in order to understand the historical and cultural settings of the participants.

- Based on the third principle, it is highly required that I- as a researcher- have social interaction with participants to generate the facts about their perception on quality of LNU LibGuides. According to Klein and Myers (1999), participants play the role of interpreters by appropriation of concepts that I use with the help of IS success framework in section 3.4.

- Walsham argues that there are four types of generalizations from interpretive case studies: the development of concepts, the generation of theory, the drawing of specific implications, and the contribution of rich insight (Walsham, 1995). This principle makes it possible to achieve the purpose of the study with generalizing the result for development of the quality themes of LibGuides perceived by IS students.

- Based on the principle of digital reasoning, it is require that preconceptions that derived from IS success framework in section 3.4, confront with the emerged data from interviews. In discussion part of this study I will show the verification or contradiction of the new emerged data with previous studies’.

One dimension on which constructivist perspectives are divided is on whether knowledge construction is viewed as an individual process (cognitive constructivism) or as socially situated (social constructivism) (Apedoe, Walker & Reeves, 2006). Because of the fact that this study is conducted in individual situation so the researchers took cognitive construction worldview for her research.
4.2.1 Cognitive constructivism

According to Talja, Tuominen, and Savolainen (2004), cognitive constructivism as a meta theoretical position that sees knowledge production as the creation of mental models. This position has been exploited from Piaget’s theory of cognitive development proposing that humans cannot be “given” information which they immediately understand and use. Instead, humans must “construct” their own knowledge. Individuals build their knowledge through their experiences that enable them to build “mental models” of the world. Mental models consist of schemas, scripts and knowledge structures. These models may change and become more detailed and sophisticated as individuals receive new sensory data or encounter novel situations. Yet, mental models are understood as relatively stable conceptual structures orienting action.

4.2.2 The application of cognitive constructivism

Cognitive constructivism has frequently formed a background for information needs, seeking and use studies, user-oriented and interactive information retrieval research, internet search behavior studies and conceptualizations of information literacy (Talja, Tuominen and Savolainen, 2004).

Cognitive constructivism is a theoretical approach that is highly suited for studying task-based information seeking. It is especially applicable in integrated studies on information seeking and retrieval. So, Cognitive constructivism can be applied for this study because this is also a kind of task-based study and I am going to consider students’ perception during implementing IS research tasks. For example I need to understand how they define the quality of LNU LibGuides to search for topic, literature review, theoretical framework, research methodology, etc.

Cognitive constructivism is chosen as it can be applied for elicitation of participants’ requirements in order to improve the LibGuides user interface and user-system interaction (Talja, Tuominen and Savolainen, 2004).

Base on the above description about cognitive constructivism, it is clear that having this worldview is highly suited for answering the research questions of the study and reaching the research purpose, because: base on research problem there is almost no studies about different quality aspects of LibGuides from IS student perspective, and this worldview contributes researcher to have a main focus on students’ perception about LibGuides, and understand their meaning and the methods that they usually take to meet their information requirements; moreover, this worldview is highly suited for analyzing student information seeking behavior in interaction with LNU LibGuides.

In addition, some researchers such as Tallent (2010) found out that searching is more independent act. He explains searching as “and one theme that came across strongly was that
searchers wanted to be independent. They want to so as much as possible in DIY fashion.” So, the process of students’ research is going to be considered as an individual process in the present study. So, the cognitive constructivism is well-suited for this study to better cover individual aspects of the research.

4.3 Research method

This research is exploratory qualitative case study. Base on research problem, study about students’ perspective on LibGuides is still in the exploratory state. We specifically want to know about the LibGuides quality in support of IS researches, perceived by IS students. This topic is a new topic that almost there is not enough previous study conducted on it, and so there are still many hidden and undiscovered points that must be explored.

4.3.1 Why qualitative case study?

According to Griffiths (1996), qualitative methods provide useful tools for understanding phenomenon for which, at present, there is no really good models. Some main reasons that caused to choose qualitative methodology are explained in the following paragraphs. Qualitative method is chosen for this study, because the students perception of the quality aspects of LnU LibGuides cannot be measured easily (Kaplan and Maxwell, 1994), moreover, this method is helpful to understand how participants think or feel about LibGuides and why they think that way, what their perspectives and situations are and how those impudence on their perception about quality of LibGuides (Kaplan and Maxwell, 1994). According to some authors (Kaplan and Maxwell, 1994; Lapan et al. 2011; Taylor and Bogdan, 1998) it emphasizes on the phenomenon from the perspective of insiders. On the other hand, Kaplan and Maxwell (1994) argue that the goal of understanding a phenomenon from the participants’ point of view and its particular social and institutional context is largely lost when textual data are quantified.

This method is flexible to follow unexpected ideas during research and explore processes - IS research process in this case study- effectively, it is sensitive to contextual factors - such as cultural and social factors in the international setting of this study (Ospina, 2004), and increase opportunity for in-depth and longitudinal explorations of LNU LibGuides success (Conger, 1998; Alvesson, 1996).

It helps to identify underlying concepts about quality of LibGuides in support of research, from IS students point of view and the relationships between these concepts (Frankfort-Nachmias and Nachmias, 1996).

Creswell (2009) states that “qualitative research is a form of interpretive inquiry in which researchers make an interpretation of what they see, hear, and understand. Their interpretation cannot be separated from their own backgrounds, history, contexts, and prior understandings”
(Creswell, 2009, p.176). Based on the interpretive research approach in this study and since the participants of this study are from an international class, so qualitative method better helps me as a researcher to understand their meaning rooted from their knowledge, cultural and historical background.

Nature of the research problem and questions are two influential factors for choosing the research methodology (Rowley, 2002). Based on the research problem, it is required to researcher have in-depth interview with IS students to deeply understand all aspects of their meaning on quality of LNU LibGuides, and observe their interaction with the LibGuides system. So, qualitative and interpretivism can be well suited for meeting these requirements in a real life setting.

One of the methods for developing themes is inductive approach (Ryan and Bernard, 2003). Based on the research problem this study applies qualitative inductive approach to generate quality themes of LibGuides.

Qualitative research can be conducted in variety types of strategy of inquiry. The strategy of inquiry that is applied in this study is case study. Case study research is the most common qualitative method used in information systems (Orlikowski and Baroudi, 1991; Alavi and Carlson, 1992; Myers, 1997). The case study can have different types. The present study is a single case study.

Yin (2002) defines the scope of a case study as follow: *A case study is an empirical inquiry that: investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*. According to his definition of case study, the best choice of strategy of inquiry for the current study is case study in order to investigate quality aspects of LibGuides as a contemporary phenomenon with the real-life context of research, where IS students express their perception and suggestions about this phenomenon.

Thomas (2011) defines case study as:”*Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame — an object — within which the study is conducted and which the case illuminates and explicates”* (Thomas, 2011, p.23). According to the definition of Thomas (2011), in this study the case is IS students at Linnaeus University and the process that build up when a student start using LibGuides of Linnaeus University during their research tasks, for example their master thesis.

Eisenhardt (1989) says that case studies are:

“*Particularly well suited to new research areas or research areas for which existing theory*
seems inadequate. This type of work is highly complementary to incremental theory building from normal science research. The former is useful in early stages of research on a topic or when a fresh perspective is needed, whilst the latter is useful in later stages of knowledge (pp.548-549).

Rowley (2002) identified three factors that determine the best research methodology as; 1) the type of questions to be answered; 2) the extend of control over behavioral events; and 3) the degree of focus on contemporary as opposed to historical events.

There are different ideas regarding the types of research questions that case studies can answer. She believes that case study is an approach that supports deeper and more detailed investigation of the type that normally answers how and why questions. This is something that is suitable to specifically answer the first research question.

Yin (1994) believes that case study research is useful when “A how or why question is being asked about a contemporary set of events over which the investigator has little or no control” (Yin, 1994, p.9). Based on his definition and second factor mentioned by Rowley (2002), the case study is well suited to this research since the participants are the main controller of the study and researcher is just as an interview mean. Based on the third factor, although the background of the participants is considered in the study but the main focus of the study is on the contemporary use of LibGuides.

4.4 Data collection

In this study as a qualitative study, the sampling relies on small numbers but with the aim of studying in depth and detail data collection (Miles and Huberman 1994; Patton 1990). The study involves 11 students studying in master of information systems at Linnaeus University.

According to (Creswell, 2009), participants are purposefully selected among students who are in the process of implementing their master thesis, because they can best inform the research questions and enhance understanding of the phenomenon under study. In addition, they are asked about consent to intervention. Moreover, participants are selected in a maximum variation sample (Patton 1990). They are recruited from different nationalities, genders, ages and knowledge background studies in master of information Systems at Linnaeus University. Selecting this small sample of 11 students with great diversity in this study helps to have high-quality, detailed descriptions of the case (Patton 1990).

All of the interviews are done face-to-face and one-on-one question and answer session, in order to get more in-depth information about the worldview of individuals (James, 2008; Miles and Huberman 1994; Patton 1990). After interview, if it would be required that participants give further explanation about their answers, researcher contact them through Skype, Facebook and/or phone. Participants took an average of 45 minute to answer the
questions and complete the study.

In the current study, data is gathered through open-ended semi structured interviews (included in Appendix B) and observing the participants’ information seeking behavior in their interaction with LNU Subject guides (Marshall, 2006; Creswell, 2003). Interview is a suitable method of data collection for this research as it is a part of most interpretive studies for accessing the interpretation of informants in the field (Walsham, 2006). Semi-structured method is applied for data collection in this study. This method is a flexible method because respect participants to frame and structure the responses (Marshall, 2006), and it helps the researcher to better understand the meaning of participants. And also, it makes it possible for the researcher to change the direction of the interview based on the cognitive behavior of the interviewees. The open-ended questions sought to determine methods of using LNU LibGuides by participants, their meanings and perceptions about information quality, service quality and system quality of LNU LibGuides. It is well- suited for this study as open-ended questions allow participants the freedom to use their knowledge about LibGuides quality and imagination about its improvement (Marshall, 2006).

With the help of initial study on IS research steps, I designed a pattern for the interview questions through which participants were presented with a series of information seeking needs and instructed to use LNU subject guide web platform to answer the interview questions. The pattern is shown in the question 3 of the interview questions (Appendix B). The following table shows the individual properties of participants:

<table>
<thead>
<tr>
<th>Properties</th>
<th>Groups</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5</td>
</tr>
<tr>
<td>Age boundary</td>
<td>20-25</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>25-30</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>30-35</td>
<td>3</td>
</tr>
<tr>
<td>Nationality</td>
<td>Iranian</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Swedish</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indian</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Chinese</td>
<td>1</td>
</tr>
<tr>
<td>Level of education</td>
<td>Undergraduate</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Graduated</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 4.1: Demographics of Participants

Since the fact that the study is conducted with cognitive constructivism worldview, so the Cognitive Interview (CI) approach is considered as a proper complementary method for data collection. It is suitable for better understanding participants’ meaning and perceptions about different parts of the LNU LibGuides.
4.4.1 Cognitive Interview (CI)

CI is an approach that is accompanied by a set of discrete techniques, rather than a procedure. It has synergies with unstructured qualitative interviewing (Waddington and Bull, 2007).

For the purpose of doing cognitive interviewing we need to know and apply cognitive interviewing methods. Cognitive interviewing is a qualitative tool to gain insight into this process by means of letting respondents think aloud or asking them specific questions (Willis, 2005)

A) “Think-aloud” interviewing

A think-aloud interview derives from psychological procedures described by Ericsson and Simon (1980). According to Willis, et al. (1999), the term think- aloud is used here to describe a very specific type of activity, in which subjects are explicitly instructed to “think aloud” as they answer the survey questions. According to Willis (2005), in Think- aloud interview, the interviewer reads each question to the subject and then records and/or otherwise notes the processes that subject uses in arriving at an answer to the question. The interviewer interjects little else, except to say "tell me what you're thinking" when the subject pauses. It is required to train the participants how to think aloud.

B) “Verbal Probing” technique

As an alternative to the think-aloud, the use of verbal probing is the basic technique that has increasingly come into favor by cognitive researchers (see Willis, et al., 1999). After the interviewer asks the survey question, and the subject answers, the interviewer then asks for other, specific information relevant to the question, or to the specific answer given. In general, the interviewer "probes" further into the basis for the response (Willis, 2005). Some examples of cognitive probes that are provided in the present study base on Willis (2005) are mentioned in Appendix C.

It should be mentioned that the above CI questions are applied as a complimentary interview questions for more in-depth understanding the participants meanings and perceptions.

4.5 Data analysis

Data analysis is done according the procedure of Creswell (2008) as follow process:
Step 1. Organize and prepare the data for analysis. In this step I transcribe interviews, type up field notes.

Step 2. In this step a general sense and overall meaning of the information is obtained. The general ideas of the participants are getting to be considered and be noted in the margins, by researcher.
Step 3. In this step I start the detailed analysis with coding process. According to Creswell (2008), three states may be taken about coding a) develop codes only on the basis of the emerging information collected from participants b) predetermined codes and then fit the data to them, or c) some combination of predominant and emerging codes. In the present study, I do codifying through (c) state that is combination of predominant and emerging codes. Predetermined codes are based on D&M IS success model and literature review (Figure 3.3). This model is used with intent of identifying meaningful units of text for analyzing collected data from interviews. Coding is going to be done base on the framework (Figure 3.3) that is created base on D&M ISSM. In addition to that, the common concepts that are basis of emerging information collected from participants are going to be categorized as a new explored factor and labeled with a term. These codes maybe surprising and are not anticipated at the beginning of the study, or be unusual that are in and of conceptual interest to readers. According to Bogdan and Biklen (1992) list of codes, “perspectives held by students” are among the codes of the present study. According to Creswell (2008), three states may be taken about coding a) develop codes only on the basis of the emerging information collected from participants b) predetermined codes and then fit the data to them, or c) some combination of predominant and emerging codes. In the present study, I do codifying through (c) state that is combination of predominant and emerging codes.

Step 4. Use the coding process to generate a description of the setting or people as well as categories or themes for analysis. Then use the coding to generate a small number of themes or categories. In other word, once I observe a significant overlap between participant responses, I use inductive qualitative analysis to code text and identify themes from the data collected of the study (Thomas, 2006; Patton, 2002). These emerged themes are the major findings in the current study.

Step 5. Advance how the description and themes will be represented in the qualitative narrative (Creswell, 2008). So, in this step I narrow the research by answering the research questions with the help of themes that are derived from the analysis.

Step 6. In the final step, data analysis involves making an interpretation or meaning of the data. This step is done in the discussion chapter to compare the interpretation of the present study’s researchers with findings of previous studies regarding D&M ISSM theory, and derive lesson from this comparison.

4.6 Research procedure

In the following picture, an overall view of different steps of the research is represented. The application of the framework provided in section 4.2 is shown here. Based on the picture, the framework is used in data collection for an assist to interviewees, in data analysis for finding authorized and meaningful unit of codifying in empirical data, and in discussion for comparing the previous studies with the current study’s result.
4.7 Validity and reliability

According to Patton (2001), validity and reliability are two factors which any qualitative researcher should be concerned about while designing a study, analyzing results and judging the quality of the study.

According to Creswell (2008), qualitative validity means that the researcher checks for the accuracy of the findings.

The interviews are recorded for creating reliable transcription. For making sure of the reliability of the data analysis, the author checks the transcripts to make sure that they do not contain obvious mistakes made during transcription.

Verification strategies are also used by researchers in the process of inquiry so that reliability and validity attained, rather than proclaimed by external reviewers on the completion of the project (Morse et al., 2002). Verification is the process of checking, confirming, making sure, and being certain. In qualitative research, verification refers to the mechanisms used during the process of research to incrementally contribute to ensuring reliability and validity and, thus, the rigor of a study (Morse et al., 2002). So, one of the stages of assessing reliability on this study is getting verification from participants about their interviews, after interview transcription.
4.8 Ethical standards

The ethical issues are considered in three areas based on Davison et al.’s (2001) categorization, as follow:

1. Research design, data collection and analysis

   *Voluntary participation*

   One of the ethical perspectives in IS research is regarding to subjects’ participations. The present study consider this ethical perspective as researcher make sure that students are voluntary participating in the interview. Researcher send email to students of information systems, after explaining about the interview students are asked to voluntary participate it and act in accordance to their consciences. Anonymity must be guaranteed. In order to conceal the identity of participants, their real name is shown by pseudonyms or as an unknown name, following their own request.

   *Confidentiality: A right to know*

   The current study pay attention to the fact that students have right to know what data is being collected from them, how it will be used, how long it will be kept, where it will be stored, who will have access to it.

2. Writing and submission of research papers

   Problems such as plagiarism are well recognized in IS research, as well as in other disciplines, and these can effectively be addressed with formally codified guidelines (Davison et al.’s, 2001). Plagiarism is one of the ethical issues that is considered in this study. The citations of participants are transcript in details and participants confirm them. Students are asked to answer the question in English as much as possible, even participants who their native language is the same with the researcher.
5 Results and Analysis

This chapter intends to represent and analyse the empirical findings based on D&M ISSM. It will start with presenting IS students’ perspective on LNU LibGuides from different aspects; basically, information quality aspect, system quality aspect, and service quality aspect. It furthers with codification based on the concepts in framework 3.3. The emerged themes are categorized to answer the research questions, and shown in table 5.

5.1 Perception of IS students about LibGuides

5.1.1 Using LibGuides

LNU LibGuides is composed of research assistance, subject guides, and resources. Interviews shows that among all facilities of LibGuides such as email alert, subject guides, IM chat, etc, students of IS typically use sections of Databases and Articles, students thesis, some specific databases such as OneSearch search engine, University library catalogue, Libris and a few of them used IM chat with librarians, however, most of them have not used LibGuides and subject guides before the beginning of this study. Participants who already used Subject guide of LNU library platform do not use it frequently. They just use it in a few specific cases; for example, when they need to find the subject guide contact person information and contact them, and/or when they need to find databases and journals related to IS. However, they almost believed subject guide can be helpful (but not completely necessary) for their researches, especially if it would get improved.

Considering the information seeking behavior of participants, P1 says as:

”I always begin my searches from Google, and then if I want to find a special thing from an academic content, I will search in Google scholar. If I could not find it from Google scholar in normal way, then I will connect to the university’s website. If I could not find it in the university’s website, then I will connect to other universities’ websites”.

She said about the reason why she prefers to use Google engine and Wikipedia as:

“Searching through Google is easier for me, as I need to do less click to find articles compared with when I am searching in the university’s website... I am somehow accustomed to use It (Google search engine).”

Another one commented that:

“We used Google, because when you read about the root definition of something and the article comes from 1920s, it is pretty hard to read the
text to understand what the concept is. So, by searching in the web first
to get overview of what it could be, so we have a heads up that this is
this. Then it becomes easier to interpret the articles. Of course we use
Onesearch”.

However, a small numbers of participants, used subject guide. One individual stated that:

“For narrowing my thesis’s topic, I used subject guides. I searched subjects
through databases in Informatics subject guide.”

It can be interpreted from their statements that participants directly use other search
engines especially in initial steps of their information seeking, because of different reasons
such as, easiness to work with them and need less clicking compared with using the
university’s digital library and so forth. Thus, simplicity is one important success element
for using a system that should be considered.

5.1.2 Student background and personality

One of the new emerged finding that streamed from this study is related to participants’
background. Most of the participants who have not used LibGuides claimed that did not
know about Subject Guides before this study. So, the participants are classified in two
groups of: 1) students who already knew about LibGuides and subject guides, and have
used it before; and 2) students who have not used it and just got familiar with it during the
present study. There are another categorizations regarding the participants; since the
study’s result shows that students’ cultural background in research has affect on their
perception on quality of LibGuides. These categorizations are not considered in D&M IS
success model.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge background</td>
<td>With previous knowledge about LibGuides</td>
</tr>
<tr>
<td></td>
<td>Without previous knowledge about LibGuides</td>
</tr>
<tr>
<td>Cultural background or nationality</td>
<td>Swedish students</td>
</tr>
<tr>
<td></td>
<td>International students</td>
</tr>
</tbody>
</table>

Table 5.1: Participants categories based on their backgrounds

Both groups of students in each category are asked about their points of view about
using LibGuides and subject guides and asking about their recommendation for improving
it. Two groups of participants almost offered suggestions for improving LNU LibGuides
that are going to be discussed in the following section.
Majority amount of the participants in the current study specially the ones who came from other countries, were not aware of the LibGuides, or did not have a clear perception about it, before beginning the study.

P2 says as “I have not heard about it[subject guide] before.”.
P4 indicates that “its quite a new concept for me. Is it for searching books?!”.

For indentifying information resources they habitually use some specific tools. For example P1 said:

“There is 2 things in this regard; firstly, my perception is that the internet search engines are more complete and secondly, it the matter of my habit. I have not used the search engines at the university’s website so much to see if it can work for me or I don’t have habit in using it”,

And also she pointed to the culture of search and research in their previous university. P5 explained in this regards as:

“We have come from an developing country and the culture of using DLs are different...I used the library in my country about 13 years ago and as far as I remember, we didn’t have LibGuides and so did not search through it.”

P8 claims as:

“We have come from a country that the education and research systems and the facilities that are provided for our research are so different from here. So we are not familiar with this kind of system”.

Base on cognitive interviews in this study, it becomes clear that participants know subject guides mainly as a tool for contacting with librarians and get guidance, not producing or sharing their knowledge with other students. Their cognitive behavior reveals that although they welcome having wiki in LNU LibGuides, most of them are not familiar with it or have not experienced knowledge production in the web environment such as Wiki or Facebook, or have not intendency to share their knowledge in the class. P8 expressed his belief about including Wiki to LibGuide as:

“I don’t think it is useful for me,... because Information systems [program] does not have so many students and faculties and I think their contribution in Wiki shouldn’t be so effective, I personally prefer to ask my questions in bigger communities in internet, such as forums. In internet, there would be more people to answer my question. ”

Nevertheless, there are some suggestions submitted regarding facilitating LNU LibGuides
with knowledge sharing technologies that will be discussed in section 4.2.

5.1.3 Information quality

Participants who had already experience of using LNU LibGuides before interview basically used it for finding their required information about databases and journals.

It can be interpreted from their point of view that they used LibGuides because of its information accessibility and availability. P3 indicates his experience of using LibGuides as:

“I use it [subject guide] to find the databases associated with my topic since I roughly can access different information systems database from here”

Other participants pointed to information accessibility and availability of other tools that they use for information seeking. P1 says that:

“I always begin whole of my searches from Google, and then if I want to find a special thing from an academic content, I will search in Google scholar. If I could not find it from Google scholar in normal way, then I will connect to the university’s website. If I could not find it in the university’s website, then I will connect to other universities’ websites”.

For making sure of the information resources reliability, participants take different methods, for example some of them look for articles that are peer reviewed, some of them relied on articles in journals, and some of them just check the reputation of information resources. Among participants who use peer reviewed articles, a few of them use the functionality of “Scholarly Journals (peer reviewed)” at OneSearch search engine. Most of them just use Google scholarly and they pointed to the important role of LNU DL platform in assisting them to access the information resources in Google scholarly easier and freely. Some of the participants just rely on number of viewers of articles. It makes them to use Google scholar as it provides them with the possibility to check the number of viewers of an article, however, there is not such functionality in LNU DL platform. One of the participants explained that:

“For knowing the reliability of an article, I searched in Google scholar and checked the amount of viewers of an article... I have not known anything about peer reviewed till now. I did not know that OneSearchbeta has such functionality.”

Base on participates’ point of view, LibGuides can somehow provides information reliability for students through introducing and referring students to the reliable information resources such as journals and reliable informatics databases. P5 declare it as:
“for making sure of the reliability of information I try to find the articles from journals. It is a proper method that guarantees the reliability for me.”

Another individual commented that:

“I personally don’t check the reliability of the articles, and just rely on every article that I use from journals”.

The LNU LibGuides provides students with some guidance about Authority, Reliability, objectivity and timeliness. However, most of the participants were not aware of them. After showing the guidance to the participants, they almost found it useful. One of the most critical barriers of using this guidance is language barrier.

Participants believe that the LNU LibGuides can improve its functionality for better providing students with information reliability and authority. More details about their suggestions will be explained in section 4.2.

Some participants expressed the belief that LNU subject guides can properly direct relevant content to their research topic. In response to the question about information relevancy, participants show different methods in making sure that the information is related to their project’s topic. Most of the students pointed to the journals. P6 stated that “I find the articles from journals that are about information systems”. Among participants who have used subject guides before, mostly pointed to the possibility that LNU LibGuides provides them for finding relevant contents to their research topics. P3 explained that:

“I use subject guides with the aim of finding information that are related to my thesis subject... We can find all articles aligned to informatics. Because if I search in other databases we may have subjects that are more related to pedagogic”

Some other participants believe that LNU Subject guide cannot provide with possibility for finding interdisciplinary information. For doing IS research, students usually need to do interdisciplinary search, so some participants do not consider subject guide so efficient for their research. P2 states her problem as:

“I searched about tourism that I could find a wealth of articles about tourism but I did not know what I should search to find resources that are related to both tourism and information systems. I think some people should spend time to search in this regards to find a keywords that are related to both IS and any other topic”.

So, some suggestions are offered for improvement of information relevancy in subject guides by students. In the section 4.2, I explained the related suggestions in more details.

Interviews reveal that one of the necessities in doing research is making high quality contact with experts for getting guidance. Experts in IS may be librarians, tutors and supervisors. For making contact with supervisors and tutors students make face-to-face contact and email contact in regular or irregular sessions of supervising. A few number of participants had the experience of online chatting with librarians to get advice about finding their required information. P5 believed it was so beneficial that had online chat with the librarian: “I chatted with them and asked them my question and they immediately replied me”. Some suggestions are expressed by participants in section 4.2.

Subject guide provides students with the new informatics books at the university’s library. Some participants considered it as an appropriate method for updating information resources. However, most of the students do not know it so useful for themselves because they mainly look for new articles and recent news regarding their research but the LibGuides does not inform them about detailed information of new articles or IS journals. Moreover, it is difficult for non Swedish students to gain useful information from this part of LNU subject guide because new books are announced in Swedish. The LNU LibGuides represent new books. Participants have different ideas about it. For example, P7 states that:

”I see it as a good idea to show the new books in the subject guide, but it is not so practical for me because I mainly look for English books. I cannot exactly understand what are these [books]. Maybe because they are in Swedish”.

For the purpose of informing students about updated articles, students submit new suggestions that will be discussed in section 4.2.

Interviews demonstrate that participants use OneSearch to gain updated information. Majority of them considered it useful technology that provides them with advance search for the last versions of articles. Andreas explained that:

“The search functionality includes advanced search functionality. You can take publication date, you can take journals, you can search for keywords, the authors”

However, this depends on their needs to access to up-to-date information resources or older versions of them. Wang stated that:

“Honestly, I don’t need to use articles with their latest version in my thesis; I need more basic articles, so I have not use this functionality of search (advanced
Thus, providing updated information resources are somehow dependant on IS students’ need. There are some participants’ comments about lack of enough information granularity in LibGuides. From the participants point of view this shortage decrease the efficiency of LibGuides. One of the participants noted that: “as I see, it just show a general view of databases, it is not so efficient for me as I need more detailed information.”

5.1.4 System quality

One of the other findings of the research is regarding systematic response time. In the current study, response time can be considered from technological aspect and library personnel responsiveness. From technological aspect, the high speed of loading search result pages is one of the enablers of taking advantage of LibGuides. One of the students stated that:

“in my previous university I had so many problems with connection to internet and it usually prevented me to use the digital library, whereas, I have not face with such problem in this university and it greatly helped me in using this website even when I was in Denmark.”

However, in one of the cases, participant reported that technological problem has caused trouble in making online connection with the librarian and getting expected response. From responsiveness aspect, most of the students preferred face-to-face communication. They mostly believe going to information desk and having face-to-face communication is faster way to reach their response rather than using technologies like email. A few number of students used online communication channel such as online chatting with librarians that they reported it almost useful in reaching the faster response. P5 reported that:

“I chatted with them and asked them about my question and they immediately replied me”.

One of the issues that is discussed by participants is lack of understandability and language barriers for international IS students. The participants’ expectations will be discussed in the following section, section 4.2.

5.1.5 Service quality

Participants who passed the mandatory course such as Technical Information Communication and Writing in their bachelor education were more familiar with different parts and functionalities of the LibGuides compared with other participants. P3 declared his knowledge about LibGuides as:
"I learnt about it when I had a mandatory course about information searching at my bachelor studies”.

P7 also said:

"bachelor students have to take a course ... as far as I remember its name was writing skill, it was so helpful in getting to know different parts of the library’ platform”

Hence, it can be interpreted that instruction in the form of mandatory courses can be an affective service on using LibGuides by students and then on success of LibGuide.

Some of the participants pointed to the factor of personnel response time in their interviews. P5 states that:

“I chatted with them and asked them about my question and they immediately replied me ”

Another one believes:

"I don't usually send them email because they sometimes reply me late. Simply, I prefer to ask my questions face-to-face in the library. But the problem is that they are not always on a special location and it makes it difficult to find them easily.”

In terms of using Web2.0 features, a few number of the participants reported that they used Facebook for asking and discussing their questions about their thesis from their supervisor. However, some of them pointed to the role of their supervisor in promoting them in using these features. One individual commented that:

”my supervisor created a group at Facebook and invited his own students in it. At first we were not so convenient to ask our question there, maybe because we did not get use to it, however, after a while we (me and my groupmate) understood that we can get our answer faster in Facebook rather than sending email to our supervisor, so we started to use it more.”

5.2 Expectation of IS students of LibGuides

5.2.1 Information quality

In terms of information relevancy, base on interviews it is interpreted that some of the participants need their teachers, supervisors, other IS students involvement in better finding relevant information. In this regards, P8 says:
“I sometimes contact with my supervisor to get some hint from her about the articles that are related to my thesis topic.”

Another participant believes that:

“I suggest that LibGuide should facilitate tutors and supervisors and even students to evaluate the relevancy of the articles.”

Another participant suggested that:

“ In my idea, it is helpful for us that we could easily access other students’ thesis that are related to our topic... I think tagging technology maybe applicable in this regard. For example, users have the possibility to tag articles and thesis for a specific topic. Then other students can refer to those topic categories”

From these statements it can be interpreted that user evaluation and tagging technologies (two types of Web2.0 technologies) can be useful technologies for better support of information relevancy in LNU LibGuides.

Some participants expressed the belief that LNU LibGuides can be improved in providing students with more complete contact information of experts.

One of the participants says that:

“I sometimes need to find other librarians, but I cannot find them by calling them or sending them email. I need to know their current place, for example in which room they have located at that moment. Or what time are they usually available.”

It can be interpreted from participants expectations that LNU LibGuides could be facilitated with the links that direct students to the articles related to IS methodology, or a wiki or blog that provide a coherent information resource of IS theories and models. Although most of the participants were not so indented to share their knowledge through LibGuides, some of them showed their intendancy for including sharing knowledge technologies into LibGuides. One of the participants explained about her own experience of using with a wiki for finding Information System theories:

“I was searching for IS related theories that coincidentally I found the wiki of York university. I dare say it was so useful for me to choose a suitable and relevant IS theoretical framework that was fit to my research. Besides introducing IS research theories, I could find many useful articles that were relevant to each introduced theory.”

In this regard, one of the participants expresses the belief that:
“I sometimes had to make contact with other people in IS department to ask guidance about writing methodology or finding suitable IS theories for my thesis, but I think it would be a very good idea if IS students could share our experience through a blog.”

Another one commented that: “Well...yes I think it would be useful if we had a comprehensive resource of IS theories like a Wiki.”

Thus, I interpreted that Web2.0 technologies such as wiki and blog can be considered as a matter for improving information quality providing students with an environment for better sharing their knowledge and experiences about the IS theories and methodology. However, from interviews it can be derived that there are some factors that influencing on success or failure of inclusion of such functionalities into the LibGuides. For example, based on the above interview, one of these factors is students’ willingness to sharing knowledge, or small size of the class.

One of the suggestions for improvement of the LNU LibGuides for IS students is adding the guidelines about ethical and legal standards of IS research for undergraduate and graduate IS students. P6 declared her problem as:

“When I was almost finishing my thesis, I understood that my references are so old and so I have to update them. It caused me big problem because following updating the sentences my thesis structure would be changed.”

Then, she suggested her recommendation as follow:

“If LibGuides has a section for updating us about rules and legal standards of writing thesis for IS students, it would help me to prevent this problem.”

Base on interviews, some of the participants explain that they need to know about key concepts, issues and history of thought for accomplishment of literature review and creating their research problem. The majority of participants indicated that they mainly used Google search engine, Wikipedia and search engine of OneSearch in order to seek for key concepts, issues and history of thought. They essentially used these technologies, specifically Google engine and Wikipedia to get an overall view of the IS concepts and issues, and then used databases at LNU library platform like OneSearch search engine to find a specific article.

P3 one commented that:
“We used Google, because when you read about the root definition of something and the article comes from 1920s, it is pretty hard to read the text to understand what the concept is. So, by searching in the web first to get overview of what it could be, so we have a heads up that this is this. Then it becomes easier to
interpret the articles. Of course we use Onescape”.

However, a small numbers of those who interviewed used subject guides. One individual stated that

“For narrowing my thesis’s topic, I used subject guides. I searched subjects through databases in Informatics subject guide.”

The relevant part for knowing about concepts, issues and historical thoughts in LNU LibGuides is in the tab of Link. After becoming familiar with this section in the subject guide, some of the participants found it useful for their research; however, they believed that it is required to improve this part with including more glossaries about information systems. One of the participants commented that:

“It seems practical, but I suggest to add more links that cover information system topics. As far as see here, these links are more associated with software engineering and other programs”

Another expectation of LibGuides that outlined by participants is preparing recent advances about subjects. One of the participants (P9) expressed his idea as:

“For choosing my topic I required to have more information about recent advances. It was so time consuming that I could choose a topic that not only is in my favorite but also is an up-to-the-minute one”.

Then he suggested that:

“In my perception subject guide could be designed in a way that give us more clue about recent IT developments”

As a suggestion for improvement of updating content of the LNU Libguide, some participants explained about their requirement to be updated about new articles in special journals, new databases and news about IS conferences in the university or even in other universities.

As it is derived from answer of questions, a few numbers of the participants appreciate the opportunity to stay informed of recent advances by RSS feeds. Most of the IS students particularly the ones who came with background of software engineering bachelor required to know more about writing skills. P8 declined it as:

“I personally achieved so much help from books and websites for tutoring writing
skill and useful writing statements in research projects”. She suggested that: “...more guidance about writing statements would be so helpful for me. I always use some websites that teach us how to write our IS researches.”

In the terms of providing students with interdisciplinary search, there was a clear preference in use of tagging technology.

Moreover, tagging technology can be used for better categorization of materials that students find. In this regard, one of the participants explained about her problem as:

”I sometimes find an article that contains my required information, even if I save it, I forget about it after a while. I asked one of my teachers about the solution, and he offered me to use the tagging technology.”

5.2.2 System quality

Based on interviews with students, it is revealed that students uses LibGuides for making connection with librarians and get guidance for their research, however, they used BlackBoard platform for making connection with their teachers and supervisors. Some of the participants suggested for better cooperation between tutors and libraries in providing LibGuides contents could be a constructive idea for improving the LibGuides materials and updating tutors knowledge as well.

Andreas said in this regard:

”I remember one of our tutors provided us with very out-of-date articles for a course and we had to work on them for accomplishing our assignments. It really was so annoying to work with such expired articles that even some of their theories had been quashed in its later versions, by the author.”

He followed his sentence with a suggestion for improving this problem as:

”... in my opinion, if tutors had more cooperation with librarians, it was more likely that they could update their knowledge about new issued versions of articles.”

So, preparing the possibility that three actor types of students, librarians and faculties use LibGuides in an integrated environment can be considered as an enabler for success of LNU LibGuides.

From participants’ suggestion it can be interpreted that adding a technology for information resource evaluation by teachers is useful for students. P7 suggested that:
“Something that just came to my mind is taking teachers’ opinion on Subject Guides materials into account. It helps us to recognize which article or book is more reliable, updated and suitable for our topic from teachers’ point of view”.

Another solution for updating teacher and students knowledge is using Web2.0 technologies such as RSS feeds. In term of using RSS technology participants had had different ideas. P5 suggested that:

“It would be great idea if I could subscribe through the library and receive the emails about the updated articles related to my topic, I would definitely welcome this idea”

On the other hand, one of the participants says:

“I personally don’t know it as a useful tool for myself. I think emails coming from RSS are so intruding. I don’t think I would subscribe it”

One of the other expectations of students for improvement of LNU LibGuides is clarity and understandability of LibGuides’ layouts and captions. Based on the interpretation of interviews, it can be better provided by Multilanguage caption and more description for subject guide in the main page of the library website.

5.2.3 Service quality

The majority of participants claimed that they did not know about the existence of LibGuides, and they believed if they could be introduced and trained to know how to use the LibGuides especially at the beginning of their thesis, it would be more likely to take advantage of it during their project. Banafshe declared:

”I have not heard about subject guides before. Actually, there was a session at the first days of our master program that somebody shows us whole parts of library but actually it was not so useful for me because their description about library were so short and general. It was better if they did the introduction at first of every semester to introduce us the application of this platform in regard to our courses and assignments in new semester.”

A large number of participants pointed to the role of librarians and faculties in helping students in identifying information resources; for example, the information literacy service, and instruction sessions prepared by librarians. In this regard the role of marketing came to the consideration by participants. They pointed to different marketing methods, for example marketing by tutors/supervisors and their significant role in familiarizing student with subject guides and promoting them to use it, are effective
methods for improving information resources identification. One of the participants indicated in this regard as:

“if my supervisor would told me about it at the beginning of my thesis, it was more possible that I use it.

5.3 Framework of IS LibGuides quality: Result

The following table represents a summary of the findings that streamed from this study, while answering the research questions about IS students perspective and their suggestions for improving the LNU LibGuides quality. As it is clear, the research questions are answered based on the framework of the study (Framework 3.3), and new emerged categories derived from empirical data.

<table>
<thead>
<tr>
<th>Research question</th>
<th>Dimension</th>
<th>Themes identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do IS students define the LNU LibGuides quality in support of their researches?</td>
<td>Information quality</td>
<td>Information availability and accessibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proper for guiding about authority, reliability, timeliness, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepare IS topic relevancy. But it is required to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access to experts contact information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepare updated information and contents about books but it is required to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of information granularity</td>
</tr>
<tr>
<td></td>
<td>System quality</td>
<td>High level of technical response time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of understandability and language barrier mostly for international students.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confusion in finding required links</td>
</tr>
<tr>
<td></td>
<td>Service quality</td>
<td>Supervisors and tutors role</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personnel response time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Instruction(mandatory courses)</td>
</tr>
<tr>
<td></td>
<td>Student background and personality</td>
<td>Lack of familiarity with its name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of clear perception about LibGuides and its</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personal characteristics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information quality barriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systematic barriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultural background of research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultural background of information seeking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information seeking Habits</td>
</tr>
<tr>
<td>What is IS students’ expectation for improvement of quality of LNU LibGuides?</td>
<td>Information quality</td>
<td>Information relevancy improvement with</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interdisciplinary information searching by</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sharing knowledge and experiences about</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Keeping students informed about recent advances (new articles, new databases, IS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>conferences). However, it should be</td>
</tr>
<tr>
<td></td>
<td>Including guidance about IS ethical and legal policies.</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guidance about key concepts, issues and history of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improvement in expert contact information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Writing skills guideline</td>
<td></td>
</tr>
<tr>
<td>System quality</td>
<td>Integrated environment for cooperation between</td>
<td></td>
</tr>
<tr>
<td></td>
<td>librarians,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Categorization for links related to IS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clear and Multilanguage description labels for LibGuides/Subject guides</td>
<td></td>
</tr>
<tr>
<td>Service quality</td>
<td>Instruction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information literacy session</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marketing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supervisors and tutors role for motivating students</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.2: LibGuides Quality framework: Result and Analysis
6 Discussion

In this section, we discuss about the answer of research questions. The difference and common points between findings of the current study and previous studies are being discussed, and the suggestions for enriching LibGuides systems are stated. The IS Success model is evaluated based on the new emerged findings of this case study. Last but not least, a model that resulted from this discussion is represented.

6.1 Previous studies vs. current study

Based on analyzing findings of the present study as well as previous studies conducted by other researchers (e.g. Strutin, 2008; Lindquist and Long, 2011), with a few exception, participants mostly used a small, relatively conventional set of tools like databases, Wikipedia, Google to find their required information. Specially, majority of participants use Google search engines and Wikipedia in the first step of their information seeking for getting general idea about topics, issues and concepts. The findings from the current study confirm Hintz et al. (2010) and Strutin's (2008) perceptions that claim that students are more desired to use Google and Wikipedia as starting points for research because of their "speed and simplicity"; "familiarity and consistency"; and "knowing how to navigate quickly".

There are several possible explanations for this result. A possible explanation might be that base on interviews; students need to do less click to achieve their required information. Another main reason that makes participants to mainly use the Google search engine for their research is that they did not know about subject guides, however, when they got informed about this technology at LibGuides, they found it useful. They mainly claimed that they have not been aware about subject guides and LibGuides through librarians. So, these findings are consistent with those of Adebonojo (2010) who believed that “At the same time that collections are becoming increasingly digital, our students’ inability to use library resources without assistance from librarians is reinforcing the initial rush to Google when faced with an assignment”.

One of the solutions that some websites have taken for enhancing the usability of their website is inclusion of Google’s Customs Search Engine (Google CSE) to their websites or LibGuides platforms. Since almost over half of the participants reported that they would use this technology if they had it in LNU digital library platform, so, adding this technology is supposed to be useful in this case.

Moreover, the result of the current study shows that service quality provided for using LibGuides, can be affective element on its success. The findings of current study are consistent with those of Staley (2005) who found that students who have received library instruction are likely to make more frequent use subject guides although students are mainly using the Articles and Database page within their subject guide. In the current case study most of the students
were unaware of the existence or functionalities of other sections of LNU LibGuides, and most of them believed that Information literacy sessions and courses provided by LNU library makes students to get more informed of different functionalities of LibGuides, including web 2.0 functionalities of LibGuides such as online chat, subject guides, etc in the process of their research projects. They mostly believed although LNU library platform includes many features and functionalities, because of lack of instruction and marketing about different parts of LibGuides students cannot be aware of them.

One of the most striking problems that revealed from interviews is participants’ lack of knowledge about different methods of finding reliable information that they require for their research. This is something that many other LibGuides provides for researchers to enhance the information quality of researches, however, in LNU LibGuides there is some guidance about information reliability, currency, relevancy, etc. however, almost none of the participants were not aware of it. And their believed it is so complicated to reach these kinds of information through LibGuides.

One of the problems that is identified through some studies including this case study is that subject guides may confuse students or not be enough efficient because of improper categorization. For example, considering the fact that field of Information Systems is an interdisciplinary filed, in the present case students need to make interconnection between information systems and other contexts such as health care, environment, marketing, tourism, etc. however, the findings of the present case study seem to be consistent with findings of research at Bucknell University Library which show that students mostly get confused about finding their interdisciplinary subject in each category of subject guides. According to Reeb and Gibbons (2004) researchers at Bucknell University Library study believes that:

"This blending of disciplines is not usually reflected in the categorization of subject guides, only adding to students’ confusion about how to address their information needs within the context of discipline-based subject guides.”.

One important issue that is neglected in LNU subject guide is that it does not offer sufficient granularity of content to the students. Most of the students who have just got familiar with it believed that it is not useful and efficient enough for them because it just show them a general view of databases that include IS related resources, however, interviews show that participants need to have more detailed guidance for their information seeking. For example, they need not just IS-related articles but also information that related to their own research project topic. So, one of the important factors that may affect on improvement of LibGuides quality is considering the level of content granularity. This finding corroborates the ideas of Mendonca and Cimino’s (1999) who believed that more specific the indexing and field of activities, the more useful it will be for source selection. Moreover, the findings of this study is similar with McMullin and Hutton’s (2010) finding who found that the browsing by subject at default LibGuides does not offer sufficient granularity to optimally direct users. They came across
with the solution of developing a customizable library web page as a gateway to the guides, although they believed that it seems like a step backward in development and maintenance of Websubject guide management (McMullin and Hutton, 2010).

Ouellette (2011) found out that students do not use subject guides because they feel that they do not need it. Instead, students often have a preferred method or database that they use almost exclusively in their own discipline. There are similarities between the attitudes expressed by some of the participants in this study and those described by Ouellette (2011); although LNU LibGuides embraces different sections such as databases and articles, Journals, Links, librarians and subject guides contact information, in this study most of the IS students who use the subject guides use just some specified sections such as databases and articles and journal. Although some participants had not used it before, they believed that different parts of the LibGuides are useful if the quality of the subject guide be improved and they would use it if they knew about them before.

In addition, the finding of the current study is in agreement with Hintz et al. (2010) findings which showed that having a clean and simple layout for subject guides is an important quality aspect of LibGuides to students. Moreover, respondents expressed a desire for easy-to-understand content that is comprehensible both in terms of navigational structure and clarity of language. As the result of the current study also shows, single-language label for subject guide is an obstacle for students to get to know it; additionally, it is obscure for international students to get the correct direction of guidance.

The findings of the current study are somehow consistent with those of Hintz et al. (2010) who found that students are more interested in finding authoritative information from accepted experts (librarians and faculty members) rather than in using subject guides as a site for their own knowledge production and interaction with peers. In the current study, participants know subject guides mainly as a tool for contacting with librarians and get guidance, and just a few participants suggested for improving it for producing or sharing their knowledge with other students. They mainly have not used knowledge sharing systems and some of them do not have tendency toward using them. So, even in the case of integrating some tools such as Wiki for knowledge production and sharing knowledge, it is likely some of the students do not use it. This issue should be come to more consideration in future researches.

In some previous studies, inclusion of Web 2.0 technologies in subject guides are considered as positive development, for example Yang noted that for collaboration among faculty, students, and librarians is necessary in creating and maintaining subject guides; therefore subject guide 2.0 must have the capability to receive and incorporate input from users" (2009, p. 92). On the other hand, Hintz et al. (2010) found little evidence to support the efficacy of this kind of exposure and integration. Their findings reveal that students do not welcome or even understand all the Web 2.0 features that can possibly be embedded into subject guides. The current study to some extend showed the interests of participants in including Web2.0 technologies into the LNU LibGuides. However, it has not been able to completely demonstrate
that integrating of Web2.0 technologies to the subject has definitely efficient in LibGuides success in the future. The findings of the study are to some extend in agreement with Hintz et al. (2010) findings. Hintz et al. categorized Web 2.0 features to two groups of: 1) features that promote peer-to-peer interaction and learning (student recommendations, forums and personalization/customization) and 2) features that enable students largely to receive authoritative advice (librarian chat window, embedded tutorials/handouts giving advice on how to use resources). Based on this categorization, the findings of present study are more consistent with those of Hintz at al.(2010) who found students were largely unresponsive to collaborative interaction and learning, however, students are more interested in finding authoritative information from accepted experts (librarians and faculty members) rather than in using subject guides as a site for their own knowledge production and interaction with peers (Hintz et al., 2010). Acceptance of Web 2.0 technologies in research guiding and using them by students is somehow influenced by other elements such as students’ culture, their supervisors’ role in motivating students in using them, their background knowledge about Web2.0, etc.

Moses and Richard (2008) realized that libraries that highlight or link directly to subject guides from their main page get many more hits on their guides then those that are difficult to find or accessed through LibGuides.com. In the present case study conducted in Linnaeus University, although subject guides was in the main page of the university library platform, a few students know about it. This discrepancy may be due to reasons such as lack of training about subject guides, and Swedish labels, and lack of a clear definition of for subject guide in the main page that prevent students in becoming familiar with it. So, based on analyzing interviews, mentioning subject guide in the library training session or providing an English label can be an enabler for using it.

Moreover, this study reveals the necessity of the cooperation between students, tutors and librarians in providing more reliable information resources in LibGuides. However, there are not enough previous studies that cover this important.

6.2 Evaluation of D&M IS Success model for IS research tasks

The findings of this case study represented that D&M IS Success model has ignored some facts that are influential in using of LibGuides by IS students. This section considers two of those facts - researchers’ characteristics and task characteristics- that are derived from the researcher’s perspective and based on the results of the study.

6.2.1 Researcher characteristics

The result of this study and previous studies reveals that besides three mentioned requirement qualities in D&M IS Success model, students’ characteristics are another influential factor in their perception about LibGuides. Although this element plays important role in the result of studies on LibGuides, it is ignored in the D&M IS success model. For example, students’ passion
to using LibGuides, their tendency and cultural background in sharing knowledge, etc should be considered as one of the factors of the LibGuides success.

One of the issues that is mentioned by LaGuardia (2011) is possibility of degrading or impugning the intelligence of the university students by giving. LaGuardia (2011) states that “given the promulgation of literacies now recognized as essential in the academy (media literacy, visual literacy, transliteracy, etc.), library research literacy fits in nicely, without degrading or impugning the intelligence of our college and university students.” the present case study also supports his statement as most of the students of this study also did not found it ridiculous to be taught research skills except of some of them who have taken their bachelor education in an university that was facilitated with LibGuides or taken information literacy course. So it is shows that background knowledge of information literacy is influential on students’ point of view on having information literacy teaching.

Moreover, findings resulted from Staley, in 2007; support the idea of influence of individual properties on use of LibGuides. As his findings show that library instruction attendance appears to be correlated with student academic levels. In general, seniors are more likely to have attended a library instruction session than juniors, and seniors report more frequent use of subject guides.

6.2.2 Task characteristics

Another emerged important dimension that may influence on success of LibGuides is the research task characteristics (complexity of research task) that are not taken into consideration in the model of D&M IS Success model. Steven (2008) in his article discusses about taking appropriate approach match with the complexity of the research. He proposed to add “identify and understand the context of the research problem and choose a decision-making style that matches that context” to the list of information literacy skills that many of us list in some planning document. This method can be a suitable one for improving IS student information literacy skill. This case study shows that although student are prepared for research with IS research methodology course and one session information literacy course, however, it would be beneficial if they could get more familiar with the methods and technologies that are proper with the complexity of their research. According to Steven (2008), it could help them act as an effective researcher and make any number of required decisions for example about what database to use, what search terms to use, which results to explore, etc.
6.3 Framework of LibGuides success: Discussion

This section summarizes the discussion part in the table 6.1. As it is clear from the table, the research questions are answered as a result of comparison between the previous studies and the current study, and based on quality aspects of LibGuides. In new emerged dimensions, I reviewed the new findings derived from the research.

<table>
<thead>
<tr>
<th>Students’ perception of LibGuides/Subject guide, and their expectations of it.</th>
<th>Information quality</th>
<th>Previous studies</th>
<th>Current study</th>
<th>Final result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>more specific the indexing and field of activities, the more useful it will be for source selection.</td>
<td>Lack of efficiency because of lack of content granularity.</td>
<td>Content granularity, Specific indexing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Two different perspectives: Inclusion of Web 2.0 technologies in subject guides are considered as positive development. Little evidence to support the efficacy of this kind of exposure and integration.</td>
<td>There are a few evidence of efficiency of Web2.0 technologies in some cases such as information relevancy, updating (articles, journals, databases, news), sharing knowledge (IS methodologies, theories)</td>
<td>Using Web2.0 technologies, such as RSS feeds, Wiki and blogs, Facebook, user evaluation etc. for information relevancy, information updating, sharing knowledge.</td>
</tr>
<tr>
<td>System quality</td>
<td>Initial search through Google search, Wikipedia, because of their &quot;speed and simplicity&quot;; &quot;familiarity and consistency&quot;; and &quot;knowing how to navigate quickly&quot;.</td>
<td>Initial search directly through Google, Wikipedia, OneSearch, because of their &quot;simplicity&quot;, &quot;understandability&quot;, &quot;less clicking&quot;. On the other hand,&quot; language barrier&quot; in using LibGuides.</td>
<td>Simple layouts and navigation Easy-to-understand and clear descriptions Multilanguage captions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;...adding to students' confusion about how to address their information needs within the context of discipline-based subject guides&quot; (Reeb &amp; Gibbons, 2004)</td>
<td>LNU Subject guide is not enough efficient and may confuse students because of improper categorization and lack of interdisciplinary information seeking.</td>
<td>Easy and simple Interdisciplinary information seeking ability.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Libraries that highlight or link directly to subject guides from their main page get many more hits on their guides</td>
<td>Although subject guides is in the main page , a few international students know about it because of the non English caption, not enough explanation</td>
<td>Accessible and highlighted position of LibGuides link Multilanguage caption</td>
<td></td>
</tr>
<tr>
<td>Service quality</td>
<td>Information literacy</td>
<td>Information literacy sessions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students pointed to some factors such as familiarity with other systems. Students who have received library instruction are likely to make more frequent use of subject guides.</td>
<td>Information literacy sessions and courses provided by LNU library makes students to get more informed of it.</td>
<td>Information literacy sessions • library instruction course of Technical Information Communication and writing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students would use other sections of subject guides if an instructor tells them too use a certain section</td>
<td>Marketing is taken into consideration as a factor of LibGuides success.</td>
<td>Marketing of LibGuides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use/intention to use</td>
<td>Supervisors play important role in getting familiar with and even using LibGuides (especially Web2.0 technologies for sharing knowledge).</td>
<td>Knowing and motivating to use different sections of LibGuides.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>students do not use subject guides because they feel that they do not need it. They have a preferred method that they use almost exclusively in their own discipline</td>
<td>IS students mainly use some special sections. If the LibGuide’s quality be improved, some of the students have tendency to use more different sections of it, in the future.</td>
<td>Using some special sections based on their needs, or/and the quality of the Libguide.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**New emerged dimensions influencing LibGuides system success**

<table>
<thead>
<tr>
<th>Students characteristics</th>
<th>Research task characteristics</th>
<th>Research task characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>largely unresponsive to collaborative interaction and learning, and more interested in finding authoritative information from accepted experts</td>
<td>taking appropriate approach match with the complexity of the research, to decide for example about what database to use, what search terms to use, which results to explore, etc.</td>
<td>taking appropriate approach match with the complexity of the research, to decide for example about what database to use, what search terms to use, which results to explore, etc.</td>
</tr>
<tr>
<td>Subject guides mainly as a tool for contacting with librarians and get guidance, less for producing or sharing their knowledge. knowledge sharing can be improved by Web2.0 However, sharing and learning knowledge dependent on some personal factors.</td>
<td>IS students get more familiar with the methods and technologies that are proper with the complexity of their research.</td>
<td>Matching the complexity of the work with the methods and technologies that they use, for example about: What database, and search terms to use, which results to explore, etc.</td>
</tr>
<tr>
<td>Students knowledge background of web2.0 Their culture in sharing knowledge Their tendency in sharing knowledge, etc.</td>
<td>Students knowledge background of web2.0 Their culture in sharing knowledge Their tendency in sharing knowledge, etc.</td>
<td>Students knowledge background of web2.0 Their culture in sharing knowledge Their tendency in sharing knowledge, etc.</td>
</tr>
</tbody>
</table>

Table 6.1: LibGuides Quality Framework : Discussion
7 Conclusion

The present study has set out to determine students’ perception on quality of LibGuides at library website of Linnaeus University. The study fully covers two aspects of: 1) IS students’ perspective on LibGuides, and 2) different quality aspects of the LibGuides.

The result of the study mainly verifies previous studies and in some cases shows contradiction with them. Two research questions of this study are answered; 1) How do IS students define quality of LNU LibGuides in support of their research projects, 2) what are their expectations for improvement of its quality. D&M ISSM, as a base model for this study, played important role in answering the research questions from various quality aspects of information quality, system quality and service quality.

In respect to the students’ perception on LibGuides quality, the result of the study reveals that students defines the information quality of the LibGuides based on some factors such as providing updated information, recent advances in information systems field, providing interdisciplinary information, information availability and accessibility, and information that is required for writing thesis (such as writing skills, IS methodology and theories, etc).

Moreover, they pointed to some elements related to user interface designing and search technology, in response to their perception about technical/ system quality of LibGuides. Based on their perception, LibGuides may not be so efficient or sometimes make them confused in finding their required information. From their perception, it is beneficial if LibGuides contain granular information seeking tools, and some technologies such as Tagging and indexing, in addition, enable IS students to do interdisciplinary topics search. Providing Multilanguage description, clean and simple layout, and well-categorized subject guides are considered useful courses of actions for improving the system quality of LibGuides. One of the most obvious finding to emerge from this study is that participants mainly do not use Web 2.0 interactive multimedia tools such as video tutorials, tagging and user polls. They mostly use Web2.0 technologies - such as blogs and social networking applications - as applications that enable students largely to receive authoritative advice, not for peer-to-peer interaction and learning. However, the findings also support idea that instructors and supervisors can play effective role in motivating students to use these tools for sharing and learning knowledge. It is also suggested to facilitating LibGuides with user evaluation technology in order to get involve teachers and students in providing reliable and up-to-date content for LibGuides.

In the field of service quality they explained about instruction sessions and courses in their bachelor studies for enhancing their knowledge about LibGuides.

Moreover, one of the most significant findings that emerged from this study is that majority of
students are not familiar enough with LibGuides and do not have clear perception about it (particularly before this study). Its main reason is rooted from students’ culture and knowledge background about subject guides, their habits in information searching and knowledge sharing. So, students’ personalities and background is considered as a new emerged aspect in my study. In this regard, librarians, teachers, and supervisors play important role in introducing LibGuides to students with different background, and encouraging them to use it. Based on participants’ suggestions, taking instruction session at the first of the semester would be more affective rather than just at the first of the academic year.

These findings provide the following insights for future research. The integration of Web 2.0 features and LibGuides is a matter that is ignored in previous studies conducted on LibGuides and Subject guides this study also was unable to cover assessment of including different kinds of Web 2.0 features on research guiding. Future research should therefore concentrate on the integration of each Web 2.0 features with subject guide and their influence on research guiding. The research particularly should be focused on Web 2.0 features that are useful for peer-to-peer interaction and learning such as students’ forums and blogs. The relationship between participants’ background and using subject guides require further research to be investigated deeply, in the future. The main weakness of this study was the paucity of participants from various nationalities and especially from Sweden. Dealing with this limitation might be a suitable subject to be considered in the future researches. The relationship between the complexity of the research task and the LibGuides success should be considered later. Further research might expand the studies about the influence of LibGuide/Subject guide on students’ research projects.

These findings suggest several courses of action for enhancing the quality of LibGuides in supporting IS research projects; 1) setting up the information literacy session at the beginning of students’ thesis, 2) adding more complete search possibility (such as master search screen in Herrera’s (2007) study) for students to be able to easily search interdisciplinary information resources, 3) providing clear and sufficient annotations for subject guides and its contents, 4) addition of some more useful parts that might assist students in writing thesis such as writing skills guidance, 5) taking more advantage of supervisors/tutors’ role in informing and encouraging students in using LibGuides, 6) Including Web2.0 technologies to LibGuides and motivating students to use them, for the purpose of enhancing information quality of LibGuides.
References


Darby, A., 2006. Implementing an Open Source Application in a College Library: ECU’s


Griffiths, F., 1996. Qualitative research: The research questions it can help answer, the methods it uses, the assumptions behind the research questions and what influences the direction of research. A summary of the panel discussion at the conference 'exploring qualitative research in general practice', 13, pp. 27-30.


Hox, J.J. and Boeije, H.R., 2005. Data collection, primary vs. Secondary, *Encyclopedi*a of *Social Measurement*, 1


Kettinger, W.J. and Lee C.C., 1997. Pragmatic perspectives on the measurement of


University; College & Research Libraries, 68(2), pp.119-p139.


Tchangalova, N. and Feigley, A., 2008. Subject Guides: Putting a New Spin on an Old Concept; Electronic Journal of Academic and Special Librarianship, 9(3).


Appendix A: Home page of LNU Digital Library Website
Appendix B: Interview Questions

Participants Demographic

Name Age Nationality
Current field of study
Previous field of study

General questions about information searching

1. Please explain about one of your main research projects in information system studies?
2. What information did you need to achieve about the following steps in your project?
3. How did you find your required information in the following steps?

- General idea of the topic and narrowing topic
- Literature review
- Theoretical framework
- Methodology
- Ethical standards

Perception about LNU LibGuides

4. Have you ever used LibGuides at the university? What does it imply for you?
5. How many times have you used subject guide from beginning of your master thesis?

6. How often do you use LNU LibGuides platform?

7. How do you use it?

8. What parts of it do you usually use? Why?

Perception and Expectation of LibGuides Quality

9. How do you define the following concepts?

- Information that LibGuides provides you.
- Services that university provides you for using LibGuides.
- The technical aspects of using LibGuides.

10. What are the barriers of using LNU LibGuides, from the following aspects?

- Information that it provides you
• Services that is provided by LNU for using it
• Technical aspects

What are the reasons of these barriers from your point of view?

11. If it was up to you to design a subject guides for your research tasks, how would you like to design it? How would you like to categorize the subjects, articles and databases guidance?

12. What features of the LNU subject guides do you like to add, remove or improve?
# Appendix C: Interview Question based on CI method

<table>
<thead>
<tr>
<th>probe</th>
<th>Sample question in the research</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Comprehension/ Interpretation</em></td>
<td>What does the term &quot;subject guides&quot; mean to you?</td>
</tr>
<tr>
<td><em>Paraphrasing</em></td>
<td>Can you repeat the question I just asked in your own words?</td>
</tr>
<tr>
<td><em>Confidence judgment</em></td>
<td>How sure are you that including Wiki to LibGuides can improve the information quality of the system?</td>
</tr>
<tr>
<td><em>Recall probe</em></td>
<td>How do you remember the number of times that you faced with technical problem in using LibGuides?</td>
</tr>
<tr>
<td><em>Specific probe</em></td>
<td>Why do you think that including Blog for sharing experiences is not useful for IS class at LNU?</td>
</tr>
<tr>
<td><em>General probes</em></td>
<td>How did you arrive at that answer? Was that easy or hard to answer? I noticed that you hesitated - tell me what you were thinking</td>
</tr>
</tbody>
</table>