To BI or not to BI, that is the question…
Corporate libraries and business intelligence – relevance for LIS professionals?

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Communications without intelligence is noise; intelligence without communication is irrelevant.

General Alfred M. Grey
United States Marine Corps
ABSTRACT

Svensk titel: BI eller ej, en viktig fråga: om företagsbibliotek och business intelligence och förutsättningar för biblioteks- och informationsvetenskapstudenter

Engelsk titel: To BI or not to BI, that is the question... Corporate libraries and business intelligence - relevance for LIS professionals?

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Abstract:
The topic of this master’s thesis regards the situation between corporate library and business intelligence units in 5 selected companies in Stockholm Province. The aim of the study is threefold: is there any cooperation between the corporate libraries and the business intelligence units; what is the position of analysis in the work of corporate librarians and; what is the status of library and information science education from the perspective of the corporate world. In total 8 interviews were done.

The results of the interviews were analyzed according to a theoretical framework of a business intelligence cycle and professional competencies and job descriptions for both corporate librarians and intelligence professionals.

The theoretical section showed that corporate librarians should have the capabilities to do most of the phases in the BI cycle except for need determination and need re-determination. It was also noticed that the LIS education in Sweden is really not providing studies to become a professional in business intelligence.

The results implicate that the competence of the corporate librarians are not fully used by the BI units and that the corporate librarians are in fact doing analysis of information, even against their own belief. The study also showed that in the perspective of the corporate world the current library and information science program is lacking in many fields.

The conclusion is that the corporate library is a resource that is not fully used by the business intelligence functions in companies. But in order to make the students more capable for business intelligence functions, changes need to happen in LIS education.

Nyckelord: omvärldsbekäran, biblioteks- och informationsvetenskap utbildning, business intelligence, företagsbibliotek
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1 BACKGROUND

What do these three situations have in common?

1. Alternative futures\(^1\) rose to prominence when Royal Dutch/Shell used the method in the 1970’s. The use of a method called alternative futures enabled the oil company to understand the implications of a possible energy crisis. As a result of this work, they were the only multinational oil company, which was prepared for the 1973 oil crisis.\(^2\)

2. One cold evening in January 2005 my brother Mikko from Finland called me.
   - “Hi Anu, how are you? Do you remember Candye Kane, the blues singer who performed in a blues festival here a few years back? Well, I read in the *Blues News* that she is touring again and she will also be giving a concert in Stockholm!” It was very nice gesture from my brother to call me because he knew that I do not read *Blues News* magazine. And he also knew that I was disappointed for missing the concert few years ago.
   - “Wow, really? That is great!” I replied enthusiastically. I remembered that my brother really praised her and I thought that I should not miss her performance this time.
   - “Do you think there are still tickets available?” Mikko asked, afraid that I would miss this concert also.
   - “I need to check the Internet right away to see if there are any tickets still available. Thanks for calling me and letting me know! I would have missed it otherwise!”
   - “No problem! Take care and I’ll talk to you later!”
   There were tickets available. I finally saw Candye Kane and she was great! I thanked my brother for informing me by asking Ms Kane to sign the CD I bought.

3. “Somewhere in the CIA there was information that two al Qaeda terrorists had come into the United States. Somewhere in FBI there was information that strange things had been going on at flight schools in the United States. I had asked to know if a sparrow fell from a tree\(^3\), red lights and bells should have been going off. They had specific information about individual terrorists from which one could have deduced what was about to happen. None of that information got to me or the White House.”\(^4\)

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\(^1\) Considered by many to be the core concept of futures studies. ‘Futurists try to contribute to the making of informed and wise choices by carrying out systematic studies of possible, probable, and preferable futures’.


\(^3\) Richard A. Clarke served in the Clinton and G.W. Bush administration as the First National Coordinator for Security, Infrastructure Protection and Counterterrorism. In the summer of 2001 he had received intelligence that something big was about to happen and he had asked all the agencies to be on full alert and to report even “if a sparrow fell from a tree”.


The common idea binding these three stories is intelligence. In the first and second story the intelligence was very successful. In the third story the intelligence was not successful, and we are still living the frightful consequences.

Delivering meaningful information is all about having the right information delivered to the right person/quarter at the right time and in the correct form. The third story is a tragic example of failed intelligence, when the correct information was available, but did not reach the right persons in time. Searching for and delivering proper information is about being alert, observing the environment, understanding the meaning of information and delivering information in a digestible form so that it can be used directly in real situations.

This sounds very much like what librarians are also doing: delivering the right information to the right person at the right time and in the correct form. Is there still a role for librarians or library and information science (LIS) professionals in all this? Are LIS professionals up to the challenges of modern world organizations and companies, where most of the already filtered information needs to be delivered in predigested form?

The explosion of accessible information on the Internet has given birth to a huge wave of new knowledge industries like data mining and knowledge management. Many new professional titles have emerged during the last ten years: information mediator, information broker, information architect, knowledge manager, and intelligence analyst, to mention a few. These information specialists are working in order to retain some structure in the massive flow of information in today’s digital society.

Companies have had information services and corporate libraries long before business intelligence invaded the business scene. Now a number of companies have both: a Business Intelligence Unit (BI unit) and a Corporate Library (CL). As we think of the duties and the goals of these two different services, we soon realize that there are a lot of similarities in their operations. Both are dedicated to delivering tools to the management to make justified decisions in their daily work. The most significant difference between these two functions is that in business intelligence information is refined and analyzed to become intelligence.

In spite of this significant difference there are signs that the work in corporate libraries increasingly includes the work of an analyst in some form. Some librarians/information service managers are prepared to do analytical work and some even see it as part of their duty and others refuse altogether to do any analytical work. The reasons for the dilemma of whether ‘to analyze or not’ are numerous. This research project will explore some of the possible and probable reasons for the dilemma. Many LIS professionals are already active in environmental scanning. Similar scanning work takes place in local administration as well as in companies. It usually means that scanners are delivering news from the media to people who need it.

The reason I wanted to write the thesis on this particular subject is my personal interest in business intelligence and corporate libraries. During my earlier employment and studies in form of a Bachelor’s Thesis I became interested in these subjects and I

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wanted to work further with these concepts, though this time from a slightly different point of view.

In particular I became fascinated by the idea of little bits and pieces of information refined into knowledge/intelligence and affecting important business decisions. After that I realized that I would like to work with business intelligence and corporate libraries. During my earlier studies I also realized that many information professionals who work in corporate libraries not only have an LIS degree but also an education in another subject. This made me wonder if I would ever have a future in the corporate library world since I only have a background in LIS education of generalist character. One of the main inspirations for researching this subject was to find out if LIS professionals have a place in business intelligence functions as they exist currently and does the present educational model train LIS students according to the needs of business intelligence.

Personally I think LIS professionals could work in business intelligence up to a certain point: when it is time to analyze the bits and pieces of information to become usable and to reach more valuable form. I have been a member in the Special Libraries Association (SLA) and it was extremely interesting to follow an email discussion about this subject. Some corporate librarians felt that it was not their job to analyze information and some felt that it was one of their most important responsibilities. Most of these differences result from different starting points. In my personal opinion these starting points can be for example: a different organizational structure (business intelligence activities are a part of the corporate library), or differences in education (LIS or LIS + some other degree), experience, personal skills, etc.

I found a few studies that were quite similar to mine. Veronica Alfredsson\(^6\) wrote her masters thesis at Lund University in Library- and information science. She studied LIS education and whether it is enough for working in business intelligence. Whereas her starting point was the perspective of education, my study is more from a practical point of view, from the perspective of the company.

Sara Laurentz\(^7\) wrote her masters thesis at Uppsala University researching the role of the information specialist in today’s information society, with a special emphasis on the corporate world. Also, Tommie Anderberg and Tomas Johansson\(^8\) discuss the role of the LIS specialist in business intelligence in their thesis. As can be noticed from the footnotes, these theses have been written quite recently. It can be concluded that these matters are of great importance and interest to library and information science students and to academic institutions.

In addition to these master’s theses there is a lot of material on these issues, but from many different points of view. Written material for my research includes many books, a large number of articles and several bachelor’s and masters’ theses.

\(^6\) Alfredsson, Veronica 2003. Omvärldsbekämmning – hur långt räcker utbildningen I biblioteks- och informationsvetenskap?
\(^7\) Laurentz, Sara 2002. Corporate information specialists or Librarians in Today’s Information Society: their key roles in corporate success.
1.1 Aims and research questions

The question underpinning this study is: Are the graduates of library and information science from the academic institutions in Sweden ready to face the challenges of the corporate environment and work in business intelligence?

The aim of this study is threefold: the first aim is to find out the level of cooperation between BI Units and corporate libraries in five Swedish companies. This was researched with the help of a so-called Intelligence Cycle⁹, which forms the major theoretical framework of this study. A few different variants of the Intelligence Cycle were taken under observation. The main question is if the corporate library is a part of the intelligence process, the Intelligence Cycle. The reason that this should be studied is that the corporate library is usually an expert in finding information, categorizing and classifying and also in delivering and storing the information. The point is to find out if the BI Unit is using the expertise of the corporate library personnel in order to support the work of the BI unit’s employees and also to find out if these two units combine their professional expertise and resources in some way.

The second aim in my study involves analyzing information. Questions like what is needed to analyze information, whether or not librarians have the proper qualifications to analyze information and whether there are possibilities to learn analyzing in some educational institutions were studied.

The third and final aim is to look at current LIS education from the perspective of the corporate world and business intelligence functions.

The research questions are:

1. Does the corporate library at some phase of the Business Intelligence Cycle take part in the business intelligence functions of the company?
2. What position does information analysis have in the library and information science profession?
3. What is the status of LIS education from the perspective of the corporate world and business intelligence?

It was assumed that the answers to these research questions would be found in the literature and from the interviews that were conducted. Also, a small benchmarking project was performed to map out and to compare the situation of corporate library- or business intelligence-related studies in those institutions of higher education in Sweden that have LIS programs.

1.2 Thesis disposition

This thesis consists of seven major parts.

Introduction

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⁹ The process of business intelligence, including all phases in the process of refining data into intelligence.
The introduction chapter describes the origins of the study and presents the research questions as well as the methods used to execute the study. The introduction is divided to following sections: Aims and research questions, Thesis disposition, Definitions of used concepts, Demarcation, and Abbreviations.

Research methods

This chapter presents the method, which was used in this study. The chapter consists of sections Research methods, Disposition, and Special notes.

Theoretical and analytical framework

Chapter two evaluates earlier literature that deals with the research questions. A section called ‘Business Intelligence Cycle’, provides the theoretical framework of this study. More precisely, the results of this study are analyzed from the perspective of the BI cycle summary that is drawn together from six different BI cycle descriptions found in the secondary literature.

Results of the interview study

The third chapter presents the results of the eight interviews that were conducted. The results are presented in the same order as the interview questions, which are divided into four bigger parts.

Analysis

The results of the study are analyzed in this chapter according to the framework of the BI cycle.

Discussion

For the discussion, the writer joins in the debate on the issues that frame the research questions of this study: the question of whether or not to cooperate, questions over how to analyze the information, and on the role of education.

Summary

The summary will evaluate the results of the study and see if the aim of the study was reached.

1.3 Definition of concepts

There are some terms that need to be discussed before proceeding with the research. The important terms are written in bold in the particular section.

Data, information, intelligence/knowledge, wisdom?

The meaning and use of these terms is discussed in chapter 3.1.

Corporate library
Just as a precious child has many nicknames so too does the corporate information service. The word *library* is undoubtedly becoming somewhat more rare in the business environment. Many LIS professionals think that the word ‘library’ nowadays gives an incorrect picture of the functions they perform. Since the word library is often assimilated with books, it does not do justice to today’s delivery of information, which is mostly in electronic form. For example, Margareta Nelke, a pioneer in modernizing the corporate library’s functions and services, renamed the Tetra Pak corporate library as Technology Intelligence.  

Other terms found in the literature are information service, information center, corporate information center, etc. However, the term **corporate library** will be used throughout this study. The term corporate library is still quite common and to avoid confusion between the more modern variations, it is more consistent to use the term corporate library.

**Corporate librarian**

Librarians have a lot of different professional titles: librarian, information professional, corporate librarian, information broker, LIS professional, etc. All these titles are treated as synonyms in this study. Even when the term LIS professional was appropriate, the term **corporate librarian** was used instead in its place in accordance with the chosen term corporate library. For the theoretical discussion, when the professional competencies of these two professions are studied, the terms **intelligence professional** and **information professional** are used because these are the terms the institutions Society of Competitive Intelligence Professionals (SCIP) and Special Libraries Association (SLA) are using in their text. In this study these terms can be understood as synonyms for ‘business intelligence professional’ and ‘corporate librarian’.

**Business intelligence**

There are two basic terms that keep coming up in the literature: business intelligence (BI) and competitive intelligence (CI). These terms will be discussed more closely in section 3.2.1. The term **business intelligence** will be used throughout this research.

Since much Swedish and Finnish material already exists on this topic, one aspect is interesting enough to be mentioned. The equivalent term for Business Intelligence in Swedish is *omvärldsscovning* and it directly translates to environmental scanning/surveillance, a term established by Chun Wei Choo.

Environmental scanning =

Environmental scanning is the acquisition and use of information about events, trends, and relationships in an organization’s external environment, the knowledge of which would assist management in planning the organization’s future course of action.  

If the definition for environmental scanning is studied, it seems mostly to be about scanning the environment where the company is acting and doing business in. Scanning the competitors is not directly mentioned but it can be understood to be an essential part

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of the business environment. Choo’s definition is very similar to the definition of business intelligence that is presented in chapter two. However, when the Swedish term omvärldsbevakning is used, it is treated as a synonym for business intelligence.

The Finnish term used for business intelligence is ‘kilpailijaseuranta’, which directly translates as competitor surveillance. As can be seen, these three terms - business intelligence, environmental scanning, competitor surveillance - are used as synonyms when talking about business intelligence in these three different languages, even if there are actually big and profound differences in defining these terms.

<table>
<thead>
<tr>
<th>English</th>
<th>Business intelligence/competitive intelligence</th>
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<tbody>
<tr>
<td>Swedish</td>
<td>Omvärldsbevakning = environmental scanning</td>
</tr>
<tr>
<td>Finnish</td>
<td>Kilpailijaseuranta = competitor surveillance</td>
</tr>
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However, all these terms are used as business intelligence in the respective countries. Therefore, the etymological differences between these terms will not be studied more closely.

**Intelligence professional**

According to Society of competitive intelligence professionals (SCIP) BI manager and BI analyst are the most common working titles of intelligence professionals. When the professional competencies of these two professions are studied, the list of competencies and needed skills will be combined together in order to understand the whole scope of the intelligence work. Therefore the title most commonly used to describe the intelligence profession is intelligence professional. The titles BI manager and BI analyst are hence considered to be synonyms.

**Client**

In this study the word client is used to describe the person who is using the services of a corporate library or business intelligence. This is because the Special Libraries Association (SLA) is using “client” when listing the professional competencies of information professionals. Then again, the SCIP is using the word “customer” in their list of professional competencies. Therefore both terms, client and customer, are understood as synonyms in this study.

**Company**

In literature, many terms are used to describe a company: corporation, corporate organization, etc. Terms in this study might change from one quotation to another but the variations can be understood as synonyms. The most used term in this study is company.

**Analyzing**

The term “analyzing” is highly meaningful when talking about information. It can many times be understood differently.
According to Encyclopedia Britannica it means: “to study or determine the nature and relationship of the parts of by analysis”\(^{12}\).

In this study, the term “analyzing” can also be understood to mean value-added information. In such situations, the information is added to an already existing information structure to discover new meanings. Another related term is “sense-making”. The term cannot be considered as a direct synonym for “analyzing” but it has much the same idea: to understand and make sense of what you know and see.

**Tacit knowledge**

Tacit knowledge is another term that is important to mention. It has many things in common with business intelligence work or any work for that matter. Knowledge can be explicit or tacit. Explicit knowledge is something that can be expressed in words or numbers and can be communicated.\(^{13}\) Tacit knowledge is personal knowledge, which is hard to express and communicate; subjective insight, intuition, and hunch are examples of tacit knowledge.\(^{14}\)

Tacit knowledge can be seen as a very important part of the business intelligence work. Nonaka and Takeuchi introduce tacit knowledge as the key success factor in Japanese companies.\(^{15}\)

**1.4 Demarcation**

There have been huge advancements in mediating information. These changes have mostly been technical in nature. Data mining is one of the tools. Such programs use machine-learning algorithms to analyze data in different documents and databases. The programs are also able to find patterns in texts and therefore make analyzing less time consuming.\(^{16}\) This is only one example of how the information technology has been harnessed to ease the work of many information and intelligence professionals.

However, since the field of different information technological solutions is so wide, the issue of technical advancements is left out of this study. The issue was considered to be too large to be discussed in this context. Financial constraints must be mentioned as well. The responding companies had to be restricted geographically, because of financial restrictions in the form of travel costs. The companies interviewed are situated in the Stockholm Province.

**1.5 Abbreviations**

\[\begin{align*}
\text{CL} &= \text{Corporate library} \\
\text{BI} &= \text{Business intelligence} \\
\text{CI} &= \text{Competitive intelligence} \\
\text{LIS} &= \text{Library and information science}
\end{align*}\]


\(^{13}\) Nonaka, Ikjiro & Takeuchi, Hirotaka 1995. The knowledge creating company, p. 8.

\(^{14}\) Ibid.

\(^{15}\) Ibid.

SLA = Special Libraries Association
SCIP = Society of Competitive Intelligence Professionals
SFIS = Svenska förening för informationsspecialister, Swedish association for information specialists
2 RESEARCH METHODS

In this chapter the research methods and the actual research process of the study are explained in detail.

2.1 Execution of data gathering, theoretical part

An extensive data-gathering project was started over two years ago, in the fall of 2003, when the subject of the thesis was beginning to take form. Numerous sources have been used to gather articles, books, and studies. The searches in Sweden have mostly concentrated on the university databases of the University College of Borås, the University of Stockholm, the Stockholm School of Economics, and the Stockholm City Library. At the University College of Borås Library various external reference databases and full text databases have been used, including LISA, Library Literature and Information Science, Academic Search Elite, and Emerald Library. Also, material has been gathered using the master’s thesis databases of Borås, Lund, and Uppsala universities.

Some information searches were also made in Finland. In the writer’s hometown of Turku there is a polytechnic school, Turku Polytechnic, and a Swedish university, Åbo Akademi, that both have library and information science as a degree program. Information was also gathered using the library catalogues of these two schools.

In addition, the Internet was used several times as a search tool. Frequently used search engines were Google and the clustering engine, Clusty. A lot of information gathering took place according to the ‘snowball’ method, meaning that a lot of good sources were always found from the reference lists of particular articles.

2.2 Choosing of the method

Studies are usually either quantitative or qualitative in nature or a mixture of both. As is realized, quantitative means amounts and numbers and qualitative means quality and character. Because the nature of this study was to study how the situation is in these companies, and to hear peoples opinions about these issues from their own perspective and to go deeper to understand the qualifications to act as an information or intelligence professional it was realized which way the study needs to go. It was not desired to ask these circumstances from a larger number of participants and go with a quantitative study but it was desired to find out what these respondents think.

One of the aims of this study was to look into the functional models within the BI unit and the CL of a few selected companies and to find out if they cooperate in some way. The basic aim was to find out how things work in the selected companies and also to see how the respondents felt about the situation and what their opinions were about different issues. In cases when these kinds of aims are set for a study, it calls for qualitative methods.

Therefore, a qualitative method was selected and semi-structured interviews with open-ended questions were chosen as the method for conducting the study. A qualitative study was chosen as the means for collecting the data, since the aim was to understand the reasons and attitudes within the chosen framework. As Repstad writes in his book, the interviews give a possibility to ask follow-up questions and in that way to really get to the bottom of the study questions.\textsuperscript{18}

There are good and bad sides to this chosen method. The interview situation might make an interview subject nervous and if not feeling relaxed and secure the answers might not be coming from the heart.

There was no intention to apply the results of the study on a larger scale. In other words, the intention was not to find out the number of companies in which the business intelligence and corporate library are totally two different departments. Rather, the study would be better served through a more in depth, qualitative study of a few companies.

2.3 Preliminary preparations

The empirical part of the study was performed by interviewing both business intelligence managers and corporate librarians in five different companies in Sweden. The reason for choosing managers of both units from within the same company was to see the same issue from both perspectives. For example, if there is cooperation, on whose initiative did it begin and what were the reasons that led to the possible cooperation? It was also important to study the opinion of business managers regarding the ability of librarians to work with business intelligence, given the educational background of the librarians. An important aspect was also to study the opinions on the importance of professional subject knowledge of a certain field.

The interview questions were semi-structured and open-ended, meaning that they were composed before the interviews but they changed slightly on the course of the interviews. Open-ended means that the interviewees had the opportunity to talk and they did not have any YES/NO questions. The interview questions were written after forming the research questions. Because of reading a significant amount of business intelligence literature and professional material in the past, the creating of the needed interview questions was no ordeal; they came naturally according to the research questions.

The interview questions were divided into four larger parts according to the three research questions. The interview questions were slightly different for business intelligence managers than for corporate librarians (See Appendix 1). After the first interview a few changes were made to the interview questions, concerning how the respondents analyze information. While formulating the interview questions, it was decided that only the corporate librarians would be asked the analyzing capability questions. However, after the first interview it was realized that business intelligence managers also needed to be asked these questions in order to know what kind of personal and professional capabilities they have for analyzing business information. The

\textsuperscript{18} Repstad, Pål 1988. p. 10.
questions that were added were sent to the first interviewee a few days after the actual interview.

When the study was in its planning stage, the original idea was to get five companies in Stockholm province where there are both corporate libraries and business intelligence departments. This was not expected to be difficult but it turned out to be slightly problematic.

Interviewees were finally found in different ways. First a request was made for a list of members in SFIS, Svenska Förening för Informationspecialister (The Swedish Association of Information Specialists). The contact information for members who had listed the corporate library as their work place was received and soon interview requests were sent via email to those persons (See Appendix 2). People that did not reply to the original message were contacted by phone. The BI managers in companies were reached with the help of the corporate librarians, who had already replied and given their consent to take part in the study. Similar emails were then sent also to the BI managers. In the letter to the possible interviewees it was told that the research concerns corporate libraries and their relation to business intelligence activities of a company and that how well the modern library and information science (LIS) serves the needs of business intelligence or does it serve those needs.

After finding two companies that fit the profile it looked as if there were not enough additional companies with the desired circumstances. This led to the necessary act of expanding the initial profile, which was to find companies that had BI and CL as two separate units. Then the list from SFIS was read once more and one more company that fit the original profile was found. The fourth and fifth companies were included through the recommendation of a corporate librarian from one of the companies already chosen. The range of companies was thereby expanded to include two additional companies, in which the corporate library reportedly also did business intelligence.

2.4 Execution of data gathering, empirical part

Finally, the study consisted of five companies: three with separate BI and CL functions and two companies that partly integrated the functions. Two interviews were conducted in the first three companies and one interview in the following two companies. There were eight interviews all together. The interview questions were not tested beforehand. They were not recorded either; the interviewer made notes and transcribed the interview directly afterwards.

The reason for not recording was purely practical and involved personal issues not related to the study. It was understood that not recording the interviews some information might be forgotten. Possibly also some new information would have come up after listening the tapes again. And also when only taking notes the interviewer unconsciously is filtering information and in a way choosing what to write down.

The interviews took place in a relaxed atmosphere. Even though the questions were quite structured, some follow-up questions were raised to clarify a previous answer. One

19 Association’s homepage www.tls.se
interview was exceptional in the sense that three employees from the same corporate library actively took part in it. The reason was that the manager of the corporate library did not have a clear enough picture of how the employees did their work, meaning she was not sure if she could give a comprehensive answer to all of the interview questions.

The interviews were done in face-to-face situations, except for one that had to be done by telephone because of difficulties in arranging the interview. In the only telephone interview the person received the questions beforehand in order to make communication over the telephone easier and to lower the possibility of misunderstandings caused by the interview questions. The shortest interview was the interview on the phone, approximately 20 minutes. The longest interview took one hour and a half.

Since the language of the study is English, the interview questions were also presented to interviewees in English. In three interviews the only language used was English, in the rest of them both English and Swedish were used. One respondent was Finnish and since that is also the native language of the writer, parts of the discussion were in Finnish. After writing down the interviews in summarized form the texts were sent to the interviewees to be checked for possible factual errors. Some follow up questions were made in order to better understand some answers.

There are a number of companies where both CL and BI activities have already been integrated. The corporate library has been transformed, for example, the Tetra Pak Library is now Technology Intelligence (see page 9). This shows that former traditional library service activities have been integrated (or changed) to deliver more value-added information, perhaps even intelligence.

It would be extremely interesting to do a quantitative study of libraries/information services in Sweden and to see the proportion of corporate libraries that are already delivering value-added intelligence services. However, this would demand more time and resources and should be done in a more comprehensive study than a master’s thesis.

A small benchmarking project was also performed to evaluate the position of business intelligence-related issues in the curriculum of library- and information science studies. The Internet pages of all the library and information science departments of Borås University College, Lund University, Uppsala University, Umeå University and Vaxjö University were studied. The program presentations of these academic institutions were read and reviewed for any possible courses that could have a connection to the studies that were mentioned by the interviewees of this study.

Only university and university college-level educational institutions were studied since, as can be noticed further on in section 3.2.4 in the professional competencies for a business intelligence professional, bachelor or master level academic education should be acquired from people working in business intelligence.

2.5 Special notes

2.5.1 Generalization

A major question when doing research has to do with whether or not the results and findings of the study can be applied to a larger population and whether the study can be
regarded as useful for further study on the subject. Regarding this study, it should be noted that, because the study consists of merely five companies, the results are not fully applicable to a larger number of companies. The findings of this study only apply to the limited sample used, but can nonetheless provide some suggestions for the way the industry operates in larger context. If the sample for this study would have been larger the results could have been applied to larger number and the study would have been clearly a suggestive study.

2.5.2 Confidentiality

The study ensures the confidentiality of the respondents and the companies where they work. Letters and numbers are used to refer to different respondents.

2.5.3 Language

The writer’s native language is Finnish so there might be some unintentional confusion with the choice of some words. A native English speaker proofread the thesis to correct the language. The writer herself translated the non-English quotations into English.
3 THEORETICAL AND ANALYTICAL FRAMEWORK

In this chapter the chosen theoretical framework is explained and also the analytical tools that are used in analyzing the results are explained.

To begin this chapter, first the definition for the word intelligence is studied and after that the section 3.2 describes business intelligence and its different dimensions more closely. Later on in section 3.3 the concept of corporate library is presented. Chapter three also looks into the professional competencies of both business intelligence professionals as well as corporate librarians.

Business intelligence work occurs according to a business intelligence cycle (BI cycle). The BI cycle is described in detail in section 3.2. Since the BI cycle resembles the usual procedure for information gathering and delivery to a client, the BI cycle is very familiar to corporate librarians and other information professionals. Therefore the BI cycle was chosen as the theoretical framework for the study. The results of the study will be analyzed from the BI cycle point of view to understand those parts of the BI cycle that corporate librarians possibly take part in.

3.1 What is intelligence?

Intelligence is the most vital term used in this study and needs to be defined. It needs to be understood both according to what it consists of and how it is achieved.

In the age of information we are bombarded with data and it is more and more difficult to distinguish information. Information leads eventually to knowledge and understanding. The term ‘information anxiety’, coined by Richard Raul Wurman, has an interesting background. Wurman considers information anxiety to be a black hole between data and knowledge. It is the ground between what we understand and what we think we should understand.  

Intelligence is analyzed information. At the same time it is more than mere information; its relevance and meaning within the decision-making process has been realized. For example a stack of article clippings on a specific issue is not intelligence; it is merely information. However, when the article clippings have been analyzed and the information used for the company’s benefit, intelligence has been accomplished.

Larry Kahaner defines intelligence in the following way: ‘Information has been filtered, distilled, and analyzed. It has been turned into something that can be acted upon.’ The definition highlights all the various characteristics in BI activities and the intelligence process. Another term for intelligence is knowledge.

Steve M. Shaker and Mark P. Gembicki define intelligence as ‘a compilation and analysis of data and information provided by any and every source, human or otherwise, that has foresight and can render an insightful picture of intentions, capabilities, or

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22 Kahaner, Larry 1996. Competitive Intelligence: How to gather, analyze, and use information to move your business to the top, p. 285.
23 Ibid, p. 21
activities, as well as their possible implications and consequences. All of these sources agree that any person or electronic or printed items can possess information, which can be used. The definition offered by Shaker and Gembicki clearly puts a lot of emphasis on understanding the meaning of the information you possess or have acquired.

Shaker and Gembicki also provide a model of an information hierarchy, which they arrange in the shape of a pyramid. The same hierarchy can also be presented as a staircase-model.

![Information Hierarchy Diagram](image)

*Figure 1. The information hierarchy (Steve M. Shaker and Mark P. Gembicki, 1998)*

The data on the bottom level can be statistics, sale numbers, user survey data, etc. In the second level the data is refined and it has turned into information. The authors introduce the concept ‘value-added’. It means that the data is more valuable. To add value means that the data or received information has been combined with previously known information to achieve a new, more valuable meaning. A fact-data sheet sitting on a desk is information but when the information has been read and combined with the already existing information and when its meaning in the entity is understood, it has been transformed into intelligence. Good decisions cannot be based on information, no matter how accurate or comprehensive the information. A decision based merely on information is basically only an educated guess.

In the book, *Leading with Knowledge*, Richard Huseman et al. provide an amusing and yet a very descriptive analogy of the difference between information and knowledge: ‘The difference between information and knowledge is like the nutritional difference between bon-bons and broccoli’.

Stephen Abram argues for a Data-Information-Knowledge-continuum, where the data flows along the continuum and eventually is transformed/processed into knowledge. He links behavior (action) and decision-making to this continuum and these can be seen as a supporting pillar for decision-making.

Jonathan Calof writes about the big difference between data and intelligence. He includes the saying that ‘until information is analyzed and actionable recommendations are drawn out, you do not have intelligence.’ Equally, Leonard Fuld states that ‘understanding the difference between intelligence and information is essential to success’. Companies that do not understand the difference do not receive intelligence but instead a flood of data and information.

Although Calof emphasizes the difference between DATA and intelligence and Fuld emphasizes the difference between INFORMATION and intelligence, the most important fact still remains: the differences are significant.

In addition to differences between information and knowledge, Sven Hamrefors writes in his article that there is also a difference between sharing information and sharing knowledge. The corporate library can interpret the meaning of information and in this way increase the value of the information.

The history of intelligence as a concept

In the book, Den uppmärksamma organisationen, Sven Hamrefors writes about the history of intelligence. He as well as Steve M. Shaker and Mark P. Gembicki in their book War room guide to competitive intelligence, acknowledges the Chinese general Sun-Zu to be the first in history to write down notes about intelligence strategies in war in the book The art of war. That was 2500 years ago.

Since that time intelligence has been a part of wars and battles and later on also part of trade and finance. The need for intelligence in trade arose when the leading houses of commerce in Europe started international trade. After the 1980’s the Cold War was replaced with a commercial war and that meant that the character of intelligence changed.

One nation that has really been a pioneer in this field and has accomplished a lot with intelligence, both military and commercial, is Japan. In many ways intelligence activities contributed significantly to the position that Japan now occupies, a huge economic power. After the society reform in Japan in the middle of the 1800s, they started systematically to build up their economical and technical intelligence activities. With these activities they have since become a serious competitor in industry and international trade. Japan now has the world’s second largest economy, with a GNP of $3.5 trillion. It is worth considering how Japan got where it is now.

References:

28 Calof, Jonathan 1997. For king and country ... and company, p. 36.
30 Hamrefors, Sven 1999. The company library’s contribution to the organization’s environmental scanning, p. 123.
33 Hamrefors, Sven 2002, p. 15.
34 Ibid., p. 14.
3.2 Business Intelligence

In this section the concept of business intelligence is studied more closely. In the sub section, Business Intelligence Cycle (BI cycle), the process of refining data/information and delivering intelligence is explained. At the end of this chapter the results of this study are analyzed according to the BI cycle summary.

3.2.1 Concept

Globalization and increasing competition have been two of the reasons that have forced many companies to develop systematic intelligence functions and resources to analyze the business environment and their competitors. Business intelligence is, simply put, a discipline that companies use to gain a competitive edge in the markets.

Business intelligence has many forms. It can be said that it consists of many different smaller components but at the same time it can be said that these smaller components are totally different forms of business intelligence, which can be practiced as a separate discipline. Different forms of business intelligence include: strategic intelligence, competitor intelligence, market intelligence, customer intelligence, etc.

Another definition for business intelligence is competitive intelligence. In fact they are often used as actual synonyms. In order to understand the slight difference between them, Anneli Pirttilä defines both terms.

“Business intelligence is an operation where information linked to the whole business environment is systematically gathered, interpreted and analyzed and its value to business is evaluated. After this intelligence is distributed to decision-makers needing the specific intelligence.”

Anneli Pirttilä’s definition of competitive intelligence goes as follows (and please note also how she differentiates it from business intelligence):

“Competitive intelligence is part of a company’s business intelligence operation. Business intelligence covers the whole business environment of a company –competitors, but also for example customers and general trends like changes in economic development, country risk analyses, and many more similar business environment follow-ups. Competitive intelligence, on the other hand, is organized activity, where a company’s competition environment, competitors, the changes and trends in the environment are pursued. In a company competitive intelligence is often organized to be part of the business intelligence unit.”

Monitoring the competitors is a natural part of business intelligence, since the BI contains all aspects of the business environment in which the company is functioning. In that case, business intelligence as a term is broader and more comprehensive. Nonetheless, both terms basically consist of the same things.

36 Pirttilä, Anneli 2000. Kilpailijaseuranta, p. 17
37 Ibid., p. 186.
38 Ibid.
Based on these definitions by Anneli Pirttilä, it is justified to use the term business intelligence in this study. In some articles the only term used is competitive intelligence, but in these situations it can be understood as a synonym for business intelligence.

Kairos Future AB performed a study in 2004 on business intelligence and its stages of development among large Swedish companies and city and municipality officials. In the beginning of the 1990s the first wave of business intelligence came to Sweden and the rest of the western world. That phase can be described as the awakening – the importance of the future and the world around us. At the end of the 1990s the development of the discipline reached a new stage of development and BI functions started to be relatively common. Also, the first group of students to have an education in business intelligence entered the work force and business intelligence analysts became an established profession. 39

Now in 2005 the discipline has entered yet another stage of development. Business intelligence is more seen as a motor for innovation. Risk and possibility analysis have replaced fact and prognosis. 40

Here are some findings from the study, which shows the latest trends in business intelligence:

- The analysis is becoming more central. Other companies are planning to add resources to the BI.
- The BI is becoming more systematic.
- The management is more and more supportive of BI activity.
- Efficiency and integration are of particular focus. To integrate the BI more closely with business is a priority in development plans.
- The BI is taking a strategic lead in everything from information gathering to business advantage and innovation. 41

3.2.2 Functions

The overall intent of business intelligence is to deliver analyzed information to clients so that they can make better decisions in their daily work. The main focus is on how to manage what we know and to use it so that the management can make better-informed decisions.

Information can be divided in different ways. There are basically two kinds of information available within any organization: internal and external information. Internal information covers all kinds of internal documents (strategy documents, internal reports, development reports, product line introductions, etc.), internal communication on the intranet, the knowledge base of the company (knowledge management systems 42), and tacit knowledge.

40 Ibid., p. 4.
41 Ibid., p. 5.
42 A computer program application, which contains the knowledge in the company, people with special competence can be found and contacted through a knowledge management system.
External information refers to information from the business environment and it includes the whole range of information from the media and oral information to the key groups and their informants (competitors, clients, subcontractors, retailers, manufacturers, etc.). Part of the information is always collected from official sources like municipal and governmental authorities, patent authorities, etc.

The types of information described above are examples of official information. Conversations in lunchrooms, at trade fairs or informal get-togethers, and face-to-face discussions with key persons are ways of acquiring unofficial information. It must be strongly emphasized that industrial espionage is not in accordance with ethical intelligence work.

Business intelligence can also be divided into systematic and unsystematic intelligence. Systematic intelligence means that it is a structured and an official and established part of a company’s functions. Unsystematic intelligence takes place everywhere in daily functions and is often communicated orally or through other unofficial paths.43

Anneli Pirttilä writes that studies have shown that the efforts engaged for systematic intelligence gathering do not correlate well with the meaning it has for a manager. The amount of unofficial and unsystematic intelligence is much lower but it can be much more valuable to a manager.44

Business Intelligence Cycle

The analysis of this study is based on the BI cycle. Therefore it is important to define the term. In this section, six different variants chosen from the reference material are explained and at the end a summary of these six models is compiled. The analysis of the results of the whole study is analyzed according to the BI cycle summary.

A cyclical model is a very natural way of describing events and philosophies within many cultures. The model is symbolic of the fact that there is no definite end. When we get to the end of one process or event, a new one starts immediately. People who believe in reincarnation think of their life as a part of a never-ending cycle of birth and death. Chinese nutrition therapists think a day as a lifetime in miniature, with morning as birth and evening as death. Then the next morning the same cycle begins again.

The BI cycle, as with many other similar processes, starts at a point when the information need is defined. Then there are stages, such as information gathering, analysis, delivering intelligence, storage, and so on. The final stage of a BI cycle is to reassess the information need in accordance what was learned the first time around. Then the cycle goes around again.

3.2.3 Different reference cycle descriptions

In the reference literature there are many different variations of the intelligence cycle. Six of them were taken under closer study to compare them. The same components can be found in all of them but there are slight differences in the choice of words and in the

43 Pirttilä, Anneli 2000, p. 21
44 Ibid.
meaning of the concept. A table is created, which gathers all the cycles together in order to show the differences more clearly (See Appendix 3). In the following and also in Appendix 3 the cycles are presented in a more space saving form, not in a cycle form.

Dr. Jonathan Calof is one of the founding directors of The Canadian Institute of Competitive Intelligence and a professor at the University of Ottawa. His Intelligence wheel consists of four stages:

1) Planning and Direction
2) Data Collection
3) Information Analysis
4) Intelligence Dissemination

Calof has a basic 4-step system, which contains the most vital steps. Extra attention needs to be drawn to second stage, ‘Data Collection’. When we think of how data is defined it seems unlikely that data will be collected instead of information. That could also be possible, but a double or triple workload will be faced when converting and combining bits of data as information. Most of the facts needed already exists in the form of information, i.e. articles, reports, etc. In all the other cycles the term information collection or gathering is used instead of data collection.

2. Larry Kahaner, 1996, The Intelligence Cycle
Larry Kahaner is the author of Competitive Intelligence: How to gather, analyze, and use information to move your business to the top. In his book he introduces a 4-step cycle, which is adapted from the intelligence cycle of the Central Intelligence Agency (CIA). The first step is also the end of the cycle, since all intelligence usually leads to new intelligence needs. Compared to the cycle of Calof, this is very similar in all its simplicity.

1) Planning and Direction
   The needs for intelligence have to be determined and the needs form the base for the whole cycle.
2) Collection
   Raw information is gathered from various information sources legally and ethically according to the intelligence needs.
3) Analysis
   Analysis is the most difficult part of the cycle. The information gathered in the second phase has to be weighted for its importance, connections to already known facts have to be understood, and conclusions have to be drawn.
4) Dissemination
   Dissemination is the last phase where intelligence is delivered to those who requested it in the first phase. Analysts have to suggest possible actions on the basis of the intelligence they produced.

This is again a very clear 4-step system containing all the necessary steps. The somewhat obvious demand for ethical and legal information has been mentioned. He is also putting a lot of emphasis on the analyst and their job description.

45 Calof, Jonathan 1997. p. 34.
46 Kahaner, Larry 1996. Competitive intelligence: how to gather, analyze, and use information to move your business to the top, p. 43.
3. Douglas Bernhardt, 1994, Intelligence Process

Douglas C. Bernhardt is a managing consultant at Business Research Group and in his article “I want it fast, factual and actionable – Tailoring Competitive Intelligence to Executives’ Needs”, he introduces a cycle that is also adapted from the intelligence cycle of CIA.

1) Planning and Direction (or ‘tasking’)
Intelligence needs and objectives must be clearly and explicitly defined (to the mutual satisfaction of consumers, researchers and analysts). 3 questions has to be answered: what do we need to know?, why do we need to know it? and what decisions are to be made or actions taken, once we know it?

2) Collection
Collection involves the gathering of raw information from which finished intelligence will be produced.

3) Processing
Processing means converting the information to a form that it is easily accessible by all, i.e. a technical solution.

4) Analysis and production
Analysis represents the ‘value added’ material in intelligence. It means the transformation of raw information into the finished intelligence product. The product has to be analytic, actionable, delivered on time and in a form that can be easily and quickly comprehended.

5) Dissemination
Dissemination involves the communication or delivery of the finished intelligence product to the customer as various intelligence reports and briefings. They must be decision oriented, they must contain supporting information, and they must be distributed under strict security guidelines. 47

This is again a well-explained cycle. He incorporates processing as a separate phase. With this he emphasizes the importance of the access to information. He mentions the technical phase after collection. Processing information in electronic form facilitates the utilization of information within the company and he seems to put emphasis on technical solutions in order to have easier access to information. Bernhardt is the only one who views the word communication as important enough to warrant special attention. He certainly would ascribe to the quote at the beginning of this thesis, that ‘intelligence without communication is irrelevant’. 48

4. Jan Herring, 1999, The Traditional Intelligence Cycle

Jan P. Herring is educator in the Academy of Competitive Intelligence (ACI) and a former CIA analyst. In his article ‘Key intelligence Topics: a process to Identify and Define Intelligence Needs’ he is concentrating on intelligence needs, but also mentions the cycle.

1) Planning and Direction - Before this key intelligence topics have to be identified.
2) Information Processing and Storage - Creation of the Knowledge Base
3) Collection - Intelligence Collection and Reporting
4) Analysis and Production - Making Intelligence Actionable and Understandable
5) Dissemination 49

48 General Alfred M. Gray, United States Marine Corps, testifying to the United States Congress in the 1990s.
http://www.lib.unb.ca/Texts/JCS/bin/get4.cgi?directory=spring99/&filename=steele_notes.html#44
49 Herring, Jan P. 1999. Key intelligence topics: a process to identify and define intelligence needs, p. 6.
Also Herring gives emphases to information processing in a form of a knowledge database in order to have knowledge easily available and accessible.

5. Kenneth A. Sawka, 1996, Five Basic Functions of Internal Intelligence
Kenneth A. Sawka is the Vice President and Director of Fuld & Company. In his article ‘Demystifying Business Intelligence’ he introduced the five steps intelligence cycle.

1) Determine your intelligence needs
   It ensures that the intelligence system is organized specifically to collect and analyze information which management has requested for
2) Gather relevant information
   Information requirements for business intelligence units demand high level thinking and problem-solving skills from the information service of the company.
3) Collect human intelligence
   This provides the intelligence unit with unique, exclusive information. To ensure the value, the collection has to be well managed.
4) Analyze the intelligence
   Intelligence analyses add value to the collected information by making considered judgments and conclusions about the acquired information. Through analysis justified decisions about the future can be made.
5) Disseminate the strategy
   The right people receive the right intelligence at the right time. Timing is essential.50

Sawka mentions the word ‘relevant’ in the information-gathering phase. Information collection has to be very strictly organized, since interesting information can be found abundantly from everywhere. What the intelligence process needs is essential information. Also an interesting phase in this cycle is human intelligence. The human intelligence capital is huge in every company. It cannot be ignored in the information gathering process.

When taking a closer look at the step 2, it is seen that Sawka clearly mentions information professionals and is therefore the only one who is in some way giving credit to LIS professionals. He is writing that high level of thinking and problem-solving skills are expected from the company’s information service personnel. Definition of Sawka is good to remember when going forward in this study to see the real expectations that are listed for an information professional.

Anneli Pirttilä is the principal of the South Carelian Polytechnic in Finland and has published books about business intelligence. She has come up with a following cycle:

1) Need determination
   What information of the competitors is needed in decision-making?
2) Systematic acquisition of information
   How to obtain the information from various available sources as efficiently as possible?
3) Segregation and selection of significant information
   How the essential and significant information can be separated from the massive flow of raw information?
4) Analysis
   Which of the obtained information is credible and what conclusions can be made?
5) Interpretation and conclusion
   What does this mean to the business and to the future?
6) Distribution

How the intelligence can be efficiently delivered to those decision-makers, who can use it in developing the business or in improving the profits?
(7) Need re-determination
Has the need changed? Should the needs be determined in a new way in the light of the last process?

The basic steps described in some form in all the cycles are planning, collection, analysis and dissemination. As it can be seen, most of the differences in these cycles occur in the processing or analyzing stage. That implies that both the phases of processing and analyzing information are the most discussed parts of the cycle. The stages marked in bold in the Appendix 2 are in the key position.

In general most of the differences occur since different people give more emphasis to different phases, or different components within one phase. Even if a component has not been marked as an individual phase, it does not imply that the component would be of a minor importance. In some cycles self-evident facts have not been mentioned. It is clear that, for example, the information obtained has to be relevant and significant and in accordance with the needed information.

Production is also needed to give the intelligence a form: a report, memo, action suggestion, etc. Today, information processing is also unmistakably important. Information is easily found in databases, knowledge warehouses.

Human intelligence can also be nearly translated to knowledge management. It is about the wisdom, the knowledge of the people, who work in the particular business environment. It is essential to ‘mine’ also these intelligence reserves and not only to concentrate on the official sources. People usually process data in their own minds and the results could be just as valuable as the information found in statistics and databases and in an analyzed form. Sawka writes that 75 % of the intelligence actually do lie in the minds of companies’ own employees. Human intelligence is not by any means a reserve to ignore.

Pirttilä has divided analysis to two different phases. It shows that she considers the analyzing to be merely refining of the raw information. Interpretation and conclusions will be made after the information has been analyzed to be intelligence. Further actions are discussed in that phase.

Calof and Kahaner have clearly wanted to keep the cycle as simple as possible. In case the cycle is very simple, it is important that the content of every phase is carefully considered. As an example, talking about the collection phase, one has to remember for example that a) it has to be relevant information, b) also human intelligence must be collected c) first the internal information sources has to be looked into and only then the external sources.

The BI cycle summary

All the presented cycles are good and at the same time fairly similar. Still, particularly good features can be found in a few of them. The following ideal cycle was created of

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features that are naturally crucial but also interesting. Since the most differences in the reference cycles were in the choice of words, the most suitable words were chosen for the ideal cycle.

Figure 2. Business intelligence cycle that is used in the analysis of this study.

1. Need determination

This first phase is very clear. The intelligence needs are drawn according to the strategic guidelines of the company. In order to define the needs correctly, the person doing this has to have an excellent knowledge of the company, its operations and products, and a knowledge of the whole business environment.

2. Acquisition of information

All possible sources have to be taken under study; the company’s own personnel (human intelligence) and personal contacts, media, statistics, patients and all publications (newspapers, leaflets, advertisements, books, etc.).

3. Segregation and selection of significant information

After the essential information has been gathered a selection still needs to be done. The information that will be used for analysis needs to be exactly what is needed by the particular company. The needed information should be evaluated before analysis. There is no need to analyze things that do not have an essential value. That would only take unnecessary resources away from the personnel.

4. Analysis and production

Analyzed information must be disseminated in a form that can be easily understood and used. Therefore the production of the analyzed information is important. Production includes entering the analysis into the company’s knowledge system, briefings in morning meetings, compiling mailing lists to brief management about future actions
taken on grounds of the intelligence achieved, presenting analysis results in seminars, etc.

5. Intelligence dissemination

If there is no dissemination, no results are achieved. The intelligence obtained from the analysis has to be communicated to the right parties at the right time. Otherwise the whole process will have been futile. There is no intelligence received without communication. Intelligence qualifies as intelligence only if it is used in the correct manner.

6. Need re-determination

The disseminated intelligence often leads to new intelligence needs. Therefore a continual ‘updating’ of the needs is very important. The information and intelligence needs never stay the same.

3.2.4 Professional qualifications / job description of a business intelligence professional

In order to understand the demands for working with Business Intelligence functions, the professional and personal demands for doing BI work need to be studied. The following list of qualifications, tasks, and personal qualities is drawn from the Society of Competitive Intelligence Professionals (SCIP). The organization is the most well known organization in the world in the field of business and competitive intelligence.

As was demonstrated in section 1.5 in this study, the term “competitive intelligence” is used as a synonym for business intelligence. Therefore, when SCIP defines and writes about a competitive intelligence manager, this study treats the term as a synonym for business intelligence manager.

SCIP defines the professional qualifications for two types of jobs within business intelligence in the following manner:  

- **Competitive Intelligence Manager.** CI manager will coordinate the activities of the CI team and be responsible for its output. Qualifications required are:
  - Bachelor’s degree (Master of Business Administration preferred)
  - At least eight years of experience in competitive analysis in the industry in question. Experience with marketing is also important.
  - Proven leadership skills: experience in project leader or supervisor of professional staff. A person has to be an excellent motivator, with a high energy level.
  - Excellent written and oral communication skills; experience working with senior managers and making boardroom presentations.

- **Competitive Intelligence Analyst.** CI analyst performs intelligence gathering and analysis.
  - Bachelor’s degree
  - At least four years of business experience in the industry in question.

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54 In August 2005 it was found that SCIP had changed their home pages. The original text of professional competencies of an intelligence professional presented here was not to be found anymore. Web page manager was contacted and he told that they change the pages quite often. The old page was not to be found anymore. The following page is dealing with similar issues.

- At least 2 years of experience in competitive intelligence.
- Excellent writing skills.
- Excellent computer skills, including with word processing, Lotus 1-2-3, and Microsoft Access. Knowledge of the World Wide Web and research experience with on-line databases is also essential.\(^{55}\)

There is a clear emphasis on strong experience to work in BI functions; both experience of business intelligence functions and also subject knowledge. Since the work is about capturing and analyzing the signs and information within the business field, there has to be experience and knowledge of the field to understand the received information and make sense of all the signs.

Noteworthy is also the emphasis on communication, people skills, and marketing experience. Since one of the most important factors in BI is the dissemination of intelligence, good communication skills is the most important talent an intelligence professional can have. They have to be active in marketing themselves and also in enhancing the communication culture within the whole company. As noted earlier, if intelligence is not adequately communicated it will remain merely as unused information. An interesting thing is that unlike with the CI manager, people skills are not seen as important for a CI analyst. The CI manager presents the analysis/results to the management. The CI manager is also the representative of the whole intelligence department. But, as already stated, this study will treat these two professions as a single profession. Consequently, the qualifications listed by SCIP can be thought of collectively as the qualification demands for an intelligence professional.

When the qualifications of the analyst are examined, the last part with excellent computing skills, knowledge of the Internet and research experience with databases is quite the same of what would be expected of an information specialist. They also have to have a good knowledge of the information sources and skills to effectively use the technology available.

At this point it is essential also to clarify the principal tasks of the CI Manager and CI Analyst according to SCIP in order to understand what the work of an intelligence specialist includes.

### Tasks of a CI Manager:

- Oversee and be responsible for the CI functions in the company. Working with the senior management, product development, and marketing teams, set objectives for intelligence gathering, and create a feasible schedule for the collection and analysis of data.
- Lead the CI group. Supervise the collection and analysis activities of the group’s analysts, assigning projects and authorizing specific data-gathering exercises. Working with corporate counsel, develop a compliance plan for the Economic Espionage Act of 1996 and ensure that all intelligence and information gathering activities of the company are undertaken using ethical and legal techniques.
- Assess the recourse requirements of the CI group. Ensure it has the resources necessary to gather and analyze data. Procure equipment, within the budget.
- Communicate with other departments to ensure an effective flow of information to and from the CI group. Enhance effective two-way communication. Ensure all staff at the company are aware of the CI group and able to pass along information quickly and easily. CI group will also provide actionable intelligence to other units when needed.

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- Supervise the CI group staff. The group comprises four professional analysts and one administrative assistant. Ensure the staff acquire and maintain appropriate skills and able to develop professionally.
- Manage the CI group budget.
- Take responsibility for the CI group’s outgoing analysis and conclusions. Make regular presentations of findings to senior management and other client groups.\(^{56}\)

The main character of a CI manager can be described as a uniter, a compiler, the glue that keeps the BI functions within the company together. The CI manager has to have good knowledge and understanding of all the functions of the company, including product development and marketing. The CI manager has to work hard to make the intelligence activities a part of the company’s core functions. Business intelligence is the business of the whole company, everybody has to be aware and alert and understand the significance of BI. That requires a tremendous amount of communication between all departments and groups within the company. Management skills, good contacts with the different key groups both inside and outside the company, communication and people skills are the most important skills of a CI manager. The CI sets objectives for intelligence gathering, which can be also understood as determining the intelligence needs. This also demands a great deal of knowledge of the company’s activities and products.

**Tasks of a CI analyst:**
- Carry out data collection and analysis as assigned by the CI Manager. Use a variety of tools to obtain information required to support better strategic decision-making. Comply with ethical standards and the Economic Espionage Act of 1996 in all data collection activities.
- Analyze data collection and draft reports.
- Assist the CI Manager in preparing presentations and reports for senior management and other units of the company. Take primary responsibility of some presentations.\(^{57}\)

The CI analyst basically carries out the assignment by searching for the information and drafting an analysis, which then will be presented to the management or other important key groups, usually by the CI manager. Even if the BI manager sets the intelligence objectives, the CI analyst also has to have a good knowledge of the company’s functions and the objectives for intelligence gathering. While they are gathering information for the analysis, they might run into something that has great meaning for the company. At that point they have to have the understanding to recognize that the information is important for the company. Also the CI analyst has to be very good in using various tools to find information. They need to have the skills to make searches in various databases and search engines. Both the CI analyst and the information specialist need to be quite familiar with the process of searching for information. When considering the BI cycle, the list of duties of the manager and analyst together covers all the phases of the cycle. In order to successfully accomplish a cycle, they have to work closely together.

Larry Kahaner, in his book *Competitive Intelligence*, claims that analysts are born, not made. Surely people can be trained to do analysis but there has to be a certain prior interest. He also states that, for example, CIA looks for people who can think linearly and in patterns. The training of analysts at the CIA takes 18 months.\(^{58}\) If we are looking at intelligence and the ability to analyze from the perspective of developmental

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\(^{57}\) Ibid.

psychology, we realize that Kahaner is right: the ability to think analytically is a skill that very well might be determined genetically.

In educational psychology, Jean Piaget has studied thinking and learning from a constructive perspective. He considered understanding to consist of different schemes, which are built when learning something. When new information is acquired, it is added to old schemes. The new information might be assimilated or accommodated to the old schemes. The better the schemes we have the better we can understand the received information. ⁵⁹

Intelligence is something we are all born with, though some are more and some are less intelligent. The ability to understand concepts and actions is also dependant on our genes and a diverse collection of things – home, school, living environment - that steer our development throughout the years. Therefore it is purely impossible that all of us would have the same abilities and gifts to perform intelligence analysis within the proper context.

SCIP also lists the personal attributes of intelligence professionals:

A person needs to have
- The ability to deal with high level of ambiguity and lack of structure.
- The ability to be a self-starter.
- The ability to be comfortable and articulate with people in the organization who are considerably more senior than he or she is.
- The ability to get customer to define what is really needed and why.
- The humility to understand that, as a support person, an intelligence analyst is not an advocate.
- The personal fortitude to push an intelligence finding so that it gets the attention it deserves by senior management – even if this means crossing the formal hierarchy of the company. ⁶⁰

Communication skills cannot be emphasized too much. They are the key to the success of intelligence activities. Intelligence professionals have to have the ability to work in a stressful environment and to have a high level of trust in his/her abilities and instincts. There has to be a certain level of diplomacy in the way the intelligence professional works. Then again the intelligence professional must posses a nature of a terrier in pursuing their hunches and following up on leads when needed. As is known, intelligence has to move fast and if the professional does not have the courage to draw early conclusions and make decisions based on the signs available, he or she might miss the window of opportunity. The sense of timing is a crucial skill.

3.3 The corporate library

In this section the concept of the corporate library is discussed. The history, the meaning, purpose, and functions of a modern corporate library are studied.

3.3.1 Concept

As business intelligence was defined in the last section, now the concept of a corporate library will be studied. Richard E. Rubin divides the different library institutions into

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four parts according to the purpose of the library (public libraries, school library media centers, academic libraries, special libraries and information centers). Within this division, the corporate library is a part of special libraries and information centers.\textsuperscript{61} Ellis Mount has the same idea.\textsuperscript{62}

Special libraries enjoy a long history, which dates all the way back to the ancient times. Libraries at that time can, according to Rubin, be considered as special libraries, since they usually focused on particular subjects. However, the clear beginning for special libraries can be traced to the 18\textsuperscript{th} and 19\textsuperscript{th} century, when most of them were associated with scientific and historical societies.\textsuperscript{63}

The origin of library functions within commercial firms can be traced to the 1880s\textsuperscript{64}. In the 1920s and 1930s corporate library functions developed and grew. The model at that time was based on the model of a public library.\textsuperscript{65}

The big change came in the 1990s, when digital information heavily made its way into people’s lives and when the Internet rearranged our conception and structure of information. Corporate libraries were suddenly struggling to stay alive, which was ironic, since we know how the amount of information expanded exponentially along with the Internet. Some libraries were shut down and outsourced, budgets were often cut and the physical space and number of personnel of many corporate libraries shrank a great deal.

One wake up call for the whole library and information world came in the form of an article by Prusak and Davenport, which had a quite provocative title: ‘Blow up the corporate library’. That article most likely woke up those corporate libraries that had not yet realized the crucial need for changes in the structure and functions of corporate libraries and the need for updated services.

In 2000 Hazel Hall published an article called ‘Show off the corporate library’, in which she argues that corporate libraries are far from their demise and are alive and well. This runs counter to what Prusak and Davenport suggested. Her article was based on a series of case studies completed in 1998, five years after the article by Prusak and Davenport. Hall’s findings show that many of the libraries studied had most likely found their niche in Intranet development and management.\textsuperscript{66}

There have been many changes in the corporate library field and the libraries have evolved over the years to serve the parent company according to their specific needs. It has been realized that information specialists are needed to help employees find their way through the maze of articles, digital magazines, internal documents, databases, networks, etc. The biggest changes have been seen in the field of technological solutions, which are now a big part of our daily work. In the study, ‘Value of corporate library’, there was a slight change seen in five years, which was the time between the

\textsuperscript{62} Mount, Ellis 1991. \textit{Special libraries and information centers}. p. 2
\textsuperscript{64} Ibid. p. 335.
\textsuperscript{66} Hall, Hazel 2000. \textit{Show of the corporate library}, p. 121.
first study and the follow-up study. There was a shift towards more value-added services.\textsuperscript{67}

They also saw that in the majority of firms studied there has been a change where the services of the corporate library had been further developed. In these companies the librarian also provided analyzing services rather than giving the information forward without any added value. As Matarazzo and Prusak write, librarians came up with a synthesis of the research material collected and it means that it is hence presented in a more concise and relevant form. Also, a certain level of proactive functions was found among information professionals, mostly in form of news alerts.\textsuperscript{68}

### 3.3.2 Functions

The principal task of a corporate library is to serve the community in delivering and mediating the right information, at the right time, in the right form and for the right person at a reasonable cost. The corporate library has had many phases in its history and it has evolved throughout the decades. In ‘Blow up the corporate library’, Prusak and Davenport call for a change in the way corporate libraries function and serve the company.\textsuperscript{69} Now, over ten years after the article was published, a big change in corporate libraries and their functions and services has been witnessed, much like Prusak and Davenport described. The most important thing was to abandon the book collection and to go digital and to concentrate on the electronic distribution of information and knowledge.

The purpose of a modern corporate library is to establish a connection between those who have information with those who want that specific information.\textsuperscript{70} Prusak and Davenport describe the development phases of corporate libraries as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Primary object</th>
<th>Mode of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse</td>
<td>Control and storage of printed materials</td>
<td>Limited information distribution; establishment of formal systems</td>
</tr>
<tr>
<td>Expertise center</td>
<td>Provide access to human experts and their information sources</td>
<td>Reliance on information professionals; some value added to information</td>
</tr>
<tr>
<td>Network</td>
<td>Connect providers and users of information</td>
<td>Computer-based multi-media networks with pointers to human sources</td>
</tr>
</tbody>
</table>

*Table 1. Models of information provision (Prusak and Davenport 1993)*

Ellis Mount contemplates the structure of corporate information centers in his book *Special libraries and information centers*. He sees many variations but he also sees one library per company to be an average type of solution. In large companies there might be several libraries that have different expertise, such as a library for legal issues, a library for technical support and one for business and finance. Companies with only one


\textsuperscript{70} Ibid, p. 221.
library need to posses the expertise to satisfy all the information needs for all purposes, from technical information to business information and marketing.71

Today, in the 21st century, corporate libraries are often also closely connected to or are partly or entirely responsible for a company’s intranet system and it’s development. Since most of the information is now easily available in electronic form and can be used directly from the end-users computer terminal, more emphasis has been put to end-user education and to facilitating the use of these electronic resources. Standing in opposition to the earlier role of a librarian as a gate keeper guarding information, library and information science professionals now try to facilitate access to information and try to think about how to get it to people who need it!

3.3.3 Professional qualifications / job description of a corporate librarian

In order to understand the demands for working in the corporate library profession, the demands for working in the field are studied in this section. In the article ‘Valuing corporate libraries’, the writers speculate on the direction in which the profession of librarians is going, since ever more databases are directed to end users. They give a few possible options of where the profession might be heading: purchasing agent, gatekeeper, network manager, internal trainer, information specialist, and chief information officer.72 In reading through the following definitions of tasks and needed qualifications, it can be concluded that the profession has evolved to be all that was suggested by Matarazzo, Prusak and Gautier.

The following definitions of qualifications and tasks are created by the Special Library Association (SLA). The organization is the best-known international organization in the world in the field of special libraries.

They have mapped out guidelines for professionals and the document in its entity can be found on their web page.73 The main points are presented below in more concise form. The document is divided into three parts: professional competencies, personal competencies and core competencies. The core competencies tie professional and personal competencies together and, as the document says, are absolutely essential for all information professionals:

Core competencies

- A. Information professionals contribute to the knowledge base of the profession by sharing best practices and experiences, and continue to learn about information products, services, and management practices throughout the life of his/her career.
- B. Information professionals commit to professional excellence and ethics, and to values and principles of the profession.74

74 Ibid.
Core competencies combine the needed skills with two very concise points, which will be divided into smaller parts in the following lists of competencies. Core competencies can be thought of as the guideline for all information specialists.

**Professional Competencies**

The professional competencies by SLA are divided into four parts: managing information organizations, managing information resources, managing information services, and applying information tools and techniques. Analysis of these parts is done at the end of the long quotation.

A. **Managing information organizations**

Information professionals excel at managing different organizations whose offerings are intangible, whose markets are constantly changing and in which both high-tech and high touch are vitally important in achieving organizational success.

A.1 Aligns the information organization with, and is supportive of, the strategic directions of the parent organization or of key client groups through partnership with key stakeholders and suppliers.

A.2 Assesses and communicates the value of the information organization, including information services, products and policies to senior management, key stakeholders and client groups.

A.3 Establishes effective management, operational and financial management processes and exercises sound business and financial judgments in making decisions that balance operational and strategic considerations.

A.4 Contributes effectively to senior management strategies and decisions regarding information applications, tools and technologies, and policies for the organization.

A.5 Builds and leads an effective information service team and champions the professional and personal development of people working within the information profession.

A.6 Markets information services and products, both formally and informally, through web and physical communication collateral, presentations, publications and conversations.

A.7 Gathers the best available evidence to support decisions about the development of new services and products, the modification of current services or the elimination of services to continually improve the array of information services offered.

A.8 Advises the organization on copyright and intellectual property issues and compliance.  

Professional competencies are explained in detail in four different parts, all concentrating on specific areas. The first area is management skills. The information specialist has to possess excellent management skills, a good understanding of business and corporate world structures, strategic understanding, and good marketing skills in order to make the services known and also to show the importance of the services to management, etc. Boldly summarized, these are the skills of any manager.

The information manager has to stay on top of the changes in the company and the business environment and also stay on top of the new technological solutions, which can possibly help to develop the services. The information professional has to communicate with the management in order to make them understand the value of information and

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actively market their skills and services. The information special has to be present and available to help with issues that come up.

Persons working in corporate libraries also have to have knowledge in the field of the company. Matarazzo and Prusak mentions in their article, ‘Valuing Corporate Libraries’, that a fourth of the respondents in their study think that the greatest value is achieved if the librarian understands the real content of the business. According to the respondents, these librarians are better at developing and designing services for the company and they are also better at anticipating changes in the needs of a company.  

Second part:

B. Managing information resources

Information professionals have expertise in total management of information resources, including identifying, selecting, evaluating, securing and providing access to pertinent information resources. These resources may be in any media or format. Information professionals recognize the importance of people as a key information resource.

B.1 Manages the full life cycle of information from its creation or acquisition through its destruction. This includes organizing, categorizing, cataloguing, classifying, disseminating; creating and managing taxonomies, intranet and extranet, thesauri etc.

B.2 Builds a dynamic collection of information resources based on a deep understanding of clients’ information needs and their learning, work and/or business process’.

B.3 Demonstrates expert knowledge of the content and format of information resources, including the ability to critically evaluate, select and filter them.

B.4 Provides access to the best available externally published and internally created information resources and deploys content throughout the organization using a suite of information access tools.

B.5 Negotiates the purchase and licensing of needed information products and services.

B.6 Develops information policies for the organization regarding externally published and internally created information resources and advises on the implementation of these policies.

The second part of the SLA professional competencies list describes the competencies of managing information resources, the intellectual assets of the parent company. It means managing the information from its birth to the point when it is no longer needed. That includes all the phases from organizing to disseminating. Also, this part of the SLA competencies requires an information specialist to have good skills in building up information systems, portals and gateways according to the information needs of the parent organization. Information professionals have to have the knowledge of the latest technological solutions to provide the best access to information. Managing information resources also demands a high level of expert/subject knowledge, since information professionals are expected to critically evaluate and select information resources. On the grounds of this they should also create and manage taxonomies, thesauri and other tools to facilitate the use of information. The organization of information resources also contains internal information, that is, tacit knowledge. The information professional should launch a knowledge management system to also exploit the ‘quiet’ knowledge of the company.


The third part:

C. Managing information services

Information professionals manage the entire life cycle of information services, from the concept stage through the design, development, testing, marketing, packaging, delivery and divestment of these offerings. Information professionals may oversee this entire process or may concentrate on specific stages, but their expertise is unquestionable in providing offerings that enable clients to immediately integrate and apply information in their work or learning processes.

C.1 Develops and maintains a portfolio of cost-effective, client-valued information services that are aligned with the strategic directions of the organization and client groups.
C.2 Conducts market research of the information behaviors and problems of current and potential client groups to identify concepts for new or enhanced information solutions for these groups. Transforms these concepts into customized information products and services.
C.3 Researches, analyzes and synthesizes information into accurate answers or actionable information for clients, and ensures that clients have the tools or capabilities to immediately apply these.
C.4 Develops and applies appropriate metrics to continually measure the quality and value of information offerings, and to take appropriate action to ensure each offering’s relevancy within the portfolio.
C.5 Employs evidence-based management to demonstrate the value of and continually improve information sources and services.78

The third part lists the competencies needed in managing the services that provide the information. Information specialists are required to develop and maintain cost-effective services in accordance with the company strategy, and to constantly evaluate the functions and services and implement new services according to the needs of the clients. Also, Return-On-Investment thinking is expected, as is customizing the information delivery to clients with the help of profiling clients. Undoubtedly, one of the most challenging of these requirements is to come up with a plan to measure the cost effectiveness of the services provided. There is also a specific competence mentioned, which deserves more attention and will be mentioned in several parts of this study. According to SLA, an information specialist has to ‘research, analyze, and synthesize information into accurate answers or actionable information’ and also to ‘provide the tools or capabilities to immediately apply’ the information received. This appears to be already quite a demanding skill and it requires a lot of subject knowledge from the information specialist.

Fourth part:

D. Applying information tools and technologies

Information professionals harness the current and appropriate technology tools to deliver the best services, provide the most relevant and accessible resources, develop and deliver teaching tools to maximize client’s use of information, and capitalize on the library and information environment of the 21st century.

D.1 Assesses, selects and applies current and emerging information tools and creates information access and delivery solutions

The fourth part of the list of competencies concentrates on skills in applying different technologies and information tools for making the information resources available and usable. The information professional also has to have foresight of upcoming systems that might prove to be useful in the future. These competencies require special know-how of available system solutions in the market. To understand these systems, an information specialist has to have a fairly good knowledge of the technical structures of these systems in order to use them effectively and also to modify them according to the clientele’s needs. The fourth part also suggests that the information specialist should also have expertise in ‘information analysis and synthesis to improve information retrieval and use in the organization’. Since the number of end-users has gone up dramatically, the information specialist has to put a lot of emphasis on teaching tools to make the best use of the company’s information resources.

To summarize the SLA competencies, the strongest emphasis is on information management skills, secondly on management skills and business understanding, and thirdly on a technical understanding of information solutions.

**Personal competencies**

- Seeks out challenges and capitalizes on new opportunities
- Seeks the big picture
- Communicates effectively
- Presents ideas clearly; negotiates confidently and persuasively
- Creates partnership and alliances
- Builds an environment of mutual respect and trust; respect and values diversity
- Employs a team approach; recognizes the balance of collaborating, leading and following
- Takes calculated risks; shows courage and tenacity when faced with opposition
- Plans, prioritizes and focuses on what is critical
- Demonstrates personal career planning
- Thinks creatively and innovatively; seeks new or ‘reinvents’ opportunities
- Recognizes the value of professional networking and personal career planning
- Balances work, family, and community obligations
- Remains flexible and positive in a time continuing change
- Celebrates achievements for self and others

To summarize the personal competencies, the information specialist, according to SLA, has to be good in people skills, communication and organizing skills, have good management abilities, and to be focused, innovative, courageous, and even bold. These abilities do not largely differ from the skills of any good manager.

Like the intelligence professional, the information professional also has to show an ability to communicate and negotiate, to be a diplomat and a terrier when the situation

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80 Ibid.
needs it, when an opinion needs to be voiced. They have to have the ability to take risks and also to draw conclusions and make decisions when the time comes. They have to understand and cherish the power of teamwork and, thus, good people skills are also highly appreciated in team building. The information professional also has to have the foresight and the vision to see the important order of things when there is a need to prioritize tasks.

Sven Hamrefors\(^81\), Björn Tell\(^82\) and Margareta Nelke\(^83\) all argue that information professionals should become more proactive. Information professionals should be able to ask the question before the question is asked by a customer; they should change from a service supplier to a service provider.

The constantly changing information environment is setting new standards and goals for information professionals. We have reached a situation in which a user education is nearly as important as organizing information. We have found ourselves in this situation because of huge advancements in information technology. Many laymen wonder why we need the information specialist since we have the Internet and Google; all information is available on our own personal computer terminal. In spite of this, it has justifiably been realized that information specialists are sorely needed to help information searchers find their path in this boggy swamp of networks and documents.

### 3.3.4 Comparison of required competencies between intelligence specialist and information specialist

To see the difference between these two information intensive professions, the study will briefly compare their professional requirements. The list of competencies for the information professional is more comprehensive than the list for competencies of the intelligence professional.

In the SCIP’s list of intelligence tasks, the functions were divided between two professional titles: intelligence manager and intelligence analyst. In the SLA’s list only one professional title was described: that of the information specialist. In the following comparison of tasks and duties the tasks of the intelligence manager and the intelligence analyst will be combined under one professional title - intelligence professional - in order to make the comparison easier.

#### Similarities

Both professions are clearly expected to manage their departments in a professional manner, both operationally and financially. That means that they have to have good managerial and leadership skills. Both groups have to be in close contact with senior management and other important key players in the company. Good communication skills are badly needed since the information and intelligence has to be distributed to respective clients. Both information and intelligence professionals have to have the nature of a communicator, to have the ability to negotiate when needed and to take calculated risks when the situation demands it. Moreover, networking skills are crucial.

\(^81\) Hamrefors, Sven 1999. *The company library’s contribution to the organization’s environmental scanning*, p. 123.

\(^82\) Tell, Björn 1990. *Bibliotek – företagets intelligence center under 90-talet*, p. 16.

Marketing skills are present on both lists. For both departments it is very important to make their functions known among the whole staff. Marketing and excellent communication skills are needed to disseminate information about the functions and services across the company. Both professions have to have deep understanding of the company’s functions in order to serve the company in the best possible way.

They are expected to carry out professional cost-effective data collection from available sources according to the needs of the clients. Since analyzing is the obvious task of the intelligence professional, it is also expected from the information professional. Both professions are also expected to perform an analysis of the information they have obtained. The analysis of information is discussed in more detail in the following sections.

**Differences found**

The information professional usually gets information requests from the clients, except when providing information proactively. The intelligence professional decides the information needs on his/her own. This suggests that the intelligence professional is expected to have such a clear picture of the ventures of the company that they know what to look for. Knowledge of the company and its products are also expected from the information professional, but determining the information needs is not clearly mentioned in the job description of the information professional.

The information specialist seems to have more duties in technically facilitating the information flow in the organization. According to the SLA requirements, they are expected to build up, manage and update information systems and infrastructures and in this way make all the needed information easily available for the whole organization. That kind of technical knowledge is not listed in the requirements for intelligence specialists; only skills in using these tools to find and locate information were mentioned. It is not always clear which person or department is providing these technical solutions for the BI department.

The scope of necessary professional competencies seems to be larger for the information professional than for the intelligence professional. Information professionals are expected to have knowledge of everything from understanding the intranet and other technical solutions to management, to marketing and business knowledge, not to mention traditional library knowledge and subject knowledge of the company’s field.

**3.3.5 Required professional competencies seen from the business intelligence cycle perspective**

1. Need determination

The intelligence manager performs information need determination on the business intelligence side. In the corporate library the information needs, i.e. the information need request, usually comes directly from the client. In some cases the information professional is proactive and recognizes the information that the client would need and
appreciate. Then again the information professional must already know the information needs of the particular client in order to be proactive in delivering information.

2. Acquisition of information

The intelligence analyst and the information specialist both acquire the information according to the assignments they have received. They are expected to use a wide range of information sources, technical and human. They must have a knowledge of search techniques and ways to access information. The information specialist is also expected to provide this access to various information sources.

3. Segregation and selection of significant information

Both sides segregate and select significant information as part of a process of delivering answers to clients. The intelligence specialist determines what information has meaning to the company. Also, the information specialist selects the most important sources. In other words, they must have ‘the ability to critically evaluate, select and filter’ information.\(^{84}\)

4. Analysis and production

Analysis is a natural part of the work of an intelligence analyst. In fact, from the perspective of an information specialist analysis is a crucial issue and it will be tackled in more detail in the next section. Nonetheless, it can be suggested that both parties are expected to do analysis. Both professions are also involved in production, disseminating the analysis to people in the form of, for example, a web page, a memo, a report or a presentation. According to Irene Wormell, production of information, among distribution and communicating, will play more important role in the future compared to mere delivering information.\(^ {85}\)

5. Intelligence dissemination

This is the responsibility of both the intelligence manager and the analyst. However, since information specialists are in fact expected to do analysis and are already doing it, they are also delivering intelligence as they disseminate their answers to respective persons. Also, the information professional is expected to manage the information infrastructure in order to facilitate the dissemination of information and, therefore, also intelligence.

6. Need re-determination

Since the intelligence manager performs the need determination, it can be argued that he/she also does the need re-determination. In all, it can be argued that most likely the need re-determination of the information/intelligence needs comes from the client. The intelligence professional is often using the intelligence themselves and therefore already has a picture of the new intelligence needs in mind. The information specialist possibly does not find out how the information they delivered to the customer was used so


therefore they have difficulty determining the need for any follow-up information or intelligence.

To summarize the professional competencies established by SCIP and SLA, there are only two phases in which information specialists are not very closely involved: the phase of need determination and the phase of need re-determination. The information professionals do not determine the information needs, but they are expected to have insight into the company’s functions and the business environment in order to work proactively. Being proactive also means that the information specialist has to know what the company and clients want and what they need to know.

3.3.6 Discussion of analysis as being a part of the library/information profession

When looking at the requirements of an information specialist from the SLA’s point of view, the analysis of information was mentioned twice. Referring to the quotations on page 40, SLA clearly suggests that analysis at some level is a professional requirement for an information specialist. In the same document it is also written:

“[The information professional] seeks opportunities to work with clients on projects or within their environments or operations to fully understand their processes, information behaviors and how information services can most effectively be utilized.”

This clearly indicates that the SLA prioritizes subject knowledge as an important component in analyzing information. There has to be subject knowledge on some level before one is able to come up with constructive analysis. The SLA also states that ‘the information professional needs to ensure that the client has the necessary tools and capabilities to immediately apply the analyzed information received’ (see page 39). This seems quite demanding, since it is usually up to the client to understand the meaning of the information. Neither the information professional nor any other person can facilitate such an understanding. They can only provide technical solutions in order to move the information more easily. All the information professional can really do is to create the channels to technically enable the use of analyzed information.

Sara van der Voort writes that there has been a visible shift in the services that corporate libraries perform. This is because more and more resources are now made available to end users. Information specialists are no longer looking for straightforward information and therefore they have time to perform other activities. Van der Voor suggests that the primary activity they perform is analysis. Already in 1990 Björn Tell suggested a shift in the same direction in the corporate libraries when he wrote about an ‘intelligent library’. Van der Voort also reminds readers that information specialists are already doing analysis, even if they do not think of it as analysis. Here is a list of different activities that van der Voort considers to be analysis of different levels. They are arranged from the easier to the more demanding functions.

87 van der Voort, Sara 1998. Are you into analysis? Remember to emphasize the value you add!, p. 59.
88 Tell, Björn 1990. p. 11.
<table>
<thead>
<tr>
<th>SIFTING</th>
<th>Determine what information is relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eliminate duplication</td>
</tr>
<tr>
<td></td>
<td>Select ‘best’ source/article</td>
</tr>
<tr>
<td></td>
<td>Highlight critical data</td>
</tr>
<tr>
<td>MONITORING</td>
<td>Provide current awareness</td>
</tr>
<tr>
<td>CUSTOMIZING</td>
<td>Meet needs of requester by delivering appropriate level of information</td>
</tr>
<tr>
<td></td>
<td>Prioritize requests and data</td>
</tr>
<tr>
<td>‘CROSS FERTILIZATION’</td>
<td>Central point of inquiry allows us to ‘cross pollinate’ information</td>
</tr>
<tr>
<td></td>
<td>Promote sharing of resources/ideas</td>
</tr>
<tr>
<td>EVALUATION OF SOURCES</td>
<td>Review for data quality, reliability, timeliness, scope, ease of use, bias, etc.</td>
</tr>
<tr>
<td></td>
<td>Check source of data. Is it attributed?</td>
</tr>
<tr>
<td></td>
<td>Weigh cost and value</td>
</tr>
<tr>
<td>EXECUTIVE SUMMARIES</td>
<td>Review information</td>
</tr>
<tr>
<td></td>
<td>Highlight salient points</td>
</tr>
<tr>
<td>TEMPLATING</td>
<td>Create tear sheets on companies, industry score cards, etc.</td>
</tr>
<tr>
<td>STATISTICAL ANALYSIS</td>
<td>Number crunching, graphing</td>
</tr>
<tr>
<td>IN-DEPTH CONCLUSIONS</td>
<td>Determinations</td>
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<tr>
<td></td>
<td>Recommendations</td>
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<tr>
<td>DATA PRESENTATIONS</td>
<td>Formatting</td>
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<td></td>
<td>Commentary</td>
</tr>
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</table>

Table 2. Analysis checklist. Sara van der Voort, 1998.89

On the basis of Table 2 it can be argued that most information professionals are performing activities up to the level of ‘Evaluation of sources’. But beyond this the level of analysis clearly rises and demands more skills and knowledge. To summarize Table 2, it is clear that most information professionals are actually doing analysis.

Margareta Nelke made a study in 1998 of nine Swedish companies, in which she assessed the value of information and information services. The results indicate that customers are in fact expecting services that van de Voort considers to be intelligence: customers expect the information professionals to find the most valuable information, to supply alerts/current awareness information, to monitor the publications of a desired subject, doing environmental scanning, etc.90 Going over to executive summaries and the rest of the more demanding activities on the Table 2, the person performing the analysis needs more knowledge and insight to things in order to perform well with the more demanding activities.

There are also arguments to the contrary, meaning that not everyone would agree that information professionals perform analysis. In a study from 1990 that has also been cited earlier in this study, Matarazzo, Prusak and Gauthier found that the senior management does not see the librarians as analysts. They are seen more in the roles of acquiring, organizing and disseminating information.91

On the basis of this it can be concluded that there is a clear difference in how we understand the term ‘analyzing’. Though van der Voort considers preliminary work on

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information to already be analyzing many other persons only consider the functions in Table 2 from ‘Executive summaries’ onwards to be analyzing. Before the concept of doing analysis can be agreed upon, there should first be consensus about the contents and meaning of the word analysis.

The list by SLA on professional competencies also mentioned the function of providing business intelligence:

\[\text{[Information specialist] develops and delivers specific information packages or alerting services for clients such as competitive intelligence, business intelligence, industry monitors, topic or issue indicators.}\]^{92}

This quotation can also be understood as “environmental scanning”, a term by Choo that was mentioned in chapter one. Sven Hamrefors writes about the different forms and ways of doing environmental scanning. He also argues that there has to be an objective when doing scanning, and that requires knowledge of things that the client wants to know. Hamrefors also studied the ways in which the CL can contribute to environmental scanning. He considers the role of facilitator and the provider of a ‘third opinion’ to be more appropriate for the CL. One of the ways this can occur is that the library personnel have to be more present and visible in the daily life of the decision makers.\(^{93}\)

One of the advantages the CL has is the knowledge of many departments. When they deliver versatile information to a number of departments, they have a very wide view on the daily functions of the company and the business environment. In this way the CL can contribute to the transparency of the company and combine many areas in their work. This is also a major advantage in doing proactive work and environmental scanning, i.e. business intelligence.

### 3.4 Corporate libraries and information science education

Library and information science students study a large number of subjects during their academic education. The intent of the versatile curriculum is to ensure that graduating students are prepared and capable of working in various information intensive fields.

**Education in relation to the needs of Business Intelligence**

This study also investigated whether or not the graduate programs in library and information science (LIS) in educational institutions in Sweden offer education or specific courses in subjects related to business intelligence.

The study concentrated on institutions offering academic LIS education. Commercial companies that provide BI-related education, such as Docere Intelligence and Kairos Future, were left out since these courses are often too expensive for students. In addition, diverse organizations such as SFIS, which provide minor courses that might give some help to scanning the environment, were also left out.


\(^{93}\) Hamrefors, Sven 1999. The company library’s contribution to the organization’s environmental scanning, p. 111-124.
It can be argued that universities do not provide enough education on business intelligence. That can be one of the reasons why these private organizations mentioned above are offering education in business intelligence. These organizations might have become painfully aware of the fact that the need for intelligence professionals is bigger than the number of graduating students who can work within business intelligence. There is only Mälardalens University College that provides a business intelligence degree in Sweden. They offer a Bachelor’s degree in environmental scanning and next academic year also master’s degree in business intelligence. In 1998 they were the first school to launch these programs in Sweden.

In 1990 Björn Tell, who at that time was the head librarian at the University Library of Lund, wrote about the idea of ‘intelligent library’. His ideas were fresh at that time and the development has through the years gone in the exact direction that he foresaw for corporate libraries. In his article he brought up the issue of further education for librarians in order to manage this change. He also saw a need to learn more about the techniques and tools available for managing information in the company.

Irene Wormell, in her article ‘Skills and competencies required to work with knowledge management’, writes about the gap between the education and the actual skills needed by capable professionals in many different fields in academic and corporate world. Wormell concludes that the current curricula in many universities are not aligned with business needs. Similar are her views in an earlier article from 2000, where she calls for greater realism in perceptions about LIS education and training. There seems to be a gap between ‘rhetoric’ and ‘reality’ in education and if we fail to tackle the problem the current LIS educational framework and training will most likely fail. As Wormell wants the LIS educators to ‘talk the talk’, they also need to ‘walk the walk’. Not only that the educators need to reduce the gap between talking and doing, there is also a need for a change in information professional roles.

There is a clear need to develop more multi-disciplinary activities in LIS education. Even though LIS professionals have to an ever-greater extent a role as educator or guide in the jungle of information, there are no compulsory pedagogical studies in LIS education. The situation is the same when we look at it from the perspective of the business world: academic institutions do not provide any studies that are clearly connected to understanding the corporate environment and business ideology. As Wormell also states, information professionals are constantly pressuring education providers to make the necessary changes to the curriculum.

Subject knowledge is of great importance in library and information science work. Often, either formal training or extensive experience within a particular discipline has produced this knowledge. Rodwell also writes that subject expertise is not only knowledge of a specific subject but also a mixture of subject knowledge and knowledge of the client community, which allows the librarian to mediate between information

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94 Tell, Björn 1990. p. 11.
95 Wormell, Irene 2004. Skills and competencies required to work with knowledge management, p. 112.
97 Ibid.
resources and the clients.\textsuperscript{99} In order to perform well, a thorough knowledge of the organizational structure and the organizational culture is also indispensable.

Golding et al studied the personal characteristics of information professionals in UK and the findings suggest that the university programs should produce professionals that are more critical, reflective and transformative and who can manage change and can cooperate with different cultures and people. The educational programs should also prepare them to fit in to the organizational cultures and cooperate effectively. The study shows that, though the educators and students consider the graduating students to have the needed attitudes and qualities to work in their profession, employers disagreed.\textsuperscript{100}

The education as well as the matter of analysis are discussed further after the results of the empirical part of this study have been analyzed.

3.5 Summary of the theory chapter

Since this chapter for theoretical and analytical framework is exhaustive, it is good to summarize it. There are three different concepts that are used to analyze the results of the empirical part. With the help of the business intelligence cycle and the list of the professional qualifications of intelligence and information professionals the needs of business intelligence work are analyzed. The issue of analysis itself is studied with the help of Sara van der Voorts listing of analyzing activities.

\textsuperscript{99} Rodwell, John 2001. Dinosaur or dynamo? The future for the subject specialist reference librarian, p. 49
\textsuperscript{100} Golding. Anne et al 2000. Professional characters: the personality of the future information workforce, p. 28-29.
4 RESULTS OF THE INTERVIEW STUDIES

In this chapter the findings of the empirical interview study are summarized. The results are divided into four parts according to the interview questions: 1) company description and preliminary information; 2) cooperation between CL and BI; 3) analyzing, and; 4) experience and education. The full list of interview questions is found in Appendix 1. The five companies are studied separately and the employees of the same company are studied together. A more extensive analysis of the interviews is provided in chapter four within the framework of the BI cycle.

The reason for presenting the results in a separate chapter from the analysis is that the analysis was done by using a different framework. The analysis of the results was done according to the theoretical framework of the BI cycle, since it was vital to see the results from that perspective; to see at what phases in the analysis of information the corporate librarians contributed within the particular companies included in this study. The reason why the companies are studied as one unit rather than studying the corporate librarians and BI managers of all companies together is that there is a need to examine the functions inside the particular company and to understand the roles of these two important actors in the same information field.

The study cannot provide a conclusive answer for certain interview questions. There were a number of questions that can be considered to be follow-up questions, especially in the third part on analyzing. The respondents did not provide their own models for the BI cycle. Many of them mentioned that the phases are self-evident and the process continues naturally without categorizing the process into separate phases.

The companies are referred to by the letters A, B, C, D, and E. The persons interviewed will be referred to according to numbers, with number one representing the corporate librarian and number two referring to the BI manager. The interviews within companies D and E were only conducted with corporate librarians, because they admitted that they also did business intelligence.

All business intelligence workers in this study will be referred to as BI managers, even if they in fact had various titles that ranged from Press Relations Manager to Information Scientist. All corporate library respondents will be referred to as corporate librarians, even if they in reality had various titles that ranged from Librarian to Manager of Scientific Information.

4.1 Company descriptions and preliminary information

Company A

The first two interviews were done in company A on the 12th of May 2005. The corporate librarian (the actual title was Information Specialist), referred to as A1 and the BI manager (the actual title was Business Developer), referred to as A2, were interviewed on the same day, both at their workplaces.

Company A has had CL functions that can be understood as corporate library functions from the end of the 1940s. At that time it consisted of one employer who was only involved in providing information to the management. In the 1980s and beginning of the
1990s the corporate library flourished and they were even awarded. In 1992 the library services were moved to a subsidiary. In 2002 the corporate library functions were moved back to the same part of the company it was before 1992. Since then the CL in company A has diminished considerably in size and has also lost its good physical location. During those changes the CL also transferred in organizational structure to the Technical Department instead of the Corporate Communication Department, where it was situated before.

Company A also has fairly long history in BI. The BI manager, A2, had no exact knowledge of how long the company has done business intelligence. The company’s BI unit has existed at least 10 to 20 years as an own department. The reason for developing the BI functions was to better organize the BI activities.

Respondent A1 has worked in company A for 26 years and in the CL since 1989. He has a background in social sciences and does not have a formal LIS education. Respondent A2 has an MBA from the UK and she has worked for the company A since 1999; she started in group-accounting and in 2001 moved to the strategy department. Now she is working in corporate communication but her duties are very much the same: business intelligence and business environment.

Respondent A1 describes the purpose of the CL as delivering external information for the product development. Respondent A2 considers the purpose of the BI department to be understanding the business environment as a whole and also aiming at understanding the future of the business.

Information-related responsibilities are divided between five different departments (from Business and Market Intelligence to Technical Benchmarking) and all of them have their own special fields of knowledge. When the respondents were asked the purpose of the CL and the BI unit the answers did not overlap at all.

Company B

The next two interviews were done in company B on the 26th of May 2005. The corporate librarian (the actual title was librarian), referred to as B1, and the BI manager (the actual title was Press Relations Manager), referred to as B2, were interviewed at the same day, both at their workplaces.

Respondent B1 has worked in company B for three years. Before that she worked in a pharmaceuticals company as an analytical chemist. She has a degree in food chemistry and an MA degree from Uppsala University in library and information science. Respondent B2 has worked in company B for five years and before that she worked for three years as a media analyst. She has an MA and, in addition, has taken different courses in media related subjects.

Company B has had a corporate library since the mid 1980s. The BI unit has existed for four years in it’s present form. It was at that time that the BI system was launched. The reasons for launching the system were simple: to become more efficient in handling information from outside the company.
The purpose of BI within company B, according to respondent B2, is to learn as soon as possible what is written about the company in the media and for the company to be able to respond as soon as possible. The BI is also about efficiency at receiving information and delivering the relevant information to the right people. The respondent, B1, describes the purpose of the CL to be the ability to deliver the right information in right time in an appropriate form.

The information-related responsibilities within company B’s head office have been divided into two departments, BI and CL. The BI specializes in environmental scanning, business intelligence and image issues and the CL specializes in delivering scientific information.

The business intelligence is often done on an ad hoc basis, more in the form of environmental scanning. Company B is in a situation in which it has no competitors, but the company still has to take good care of its image in the public eye.

Company C

The next two interviews were done in company C. The corporate librarian (the actual title was librarian) is referred to as C1 and the BI manager (the actual title was Director of Knowledge and Information Systems) is referred to as C2. The BI manager was interviewed in his workplace in the 10th of June 2005. The corporate librarian of company C was interviewed by telephone on the 3rd of June 2005.

Company C has had a CL since the end of the 1940s. Since there are hardly any books at present, the material is found mostly in electronic form. According to respondent C2, company C has been doing BI for ages; he meant that there has always been the need to have an awareness of the business environment and of the company’s main competitors.

Respondent C1 has worked at company C for 35 years and has a degree in languages and a LIS degree from Lund University. Respondent C2 has worked in company C for 2 years. The new CEO recruited him to build up an exhaustive knowledge system in order to better deliver information within the company. C2’s education is in law and political science and he has 15 years of experience as an analyst within the military and telecommunications industry.

In the opinion of respondent C1 the purpose of CL is to organize the information, helping to map out the information and search for information, documents, and references and compare them. Respondent C2 says that the purpose of BI for company C is basically to find new customers.

There are many smaller units within company C that are information intensive, like marketing analysis, that have different needs and they therefore also concentrate on different kinds of information. Basically the CL delivers both technical and business information. The information related responsibilities between these two units do not overlap.
Company D
The seventh interview was done in company D on the 9th of June 2005. The corporate librarian (the actual title was Manager Scientific Information) is referred to as D1 and the interview was done at her workplace.

Company D has changed names frequently but basically respondent D1 has worked in the same company since 1984. Before that she had worked in a pharmaceutical company. She has a degree in social sciences and humanities as well as a degree in documentation from Borås University. She sees the purpose of the corporate library to be like a spindle in a net, keeping things together and having an overview of information-related activities. The corporate library takes care of all the information-related functions within the company.

The corporate librarian in company D was one of the two interviewees who said that they also performed business intelligence. The company also has a department called competitive intelligence and their personnel consist of economists, doctors, and chemists.

Company E
The eighth and last interview was done in the company E on the 9th of June 2005. The corporate librarian (the actual title was Director) is referred to as E1. This interview was actively taken part by additionally 2 employees of the corporate library.

Company E has had a library since the mid 1930s. The library has been in present form and size since the 1960s. Respondent E1 has a lot of experience in the public library world. She has worked for company E since 2001. Competitive intelligence enjoys a long history in the company. The company has a department consisting of three persons and is solely dedicated to CI and business analysis.

According to respondent E1 the purpose of the CL is to help in decision-making and to support research, production and marketing activities. Information-related activities are concentrated within the library but a lot of people do their own searches. The library is a provider of systems, the information i.e. the content of the system, and the different desktop tools facilitate the use of information within the company.

The corporate librarian in company E was the other interviewee who said that they also performed business intelligence. They are doing competitor and scientific surveillance, both systematically in the form of subject alerts and also on an ad hoc basis. The company also has a department called competitive intelligence, which does business analysis and competitive intelligence.

Summary
Most of the companies have a long history in the CL field ranging from 20 to 60 years. It also seems that also BI activities have been on the scene for a long time, even if they have not always been as organized as in the last 10-20 years.
The educational background of the respondents in both categories seems to be very heterogeneous. Some of them had no educational connection to their current job description. Then again, many had a long work history within the field of their chosen expertise.

The purpose of CL was often described as delivering information within all phases of the product lifeline, organizing information and managing the information resources of the company. One corporate librarian, E1, mentioned the purpose to be helping in decision-making. This was the same corporate library that did business intelligence in the form of scientific and competitor surveillance. The BI managers’ answers about the purpose of BI can easily be combined into one sentence: to understand the business environment in which the company is functioning.

All companies in the study organize their information functions so that they do not overlap. Mostly it seems that the corporate library specializes in a certain type of information, such as providing scientific information or to provide information for the production. The corporate library in company E is involved in the whole lifeline of its products, from preliminary research with patents to marketing the product. In all companies with the decentralized information system it seemed to work well. At least in companies C and E the information had been gathered into one vast information/knowledge intranet system.

One particular observation can be made. In the last two companies, D and E, the corporate librarians admitted that they do business intelligence as well. In spite of this, these companies have separate departments for competitive intelligence. Both respondents, D1 and E1, report that the competitive intelligence department is doing business analysis. Both respondents also tell that they cannot provide business analysis on their own. Both of these corporate librarians do business intelligence in the form of scientific and business surveillance.

The important question is: Were the two corporate librarians from companies D and E the only librarians that considered environmental scanning to be business intelligence or were they really the only ones that did some scanning? As an observation, these two corporate libraries were the largest of the five companies and it seemed that these two corporate librarians were also the most active in reaching beyond the conventional library functions. The respondent D even said that she started doing BI after she told the management the she can also do that!

4.2 Cooperation between CL and BI

Company A

According to respondent A1, the CL and the business and market intelligence departments have very little co-operation, if none at all. There used to be cooperation before the latest organizational changes but not anymore. The corporate librarian feels that the CL possesses the skills that could be used in business intelligence (referring to the functions in the business intelligence cycle). Primarily he thinks that the CL could help in finding information.
According to the BI manager, there is basically no cooperation between the CL and the BI within the same company. She does not feel that the CL is really capable of doing BI type work; there is no match between their needs within the BI department and the concept of a corporate library. Since she has no experience with the CL she was not able to assess their competence. However, she thinks that the CL personnel are competent in some functions, like information searching.

Company B

According to respondent B2, these two units are not cooperating as much as could be possible. There is very little interaction between the BI and the corporate library. However, she thinks that some issues are similar in character. According to the corporate librarian these two units are not co-operating at all or even occasionally. They do not share any work and their fields of interest are totally different.

The corporate librarian thinks the CL would be able to help in some phases of the BI cycle. She thinks that librarians are capable of dealing with all the steps to a certain degree; depending a lot upon the person and her/his knowledge and special skills. However, she considered the analysis part to be a question mark.

The BI manager of company B feels that there are some similarities between the two functions but the bottom line is that both departments have already become specialized in their own fields of expertise and she does not see closer co-operation as a possible solution.

Company C

The BI manager in company C said the CL and BI functions are cooperating at an increasing degree. After the launching of the new information system, the cooperation has grown and it will continue to grow even more in the future. When asked if the BI functions are using the knowledge of the CL, the corporate librarian answered that, in her opinion, they are not doing so nearly enough. The BI could use the CL more, especially in searching information. The BI manager in company C also thinks that CL can help in some phases of the BI cycle, such as in retrieving and restructuring and in the evaluation of sources. He views the library profession as a bridge between data and analyzed information.

Company D

Company D has a competitive intelligence department that is doing all the analysis. The library and the competitive intelligence department cooperate in matters such as searching for information and the library helps with completing the information searches if the analyst needs help. In the opinion of corporate librarian the library could help in the following phases of the BI cycle: retrieving, storing and delivering.

Company E

In company E the competitive intelligence unit does a lot of their own information searching but sometimes they ask for help from the corporate librarians. The help is mostly in the form of technical assistance in accessing information, support in searching
for information. The corporate library provides the information for the customers, the CI department being one of them. Competitive intelligence is doing the analysis.

The respondent in company E said that, when considering the BI cycle, the library is contributing in all other phases except for analyzing. They are adding value to information in a way they call structuring information. They are in a way making information easier to understand, easier to apply and saving the clients time. They are adding value to information.

Summary

There seems to be little cooperation between the business intelligence unit and corporate libraries. In some companies the reason was that the information related responsibilities are divided because both units have their own special competence. In some cases the problem seems to be a lack of trust in the capabilities of corporate librarians on the part of the BI. But both sides responded that there could be more cooperation. A few respondents claim that the reason for minimal cooperation is the organizational structure and different special knowledge.

The cooperation seems to be mostly in the form of help in information searching and finding the information. BI managers admitted that accessing information is the best ability of the corporate librarians. In company C they prefer a three step solution for finding information within the company: first, conduct a search in the company knowledge system; second, conduct a search in the knowledge management system and contact a specialist for answers, and; finally contact the corporate library. The BI manager, C2, also told that with this three-step system the corporate librarians are not burdened with routine questions.

4.3 Analyzing

On the basis of what was written about analyzing on pages 44-46, all the functions in the Table 2 by Sara van der Voort will be considered as analyzing.

Company A

According to the corporate librarian in company A, they are not analyzing or summarizing information. They only find the desired information and deliver the full text documents and other documents and information to customers. Some of the functions performed by the corporate librarian are proactive, but only on an ad hoc basis.

The BI manager in company A does analysis in her work and she refers to her education and her personal ability and knowledge as being the two reasons why she can perform analysis in her work. Regarding the personal characteristics needed to work with BI, she names curiosity and open mindedness.

Company B

According to the corporate librarian in company B, one needs to be very close to customers and one needs to know his/her field of expertise very well in order to do
analyzing. Then a person would have better grounds for making value-added analysis. In many cases the customers are expecting a little analysis in the form of summarized information.

The corporate librarian considers a certain degree of analysis to be part of her job. She summarizes source lists for clients. She told that she is a specialist in finding information by her education and also a specialist in company B and it’s functions. Combining these two she can make the analysis she needs to do. The formal qualifications come from her degree in library and information science and from her personal qualities as a curious, alert, and proactive person.

According to the BI manager, analyzing in company B mostly involves conducting larger analysis of the public’s view on the company and public opinion about different issues. She is self-taught in conducting analysis and she has worked as a media analyst. In her opinion it is also important to understand when it is better to give the work to a consultant for analysis in order to save money and time for other activities. There also needs to be an ability to see when there is a need to analyze something. The BI manager also pointed out that her analyzing is limited to the public view of company B.

Company C

The BI manager in company C often does analyzing and says that there is no official education where you learn the skills. When he was working with a former employer, he took a course in business intelligence but that did not help him in company C since the companies were so different. He thinks that analyzing also goes hand in hand with one’s job description. Analyzing might be required in different positions. Analyzing also demands a knowledge of the field and a knowledge of the company. The BI manager’s experience gained from previous has been more valuable than any course he has taken.

The corporate librarian in company C has no education in the work of analysis and she does very little analyzing. Company C has technicians that have some education in environmental scanning/business intelligence and they are the ones, along with a few other people, that do the analysis.

Company D

No one in the library of company D is analyzing the information they retrieve. That work is left to the analysts in the company that work in the competitive intelligence department. They are economists, doctors, or chemists in profession.

Company E

The corporate librarian in company E thinks that the library contributes to all other phases of the BI cycle except for analyzing. They make for example structured summaries of requested information so that the needed information are in an easier and more structured form so that the information can more quickly be applied to decision-making.

This is adding value to the information; making it easier for the customer and saving customers’ time. Corporate library E does not consider itself to be engaged in analysis
since the librarians cannot give any suggestions for actions on grounds of the patents they find or information they summarize for the customer. Respondent E considers that the personnel of the library have neither the in-depth knowledge about the projects or their objectives nor the insight to give suggestions for action.

Summary

One corporate librarian stated clearly that she does analyzing in form of summarizing information. Paradoxically, many of the corporate librarians do summarizing and structuring of information but none of them considers it to be analyzing. It can be stated that the concept of analyzing and what it consists of is quite unclear to respondents from both sides. It seems that the librarians think that analysis only covers the activities at the end of the table 2 on page 41, activities from executive summaries until in-depth conclusions to data presentations. This is the case for example with the corporate librarian in company E, since she considered not doing analyzing, because she cannot give any suggestions for further actions on grounds of the findings.

None of the respondents were able to mention a school or a specific education where one is taught to analyze information. On the grounds of the answers from the respondents it can be stated that the capability to analyze information is a combination of personal qualities, subject knowledge, education and experience.

4.4 Experience and education

Company A

The corporate librarian in company A was not able to tell if the current LIS education is sufficient from the point of view of the corporate world. The capability of LIS students to work in a corporate information service depends on various factors. According to respondent A1, there should be some kind of interest to the field in question. For example, without a background in chemistry it would be difficult to do information searches in pharmaceuticals.

Respondent A1 says there is a need for education in economics and statistics to make new LIS professionals competent to work in BI. She also feels that a broader LIS education is needed. Working with business intelligence also depends on the company and the experience gained while working within the same field or industry. He considers experience from the field in question to be important when working with business intelligence functions. It is very hard to understand all the functions at the time that a person graduates from the university.

With the information and image of the current LIS education the BI manager of company A does not consider the current LIS education to be at all helpful in the business/corporate world. According to her, the capabilities of LIS students to work in BI are very limited.

The respondent A2 also thinks there are many skills that should be emphasized in LIS education, like understanding the complexity of the work and topics and that everything is interrelated. A person also needs to have an understanding of business. It is not
possible to learn these skills after just 10 credits of work at the university; it needs the right kind of education combined with experience.

‘Education is the earth you grow from. In order to make seeds in dirt grow, you need to nurture the ground education with experience, continuous further education and surveying the whole environment and the society.’ (Respondent A2)

As for the most important skills for a BI professional, respondent A2 says: ‘Conceptual thinking, you need to understand the things you see and communicate that to decision-makers.’ She finds her earlier experience and subject knowledge from the field to have been important. For her, this means understanding the business and the industry and understanding the customers' business. All this is something that you do not learn in college or in the university.

Company B

When the corporate librarian in company B was studying some years ago there were no possibilities for getting acquainted with the corporate world. She feels that the universities should emphasize the broad scope of possibilities that an LIS specialist has after graduating. Over all, she considers LIS graduates to be qualified enough to work in the corporate world. When considering BI work, she feels that universities should bind the LIS education more closely to IT and pedagogical studies. This is because she thinks that LIS professionals are like bridges between technical information solutions and the customer.

The BI manager in company B has no clear picture of the current LIS education. She associates the LIS programs with more traditional library work. She thinks that newly graduated LIS professionals can most likely work in BI. She considers basic qualities such as being good in searching for information, skills in organizing information, natural curiosity and an interest in society in general to be important for a BI professional. In her opinion, what would make the possibilities and competencies even better would be to require some further education for an LIS professional. In this case she personally would highly value press and media-related skills. A combination of an information studies and media studies would be optimal.

Corporate librarian B1 said that although having experience in the company’s field would have helped in the beginning, it would not have been necessary. Perhaps a broader scientific scope would also be helpful. It depends also which degree one has. BI manager B2 also considers experience with in a specialized field to be a very important issue when starting to work in BI functions.

Company C

The corporate librarian, C1, has no knowledge of the current LIS education. She considers knowledge of the field of the company to be very important when entering a certain company. In her opinion the most important skill for an LIS student is the capability to organize knowledge in order to do business intelligence work.

The BI manager, C2, feels that current LIS students are more and more capable of working with databases and searching methods. For him, the biggest problem is that they do not have a specialized knowledge of any field of industry or business functions.
In his opinion more ‘hands on practice’ during their education would be needed for the students to learn the ways of the real world. LIS specialists should be witty and a jack-of-all-trades since they are serving communities with a wide range of professionals in different fields.

The ability to work in BI functions depends on the person. According to the opinion and experience of the BI manager C2 the job requires an intuitive sense of what constitutes intelligence and the ability to understand the connection between things these are the qualities that some people possess and some people do not. The BI manager in company C has met analysts that do not have any education and analysts with 40 years of experience. It is something a person does not learn in any school or university. It is an endogenous ability.

According to respondent C2 a person working in BI needs to be are curious, needs to have the ability to understand the connections between things, they have to be unpretentious, and bold. The BI manager, C2, considers psychological aptitude tests to be the way to know who has the capability to business intelligence work. A change in education is not going to help enough. If there would be an education that could prepare someone to be a BI specialists, there still would be students on that course that do not have the feeling in their fingertips, which is needed for this profession.

It is good to have experience before starting to work in BI but according to BI manager, C2, it is more important to understand how companies work and who the players are in the business field. The bottom line is that in many fields of business the functions are very similar – whether is it a pharmaceuticals company or an automobile company – they do the intelligence and marketing in the same way and all have customers and buyers and retailers. The difference is in the research and production.

Company D

The corporate librarian D1 thinks that the current library and information science education does not place enough emphasis on economics, which in her opinion is extremely important. She thinks that in order to be able to work in today’s corporate world education should contain marketing skills and methods for showing profitability, return on investments, and communication skills. Respondent D1 also says that current LIS students do not have a strong enough background in economics to work in corporate world. They have to have a good knowledge of organization and have an outgoing personality and good communication and interpersonal skills. All these should be emphasized in an LIS education. Earlier experience within a certain field before starting work in BI and CL is very important. One needs to have both subject knowledge and an LIS education or else one needs to be a good LIS professional with superb information searching skills.

Company E

The corporate librarian, E1, has no clear picture of the current state of the LIS education. The respondent feels that the LIS graduates are capable of doing much more than what is commonly known. Still, many corporate managers have an old-fashioned idea about the library and librarians. LIS professionals need to be more active in marketing their talents.
The answer seemed to be very clear when the respondent was asked about the abilities of LIS students to work in a corporate library. When considering company E, the ideal combination of education would be both a degree within a certain field and LIS education. In fact, the corporate library in company E has no use for people with only an LIS education, except for doing the utmost traditional library work, such as indexing and cataloging.

A good combination would also be economics and marketing education combined with an LIS education. The person should also have the ability to quickly develop a good knowledge of the products of the company. Knowledge of the business world, a degree in economics, subject knowledge and also statistical skills were mentioned as skills needed in BI work. Experience with a certain field is seen as very important when starting to work in business intelligence and the corporate library.

Summary

Most of the respondents do not have a clear idea about current education in library and information science. But as far as they know many consider an LIS education to be insufficient in the corporate world, especially when considering the business intelligence functions.

All respondents except for one had worked for a long time in their particular business field. According to them, an LIS education is not extensive enough. Here is a list of subjects that the respondents would find useful in library and information science education (random order):

- Education in economics and statistics
- An ability to see relations between things
- Business understanding
- Press and media related skills
- IT knowledge
- Pedagogic skills
- Marketing skills
- Communications skills

Here is a list of personal qualifications the respondents would want the new CL information and intelligence professionals to have: (in random order)

- Interest in the field of the industry in question
- Subject knowledge
- Good at searching and organizing information
- Curiosity
- Interest in society
- Insight and understanding
- Boldness
- To be unpretentious
- Out-going nature and an open mind
- Good communication and interpersonal skills
- Active in marketing themselves and their capabilities

The skills that the respondents want from LIS graduates are all strongly business-related.
When the course program of Lund University was studied, there was no evidence of any courses that dealt with issues connected to business or business intelligence or environmental scanning.\textsuperscript{101} The same situation exists at Borås University College. The course at Borås University College that at all deals with the corporate world is a five credit course in Information Resources Management (IRM) and a voluntary course in Information Strategy.\textsuperscript{102}

At Umeå University there is an introductory course ‘The social and academic contexts of information management’ of 20 credit units, which introduces environmental scanning and knowledge management as a part of a four credit unit section.\textsuperscript{103} Uppsala University has a clear direction to archives and museums and therefore there were no courses that can in some way to be included to business intelligence or environmental scanning.\textsuperscript{104} Vaxjö University has clearly a pedagogical profile.\textsuperscript{105}

It is realized that with a superficial study of these programs one cannot thoroughly understand the depth of the education provided in these universities. But according to this somewhat minor benchmarking project it can be concluded that none of these universities really have profiled themselves clearly to provide education fitting for corporate library functions not to mention business intelligence.

In spite of these deficiencies, there were courses in pedagogy, marketing, and communication. Most courses aimed at educating the students in how to search for information and provide an overall understanding of the library science and the position of libraries in society. More discussion about education follows in chapter five.

\textsuperscript{105} Biblioteks- och informationsvetenskap: påbyggnadsutbildning, 120 poäng. Vaxjö Universitet. http://194.47.70.15/utb/program.lasso?ID=PR1068 [2005-12-04]
5 ANALYSIS OF THE RESULTS

An analysis of the interviews is presented in this chapter. The interview study is analyzed according to the theoretical framework of the BI cycle and its phases (see BI cycle summary on page 29). Since the aim of the study was to find out if LIS professionals have a role within BI functions, the analysis is only done from their perspective. Nonetheless, some references to BI managers can also be found from the following analysis.

The BI manager respondents in the study did not directly mention any variation in a BI cycle of their own. They work according to the basic BI cycle but have no formal routine or a written description of that cycle. Many of them were doing the whole BI cycle process themselves without dividing the assignment according to different job descriptions.

5.1 Need determination

The need determination can be understood as an assignment sent to or presented to the corporate librarian. Respondents receive assignments from clients. None of the corporate librarians implied need determination to be on their responsibility. There were librarians that told they are doing some proactive work and that can in some case be understood as need determination. In these cases they know the information need of a certain client and they provide information before the clients asks for it.

Library personnel in company E always have one representative in groups, which are developing new products. They take part to product development group meetings all the way from the beginning of research done on the product, so that they know what kind of information will be needed in the future. This way they can always be active in their daily work when stumbling on something regarding the new product. In this way corporate librarians can actually add to their possibilities for being proactive in providing information. Therefore, there is always a specialist for a particular product on the CL staff. However, this also demands a broad level of skills and knowledge from the library staff.

This involvement of library personnel in the production process reflects the ideology of a learning organization. To bring together different professionals to take part in production process shows appreciation of the knowledge base of different professionals. According to Terence K. Huwe use of interpersonal communication and skilled use of information resources may contribute to overall productivity.106

Even if the analysis of professional competencies earlier showed that the information professional does not do need determination, Dieter Gold strongly suggests that the corporate librarian still has to have a good overall understanding of the company’s information needs in order to serve the clientele in the best possible way.107 Corporate librarians can be understood as a gate to outside world, and they create this gate by gaining access to the right kind of information.

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5.2 Acquisition of information

Acquisition and searching for information was clearly the largest part of the corporate librarian’s job description. That also became clear in the theoretical portion of the study. That was also the part where the respondents clearly agreed the CL to be good at. Additionally all BI managers acknowledged it to be the core competence of the corporate librarians. In three companies out of five the business intelligence functions used corporate librarians expertise of the corporate librarians in accessing information.

Respondent C2 stated that in his opinion the new LIS graduates have become better and better at finding information and mining databases, but they do not have any business knowledge. In 4 companies librarians were wholly or partially responsible of managing the company’s information resources system, intranet, or similar. This clearly demonstrates the knowledge and capability of LIS professionals to acquire access to information, organize large amounts of information and make all this work in a professional manner.

5.3 Segregation and selection of significant information

Table 2 by Sara van der Voort shows that in her opinion, determining the significance of certain information is already analysis. According to respondents’ answers, four corporate librarians out of five do some level of segregation and selection of information before delivering the final answer to a client. That is because the information should be delivered ‘at the right time, in the right form, to the right person’. The information the client gets is filtered through the corporate librarian, who has removed the irrelevant information. Respondent C2 clearly mentioned that he thinks corporate librarians serve as a bridge between data collection and analyzing information. He meant that the corporate librarians are able to reduce the overall amount of information and therefore help the analysts in their work.

The LIS specialists are selecting significant information already when they make decisions concerning which databases will be bought for the corporate library. They are directing the flow of information to the company in the right direction and function as a filter of information. They are drawing the lines of the content of the corporate information systems.

5.4 Analysis and production

Analysis of information seems to be the biggest question mark among the respondents. But if we look at the answers of the respondents using Sara van der Voort’s theoretical framework (page 46), things start to look very different indeed. Two corporate librarians, B1 and C1, admitted that they are doing very little analysis; the rest are not doing analysis at all. Respondent B1 performs analysis in the form of summarizing, restructuring, cutting down the number of sources, etc. But, at the same time, the same respondent said that within the BI cycle the corporate librarians could do everything else but analysis would be a point of uncertainty.

The other interesting finding was, that in company E the corporate librarians are in fact doing quite extensive analytic work, when comparing their services of Sara van der
Voort’s list. However, the respondent for company E does not define their work as analysis. This incongruity can be understood as the result of confusion over just how to define analysis. As was mentioned earlier, people have very different views on the different levels of analyzing. Respondent E specifically mentioned that the corporate librarians in company E do not do analyzing, since they cannot recommend any course of action based on their analysis. Respondent E also mentions that they do not have enough knowledge or insight to give any recommendations for action.

It is obvious, that not all people are able to do analyzing. As was seen in the interviews, there are a lot of different personal capabilities and prior experiences that add to the ability to summarize the right kind of information and to understand the information needs of clients and the company as a whole. This requires the right kind of background and possibly years of work in the field. It is a question of being ‘the right man for the right job’.

It can be argued that this is most likely the case in a number of corporate libraries throughout Sweden. The definition of analyzing within the corporate library environment is in fact unclear and there is confusion over what constitutes analyzing and what does not. According to the interview results it can be clearly said that nearly all of the responding corporate librarians were doing some of the activities from Sara van der Voort’s list. Whether it is in the form of determining relevant information, reviewing the return on investment ratio or promoting the sharing of sources, the corporate librarians are definitely doing analysis.

Production is a small part of this, but it cannot be ignored. All of the respondents are in some form maintaining, updating, or building the information or knowledge portals and intranets within their respective companies. In many cases, the summaries they provide as well as other pieces of information are presented as products in the intranet pages for all interested. Also, a system of personalized alerts to clients can be considered as an information product.

5.5 Intelligence dissemination

One of the basic duties that library and information professionals have is to deliver information to users and clients. This takes place in many forms: orally in a meeting, by sending an email reply to an assignment, by producing a written summary on the assignment and delivering it to the client or by posting it on the intranet for all to see. Whichever the case, corporate librarians disseminate information and intelligence. All corporate librarians in the study are using some kind of network system to deliver information inside the company. They give access to databases, to different portals, to electronic magazines, statistics, internal documents, news alerts, knowledge management systems, etc.
4.6 Need re-determination

Since the corporate librarians do not seem to perform the actual need determination on a larger scale, it can be concluded that they do not do so in this phase either. New questions arise based on the information needs of the client after receiving the earlier answer.

These results are very much in accordance with the findings in the literature. When the professional requirements for SLA and SCIP are compared, it is realized that the first and last phases are the phases in which information specialists, i.e. corporate librarians, do not participate. That seems also to be the case when the results of this interview study are analyzed.
6 DISCUSSION

The discussion part consists of the three research questions for the study, each examined in a separate section.

6.1 Does the corporate library at some phase of the Business Intelligence Cycle take part in the business intelligence functions of the company?

As business intelligence professionals, the corporate library personnel do not take part in the BI cycle. There seems to be a clear line between these two units and they function as separate units. The corporate librarians are consulted in questions that concern searching for information and accessing information. There were no indications of the business intelligence departments using the expertise of the corporate libraries to the full.

There are two companies in which the corporate libraries do business intelligence of their own, but even these companies have a separate department for competitive intelligence that does the more demanding business analyzing. Nonetheless, the situation is the same; the competitive intelligence departments use the help of corporate libraries only to search for information in case there are more demanding assignments. Intelligence professionals in studied companies make a lot of information searches themselves.

At present, in the company A there is no cooperation between the CL and the BI. Earlier there was a group called the ‘business environment group’, which consisted of employees of the information intensive departments of the company. According to respondent A1, there was good cooperation and a lot of knowledge was transferred within the group, but the group was terminated 2003 due to the fact that other things were considered to be more important.

Respondent A2 says that the word ‘library’ brings to mind an association with a place where parents take children to listen to fairytales. This association is a rather normal association since, even according to Björn Tell, the library is understood as a ‘book oriented’ place and not as an ‘information oriented’ place. Though Tell’s article is 15 years old, it can be argued that to some extent the associations are still the same. When interview phone calls were made, some respondents were quite agitated when the word ‘library’ was used to refer to a corporate library. There is clearly a trend to actively get rid of the word library and all the associations it brings with it in the minds of clients. The names of the corporate libraries of respondents varied greatly, but some are actually still called libraries.

Irene Wormell strongly agrees with removing the L-word from our minds and our professional titles and to replace it with more information oriented jargon. She considers the word library and the images it brings to almost be an impediment to compete in the information market with other professionals.

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When summarizing the situation inside each company it must be said that no big confrontations exist. The situation is mostly seen as worse from the CL point of view. From the BI’s perspective the situation does not seem so bad. BI professionals seem to be happy with their information gathering. It is also clear that both sides to some extent feel that the CL is not being utilized to the fullest of its capabilities. Although there is room for cooperation, it seems to be hard to find ways to make it work.

Both the literature and interview study show that LIS specialists are capable of taking part in all phases of the BI cycle except need determination and need re-determination. Still, according to the interviews, the capabilities of library and information specialist are only used in acquiring information when looked from the perspective of BI managers. From all this it can be concluded that there is a great potential within corporate libraries that is currently being overlooked by the intelligence professionals within the companies.

6.2 What position does information analysis have in the library and information science profession?

The bottom line seems to be that most corporate librarians in the study are analyzing information but they clearly do not think of it as analyzing. They are daily adding value to information in various ways and helping the decision-maker to take action on the basis of the information. This was clearly seen in the interviews.

One thing that was confusing both in the literature and in the interviews was the concept of analyzing and especially what is considered to be analyzing. There should be a consensus reached on what is analyzing so that all parties could approach the task from the same perspective. At present it seems that, while some are talking about grilled chicken and others about fried chicken, in the end everybody is still talking about chicken.

There are clearly many misconceptions about analyzing and the level at which it is performed and this contributes to the confusion in growing measure. It can be concluded that corporate librarians should actively market their services as analyzed information, since most of them do analyzing on some level. At least, corporate librarians should market themselves as being the bridge between data collection and analyzed information, as respondent C2 suggested.

Some of us are born with the ability to think analytically and others of us are not. That was clearly stated by two of respondents. The existing literature also supports this view. As respondent C2 suggested, if there is a real need to find persons capable of analytical thinking there should be tests done to find these people. Certainly analyzing can also be learned, but it helps if that person already has the needed personal capabilities.

One aspect that is of great importance when talking about analysis is subject knowledge. When working in a company one has to have a certain level of knowledge of the particular field in order to succeed in work. Per Frankelius states that one of the biggest challenge of a corporate librarian is to see the difference between useful and useless sources of information. He also states that this recognition of useful sources needs, among other things, significant amount of subject knowledge and deep practical
experience.\footnote{Frankelius, Per 1998. \textit{Om informationens nytt a}. p. 48.} Also the study of Veronica Alfredsson showed that subject knowledge is important in searching and understanding information.\footnote{Alfredsson, Veronica 2003. \textit{Omvärldsbevakning – hur långt räcker utbildningen I biblioteks- och informationsvetenskap?} p. 47.}

6.3 What is the status of LIS education from the perspective of the corporate world and business intelligence?

The titles for library and information science specialists have changed during the last 10 years from ‘librarian’ to, for example, ‘information scientist’ or ‘architect’. Have these titles changed because of the new type of education or a new content at work? The bottom line is that LIS specialists are doing what they have done for decades. The tools have changed but much has stayed the same - regrettably this includes the education. The new titles sound more up to date than what they actually are.

Only one BI manager out of three in this study felt that the LIS professionals are not qualified to work in the corporate world. The other two had a fairly positive attitude, but still felt there was room for improvement in the LIS education.

The world is changing rapidly, information overload is an indisputable fact and there is a need for someone to make some sense out of all the information. Librarians would be the first professionals that come to mind. But how can we fill the needs of the corporate world if we have not even been able to read the signs and indicators coming from within the field? The LIS education should first reform itself from within and then start marketing the newly graduated professionals as being able to do nearly whatever the information field requires of them.

The fact seems to be that a library and information science education has in many ways stayed on the same course. It is not up to date when it comes to teaching the abilities necessary for working in a business environment. That was the overall opinion of the respondents of this study and there were also clear indications of this in the literature. There seems to be a need for different subjects areas to be included in the LIS education.

Some subjects that Veronica Alfredsson found to be missing in the education are leadership studies and analytical thinking. She also brings up the importance of ‘business thinking’ in education, meaning that there needs to be a stronger linkage to the business world in order to give students the necessary tools for working in companies.\footnote{Ibid. p. 41-43.}

In 1986 Irene Wormell wrote an article on shaping future professional roles in LIS education. In the article she calls for a change in the LIS education. There should be more emphasis on the teaching of methods and analytical devices, more room for interdisciplinary teaching, consideration of the ongoing technological developments in all areas of professional study and practical work carried out in various types of libraries, information and documentation organizations.\footnote{Wormell, Irene 1986, \textit{Shaping the future professional roles: new marketplace-oriented attitudes in curriculum development in Denmark}. p. 121.} The results of the theoretical
and empirical parts of this study suggest that there is still a need for these kinds of skills and knowledge. Still after 20 years these are the same things that seem to be missing in the LIS education.

In order for newly graduated LIS professionals to work in the corporate world, they need to have different kind of skills and resources than what they now have. According to a modest benchmarking done among the academic institutions offering an LIS education at Borås, Lund, Umeå, and Uppsala Universities, none of the institutions offered the kind of courses that were deeply called for in the interviews: business understanding, business intelligence, environmental scanning, statistics, or marketing. There were courses that can be said to scratch the surface on some of these issues, but do not provide any deeper understanding. The Mälardalen University College was the exception that offers a whole bachelor level education in business intelligence.

Respondent C2 strongly emphasized that it would be best for a student to gain practical experience in the field during their studies. Then the student would have some kind of basic knowledge of how things work in the real world when joining a corporation after university. According to the respondents, there is no education or school where you can be taught to analyze information. Even if there would be, according to respondent C2, he would still do psychological tests to see who really possesses the right aptitude for the job.

According to the results from the interviews, in order to work in corporate libraries and BI functions, an important combination would be an education as both an economist and an information specialist. Such a person would have a knowledge of the business, marketing, leadership and statistical knowledge combined with the ability to search, organize, structure and disseminate information resources. If an LIS student could combine his or her studies with certain studies from a business school, it would produce an ideal combination. Also, Wormell mentions the need to combine studies to form joint degrees as a possible answer to this problem 114.

Often subject knowledge was also mentioned as an important character. When entering a company or a specific industry earlier experience within a particular field was found to be important or very important by all of the respondents. Respondent C2 was the only person who mentioned that he considers a knowledge and understanding of business to be more important than experience within a particular field, since most functions are the same regardless of the industry. The basic functions are the same in the chemical or the automobile industry; all have buyers and retailers and everybody does marketing. He says that the differences are only in research and production.

Tommie Anderberg and Tomas Johansson in their thesis suggest that in order for the newly graduated LIS professionals to be sought after in the workplace, they should take up the role of environmental scanner, since it seems to be needed just as much in the private sector as in the public sector. They also suggest that there should be outside lecturers from the business world that can tell about their needs and working methods. Furthermore they think that students should again get the possibility to research their master’s thesis in closer connection with some company or an organization.115

114 Wormell, Irene 2004. Skills and competencies required to work with knowledge management, p. 113.
As was found in the results of the interview study, all these suggestions by Anderberg and Johansson would improve the situation from the corporate world point of view. In addition to these suggestions, the writer would like to see a work-training period as part of the LIS education, in accordance with the collegiums already established by the Borås university college. A student that is studying in collegium 4 would work in an organization, learning how things are done, learning to understand the work culture, preferably even having their own mentor, which would guide the student. The practical experience is often a much more fruitful learning process than listening to hours and hours of lectures. If this seems to be a method suggested by researchers and the employees, then why are the educators overlooking this golden opportunity for learning?

In their article, Jackie Marfleet and Catherine Kelly, are pondering the roles of information professionals in the next century. How we need to concentrate on core competencies and to the role of trainers and facilitators. ‘Above all, the information specialist must become closely aligned to the business, able to ride the wave of change both in the business and in technology’.

One thing is sure. The librarians, information professionals, are capable professionals in many ways. There surely is capability and skills to work in the corporate world, but frankly, there are some shortcomings in the LIS education. As of now, more attention needs to be paid to the needs of the business world, if the LIS education is aiming at producing more specialists to satisfy the needs of the Swedish industry and commerce.

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The question underpinning this study is: Are the graduates of library and information science from the academic institutions in Sweden ready to face the challenges of the corporate environment and work in business intelligence? This was the basic question that motivated the research in this master’s thesis. The theoretical framework in which the study was done is the business intelligence cycle. BI ideology is based on scanning the business environment and then making well-informed decisions based on the received information. Business intelligence is quite essential within today’s business world and also quite demanding. In this study these demands are studied in order to understand the expectations that graduates of library and information science face when entering the business world and corporate libraries.

The aim of this study was threefold: First, to study the possible cooperative functions between the corporate library and the business intelligence unit in five companies in Stockholm Province; second, to see if analyzing information is the work of LIS professionals, and; third, to better understand the status of LIS education from the perspective of corporate world and business intelligence.

Research questions of this study were:

- Does the corporate library at some phase of the Business Intelligence Cycle take part in the business intelligence functions of the company?
- What position does analyzing has within the library and information science profession?
- What is the status of an LIS education from the perspective of the corporate world and business intelligence?

An extensive theoretical framework was used based on the business intelligence cycle and also on the professional competencies of information and intelligence professionals, using the listed competencies of two well-established professional organizations, the Society for Competitive Intelligence Professionals (SCIP) and the Special Libraries Association (SLA). Against this theoretical framework the empirical part the results of the interviews were compared.

The empirical part of the study was conducted in May-June 2005 by interviewing eight LIS professionals and BI professionals in five companies in Stockholm Province. The interviews were then summarized and later analyzed.

The study shows that there is very little cooperation between the corporate library and the business intelligence unit in most companies. The small amount of cooperation that was found was mostly in the form of advising and helping to access information and completing complicated information searches. In most of the cases the corporate library personnel was not seen as capable enough to manage business intelligence work.

Analyzing seems to be a part of the daily life of library and information professionals. However, there seem to be a number of confusing issues surrounding analyzing and the concept of analyzing can in fact be understood in many different ways. According to the results of the interviews and Sara van der Voort’s table on analyzing activities, LIS specialists are in fact analyzing information, i.e. adding value to the information they
deliver to clients. This was realized when studying the range of services offered by the corporate libraries. This is in contrast to the actual interviews, where many LIS specialist responded that they do not analyze information. However, the analyzing competence seems to be somewhat limited and more demanding analysis is not done by corporate librarians.

According to the results of the study, the library and information science education is not in accordance with the needs of the corporate world. Both the literature and the interview study shows that LIS graduates do not have the qualities what corporate managers expect. There is a need to include studies in economics with an LIS education, and not neglect marketing, statistics, IT and pedagogical studies. As the education is now, it is not serving the needs of the modern business world.

An analysis of the results was done within the theoretical framework of the thesis: the business intelligence cycle. The results of the interview study were analyzed according to the six phases of the cycle (need determination, acquisition of information, segregation and selection of significant information, analysis and production, intelligence dissemination, need re-determination). Also, the theoretical framework for professional competencies was used in analyzing the interviews.

The discussion part took the research questions under examination and evaluated how the study was able to answer the research questions. The answers were found to be satisfactory. In the discussion the writer also gives some suggestions for improving the situation based on the results. Respondents expressed a demand for a degree in which an LIS education is combined with studies in business. There is a desperate need to take the demands of the corporate world under consideration and update library and information education to meet their demands.
LITERATURE


Appendix 1.

Questions to the manager of Business Intelligence Unit

1. Company description and preliminary information

1. What kind of work history you have and how long have you worked in this company and this field?
2. How long history your company has of Business Intelligence as an own unit?
3. How was the present Business Intelligence Unit established and when?
4. How would you describe, in your own words, the purpose of Business Intelligence in your company?
5. Tell me about the way your BI unit functions.
6. How do you divide the information related responsibilities in the company between the BI and CL units?
7. If you have an Intelligence Cycle you work according to,
   a. What phases it has?
   b. What are the phases and how are the responsibilities shared in every phase?
   c. What kind of education the persons have, who take care of all the different stages?
   d. How long experience these persons have from Business Intelligence?
   e. How long experience they have from the field of industry you are in?

2. Cooperation between CL and BI

8. Are BI unit and CL in cooperation, do you take advantage of the skills and knowledge of the personnel of the Corporate Library in your own BI unit and in general in BI functions?
   a. If so, in which way?
   b. If so, how did idea of cooperation begin and of who’s initiative?
   c. If not, why?
9. Have you ever have a thought that the Corporate Library could possibly help in some parts of the Business Intelligence Cycle?
   a. If so, why?
   b. If not, why?

3. Analyzing

10. If you or an employee in the Corporate Library analyzes the information acquired, do these people have a formal education to do that or do they analyze information thanks to a long carrier in the field?
11. If you have got some education in analyzing work, where have you obtained it?
12. Tell me about that specific education and about the contest of it.
13. If you don’t have formal qualifications to do analyzing, which kind of skills, competencies and experiences are using in analyzing information?
14. How did you require these capabilities?
15. If the information is analyzed is it done from one’s own initiative or is it requested from the side of the client?
4. Experience and education

16. What is your own opinion of the current library and information science education from the corporate world point of view? Do you have some kind of conception of this education?
17. In your opinion, what is the capability of LIS students to work in Business Intelligence duties?
18. When considering the skills needed in Business Intelligence work, what should be emphasized in LIS education?
   a. Where can these skills and competencies be obtained, name some relevant education program in today’s academic world.
   b. Which are the most important skills and competencies for BI?
19. How important is the earlier experience of a certain field of industry before starting to work in Business Intelligence?

1 Questions to Corporate library manager

1. Company description and preliminary information

1. What kind of work history you have and how long have you worked in this company and this field?
2. How long history your company has in having a corporate library?
3. How would you describe, in your own words, the purpose of corporate Library in your company?
4. How are the information related responsibilities in the company divided between BI unit and CL?

2. Cooperation between CL and BI

5. Are BI unit and CL in cooperation, in other words, is the BI unit in any way taking advantage of the skills and knowledge of the personnel of the Corporate Library in general BI functions?
   a. If so, in which way?
   b. If so, how did idea of cooperation begin and of who’s initiative?
   c. If not, why?
6. Have you ever have a thought that the Corporate Library could possibly help in some parts of the Business Intelligence Cycle?
   a. If so, why?
   b. If not, why?

3. Analyzing

7. If you or an employee in the Corporate Library analyzes the information acquired, do these people have a formal education to do that or do they analyze information thanks to a long carrier in the field?
8. If you have got some education in analyzing work, where have you obtained it?
9. Tell me about that specific education and about the contest of it.
10. If you don’t have formal qualifications to do analyzing, which kind of skills, competencies and experiences are using in analyzing information?
11. How did you require these capabilities?
12. If the information is analyzed is it done from one’s own initiative or is it requested from the side of the client?

4. Experience and education

13. What is your own opinion/view of the current library and information science education from the corporate world point of view?
14. In your opinion, what is the capability of LIS students to work in corporate information services?
15. When considering the skills needed in Business Intelligence work, what should be emphasized in LIS education?
16. How important is the earlier experience of a certain field of industry before starting to work in Business Intelligence?
Appendix 2

Bibliotekshögskolan i Borås - a master's thesis study

Dear receiver!

I am a student in Borås bibliotekshögskolan and pursuing research towards my Masters thesis under the supervision of professor Irene Wormell.

My research is concerned with corporate libraries and their relation to business intelligence activities of a company. I am looking for a company where both corporate library and a business intelligence unit exist.

The study is important in finding out how well the modern library and information science (LIS) serves the needs of business intelligence or does it serve those needs at all. Therefore, I need to get answers to my research questions.

I need to perform two interviews in your company, with the corporate librarian and with the manager in business intelligence (omvärldsbevakning). The interviews will be done in English and one interview may take approximately 1 hour. I, therefore, request you to please help me in my academic endeavor by giving me your valuable time and comments.

In a few days I will contact you in order to talk about arranging the interviews.

Looking forward for your cooperation,

Anu Ojaranta

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tel. 070-4613691
## Appendix 3. The Business Cycle comparison.

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