ABSTRACT

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A recent trend in information searching research is task-based information searching, which views a user's task as a central factor for understanding information-seeking behaviors and designing information retrieval systems. To investigate empirically the role of tasks in information searching, particularly in the business domain, this study analyzes the database selection process used by librarians from the perspective of users' tasks. The first part of the study focused on identifying and characterizing business tasks and the associated questions needed to complete the tasks. An inventory of 30 business tasks and 144 associated business questions was developed through content analysis of Harvard Business School cases and other published materials. The second part of the study explored the influence of tasks on database selection by conducting a survey among business librarians in academic institutions. Nine sets of survey questionnaires were created based on the identified business tasks and questions and each questionnaire, containing a total of five business questions for two to three tasks, was disseminated through a Web-based survey tool. Out of 52

sampled librarians, 29 (56 percent response rate) participated in the study. The survey questionnaires focused on participants' use of tasks and related business questions to determine information types likely to answer the questions, to choose databases, and to determine the criteria used to select the databases. The characteristics of business tasks and questions were analyzed and linked to other elements - information types, database selection criteria, and selected databases - to understand the interplay among all elements in the database selection process. The analysis noted the participants' reliance on users' tasks in various aspects of an information searching process. A database selection process was further modeled to describe how five task or context-related criteria - company size, company type, industry sector, geographical setting, and business stage - influence database selection. The inventory of business tasks and questions, along with the patterns among the elements, set the stage for a task-based database selection system.

THE EFFECT OF USERS' WORK TASKS ON
LIBRARIANS' DATABASE SELECTION

By

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Chapter 1: Introduction

1.1 Problem Statement

A recent trend in information seeking and searching research is task-based information searching. Task-based information searching places users' tasks, goals, or problems at the center in characterizing information seeking processes, designing information-retrieval systems, and evaluating retrieval performance. This concept is not new, as many information science researchers have long underscored the tasks or goals that drive people to seek information. Even though the terms used to describe "task" as a trigger of information searching vary, such as "problem" (Wilson, 1999) or "goal" (Hert, 1996; Xie, 2000), the "task" is essential in understanding why people need information, how they choose to acquire it, and what use they make of it (Byström & Hansen, 2002).

Despite the theoretical consensus in viewing a user's task as a central criterion for the understanding of information-seeking behavior and designing information retrieval (IR) systems, only relatively recently have empirical studies established an explicit connection between task characteristics as independent variables and information behaviors as dependent variables. Among notable researchers in this area is Vakkari, who wrote the only *Annual Review of Information Science and Technology* chapter on task-based information searching (Vakkari, 2003). Through a series of articles (2000a; 2000b; Vakkari et al., 2003), he and his colleagues have demonstrated how task stages influence users' searching behaviors, for example, the number of search terms, the vocabulary used, and the change of Boolean operators.

Although other researchers have looked at different task characteristics such as task complexity, task variety, and task analyzability to relate them to particular information behaviors, they have emphasized primarily single task characteristics that describe a particular task type. Only a few empirical studies have examined how different types of tasks influence information seeking behaviors (e.g., Algon, 1999; Slone, 2002; Toms, et al., 2003). Therefore, this study seeks to fill this research gap by investigating the impact of different types of tasks on one step in information seeking -- database selection.

Moreover, these studies are commonly concerned with end users' information seeking processes, not intermediaries'. Given that reference librarians are knowledgeable about relating the context or task in which information is used to finding appropriate databases, examining their decision making should provide valid evidence about how users' tasks influence an information seeking process.

In addition to the theoretical impetus, another rationale for research on the relationship between tasks and database selection arises from the limitations of traditional word-based IR systems. Previous word-based information systems are criticized for ignoring the context of the users' tasks and situations and focusing narrowly on a direct matching of query terms and words in documents. In response to this critique, task-based information searching research takes a broader view that regards an IR system as an element in a larger information-seeking context. From this view, an information system should be able to help users throughout the entire task performance process from clarifying a problem or task to using acquired information. As a complement to such traditional information systems, this study

suggests incorporating users' tasks into a system mechanism and interface design so that users can become aware of their tasks that trigger information searching and can select the most appropriate databases. Prior to developing such a task-based information system, research that explores the relationship between tasks and database selection is needed.

The importance of database selection has been increasing due to the proliferation of electronic databases and end-users' having direct access to them in today's computerized environment. On the end-user's side, challenges related to database selection include being aware of the availability of databases, finding the links to the databases in a labyrinth-like library website, and knowing the characteristics and scope of the individual databases to identify where needed information is stored (Jacso, 2004). Any of these challenges could hinder an end-user from reaching the most appropriate databases.

Some people may believe federated searching will completely overcome these challenges by retrieving multiple remote databases at once, but current federated search systems suffer from a number of inherent limitations:

• Many databases require authentication for licensing purposes, so not all federated search engines can search all databases (Hane, 2003; Wadham, 2004).

• De-duplication is regarded as virtually impossible because, to truly de-duplicate, all search results would have to be downloaded and compared and this would take hours (Hane, 2003; Wadham, 2004).

• The number of live connections that can be sustained simultaneously is limited. The prevailing design underlying metasearch will not scale to the level

needed for a successful library information environment (Breeding, 2005).

        • Federated search engines are limited by the search capabilities of the sources they are searching and, obviously, they do not enhance or even fully use the native database's search performance (Hane, 2003; Wadham, 2004).

        • Managing the results of a search becomes more important as the number of databases continues to grow. What criteria will determine their ranking in the search results is an important issue (Luther, 2003).

        • Originally developed to remedy the difficulties that users face in retrieving full-text content, the type of databases federated searching is limited to bibliographic and full-text databases.

        • Federated searching seems to benefit novice users with insufficient knowledge of databases rather than advanced users who are inclined to consult a few familiar specialized databases (Chandler & Hyland, 2003).

        These limitations of federated search engines present more serious problems particularly in the business domain with its abundance and diversity of mostly fee-based databases (Lavin, 1995). Federated search engines are basically simple systems that translate a search query into something bibliographic database search engines can understand and return a combined list of relevant documents. Since business databases are not only diverse in terms of date coverage, content coverage, company coverage, and degree of specialization but also allow for searching various entities other than documents (e.g., companies, industries, products, and countries), it has been technologically challenging to develop an effective federated search system for business databases.

Until federated searching technologies can address the complexities and distinctive search features of business databases, selecting appropriate databases will continue to be critical to the success of information searching for business librarians and business information seekers, and research on the effect of users' tasks on database selection in particular will contribute to advancement in theories, system design, and library practices.

1.2 Purpose of the Study and Research Questions

The purpose of this study is to analyze the database selection process used by librarians from the perspective of users' tasks. It does this within the business domain and is the first step toward the development of a task-based information system for business databases.

The overarching research question is: How do end users' business tasks influence librarians' database selection? To learn about the impact of tasks on librarians' database selection decisions, this study formulates the following foreshadowing research questions:

1) For a representative sample of business tasks, what are the associated questions that require information in databases?

2) What characteristics of business questions influence the databases selected and the selection criteria?

3) What are the relationships among tasks, questions, and database selection criteria in selecting appropriate databases in which to search each business question?

4) How does a user's task influence database selection?

Based on a literature review on task-based information searching and database selection, a tentative model for a task-based database selection process is proposed in Figure 1.
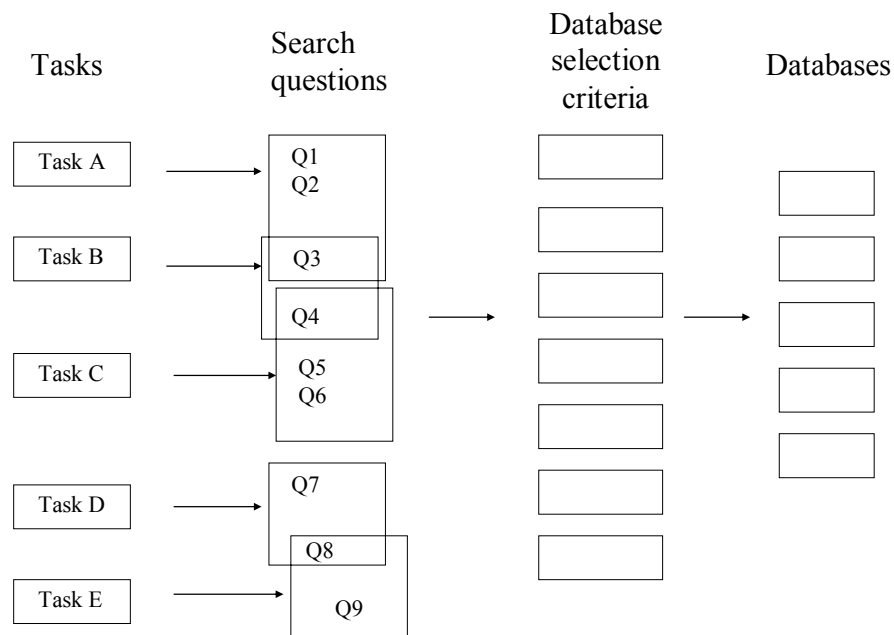
Figure 1. A tentative task-based database selection process model

Accomplishing a task usually calls for answering a set of business questions and using the resulting information. The individual business question characterizes the type of information needed, but the question needs to be considered within the context of the task. Different tasks can share the same business questions, but database selection criteria and selected databases may vary in accordance with the nature of the initial task that prompts information searching. In other words, the task context may be critical for understanding the business questions and for selecting the

appropriate databases. Investigating the role of tasks in the database selection process and the relative roles of intermediate variables is the essence of this study.

This study is a qualitative study and captures emerging patterns by arranging findings about task types, business question types, database selection criteria, and databases selected in a qualitative manner.

1.3 Definitions

Important concepts in the study are defined in this section.

Task A task is a set of actions in pursuit of a certain goal. This research particularly focuses on information-intensive work tasks that involve information-related activities to a considerable degree to achieve their goal (Byström & Hansen, 2005). This definition is akin to Pharo (2002) and Vakkari's definition of 'work task' (2001) and Xie's definition of leading goal (Xie, 2000) in that the task triggers information searching, and it has a goal that is intended to be a final result achieved through the search. In other words, "task" is a broad concept that embeds search tasks as part of task performance to accomplish the goal. With this definition, the studies that exclusively address search tasks and their impact on information retrieval processes are deemed irrelevant to this study.

Although Xie (2000) refers to 'goal' instead of 'task,' her levels of goals point out the existence of different levels of tasks and the influence of the higher-level tasks on the lower ones:

- Long-term goal (e.g., personal achievement)
- Leading goal (e.g., writing a paper)

• Current search goal (e.g., looking for a book)

• Interactive goal (e.g., read)

She empirically shows the interrelationship among the different levels of goals and their relationship with searching strategies in a library setting (Xie, 2000; Xie, 2001).

Pharo (2002) stresses the difference between work tasks and search tasks. He defines work task as "a series of actions in pursuit of a certain goal, where the performance is seen as an integrated part of the task" (p. 96). Studies focusing on work task usually look at specific organizational settings and a group of people in job or project-related work. A search task goal is defined as "what is intended to be final results, e.g., what information, documents, facts, etc." (p. 101). To show different types of search tasks, Kang and Kim (2003) classify Web queries into three categories related to what users intend to find on the Web: the topic relevance task, the homepage finding task, and the service finding task. After they classify a user query, they apply different algorithms and information for better search results. For the topic relevance task, the researchers emphasize the content information, on the other hand, for the homepage finding task, they emphasize link information and URL information. Agosti and Melucci (1999) also categorize the purpose of people's search on the Web as finding (aims to get a document or know about a product), comparing/choosing (aims to compare multiple products or pieces of information), and understanding (aims to explore some topics). To explain Web users' information-seeking behavior, Kim (2006) similarly suggests four search tasks: factual task (to seek for specific precise data), descriptive task (to define/describe a

thing, event, reason, etc.), instrumental task (to find out what to do or how to do), and

exploratory task (to require generalization related to facts in meaningful patters).

It is possible for a search task to be identical to the work task, for example, a librarian

whose work task is to perform a search for a user, but that possibility will not be the

case in this study. Hansen and Järvelin (2000) illustrate relationships among the work

task, information seeking, and retrieval tasks as shown in Figure 2.
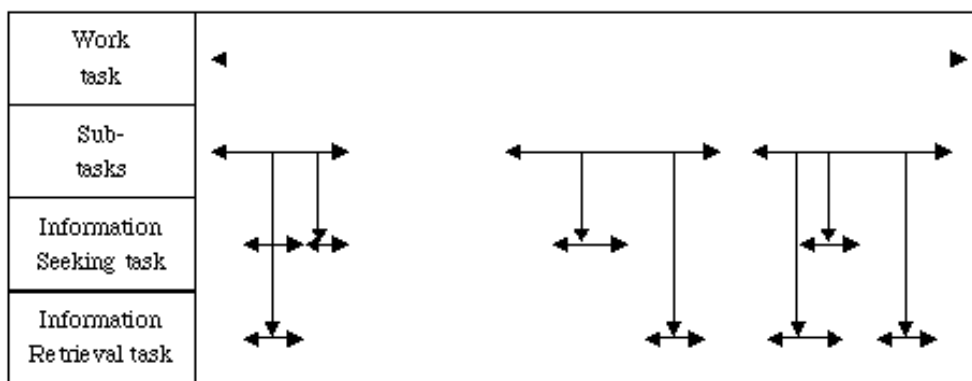
Figure 2. Hansen and Järvelin's task dimensions (2000)

In these dimensions, a work task consists of subsequent sub-tasks, some of

which demand information seeking, while others do not. A sub-task can include

multiple information seeking tasks depending on the nature of the subtask. While

some sub-tasks necessitate information retrieval tasks involving interaction with

formal information retrieval systems, others do not.

Business task Based on the definition of a task above, a business task is

defined as a set of actions to accomplish business-related goals. Although the types

of business tasks vary depending on the nature of companies, a set of representative

business tasks are likely to stay the same across different environments. Some studies

have attempted to identify or classify business tasks/problems, but they are subject to

limitations. This study seeks to identify representative business tasks, focusing on the

ones that require external information seeking as part of task accomplishment.

Task-associated business questions To accomplish a task usually calls for

answering a set of associated business questions and using the resulting information.

Those business questions can be seen as information needs represented in a question

form that need to be satisfied to complete the task.

Information types[1] Information types are equivalent to generic information

packages requested by the question in this study. Examples of business information

types in this study include company profiles, market research reports,

patents/trademarks, and statistics/demographics.

Database A database is a large, regularly updated file of digitized

information such as bibliographic records, abstracts, and images related to a specific

field or subject (Reitz, 2006). For this study, databases are limited to fee-based

databases, but the coverage may include bibliographic data, full-text, directory

information, and statistics.

Database selection criteria Database selection *criteria* are the values

librarians consider when selecting databases and *factors* provide a basis for applying

the criteria. Currency is a criterion, for example, and librarians may look at the

coverage dates of the database (factor) to determine currency.

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[1] Different opinions exist on the definition of information types. The definition here is the one used in the survey questionnaires sent to the participants.

Chapter 2: Literature Review

The theoretical framework that informs this study integrates the following fields of research:

- Task-based information searching
- System development for task-based information searching
- Database selection system
- Business information seeking

This study builds primarily on task-based information searching studies that provide a solid foundation for validation of the theoretical constructs that the research questions suggest. Examples of task-based information systems give insights into the way theoretical or empirical research on task-based information searching informs system development. Reviews of previous database selection systems point out their limitations and justify the need for suggesting a task-based information system to assist users in finding appropriate databases and, finally, needed information. Studies on business information seeking present the problems business information seekers encounter during searching business databases.

The next sections describe each related field of research and show where this study fits in the big picture.

2.1 Task-based Information Searching

A typical approach to task-based information searching is to take one or more characteristics of a task as independent variables or influencing factors to explain

variations in information seeking behaviors and task performance. This literature review section divides task-related variables/factors into two groups: a single task characteristic and multiple task types/domains.

2.1.1 A Single Task Characteristic

This line of research explicitly selects and operationalizes a specific task characteristic to relate it to dependent variables. Task stage, task complexity, task analyzability, task variety, task interdependence, and task scope have been identified as notable task characteristics that shape information seeking behaviors. For a more comprehensive list of task characteristics that have been investigated in the information science and management fields, please refer to Kim and Soergel's task classification (Kim & Soergel, 2005).

2.1.1.1 Task Stages

Task stages have been the most widely studied task-related variable in information science. The identification of the stages/steps/phases in a task process is critical because each stage differs in the type of activities, the information sought to complete the activities, and accordingly, the users' information searching behaviors to meet the needs.

It is difficult to do a comparative analysis among research on task stages because they address different tasks performed by different user groups, for example, economists (White, 1975), literary critics (Chu, 1999), and R&D researchers (Hirsh, 1999), etc. For a detailed comparison on research-phases of scientists, social scientists, and humanists, refer to Chu (1999).

Task stages have an impact on the types of sources used. Although the task types examined and the unit used to represent a stage in the task process vary across studies, some similarities are obvious. Task processes suggest a common start to the research process beginning with problem identification or idea generation (Chu, 1999). To do this, people usually talk with fellow researchers or classmates to discuss the problems or consult a wide range of sources. Tasks in the middle stages vary according to the environments in which task types are examined. R&D researchers' development stage makes the greatest use of patent literature and technical journal literature (Hirsh, 1999). Economists rely mostly on statistics and methodological sources in the methodology stage (White, 1975) and literary critics use extensive primary and secondary sources in the preparation stage (Chu, 1999). Substantive use of information and a diverse range of resources usually mark these middle stages. In the analysis and writing stages, on the other hand, people use information minimally but may seek additional information. In the dissemination or transfer stage involving the activities of publishing or presenting the end product, people heavily rely on conference presentations and interactions with personal sources of information.

Task stages have an impact on relevance judgment. Generally, as a user progresses from preliminary to advanced stages, he becomes more focused and knowledgeable about the research problem at hand, and thus, relevance judgment becomes more sophisticated and discriminatory. Consequently, the share of relevant documents decreases along the task process (Vakkari & Hakala, 2000). Similarly, Wang and White (1999) demonstrate that during a research project, the number of

retrieved documents is much larger than what is obtained and read, and the number of cited documents is much smaller than what is retrieved and read.

In addition to degree of relevance, Vakkari and Hakala (2000) examine changes in relevance criteria used throughout the task stages. Information content or topicality is a major criterion across stages, whereas the significance of information types increases compared to topicality especially in the middle of the process. The findings suggest that each stage requires users to look at particular aspects of the topic rather than to search for documents on the topic in general. General background and theoretical information, which are judged relevant at the beginning of the process, are deemed less relevant at the end.

Task stages have an impact on information search strategies and vocabulary used. As users become more focused and clearer about their topics as they perform tasks, their vocabulary in the request or search terms includes more synonyms, narrower and related terms (Wang, 1997; Vakkari et al., 2003). For example, Vakkari (2003) notes that, as the task proceeded, 22 undergraduate students used more *Vary* tactics, which was substituting an existing query term with another, and *Parallel* tactics, which was adding synonyms, reflecting the growing knowledge about the topic. Yang (1997), who observed students working through their class exercises using a hypertext system, also finds that the share of exploratory search strategies decreases as students search for more specific information.

Task stages have an impact on collaborative activities. The types and amount of collaborative information retrieval activities vary according to work task stages. Studying patent task performance at the Swedish Patent and Registration

Office, Hansen and Järvelin (2005) find that the task process includes highly collaborative activities throughout the work stages. The task planning stage especially involves high human-related collaborative activities while the task preparation and complete stages involve more document-related collaborative activities.

2.1.1.2 Task Complexity

Task complexity has been regarded as a critical aspect that affects the way in which task performers address information seeking activities. Vakkari (1998) compares five studies on the relationship between task complexity and information seeking to analyze the growth of theories in this field. The studies include Tiamiyu (1992), Culnan (1983), Byström and Järvelin, (1995), Pinelli et al. (1993), and Zeffane and Gul (1993). Zeffane and Gul's (1993) research is discussed in 2.1.1.3. because their notion of task complexity is actually based on task analyzability and task variety.

Task complexity has an impact on the number of sources used. As task complexity increases, the complexity of information needed increases and thus, the number of sources or channels used increases to accomplish the given task (Tiamiyu, 1992; Byström & Järvelin, 1995).

Task complexity has an impact on information types. Among rare research investigating the relationship between task complexity and information types, Byström and Järvelin (1995) find that simple tasks necessitate simple information, typically, *problem information* that describes the structure, properties, and requirements of the problems at hand. Complex tasks, on the other hand, demand

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more *domain information* and *problem-solving information* that cover concepts and

theories in the domain of the problems and the methods of problem treatment.

Task complexity has an impact on the types of sources used. Some studies

show that, as task complexity increases, more external sources/channels are used and

fewer internal sources/channels are used (Tiamiyu, 1992; Byström & Järvelin, 1995).

Byström and Järvelin (1995) state, however, that the internality/externality dimension

of sources indicates a large share of internal sources even in complex tasks. Culnan

(1983) and Pinelli et al. (1993) find an increasing use of internal sources for complex

tasks. These seemingly contradictory findings need careful interpretation with

thorough examination of their operational definitions and categories regarding

internal and external resource types.

With most research looking at internal/external or person/document resource

types, Byström and Järveli, (1995) further categorize resources by the contents they

offer: general purpose sources (experts, literature), problems sources (people

concerned, documents), and fact-oriented sources (databases). According to their

study, as a task gets more complex, people seek and use more general purpose

sources, while the share of problem and fact-oriented source decreases.

Task complexity has an impact on the success of information seeking. As

expected, as task complexity increases, the success of information seeking in terms of

finding all information needed for the task decreases (Byström & Järvelin, 1995).

Task complexity has an impact on the amount of communication within a

group. In general, the more complex the task is, the greater the group's internal

communication is. Based on task categories ranging from complex (research) to less

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complex (technical services) tasks in a laboratory setting, Tushman (1978) finds that high performing projects dealing with complex tasks have significantly more intra-project communication than high performing technical service projects.

2.1.1.3 Task Analyzability and Task Determinacy

The concepts of task analyzability and task determinacy originated from organizational theories as major determinants of task performance. Task analyzability refers to the degree to which programmed solutions are available to a task doer to solve problems. Task determinacy refers to the degree to which unexpected events are absent in the process of task completion (task variety is the opposite, the degree to which unexpected events are present). In combination, low task analyzability and low task determinacy are sometimes conceptualized as high task complexity or uncertainty. Some researchers successfully link these concepts to information seeking rather than directly to task performance (e.g., Daft & Macintosh, 1981; Zeffane & Gul, 1993).

Task analyzability and task determinacy have an impact on information processing. Low task determinacy is associated with uncertainty, which, in turn, calls for more information to reduce the uncertainty (Daft & Macintosh, 1981; Zeffane & Gul, 1993). Daft and Macintosh (1981) also make a connection between task determinacy and information equivocality, which refers to ambiguity. When information is highly equivocal, for example, when too many possible meanings exist, people need a context or framework to help them accurately understand the information. Daft and Macintosh (1981) find that high-determinacy (low variety) or routine tasks need unequivocal information such as quantitative data, whereas low-

determinacy (high variety) tasks need more equivocal information that provides richer

clues in a qualitative manner.

As task analyzability increases, the degree of required timeliness of

information increases (Zeffane & Gul, 1993).

2.1.1.4 Task Interdependence

Task interdependence refers to the degree to which individuals need to work

with other individuals to accomplish their tasks. This concept is closely related to

teamwork and communication patterns.

Task interdependence has an impact on the amount of communication.

Since greater interdependence requires more joint decision-making and coordination,

projects with high interdependence have greater communication than those with a

small amount of interdependence in an R&D laboratory environment (Tushman,

1978).

2.1.1.5 Task Scope

Task scope refers to the extent of the area to which the task refers and which

is affected by the task outcome (Whitley & Frost, 1972).

Task scope has an impact on the types of sources used. Whitley and

Frost's (1972) results indicate that scientists working on tasks of global scope (tasks

addressing global problems) use external journal and university contacts more than

those working on tasks of local scope (tasks addressing local problems).

2.1.2 Multiple Task Types/Domains

While a majority of task-based information searching research concentrates on a single task type, some researchers are interested in the effect of diverse task types or task domains on information seeking. This body of research regards multiple task types themselves as independent variables or influencing factors on information seeking behaviors.

Algon (1999) asks whether there are regular relationships between the information-related behaviors (IRB) of individuals in a work-group environment and the tasks they are performing. By observing and surveying drug development project team members in a large pharmaceutical company, she finds that the type of task indeed influences the IRBs that people apply. In this study, tasks related to interactions with people and tasks related to interactions with things are both positively and negatively associated with information use and processing behaviors. Tasks related to interactions with ideas are both positively and negatively associated with information comprehension and articulation behaviors but are only negatively associated with information use and processing behaviors.

While this study is a typical work-task study, the advent of the Web in which ordinary people look for information has spurred research to expand job or project-related tasks to personal tasks in daily lives. The impact of different tasks performed by ordinary people especially on the Web searching behaviors is recently attracting more interest among researchers.

Through observation of users using the Web in a public library, Slone (2002) categorizes users' goals as recreational, educational, personal, and job/career as task

types. She finds that job information seekers employ a broad net type of browsing mechanism wherein many websites are accessed and much information is retrieved. Education information seekers retrieve information from far fewer sources but use more approaches and Web tools than job seekers. Those looking for recreational information browse the Web by random pointing and clicking. Personal information seekers prefer linking to analytic searching. Interestingly, Slone suspects that the discrepancies in searching strategies are attributable to users' motivation. According to her conjecture, the level of motivation underlying each task type actually functions as a mediating factor that differentiates the search strategies, resulting in the use of more sources and wider approaches for highly motivated tasks such as the job/career task.

Likewise, Toms, et al. (2003) examines task domains as a variable -- health , research, shopping, and travel -- on the Web search process. Their findings are that research searchers tend to focus on the subject content and the format of the information. Their queries usually include a topic together with a particular type of information format (e.g., journals, newspapers, and statistics). Shopping searchers often add "purchasing" with a product name to queries to avoid the websites simply providing information about the product without the capability of on-line transaction. In general, shopping and travel queries share some common characteristics, as did research and health. The authors argue that, rather than task domains themselves, the characteristics of search goals that the task domains embed – finding topical information (research & health tasks) vs. finding information to take a certain action (shopping & travel tasks) – play a greater role in Web searching.

Rieh (2002) demonstrates that Web users' authority judgments vary according to task types; users who look for information on medicine and computer are more sensitive to the authority of Web pages than those doing research and travel tasks. Her research is novel in that it links task types to relevance judgments. Relevance judgments have received little attention as a dependent variable or influenced factor in task-based information searching..

TREC 10 and 11 assess Web searching performance by a function of task domains (Hersh & Over, 2001; Hersh, 2002). TREC 2002 interactive track covers four general tasks from which the eight actual search tasks are derived (Hersh & Over, 2001; Hersh, 2002). The four tasks, which are slightly modified from the previous track, include looking for personal health information, seeking guidance on U.S. government law/regulation/policy, making travel plans, and gathering materials for a report on a given subject. The tasks are related to system performance such as effectiveness, efficiency, and user satisfaction of the searches but not to information seeking behaviors. As an exception, Rutgers Interactive Track at TREC 2002 (Belkin et al., 2002) investigated the effect of the task domain on users' search behaviors. The task domains used as independent variables are projects, shopping, traveling, medical/health, government/policy, and entertainment tasks. The dependent variables are the number of pages seen, number of document saved, number of iterations, mean query length and more.

These studies have contributed to broadening the boundary of task-based information searching research from a single task characteristic to multiple task types, but most of the findings are merely descriptions of variances occurred in dependent

variables. This is partly due to the difficulty of separating the aspects or dimensions
of task types that directly lead to the varying information seeking behaviors from the
compound aspects of tasks. A more systematic approach is needed to sharpen the
understanding of what makes the relationships between task types and dependent
variables or to what extent task types influence dependent variables.

2.1.3 Summary

The scope of task-based information searching research can be defined along
two dimensions. These are represented in Table 1 with previous studies located at the
intersecting cell of the corresponding dimensions.

Table 1. *Scope of the Task-based Information Searching Research Area with Study*
Examples

Independent variables (task characteristics)	Dependent variables (information behaviors)		
	Seeking (source level)	Retrieval (document level)	Evaluation/use/ outcome
Single task type/characteristic	White (1975) Byström & Järvelin (1995)	Vakkari (2001)	Hart & Rice (1991)
Multiple task types/ domains		Slone (2002) Belkin et al. (2002)	Algon (1999) Rieh (2002)

Note: For complete bibliographical references for the studies, refer to bibliography.

The independent variable or influencing factor dimension breaks down into a
single task type and multiple task types/domains. The dependent variable or
influenced factor dimension that spans a wide range of information behaviors is
broadly categorized into information seeking activities (e.g., types of information

channels used, number of sources used), information retrieval (e.g., search strategies used, Boolean operators used), and information evaluation and use/outcome (e.g., relevance judgments).

As shown in Table 1, few studies have elucidated the relationship between the information seeking process and multiple task types. The proposed study fills this void by relating database selection, one of the most important activities in the information seeking process in today's computerized environment, to diverse business task types.

Also, all of the reviewed studies examine end users' information seeking processes and little is known about the impact of users' tasks on librarians' work. It is interesting that although reference librarians as information experts negotiate users' questions to identify their tasks behind the questions to better serve the tasks, few studies have been done to know how librarians consider users' tasks in their work. This study will fill this research gap by surveying reference librarians instead of end users.

2.2 System Development for Task-based Information Searching

Task-based information systems can be divided into two groups: specialized task-based systems and general-purpose systems. The former systems offer the potential of improved support for a specific type of users having a specific task, whereas the latter systems attempt to address the general public having a wide range of tasks.

2.2.1 Domain-specific Task-based Information Systems

Domain-specific task-based systems are effective in tightly coupling pre-defined tasks with a searching mechanism in a narrow domain by analyzing users' tasks and supporting customized information to the tasks. The advantages of the specialized task-based systems are, however, mitigated by significant cost and effort put into the development process. Furthermore, users involved in more than one type of task would need to learn how to use multiple specialized systems to accommodate all tasks.

Celentano et al. (1990) proposes a document retrieval system called the Kibiria system based on the representation of knowledge describing the way in which the documents are managed by procedures and by people in the offices. The system models the tasks in which the documents are used, the actors who perform the tasks, and laws, regulations, and habits of the office using frame and semantic networks. The benefits of this system derive from the ability to retrieve documents not only by explicit contents in the document, but also by additional relationships with other documents or office rules.

Wolverton (1999) constructs the Task-based Information Distribution Environment (TIDE) system that aims to deliver information to users by evaluating the relevance of incoming information to their current tasks. The system represents each task in a hierarchy of relationships among the tasks, and derives keyword vector queries from instantiations of the task representation that will match documents relevant to a selected task. Again, the tasks are based on the knowledge representation in this system.

Meyyappan et al. (2002) proposes the Digital Work Environment (DWE) that aims to assist the academic users in carrying out various tasks using a task-based design. The system organizes useful resources according to the tasks and subtasks needed to accomplish different types of jobs. The examples of representative tasks derived from interviews and focus groups include preparation of a new course outline, preparation of reading lists and assignments, and writing a dissertation. The examples of sub-tasks for the dissertation-writing task include deciding on the research methodology, data collection, data analysis, and preparing a bibliography. Upon selecting a relevant task to be accomplished, the users are presented with a list of subtasks and the procedure to follow and appropriate resources corresponding to each subtask. This is a web-based system in which users simply follow links step-by-step.

These systems take advantage of knowledge bases that are constructed to reflect the existing task structure.

Leake et al. (1999), on the other hand, integrates case-based reasoning and information retrieval to develop a knowledge management system. The system anticipates task-based information needs and satisfies them automatically before the user requests information by learning unobtrusively users' task performance. It benefits users by integrating other knowledge resources, supplementing case information. Moreover, it supports not only immediate tasks, but also guide users through the overall task process.

Task-centered Interface Design in the HCI (Human Computer Interaction) field is another large body of research that considers tasks in system development.

Theories and empirical findings are abundant in this area (e.g., Lewis. & Rieman, 1994; Greenberg, 2003), but most of them were originally designed to support computer tasks such as word processing that do not necessarily need information retrieval. The emphasis in this study, on the other hand, is on tasks that can be accomplished with the help of information gleaned during information searching.

This idea is consistent with Komlodi and Soergel (2002) and Hendry (2003). Hendry suggests developing a catalogue of task scenarios that illustrate how search has been embedded within task environments to develop a task-based information retrieval system. He also proposes an integrated system whose ultimate purpose is organizing references for a paper using a search feature. Komlodi and Soergel (2002) developed a history-based interface for lawyers. They suggest interface tools that support task integration across searches and the use of information.

2.2.2 General-purpose Information Systems

A general-purpose information retrieval system that automatically identifies a user's task and customizes retrieval algorithms according to the task would be more desirable than specialized systems in terms of cost-effectiveness and ease-of-use on users' side. It is difficult, however, to build such a system because of the inherent complexity in defining and determining tasks and lack of empirical studies that make a connection between a certain task and retrieval algorithms that produce improved search performance for that task. Nonetheless, efforts are continuing to develop a general-purpose IR system that is capable of eliciting users' tasks at hand or contexts either explicitly or implicitly in many areas.

To reduce users' difficulty in specifying a task with keywords in general Web search engines, Matsuda and Fukushima's (1999) system presents users with a set of document types to choose from, each of which implies a task (e.g., On-line shop, Call for paper, Glossary). In this system, two users who type in the same search query would receive different sets of results if they check different document types, which signify different tasks to achieve.

Instead of presenting options that implicitly designate corresponding task, the body of research on "service-finding" seeks to allow users to explicitly express which on-line services they look for. The MIT Process Handbook project provides a tool that prompts users to enter a service name, for example, "buy a used book," resulting in retrieving a list of the Web pages that allow for the service. To do this, an ontology was constructed based on a business process model and Web service names were added to the ontology manually. Bernstein and Klein (2002) argue the superiority of the process ontology to keyword-based and table-based approaches in the performance of service-finding systems.

Without users' input, some systems attempt to elicit automatically the context by working alongside the user as he is performing a task. This type of research, called "just-in-time," characterizes a user's context by analyzing terms in documents the user is accessing. *Watson* (Budzik & Hammond 2000) constructs a query based on the content of the document a user is writing or browsing and, when a new query is issued, combines it with the previously constructed contextual query by concatenating them to form a single query. Similarly, *Prism* (Leake & Scherle, 2001) extracts a user's context by monitoring his activities in word processors, uses

heuristics to identify relevant content areas, and selects search engines relevant to his context. More recently, Kraft, Maghoul, and Chang (2005) developed Y!Q, a first of its kind large-scale context search system integrated with Yahoo. A notable feature of the system is that it relies on explicit user selection for context acquisition instead of guessing or inferring context automatically from a page. For example, if a user were to enter the query "apple" in a regular Web search box, he would see results about the computer company, the fruit, and possibly other references, but if a user were already on a Web page about computers and then highlights some text on that Web page and typed the same "apple" query using Y!Q, he would see results that were specific only to Apple computers (Y!Q Beta FAQ, Yahoo! Inc.)

While these systems focus on information about the immediate task context, *WordSieve* is more concerned with the task sequence. *WordSieve* (Bauer & Leake, 2001) observes users as they browse the World Wide Web, indexes documents they access in a given context, and suggests those documents in similar contexts in the future.

Although these systems accomplish a modest level of success in extracting a user's immediate task and proactively introduce potentially context-relevant information, sole reliance on terms appearing in documents could lead more to a simple approximation of text topic than to identification of task hidden under the topic. More experiments on various search techniques could advance general-purpose task-based systems in future.

2.2.3 Summary

The essence of task-based systems is the assumption that information searching is embedded within a broader task and thus the systems should support the overall task performance process that requires information retrieval rather than isolating an information retrieval process out of context as in most available information retrieval systems. To that end, knowing which tasks a user group usually performs in which databases is a key to designing such task-based systems. A paucity of research has tried to incorporate users' tasks into system design, but there is much to learn, especially for business world.

Domain-specific task-based information systems are built based on the needs of a limited set of users working in a certain domain, for example, lawyers. Thorough analysis of users' tasks and associated information seeking activities are feasible for those systems. The most striking drawback of these systems is that they are not cost-effective. In addition, users with multiple tasks may have to learn and use different search languages and interfaces whenever they need to perform different tasks in different systems.

To ameliorate those drawbacks, general-purpose information systems intend to support multiple tasks for a larger number of users beyond a bounded setting or domain. A single information system capable of helping users perform multiple tasks through a unified interface would be cost-effective and reduce users' burdens of learning how to operate multiple systems. It is very difficult to develop such systems and current technology is still more suitable for topic extraction than task identification, so it has made sense that research so far has been restricted largely to

domain-specific systems.

The findings of this study could benefit a specific user group of business people because their information seeking behavior has not been examined in enough detail to be able to suggest task-based business information system design.

2.3 Database Selection Systems

With the growing number of databases available, each with its own unique search functions, the difficulty in selecting the most suitable databases for a given task has increased significantly and, in turn, the importance of database selection assistance systems has increased over past decades. Although significant research efforts have occurred to date, room is still available for designing more useful and usable database selection systems.

This section reviews previous efforts in the development of database selection systems to point out their limitations and to justify the need for taking a task-based approach in the development of a database selection system.

2.3.1 Previous Database Selection Systems

The early mechanism for selecting databases is to classify databases into broad subject areas. Databases assigned to a certain subject area are listed alphabetically by name. The searchers select a database by scanning the list of databases within a specific subject based on their needs. *Kiwinet Advisor* (Smith, 1991, cited from Ma & Cole, 2000) is a menu-driven system in which users narrow the scope of topics from broad to narrow. The drawback of this simple mechanism is

its incapability of keyword searches. The usefulness of this system is reduced when the user has a cross-disciplinary topic or when he does not immediately recognize the subject category most relevant to their information needs or, within a category, the preferred database (Ma & Cole, 2000).

Another mechanism used to narrow the list of potentially suitable databases for a given need is to use keyword postings. University of Cincinnati Engineering Library (http://www.engrlib.uc.edu/php/about/staff/hao/index.phtml) and EasyNet (O'Leary, 1988) take the terms a user specifies and automatically perform a keyword search in multiple databases. The results indicate the number of hits that are found in each one, ranked from the most to least hits. Similarly, DIALINDEX (http://library.dialog.com/bluesheets/html/bl0411.html) returns the number of items (documents) that contain the keyword at least once in each file (database).

The assumption of these systems is that the number of times the occurrences of the keyword or the number of documents that contain that keyword at least once in the database indicates the degree of relevance of the database, but some researchers insist that this assumption is not always correct since the fields in the basic index vary from database to database (Conger, 1980, cited from Wang, X. 1990). The duration of the time coverage also varies across databases, which affects the search outcome. While focusing on keyword search features, these systems do not usually enable users to select databases by other database characteristics such as desired document type or date coverage. DIALINDEX does allow the user to specify the databases that are searched, but the user needs to know the scope of the databases.

The other database selection assistance systems have followed expert system

approaches by creating a knowledge base that is a representation of the expert's knowledge about the database selection process. Thornburg (1987) describes an interactive system that guides users through seven menu layers to select suitable databases. A decision model is represented by means of production rule with respect to 24 database variables. Trautman and Flittner's (1989) expert system consists of database attributes with rankings, a user modeler, a question clarifier, a search module, an evaluator module and a ranker module. A browser module permits a free text search of text files and indexes of the database entries. Databases are classified using nine attributes: kind, period of coverage, language, geography, vocabulary, viewpoint, sources, audience, and updating. Each database attribute has category descriptions and ranks used by the expert system to determine which databases are appropriate for a query. The user modeler is used to determine where the end-user fits on a novice-expert scale as well as the type of result required for its ultimate utilization.

In the business domain, Zahr and Chang (1992) developed a prototype expert system called ONLINE-EXPERT that provides a user advice on the selection of specifically business-related databases. The system prompts a user to select one of the categories pre-defined by the developers (business news, corporate profile, reports, government documents, marketing, securities, government regulations, court decisions, and federal status) and subsequently, other pertinent variables such as geographic coverage and publication type through multi-layer menus. CIDA (Company Information Database Advisor) (Morris, et al., 1994), designed to assist in the selection of company databases in U.K., guides users through multiple steps to

narrow to one of eight company types (manufacturers, exporters, importers, owners of trade names, professional practices, retailers, and companies with specific equipment or facilities).

Despite the modest level of success in acquiring and representing experts' knowledge regarding database selection decision-making in a knowledge base, these systems are not fully satisfactory due to the lack of keyword search features or insufficient search options for various database characteristics.

To move a step forward, Ma and Cole (2000) developed a new database expert system that allows for both keyword searches with a variety of search options and browsing. They first gleaned topic keywords from the database thesaurus/controlled vocabulary of each database or random sampling from subject headings or subject heading equivalent as actually used in databases. In their system, a user can type in the keywords or phrases based on their topics and specify a criterion in other fields; subject category terms, broad subject, format, level, and database type. Alternatively, if the user has difficulty expressing his information need in keywords, he can browse a subject category term and point to the appropriate databases. As a final search function, a user can choose a database based only on desired database characteristics. This system pioneers an implementation of keyword search features with the use of database thesauri/controlled vocabularies combining with librarian-assigned descriptors for various database metadata. Moreover, the interface that organizes the search functions into keyword search, browse subject, and search by database characteristics is attuned to users having different types of ambiguity about their information needs. The results of a usability test conducted

later were encouraging. The recall rate was much better when searches were done against database controlled vocabularies and randomly selected subject headings than when such searches were done only against lists of subject category terms assigned to electronic databases by librarians (Ma, 2002).

2.3.2 Limitations of Previous Database Selection Systems

Although database selection systems have evolved from a simple subject classification mechanism to more sophisticated systems using keyword search features and various search options, they commonly have a critical deficiency -- ignorance of users' tasks in creating a database selection model. Instead of moving from the task or information need to the database, they concentrate exclusively on database-related characteristics or subjects to decide which databases are the most appropriate for given information need. Figure 3 illustrates the basic mechanism of previous database selection systems. It dismisses the influence of tasks on database selection because of complexity of incorporating tasks into system design or lack of evidence that the influence is significant enough to incorporate. Therefore, this study seeks to assess how tasks influence the database selection process.

Another illegitimate assumption made in the mechanism of previous database selection systems is that users know precisely what they want to know so that all users have to do is to specify several database characteristics options that match their needs. In reality, however, many users experience difficulty in expressing information needs using database characteristics or keywords. Although the user knows what he wants to achieve, it is still difficult to predict the types of databases

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that would contain informative documents and specify database metadata such as data type or coverage in advance. Making effective use of previous database selection systems is not realistic for a user who is incapable of accurately formulating his information needs or predicting desirable database characteristics for the immediate task.
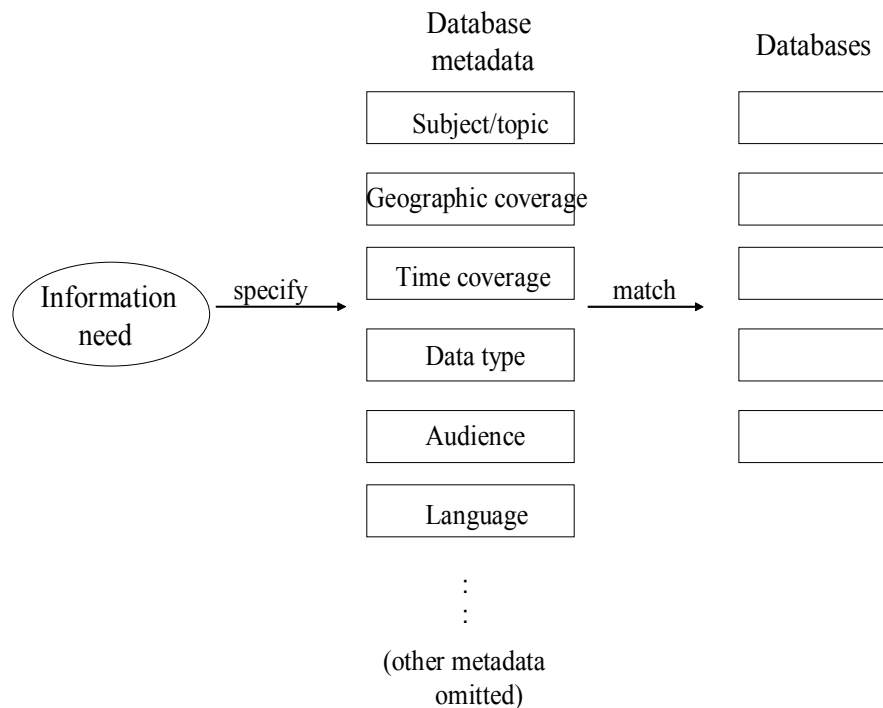
Figure 3. Basic mechanism of previous database selection systems

In this regard, Conrad and Claussen's (2003) approach is unique because they analyze thousands of real user queries in the legal field to directly incorporate users' information needs into a database selection process. The gathered queries cluster around 12 distinct categories, which signify common legal research tasks and the types of documents users commonly wish to retrieve. Among them, eight categories were implemented as of 2003: Sources & Publications, Courts & Government

agencies, Legal practice & Research areas, Geographic regions & Locations, Legal issues, News, Definitions, and Others. In the early stage of interacting with the system, users are presented with those categories to proceed to the next step. This system has significant implications in that it incorporates actual information needs as expressed by users and it supports user control over the database selection process, which consequently enables higher user satisfaction and higher search efficiency. Although it has obvious merit, the system is far from perfect. The categories do not accurately reflect users' tasks, instead they actually mingle information types, topics, and tasks.

The above-mentioned limitations of previous database selection systems justify the need for developing a task-based database selection system that is capable of directing users toward their ultimate tasks to accomplish for the effective choice of appropriate databases.

2.3.3 Summary

Influenced by the proliferation and complexity of commercially available databases and the complexity and diversity of online searching, the importance of database selection aids has been growing over decades. Currently, various database selection aids are in use, ranging from printed directories to library reference websites, but many of them cover only a limited number of vendors or give insufficient advice to end-users. Thus, database selection systems that incorporate the tasks for which users need to search should be able not only to facilitate users' database selection process, but also to enhance their information literacy by letting them determine the

nature of the information needed and easily access appropriate information.

2.4 Business Information Seeking

The rationale for choosing the business domain as a test bed in this study can be established well by illustrating business information seekers' information seeking behaviors and business databases' unique characteristics. The next sections describe the information seeking behaviors of various types of business user groups and outline business databases' distinctive characteristics.

2.4.1 Business Information Seekers

Because of the constantly changing nature of business information and its vehicles of distribution, it is important that business information seekers possess a certain level of knowledge about how to access, select, and evaluate information to be successful in navigating and managing the world of business information. Unfortunately, evidence is abundant that business information seekers, such as entrepreneurs, market researchers, job seekers, and business students and faculty members, suffer from lack of knowledge about how to effectively access, select, and evaluate information. The first and foremost reason for this phenomenon is they are highly inclined to use the Web to the exclusion of other resources. They are not aware of the wide range of business databases available that offer in-depth and value-added business information that cannot be obtained on the Web. Also, they do not know how to select and access the databases. Despite the lack of knowledge about databases, they prefer self-service and are reluctant to ask librarians for assistance

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(Haythornthwaite, 1990). They tend to have immediate, urgent questions and, as a result, impatience is a typical characteristic of business information seekers (Lavin, 1995). These behaviors have been observed across various types of business users.

Business students are some of the most over-confident of all library patron groups and have the practice of making assumptions and miscalculations about how quickly business information can be accessed and retrieved (Cunningham, 2003). Not only do they do not have the required skills and knowledge to do a successful business information search, but also they do not seek the professional assistance of the librarian immediately (Atkinson III & Figueroa, 1997). To tackle this problem, many librarians and researchers have proposed instruction sessions/programs to teach information literacy to business students (e.g., Donaldson, 2004) or described their experiences in developing instruction sessions to improve methods for business classes (e.g., Huett, Sims, & Villalon, 1997).

Another line of the effort to accommodate the business students' penchant for the Web is to create a Web-based business reference site. After developing the Virtual Business Information Center (VBIC) (http://www.vbic.umd.edu/), a portal website for business students and faculty members in Robert H. Smith School of Business (RHS) at the University of Maryland, the team administered an electronic survey to MBA students to learn more about the users and to improve the website (Abels, Griner, & Turqman, 2004). Not surprisingly, about two-thirds of the respondents reported beginning the research process by using a Web search engine while only three percent began with consulting a librarian. Regarding the type of help they need, they wanted assistance most in selecting resources and using a

database available through the library, followed by developing a search strategy.

Business executives also express a strong preference for timely and convenient access to information. Auster and Choo (1991) suggest ease of use, accessibility, time and effort to invest, and cost as primary factors in proposing a model for the study of information scanning behavior by executives. In a later study, however, they show a contradictory finding that the perceived quality of the resource is a better predictor of use than the accessibility of the resource for some executives, who are willing to pay a premium for high-quality information.

In addition to the factors suggested by Auster and Choo (1991), multitudes of other factors have been identified as coming into play when managers seek information such as organizational and personal characteristics. Notably, White and Wilson (1988) try to establish the link between managers' functions and their needs under the assumption that their needs would be dictated by the functional roles of an individual in the organization. Interviews with 82 managers in 10 companies, however, do not corroborate such a direct correlation between the functions and information needs. In that study, operational managers report using marketing information and marketing directors mention collecting internal data. The conclusion is that information needs and uses are contingent more on immediate tasks than on set functional roles or responsibilities in organizations. Katzer and Fletcher (1992) also argue in their review paper that immediate problems or tasks that trigger information searching have more impact on information searching activities than functional areas such as finance, marketing, or personnel.

With respect to information retrieval processes of business information

seekers other than business students, relatively less research has been done. Among the paucity of surveys available, a Delphi survey shows that most business professionals spend more than 2 hours a day (25 percent or more of an 8-hour day) searching for the information they need to accomplish their jobs. Sixty one percent of business professionals believe they have a less than 75 percent chance of finding the information they need (Anonymous, Information Today 2003, cited from Solomon, 2005). The main impediments to finding the information are perceived as poor tools (28 percent) and the concern that information is changing too fast. Similarly, FIND/SVP (http://www.beyondroi.com) and the 2003 Roper/ASW survey find that a majority of business executives consider it nearly impossible to do their jobs without Web-based search tools, but they think that Web searches take longer than necessary or express low confidence in search activities for their research (Solomon, 2005).

2.4.2 Business Databases

Numerous people have written on the distinctive nature of business as a subject area and its impact on business librarianship. The most notable features of the business domain are:

- Rapidly changing business events

- Complexity and interrelated nature of business and economic forces

- Dependence on multidisciplinary solutions

- The extent of proprietary and carefully guarded business information (Lavin, 1995).

The information needs coming from a turbulent business domain have

accelerated the growth of business databases in terms of volume and diversity.

According to the *Gale Directory of Databases* (Gale Directory of Databases, 2007),

business ranks first among all subject categories in terms of the total number of

databases (4,921), followed by science/technology/engineering (3,447). The status of

business databases measured by the share of the entire database market has been

consistent since 1988 while the rankings of other areas have fluctuated.

From the user perspective, the overwhelming abundance of business databases

poses a huge problem in selecting appropriate databases. Although users do not have

to select one database among three thousand because no single organization or library

provides access to all, the problem still remains. In a fall 2001 survey about business

databases access in academic business libraries (Schnedeker, 2003), 36 libraries

reported 107 business database subscriptions in aggregation. On average, one library

subscribes to about 41 commercial business databases, which means that a business

student or faculty member has 41 database candidates to choose from to launch his

business search. In that survey, only seven databases were subscribed to by 30 of the

36 libraries reporting; *EconLit, Factiva, JSTOR, PAIS International, Lexis-Nexis*

Academic Universe, STAT USA, and *Statistical Universe*. Many of these are not

business-specific but cover a range of subjects.

Beside the volume of business databases available, a wide diversity of

business databases in terms of data type (e.g., numeric, full-text), date coverage, and

content coverage, degree of specialization, and company coverage (e.g., public

companies vs. private companies) also creates problems for users for selecting a

suitable database. Most of all, in contrast to general bibliographic databases in which

users search for articles based on topics that represent their information needs, business databases enable users to look for a company, an industry, a geographic area, a customer group, and a product. For example, when a user is looking for company information for Intel Corporation, typing "Intel" in a bibliographic database such as *ABI/Inform* pulls up over 20,000 journal articles or news documents that are topically related to Intel. A search for "Intel" in *Hoover's Online* returns a list of matching or similar company names as search results. Clicking the matching company name -- Intel -- presents structured information about Intel's company overview, history, people, competitors, and U.S. Securities and Exchange Commission (SEC). In this database, the company is the unit of analysis. In the similar manner, *Business & Company Resource Center* allows for industry searches, *Thomas Register* (http://www.thomasnet.com/index.html) for product searches, and *EIU* (Economic Intelligence Unit) for country searches.

Therefore, for successful searches, users should be able to determine which databases containing which entities would fit their tasks. For a job seeker looking for basic information such as competitors or history of a particular company, *Hoover's Online* is the best source, but for a business student writing a report on the trend of an industry that the company belongs to, *ABI/Inform* is a better choice.

This abundance and diversity of business databases benefits users by offering the richness in options of databases, such as degree of specialization by subject, format, and content, but, again, the same diversity and abundance create problems in selecting appropriate databases.

To help discriminate among those diverse databases, many articles have been

written on database selection or database comparison by examining the characteristics of databases and techniques used for selecting them. Some articles deal with database selection explicitly in general or in a specific subject area (e.g., Ojala, 2003). The others focus on comparison and evaluation of databases in individual subject areas or on performance evaluation of an individual database (e.g., Ojala, 2004; Affelt, 2003). For a comprehensive list of characteristics, factors, procedures, and techniques that are used in database comparison and selection, refer to Wang's (1990) dissertation.

2.4.3 Summary

Business information seekers in general exhibit impatience and urgency in an information seeking process. They try to minimize investing time and effort into information seeking. This practice leads them to prefer free resources on the Web and to be aware only minimally of useful for-fee, electronic databases accessible to them through their organizations, frequently with Web access. Additionally, they lack in knowledge about databases' characteristics and search strategies but seldom consult librarians. Consequently, they do not make the most use of databases available to them.

In tandem with this behavior, the complex nature of business databases affected by a combination of the volume and diversity aggravates the difficulty of selecting a right database in this field.

In conclusion, the business domain is an appropriate field that could benefit considerably from a sophisticated tool that takes users' tasks into account for database

selection and information searching even though the methodology used in this study

has a potential to apply to other disciplines.

Chapter 3: Research Methods

3.1 Research Paradigm

This study uses a qualitative research paradigm for several reasons:

• The study *explores* the nature of tasks' role in the database selection process in the context of business.

• Database selection is a complicated process with many variables that are interrelated and difficult to separate from each other. The study intends to identify the *relationships* among business tasks, questions, database criteria, and selected databases.

• The study is more concerned with the database selection *process* rather than with products.

• It seeks to *understand the librarians' perspectives* on database selection. The reality in which librarians select appropriate databases is complex with many factors coming into play and that the reality cannot be measured objectively.

• The study is guided by foreshadowing research questions, not hypotheses, which have already been presented in Chapter 1.

The research questions are such that more useful results are likely to occur if the number of tasks, business questions, and participants is maximized, albeit within the qualitative research paradigm. Maximizing these factors within realistic time and financial constraints influences many of the decisions about methodology in this study. Intensive observations of real encounters in one or a few settings with one or a few librarians would not be likely to provide information about a variety of tasks and business questions and would yield thinking only from a few subjects. As a result,

the study a) uses content analysis of case studies to identify a wide-ranging inventory of business tasks; b) obtains information about essential business questions associated with each task not from people doing the task but from relevant documents written about the task; and c) relies on a Web-based survey of a range of business librarians in academic institutions that are likely to have large, comparable collections of business resources serving a range of disciplines to elicit decision making considerations.

3.2 Research Design

This study consists of two phases:

1. Developing an inventory of business tasks and related business questions.

2. Analyzing librarians' decision making related to database selection.

The next two sections describe first data collection by phase and then data analysis by phase. Techniques taken to ensure credibility and dependability are noted at relevant points, but they are also summarized in Section 3.5, along with comments about the transferability of the study results. Section 3.6 addresses the limitations of the study.

3.3 Data Collection

Table 2 briefly summarizes data sources and collection methods used in the study.

Table 2. *Data Collection Methods*

Data needed	Data source	Collection methods
Representative business tasks	Harvard Business School (HBS) Cases	Content analysis + Validation with two business librarians and one information science professor
Task-related business questions	Business textbooks, Harvard Business Review Articles, Newspapers, and websites	Content analysis + Validation with two business librarians and two information science professors
Database selection criteria and appropriate databases	A sample of academic business librarians	Web-based survey

3.3.1 Identifying Business Tasks

To identify business tasks, this study uses content analysis of business-related case studies. Case studies are written summaries of actual situations that describe common managerial problems and offer concrete solutions obtained from the experiences of real companies and real people. These are often used as teaching devices in M.B.A. programs. For the purpose of this study, they are especially useful because they represent actual problems, thus it was possible to circumvent soliciting case studies directly from business people themselves, a costly process. Their ready accessibility and appropriateness of content make it possible to use multiple examples, representing several sub-disciplines within business. Cases for these sub-disciplines should, in turn, generate a range of tasks that are representative of the field generally and of significant core areas of the field. The population of cases used for this study is the extensive, reputable, and widely used collection of Harvard Business School (HBS) cases. This collection is accessible via a database at the HBS cases website

http://harvardbusinessonline.hbsp.harvard.edu/b02/en/cases/cases_home.jhtml). This collection offers multiple cases in the sub-disciplines chosen for this study.

Case sampling Purposive sampling was used to select a sample of 30 cases from each of five core disciplines:

• Accounting

• Entrepreneurship

• Finance

• General management

• Marketing

Their coreness was corroborated by checking course offerings at approximately ten top business schools.

These cases, in turn, were mined to identify a representative, non-duplicative set of tasks in business. To select the cases, the researcher used a selection tool, *Textbook Case Maps,* provided at the HBS website (available at http://harvardbusinessonline.hbsp.harvard.edu/b01/en/academic/edu_teachres_textcas e.jhtml). *Textbook Case Maps* allows users to find relevant cases about a particular business topic by matching HBS cases to selected business textbooks chapter-by-chapter. The researcher carefully reviewed the individual chapters that constitute each textbook to determine representative topics/themes in the discipline so that core tasks, instead of marginal ones, were elicited. Once a topic/theme deemed significant was discovered in a discipline, all relevant cases linked from the chapter dealing with the topic became case candidates. Through browsing a catalogue information page containing a short description and a learning objective of each case (see Figure 4 for

Hotmail

Publication Date:
Feb 9, 1999
Revision Date:
Jun 23, 1999
Availability: In Stock
Author(s):
Michael J. Roberts, Shripriya Mahesh
Type: Case (Field)
Product Number: 9-899-165
Length: 39p
Discipline: Entrepreneurship

Price and order information omitted here

Instructors who adopted this item also adopted...
Infinata: The Quest for Human Resource Venture Capital
Xedia and Silicon Valley Bank (A)
Bitstream
Vermeer Technologies (C): Negotiating the Future
TiVo

Description:
Sabeer Bhatia, cofounder and CEO of Hotmail, is making efforts to finance and grow this business, which is based on free Web-based e-mail. Describes early, successful efforts at raising several rounds of venture capital and presents choices around a next stage of financing.

Learning Objective:
To describe the challenges of financing an early stage Internet business with an unproven business model.

Subjects Covered:
Entrepreneurship, Financing, Internet, Venture capital

Setting:
Silicon Valley; Internet & online services industries; $10 million revenues; 40 employees; 1996-1997

Figure 4. Example of a catalogue information page for a case in the HBS Case Collection website

an example of a catalogue information page) and a careful reading of the case

candidates, the researcher eventually identified cases containing workable tasks,

excluding other cases having no specific tasks, for example, cases that simply

describe a company's history.

When the process resulted in duplicate tasks, a substitute case was selected. If cases were not available in the list of relevant cases, others listed under the section "Instructors who adopted this item also adopted …" (See Figure 4) were considered until a case with a unique task was identified.

Task extraction After the cases were identified, using content analysis, the researcher analyzed them to extract a business task from each case. Content analysis can be used with existing categories or with categories developed inductively during the course of the analysis. This study followed the latter approach. The example in Figure 4 describes Hotmail' efforts to finance and grow its business at the early stage of the Internet business. From this case, the researcher extracted the generic task of "raise venture capital." A single case usually focuses on a single task, but, when multiple tasks existed in one case, a primary task was identified. Excluded were very broad tasks having numerous sub-tasks (e.g., Develop an e-commerce company and manage the process of new company development) and pure calculation tasks (e.g., Calculate needed loans at five separate dates given financing arrangements and constraints). Appendix A shows which tasks come from which cases, and Appendix B provides bibliographic information and an abstract for each case.[2]

3.3.2 Identifying Task-associated Business Questions

After compiling the inventory of business tasks in the cases, business questions that need to be answered to accomplish each task were collected by

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[2] Because the focus in the text is on the task, independent of its documentary source, Appendix A contains a translation table which relates the task as it is referred to in the dissertation text to the task as it is listed in the appendices, which focus on the case origin of each task, and vice versa.

consulting the case itself, which occasionally included a series of business questions, and relevant textbooks, newspapers, journal articles, and websites. For each task, the purpose was to capture essential questions to complete the task, not to develop an exhaustive list of business questions for the task. Initially all essential associated questions were collected to provide a complete inventory; in the second phase of the project only those requiring external information were subsequently used in survey questionnaires. By using multiple sources, the researcher could identify consensus about the essential or important business questions for each task.

To illustrate both the type of business questions identified in this way and included in this study and the usefulness of the sources mentioned for identifying them, here is one example for the task, "Start a new business with an innovative idea" (Task 26). The business questions related to this task are based on two sources: a *New York Times* article (Gwendolyn, 2005, May 9) and a chapter in Lehmann and Winer's (2005) product management textbook. In the *New York Times* article, which provides a step-by-step guide on starting a new business for inventors or idea creators, Mike Collins, chief executive of Big Idea Group, Inc., as quoted by the reporter, mentions ten questions:

- What is new and different about your innovation?

- What other things like this are out there? Why is yours better?

- How big is the market? How many people have this problem?

- How much would it cost to make this product?

- How defensible is the concept? Is there good intellectual property?

- How is this innovation strategic to my business?

• How easy is it to communicate the innovation?

• How could the product evolve? Is there an opportunity to build it out into

   product line? Can it be updated/augmented in future versions?

• Where would someone expect to purchase this product?

• What will be tricky or difficult in developing this product?

The textbook chapter details some issues with respect to producing new products in a narrative form. After comparing the above questions and the lengthy discussion in the textbook, the following business questions were finalized as essential to accomplish the task:

• What is new and different about the innovation?

• Who are the competitors?

• Please find whatever information you can that would allow me to assess the

   market potential in this e-business.

• Is the innovation technically feasible?

• What will be tricky or difficult in developing this product?

• Where would customers purchase the product?

In most cases, more than one source was consulted to identify consensus about the business questions, but in some cases, one source sufficed to establish a pertinent set. Appendix C lists the resources consulted to identify the business questions for each question.

After the set of business tasks and associated questions were identified, two business librarians at the University of Maryland and two information science professors with business library experience and teaching experience related to

business information reviewed the business questions within the context of the tasks and suggested additions or deletions as needed. This process helps to assure credibility about the data.

3.3.3 Identifying Business Questions Requiring External Information

Since the focus of Phase 2 is on librarians' decision making regarding database selection, it was necessary to categorize the identified business questions into two groups: those requiring internal information and those requiring external information. *Internal information* refers to information that can be obtained through an information seeker's memory, personal contacts, or databases internal to an organization or firm. *External information*, on the other hand, refers to information available externally via formal external databases/resources.

The two librarians and one professor with business library experience reviewed the categorization of each question and suggested some modifications. The disagreements between the researcher and the librarians were resolved through discussion. The librarians' and faculty member's review of both the identification of business questions and their categorization into those requiring external or internal information is important to ensure the credibility of the study.

The output from this phase of the project and some additional analyses are presented in Chapter 4.

3.3.4 Librarians' Judgments about Database Selection

The inventory of tasks and related business questions from Phase 1 were used

in the second phase of the project, which focused on the participants' selection of databases in response to the tasks and business questions.

Population The population of librarians selected for this study consisted of business librarians in an academic setting. The population was limited to this group because they usually have access to more business databases across a range of business topics than those based in corporate (with more specialized collections related to their product line or industry) or public libraries (with fewer databases) do. Schnedeker (2003) indicates that the average number of databases per academic business library is about 40. The broader range of databases reflects the fact that academic business libraries typically need to support information needs related to a variety of tasks from business school faculty and students, many of whom are working in business or consulting on real business tasks.

Sampling frame The participants consisted of a selective sample of academic business librarians from institutions having accredited graduate schools of business. Initially, a sample of top 50 academic business schools was drawn from the 2007 U.S. News & World Report Ranking (available at http://www.usnews.com/usnews/edu/grad/rankings/mba/brief/mbarank_brief.php). The list actually included 51 schools with three schools ranking 49th together. From that list, the business library websites were explored to identify business librarians or librarians with responsibility for business reference and their contact information. One librarian per school was selected initially to avoid potential bias resulting from having multiple participants from some schools and single participants from the others and possible conferring about responses. If multiple candidate librarians

existed in a single library, one librarian was randomly selected. Excluding the five libraries that did not publicize their reference librarians' contact information on the websites and University of Maryland business librarians who served a reviewing role in the study, 45 librarians were initially sampled, one from each of 45 schools. Later, because the response rate was lower than anticipated and some question sets did not have at least two respondents (a self-imposed minimum requirement), a snow-ball sampling method was used to identify seven additional participants; this approach resulted in a second librarian from two universities.

Questionnaire To avoid confusion among research questions, the questions arising from each task, and the survey questions asked about the questions, from this point on they will be referred to as *research questions*, *business questions*, and *survey questions*, respectively.

Considering that a maximum of 30 minutes would be a reasonable time a librarian would be willing to allocate to a survey and a set of three survey questions would repeat for each business question, five business questions were regarded as the maximum to be included in a single survey questionnaire (5 business questions × 3 survey questions × 2 minutes per response = 30 minutes). After the first phase of the study was completed, 45 business questions were judged as requiring external information.[3] These 45 business questions were grouped into nine survey sets so that each set contained five business questions and the survey questions related to each. To ensure that a survey participant addressed tasks from various disciplines, the tasks were distributed across the survey sets. Table 3 shows task allocation in the nine

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[3] In later question analysis, three compound questions were identified and translated into simple questions, yielding a total of 48 questions.

survey sets in terms of disciplines. To summarize, each of the nine sets of survey

questionnaires contained two to three different business tasks and five business

questions related to the tasks (see Appendix D - 3 for each set of the survey

questionnaires). With this approach no respondent provided information for all

business questions included in the study, and no business question was seen by all

respondents. Instead each respondent answered survey questions related to only five

business questions representing two to three tasks, and each business question was

addressed by a maximum of five respondents.

Table 3. *Task/Question Allocation across Survey Questionnaires*

Set	Task identifier and n of business questions	N of business questions
1	MK1 (3), FN1 (2)	5
2	EN1 (4), MG2 (1)	5
3	MG4 (2), FN6 (3)	5
4	MK6 (3), EN3 (2)	5
5	EN4 (3), MG1 (1), MK3 (1)	5
6	EN6 (1), MG5 (4)	5
7	MG6 (3), MK4 (2)	5
8	MK2 (2), FN2 (3)	5
9	EN2 (4), MG3 (1)	5
Total		45

Note: In the second column 2-digit codes are used for the disciplines
included in this study: EN = Entrepreneurship; FN = Finance; MG =
Management; MK = Marketing. The number following these abbreviations
denotes the number allocated to the case in Appendix B. The number in
parentheses is the number of business questions for that case.

A typical variant of the questionnaire consisted of a brief task description

extrapolated from the HBS abstract (see Appendix B), then a set of business questions

related to that task. For each business question, the participants were asked to

provide the following information:

1) The type of information needed to answer each business question

2) Their choice of databases (up to three)

3) The database selection criteria and any special strategies for using the databases, for example, getting parts of the answer from different resources or the order of use accessing databases.

In addition, after the additional task- and question-specific survey questions, they were asked to generalize over their experiences as a business librarian and provide the following:

4) General opinions about how knowledge of the user's task affects the librarian's response to answering the business question. For a complete copy of the questionnaire plus the sets of tasks and business questions that varied across the questionnaires, see Appendix D - 3.

The first survey question ((1) in the above list) provides a list of 17 business information types from Abels and Klein' book (forthcoming), modified slightly to address better the business questions in this study. These information types constitute a wide array of business information packages that can resolve business information needs. The survey participants were asked to check all that apply to answer a given business question. If the kinds of information they would consult were not in the list, they were asked to describe it separately in the second survey question.

The third survey question is an open question asking the librarians to select databases and specify their selection criteria. The focus of interest was on databases, but, assuming that some business questions might be better answered by websites or print resources, this survey question allowed any type of resources. With this open question, the survey participants were expected to recall the most salient selection

criteria that came up to their minds and were not asked to be comprehensive in listing all criteria. For secondary information, the survey question also asked about any special strategies for the selected databases. Any responses to this survey question could contribute additional insights into database selection criteria.

As noted, these three survey questions were repeated for each business question. The final survey question, which calls for an overall assessment of the relationship between knowledge of the user's task and the librarians' behavior, appears only once at the end of survey.

Survey process The nine sets of survey questionnaires were constructed on the Web using survey software called *Zoomerang*. *Zoomerang* is fee-based survey software for creating and administering online surveys (*Zoomerang*, available at http://www.zoomerang.com/login/index.zgi). The questionnaire was pre-tested at this stage to allow for assessing both the questionnaire itself and online delivery. The pre-testers were two business librarians and a professor in the College of Information Studies at the University of Maryland. The instrument was adjusted as necessary for clarity; they also reviewed the adjustments.

Once all sets of surveys were finalized and posted on the Web, the solicitation emails (see Appendix D - 4) were sent to the sample of librarians. To assess the agreement among judges in their decision making process, at least two judges were needed per business question. This approach is also consistent with qualitative research's notion of gathering collaborative data to support research findings. To increase the likelihood of obtaining at least two responses per business question, each survey set was sent to five librarians. From the sampled list of 45 librarians, every

ninth librarian was given the same set of business tasks/questions. The email asked participants to go to the Web survey to read the consent form and complete the questionnaire. As explained in the letter soliciting participation, responding to the questionnaire constituted giving informed consent. When they responded via the Web, their responses were automatically stored in the software's database.

To increase response rates, the researcher sent the first reminder e-mails after ten days (see Appendix D - 5), and the second emails after three weeks. This study started on September 2, 2006 and ended on November 15, 2006. Initially, twenty two librarians responded including complete and partial responses, and the response rate was 49%. Using a snowballing sampling method with the help of the business librarians at the University of Maryland, seven additional librarians were asked to complete the questionnaires. All of them were currently working or had recently worked in business academic settings. In total, 29 responses were received and the response rate was 56%. Responses were judged as partial when a participant gave an answer for only one to four business questions out of the total five in the survey questionnaire. Those partial responses were included for analysis because analysis was conducted for each business question. Table 4 summarizes the number of responses for each business question, and the number of complete and partial responses for each set of the survey questionnaire.

Table 4. *Survey Responses*

Set	Complete responses	Partial responses and n of business questions completed
1	3	1 (2)
2	3	1 (4)
3	2	0
4	2	1 (3)
5	3	0
6	3	0
7	3	1 (3)
8	2	2 (2, 2)
9	2	0
Total	23	6

Note: In the last column, the number in parentheses is the number of business questions completed in the partial response.

3.4 Data Analysis

This section presents the analysis process for determining types of tasks, types of business questions, types of information needed and databases selected, pattern among the elements, and influence of tasks on the selection of the appropriate database to address each business question.

3.4.1 Task Type Analysis

To identify similarities among the tasks, they were classified by Jonassen's problem typology (2000). Business tasks are frequently equated with problems business people encounter and attempt to solve (e.g., Terpstra & Olson, 1993; Cowan, 1990). Jonassen's typology of problems was particularly selected because of its holistic nature; it considers structuredness, complexity, and domain-specificity. Other typologies characterize tasks by a specific attribute, for example, Campbell's (1988)

task classification is based on task complexity.

To ensure the reliability of the task coding, two coders, including the researcher, classified the tasks. The researcher introduced the typology to the other coder and trained her with coding. Inter-coder agreement was calculated as a simple ratio – the number of agreements between the two coders divided by the number of possible agreements. The initial inter-coder reliability was 70% (21 out of 30 tasks). A major reason for the disagreements was dissimilar interpretations on the definition of strategic performance tasks. After clarification on what this category implies, the inter-coder reliability rose to 87%.

3.4.2 Business Question Analysis

To identify the characteristics of business questions that influence the database selection process, the business questions were analyzed by two aspects: the semantic frame that reflects the type of the question and the question's focus. Graesser, McMahen, and Johnson (1994) noted that a question can be decomposed into two parts: presupposed information and the focal information being queried. For example, in the question "When did Mary go to Paris?" one presupposition is that Mary went to Paris, and the focus is the time of the event. The semantic types of business questions were analyzed based on semantic frames to identify similarities among the questions and centrality of information sought and provided. To that end, *FrameNet*, an on-line lexical resource for English based on frame semantics, was used. Collaboratively developed and maintained by the University of California at Berkeley, the aim of the *FrameNet* project is to document the range of semantic and

syntactic combinatory possibilities (valences) of each word in each of its senses. The *FrameNet* lexical database, the major product of the project, currently contains more than 625 semantic frames, exemplified in more than 135,000 annotated sentences (available at

http://framenet.icsi.berkeley.edu/index.php?option=com_content&task=view&id=40 &Itemid=1) and now is in wide use by hundreds of researchers, teachers, and students around the world.

A frame is a script-like conceptual structure that describes a particular type of situation, object, or event, and the participants and propositions involved in it (Slaughter, 2002). The purpose of frames is to organize the semantic relationships into a format that can involve all the elements present. Slaughter's study (2002) is a good example of using frames for question analysis. She identified semantic relationships in health-consumers' questions, in the answers provided by physicians, and between questions and answers using frames. The identified semantics of the health-related questions and answers contribute to understanding questioning behavior and answering patterns and constructing a frame-based representation system for expressing semantic relationships in the questions/answers (Slaughter, 2002).

The advantages of using frames for question analysis are:

• Semantic level analysis: Semantic frames are concerned with semantics, not syntax. Information need statements (questions) with the same content but different syntax result in the same frame.

• Element analysis within questions: Frame analysis allows for identifying the

values in specific elements within a frame and relationships among the elements for given questions. Through this process, a focus of the question or an element wanted is easily identified. Other question analysis methods such as Graesser's categories (Graesser, McMahen, & Johnson, 1994) do not allow for the element analysis beyond the question type analysis. It is also possible to determine if the information provided and the information wanted is core to the frame based on the core and non-core elements pre-designated in the frame.

• Question pattern identification: Frame analysis allows for generating generic business questions by grouping the questions that belong to the same frame and seek after the same element.

Frame analysis consists of two steps: The first step is to find semantic frames that match individual business questions and the second part is to analyze each business question to identify which elements are given by the question and which element is being sought after using the selected frame.

To ensure the reliability of the business question analysis, two coders, including the researcher, analyzed the questions. The researcher introduced the concept of frames and the scope and content of *FrameNet* to the other coder and trained her on how to select an appropriate frame and analyze a business question using that frame.

In the first step of the analysis, matching a business question with a semantic frame was not always straightforward. One question can possibly be matched with multiple semantic frames available in *FrameNet* because in some cases multiple frames describe one similar concept. However, those frames have slightly different

perspectives in defining the concept and representing relationships among elements. When more than one semantic frame seemed to be matched to a given business question, those frames' definitions and the elements involved were carefully examined to select the best frame for the given question.

With more than 8,900 frames available in the *FrameNet* database, it was deemed very difficult for the other coder to acquire the same level of knowledge about the frames as the researcher for the short time period and to successfully select the most appropriate frames. Thus, the researcher pre-selected 43 candidate frames that were regarded semantically related to one of the 45 business questions and presented them to the second coder. However, she was allowed to explore other frames if she could not find appropriate frames in the given set. The initial inter-coder reliability, calculated as in the task analysis - the number of agreements between the two coders divided by the number of possible agreements - was 71%. For those business questions for which the researcher and the other coder disagreed on frame assignment, the two discussed, explored other frames, and reconciled the disagreements. During this process, three business questions were found to be semantically compounded. They were separated, resulting in 48 simple business questions that were matched to the frames.

In the second step, the researcher and the coder individually identified semantic relationships within the business questions. This process involves mapping from referring expressions in the questions to the elements that exist within the frames, resulting in identifying the elements provided and sought by each question. Further analysis was conducted at this point to determine if the element provided and

sought by each question is core to the frame based on the list of core and non-core elements designated in each frame.

In addition to frame analysis, the analysis categorized the focus of each question, using researcher-developed categories. These categories, named as "focal entity types" in this study, represent seven search units available in business databases: company, industry, customers, product, country, law, and topic.

3.4.3 Types of Information Needed and Databases Selected

Survey participants were asked to identify the types of information requested by the given business question that would influence the database selection process. As noted earlier, the participants selected among specified information types but were allowed to add additional types as necessary. For each business question, all the information types the respondents indicated and selected databases for each information type were summarized to see consensus among the librarians.

3.4.4 Patterns among Elements

The responses were analyzed carefully to note relationships among the tasks, business questions, the information types needed, database selection criteria, and the final choice of databases. The outcomes are closely related to the characteristics of databases. Database selection criteria and databases selected as best resources by the survey participants were compared with the analysis outcomes to identify a pattern or patterns among them.

3.4.5 Influence of Tasks

The participants' responses to database selection survey questions were thoroughly perused to note references to the task and to characteristics of the task and provided evidence about the participants' reliance on task-related criteria in understanding the business question or choosing among databases. In addition, the participants' comments on the effect of tasks in an open-ended survey question were analyzed to understand their general opinions on the importance of tasks in selecting appropriate databases.

3.5 Criteria for Verification

In qualitative research, credibility, dependability, and transferability are the criteria for verifying the quality of research. They correspond to the concepts of validity, reliability, and generalizability in quantitative research (Guba & Lincoln, 1981). *Credibility* (Validity) refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. *Dependability* (Reliability) is the extent to which an experiment, test, or any measuring procedure yields the same result on repeated trials. *Transferability* (Generalizability) refers to the degree to which the results of qualitative research can be generalized or transferred to other identical or similar contexts.

To ensure credibility, dependability, and transferability of this study, the researcher engaged in the following procedures:

• The tasks and associated business questions were reviewed by two business reference librarians and two faculty members with business library experience and

teaching experience related to business information. This process contributed to the credibility of the data and study.

• The determination of whether business questions required external or internal resources for answers was checked by two business librarians and one faculty member with business library experience. This procedure also enhanced credibility.

• The individual business questions associated with the tasks were identified from multiple resources. This triangulation method corroborated evidence from different sources, and it was used to enhance reliability.

• Categorization of tasks and frame analysis of business questions were coded by two coders, including the researcher, and discussions resolved disputes. This was another procedure to enhance reliability.

• A member check of the results, including especially the database selection model, occurred with several business librarians, including one participant. Other participants were asked to review, but declined. A member check is regarded as the most critical method in establishing credibility in a qualitative study (Lincoln & Guba, 1985, p. 314).

• The coding for individual questions and tasks (see especially Appendices E and F) and the basis for eliciting the data are included in the dissertation, providing rich data. This rich data enables other researches to be able to judge transferability to other environments.

3.6 Limitations of the Study

In any study, conflicts arise between the desire for increasing the number of

participants and/or cases considered and the depth of information that can be obtained

because of time and resource constraints. Most of the limitations in this study stem

from these conflicts. The following limitations are noted:

     • The number of tasks (30) is small, but this number far exceeds those

normally considered in a qualitative study.

     • Business questions were derived from text, not from clients themselves,

which may raise questions about the accuracy of representation of the business

questions. Conversely this approach allowed for an emphasis on *essential* business

questions, not questions that may represent only the needs of one or a few individuals.

Furthermore, the experiment with content analysis in eliciting business information

needs represented as business questions has a methodological implication (see

Section 6.2).

     • Possible limitations are based on the background and knowledge of the

researcher. Any qualitative research study relies heavily on individual interpretation

and these factors may affect decisions. The researcher has spent almost five years

working with the Virtual Business Information Center (VBIC), but lacks practical

experience as a business librarian. To minimize the influence of the researcher and

complement her lacking experience, two business librarians and two faculty members

assisted in data collection, which enhanced credibility of the study as described in

Section 3.5.

     • No data were gathered about the nature of individual collections of business

databases available in each participant's library; instead it was assumed that the

collections in the top 50 business schools would at least match the average number of

databases per academic business library (41) (Schnedeker, 2003) and that the collections would be somewhat similar in scope and coverage.

• No data were gathered about the previous knowledge and experience of individual participants with specific databases other than to identify them as being either business librarians or librarians with major reference responsibility in business. These factors denote some degree of specialization based on knowledge. It is assumed that, if a participant mentioned a database, she had some degree of familiarity with it. Although some participants may have chosen certain databases primarily because of familiarity, this bias would have influenced selection of specific databases rather than choice of information types to answer a business question. Accordingly, the overall database selection process model is unlikely to change a great deal.

• Gathering data via written questionnaires did not allow for probing responses that could have clarified ambiguities in responses and obtaining additional information about the mental processes involved in decision making about selecting databases. Also, the participants had to respond to abstract situations with perhaps the descriptions of the tasks not presented in as much detail as would be gathered in an actual situation. This is an inherent limitation of survey methods using questionnaires.

• Only one type of librarian, academic reference librarians in universities, was participants. Other groups, such as, business librarians in corporate or non-profit organization settings, government agencies, or public libraries may differ from those in an academic environment in terms of the level of familiarity with the given

business tasks/questions and business databases usually used in their daily work. One survey participant directly indicated this limitation saying "I felt the [business] questions were more typical of corporate libraries than academic libraries. We generally don't get those real life [business] questions, like the risks of IPO. Perhaps other schools do." However, academic librarians usually face a wider range of business tasks than corporate or public librarians.

The database selection model developed in this study should be viewed as a preliminary model that needs verification, and perhaps revision, by additional research involving additional business tasks/questions and decision making of participants in non-academic environments.

Chapter 4: Inventory of Business Tasks and Related Questions

This section addresses research questions 1 and 2 by identifying a representative sample of business tasks and associated questions and characterizing them. This inventory of business tasks and questions and their characteristics itself is a significant finding. In this dissertation, however, it also serves as the basis for soliciting input from librarians about their decision making related to selecting the types of information required to answer the business questions, identifying appropriate criteria, and choosing specific databases.

To facilitate tracking and clarifying distinctions across the analysis units, Table 5 provides summary descriptive data for all units and is referred to at various times in the analysis.

Table 5. *Summary Descriptive Statistics*

	Variable	Statistic
	Cases	
1	Total number	30
	Tasks	
2	Total number	30
3	Number and percentage of tasks requiring external resources	19 (63%)
4	Number and percentage of tasks requiring only internal resources	11 (37%)
	Questions	
5	Total number	144
6	Range of questions per task (based on (2))	2 to 8
7	Average number of questions per task (based on (2))	4.8 (S.D. 1.5)
8	Number and percentage of questions requiring external resources	48 (33%)
9	Number and percentage of questions requiring internal resources	96 (67%)
10	Average number of questions requiring external resources per task (based on (2))	1.6
11	Average number of questions requiring external resources per task (based on (3))	2.5
12	Range of questions requiring external resources per task (based on (3))	1 to 5

4.1 Tasks

Thirty tasks were identified from thirty HBS cases, six from each of five

disciplines. To identify similarities across the tasks, they were coded, as noted earlier,

with Jonassen's typology of problems. Table 6 groups the tasks by Jonassen's

categories and arranges them alphabetically within each category.

Table 6. *Tasks Classified by Jonassen's Typology of Problems, Arranged According to Categories with Decreasing Degree of Structure in Task*

Task ID	Task
Rule-using	
1	Analyze the total profitability of individual customers
2	Compare two capital projects in terms of potential value
3	Determine if a subsidiary is profitable or not and consider an action
4	Determine the future earnings/performance of a company
5	Evaluate the effectiveness of and payoffs from human management using Balanced Scorecard
6	Reengineer business processing using ABC (Activity Based Costing)
7	Set a price of a product and delivery service using ABC
Decision-making	
8	Adopt a new information technology (IT)
9	Decide distribution channels
10	Decide on a real estate purchase
11	Outsource a business function
12	Plan succession in a family-owned business
13	Search for a job
14	Select other markets to extend the business
15	Set an initial price for a product
Diagnosis-solution	
16	Make organizational changes in foreign operations
17	Reduce employee turnover
18	Update the Cost of Quality (COQ) system to improve quality performance
Strategic-performance	
19	Benchmark a competitor's operation management
20	Build a senior management team to launch a business
21	Finance a project in an emerging market
22	Prepare for the merger/acquisition of another company
23	Prepare to go public (IPO)
24	Raise money to manage debt
25	Raise venture capital
26	Start a new business with an innovative idea
Situated-case	
27	Face challenges from new entrant companies
Design	
28	Develop a marketing plan for a U.S. brand in a foreign country
29	Develop an advertising strategy to recruit a new group of customers
30	Enhance a customer satisfaction/loyalty program

Note: Arranged alphabetically within each category. Distribution: Rule-using (7, 23%); Decision-making (8, 27%); Diagnosis-solution (3, 10%); Strategic-performance (8, 27%); Situated-case (1, 3%); and Design (3, 10%).

Jonassen's categories are holistic. To develop them, he considered

structuredness, *complexity*, and *domain-specificity* to cluster problems that require

similar cognitive processes. *Structuredness* refers to the extent to which a problem solution, solution paths, and concepts/rules/principles necessary for the solutions are organized in a predictive and prescriptive manner. *Complexity* is related to the number of variables in the problem, the number of interactions among those variables, and the predictability of the behavior of those variables. *Domain-specificity* refers to the extent to which a problem is domain- and context-specific. Ranging along the well-structured to ill-structured dimension, the typology lists eleven different types of problems: logical problems, algorithmic problems, story problems, rule-using problems, decision-making problems, trouble-shooting problems, diagnosis-solution problems, strategic-performance problems, situated-case problems, design problems, and dilemmas (Jonassen, 2000). Specific types that appeared in this study are discussed in greater detail in subsequent paragraphs. Within each type, problems vary with regard to domain specificity and complexity. While the ill-structured problems, such as design problems, focus more on decision articulation and argumentation in a context-bound situation, the well-structured problems, such as logical problems, focus on selecting correct, efficient solutions among exact solution paths. In other words, the role of context becomes more important in defining ill-structured problems, whereas well-structured problems de-emphasize the role of context (Jonassen, 2000).

Only six of Jonassen's problem types are found among the thirty tasks identified for this study. Three task types predominate:

- Strategic-performance tasks (8; 27%)

- Decision-making tasks (8; 27%)

74

• Rule-using tasks (7; 23%)

The other three (diagnosis-solution; situated-case; and design) account together for only 23% of the cases. The identified task types range more toward the ill-structured end of the continuum. With the exception of dilemma, the other tasks not found (trouble-shooting, story, algorithm, and logical tasks) are relatively well-structured with predictable outcomes. Dilemmas, the most ill-structured task type, usually involve complex social situations and conflicting perspectives/values. No inferences should be drawn about the relative distribution of the task types in this sample of representative cases. Without further research it is not possible to say that ill-structured problems predominate in business. They may simply be considered pedagogically important and thus often the subject of HBS cases, which are widely used in M.B.A. programs.

The only significant clusters of tasks of the same type by discipline are the design tasks, all of which appear in marketing, and rule-using tasks, which are more evident in accounting (see Table 7). The other task types with multiple examples are distributed across the disciplines.

Table 7. *Task Types by Discipline*

	Discipline						
Type of task	AC	EN	FN	MG	MK	Total	%
Rule-using	5		2			7	23
Decision-making		2	1	2	3	8	27
Diagnosis-solution	1			2		3	10
Strategic-performance		4	3	1		8	27
Situated-case				1		1	3
Design					3	3	10
Total	6	6	6	6	6	30	100

Note: 1) Type of task arranged according to decreasing degree of structure in task.
2) Disciplines: AC: Accounting, EN: Entrepreneurship, FN: Finance, MG: Management, MK: Marketing

Strategic performance tasks entail complex activity structures in which the performers apply a number of tactics to form a complex and ill-structured strategy while maintaining situational awareness. Typically a finite number of tactical activities are designed to accomplish the strategy, but an expert task performer is good at constructing new tactics on the spot. Those adjustments are contextually constrained. The solutions can be quite numerous and their implementation quite complex. The task, "finance a project in an emerging market", is a good example. The context or situation in this case is an "emerging market," the nature and shape of which may not be completely known or whose boundaries may fluctuate as it is defined. In this uncertain situation, the task performer may be able to adopt or adapt known strategies, and certainly some strategies are well-known for financing ventures, but he may have to be creative, depending on the product and customers for the product, the characteristics of which would also influence completion of the task, the existing and potential economic factors, and perhaps even cultural or psychological factors.

In *decision-making* tasks, the task performer is usually constrained by a limited number of solutions, but the factors to be considered in deciding among those solutions can create complex situations. Decision-making tasks usually require comparing and contrasting the advantages and disadvantages of alternate solutions. The task, "select other markets to extend the business", involves deciding among a limited number of markets. Comparing and contrasting the advantages and disadvantages of the potential markets is an important sub-task in this task.

Design tasks are among the more ill-structured tasks, generally having an infinite number of solutions or designs. In design tasks, the task performer conducts a needs assessment and uses domain knowledge to generate an original design that will work within system constraints. The task, "develop a marketing plan for a U.S. brand in a foreign country", involves a needs assessment to understand consumers' needs for the product and the generation of a marketing plan to persuade the consumers to buy that product. Considerable domain knowledge and strategic knowledge is required to contrive the best solution, even though the criteria for the best solution are not always obvious.

Diagnosis-solution tasks require identifying a fault state to remedy the fault. Frequently, diagnosis-solution tasks have multiple solutions and solution paths, so the task performer must justify a particular solution. It is this ambiguity that makes this type of task complex. As an example, the task, "reduce employee turnover", involves the recognition of the high employee turnover rate in the company and the identification of the causes of this phenomenon. The task performer has to generate

an hypothesis and suggest an appropriate solution based on his domain knowledge and contextual information.

Situated-case tasks are complex, requiring the task performer to articulate the nature of the task and the different perspectives that impact the task prior to suggesting a solution. Most importantly, this type of task is constrained, to a great extent, by the context, which implies that generating a solution generation should rely heavily on an analysis of contextual factors. The task, "face challenges from new entrant companies", is a good example. The task performer recognizes the increasing competition as new entrant companies emerge in the industry and his ultimate goal is to maintain his company's competitive advantage. To accurately comprehend thesituation the company is in and to defend his company against the emerging companies, he has to set a concrete goal and plan appropriate strategies to attain the goal. The strategies are adjusted according the characteristics, objectives, and visions of those emerging companies and broader environmental factors in the industry.

Rule-using tasks have correct solutions with multiple solution paths or rules involved. This is the most structured task type found in this study. The task, "analyze the total profitability of individual customers", is a typical rule-using task. The goal is very clear -- calculate the profitability of individual customers using a certain method/procedure -- and the implementation of the method is straightforward although the options of the method/procedure can be numerous.

4.2 Business Questions

Table 8 lists the tasks and the essential business questions associated with each task. As noted in Chapter 3, these business questions were derived from HBS cases and business literature such as textbooks and journal articles. This list includes both the business questions requiring information from external resources and those relying on internal resources, that is, a person's memory, personal contacts, or databases internal to an organization or firm. The researcher categorized the questions into those requiring external resources and those requiring internal resources for answers. To insure credibility, the coding was checked with two business reference librarians and an information science professor with business library background.

The range of business questions per task is 2 to 8, with the average 4.8 (S.D. 1.5) (Table 5). Table 9 summarizes data by task, indicating the number of business questions per task and the concentrations in business questions calling for external resources. Nineteen (63%) of the tasks and 48 (33%) of the business questions called for external resources. The others 11 tasks (37%) and 96 questions (67%) required internal resources only.

Table 8. *Tasks and Associated Business Questions, Categorized by Type of Resource Required for Answer*

Task ID	Q ID	Resource	Questions
1			**Analyze the total profitability of individual customers**
		Internal	What are the revenues we are earning for individual customers?
		Internal	What efforts are required to develop and maintain the relationship with each customer?
		Internal	What are the costs?
		Internal	How can revenues and expenses from diverse activities in different units of the bank be combined to produce an accurate picture of customer profitability?
2			**Compare two capital projects in terms of potential value**
		Internal	What are the estimated cash inflows and outflows discounted down to present value?
		Internal	What are the key value drivers?
		Internal	How do the key value drivers affect the attractiveness of each project
		Internal	What non-financial consequences should be considered?
3			**Determine if a subsidiary is profitable or not and consider an action**
		Internal	What level of sales would be necessary to break even?
		Internal	What changes might improve profitability? (e.g., reducing prices, increase promotion efforts, etc.)
		Internal	What are the qualitative factors that should be considered before the decision?
		Internal	What are the alternative solutions if the subsidiary should be closed?
		Internal	What are the estimated revenues and costs for each solution?
4			**Determine the future earnings/performance of a company**
		Internal	What is the purpose of the forecasts?
		Internal	What are the most appropriate forecasting methods/techniques for making the forecasts?
		Internal	What are the variables to consider for the forecasts?
5			**Evaluate the effectiveness of and payoffs from human management using Balanced Scorecard**
		Internal	What are our strategic thrusts to the company?
		Internal	What are our performance measures for non-financial strategic thrusts?
		Internal	What is the target performance level for the measures?
		Internal	How can we link performance on certain non-financial measures to financial outcomes?
		Internal	How can we link performance on certain non-financial measures to compensation?
6			**Reengineer business processes using ABC (Activity Based Costing)**
		Internal	What are the major business processes and key activities of the organization?
		Internal	What are the costs and capital charges to the key activities? (e.g., labor and capital equipment expenses)
		Internal	What is the activity unit cost?
		Internal	Based on the activity unit cost, which process are profitable or not?
7			**Set a price of a product and delivery service using ABC (Activity Based Costing)**

Table 8. *Tasks and Associated Business Questions, Categorized by Type of Resource Required for Answer*

Task ID	Q ID	Resource	Questions
		Internal	What kinds of activities during the service process should be considered to calculate the price of the product?
		Internal	What is the frequency and size of each order?
		Internal	What is the service delivery fee?
8			**Adopt a new information technology (IT)**
		Internal	Where in the business process the software would be most valuable?
		Internal	What are the requirements for the software?
		Internal	What are the potential sources for resistance to the implementation of the new system?
		Internal	How can they [the potential sources for resistance] be overcome?
	1	External	Who are the vendors for Business Intelligence (BI) software? *
	2	External	What do they offer? *
9			**Decide distribution channels**
		Internal	What service requirements do the customers have for the product?
		Internal	Which channel and intermediaries will provide the best coverage of the target market?
		Internal	Which channel and intermediaries will best satisfy the buying requirements of the target market?
		Internal	What is the likelihood that the channel members will compete with the product?
		Internal	Which channel and intermediaries will be the most profitable?
		Internal	Which channels are used by competitors?
10			**Decide on a real estate purchase**
	3	External	I need to determine how land within a mile or so of the land I'm considering is being used, for example, the mix of big box retail, specialty retail and entertainment, apartments, and offices. Assume he gives the location.
	4	External	What is the market demand for apartments in this area?
		Internal	What are the future benefits by, for example, sales or refinancing of the property?
		Internal	What are the potential costs to purchase and hold the land?
	5	External	What are the land use regulations that affect land development in the area?
11			**Outsource a business function**
		Internal	Which services or corporate support functions might be better accomplished by an outside vendor and which should be kept in-house?
	6	External	Which providers are available for information systems and services outsourcing?
		Internal	What are our selection criteria for vendors? (e.g., knowledge about our business, cultural alignment)
		Internal	After selecting a vendor, how can we effectively negotiate the terms, transit resources, and manage relationships?
12			**Plan succession in a family-owned business**
		Internal	Who will have the ownership of the company when I (the current owner) retire?
		Internal	Who will manage the business?

Table 8. *Tasks and Associated Business Questions, Categorized by Type of Resource Required for Answer*

Task ID	Q ID	Resource	Questions
		Internal	What are the tax implications of family succession?
		Internal	How can I minimize tax?
13			**Search for a job**
		Internal	Which career path is right for me?
		Internal	What are my goals and values?
		Internal	What key skills do I have?
	7	External	For an industry of interest, I need an industry overview and discussion of trends in it.
	8	External	And who are the major players, i.e., which are the leading companies in the field?
	9	External	For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?
	10	External	Considering my background, how should I develop my resume so that I can actually get a job?
14			**Select other markets to extent the business**
	11	External	What information can you find that would allow us to assess the market potential for our product in this market segment?
	12	External	What are the characteristics of potential customers, e.g., attitudes, lifestyles, and so on?
15			**Set an initial price for a product**
		Internal	What is the pricing objective? (e.g., penetration pricing, pricing for stability, etc.)
		Internal	What are the costs associated with the product?
	13	External	What are the characteristics of the target market?
		Internal	How will the pricing affect demand?
		Internal	What are the customers' perceived values of the product relative to other available options?
	14	External	What are the competitors' prices for comparable products?
	15	External	Are there legal constraints on pricing?
16			**Make organizational changes in foreign operations**
	16	External	I need information about its use for these purposes in other organizations or firms. *
	17	External	Especially about its effectiveness for these objectives. *
	18	External	How should one go about measuring how successful change efforts have been?
	19	External	Would you please identify and characterize some successful change strategies that can be used within an organization, with particular attention to sequencing the strategies themselves or elements within them?
	20	External	Would you please find any characterizations of the culture in Latin American pharmaceutical firms or information that would help us to characterize that culture ourselves?
17			**Reduce employee turnover**
		Internal	What is the current turnover rate?
	21	External	What is the standard or normal turnover rate in this industry?
		Internal	What are the sources of the high rate of turnover?

Table 8. *Tasks and Associated Business Questions, Categorized by Type of Resource Required for Answer*

Task ID	Q ID	Resource	Questions
		Internal	How can they [the sources of the high rate of turnover] be broken down by job title, location, level, manager, etc.?
		Internal	Are our recruiting methods just brining more turnovers?
		Internal	What are the costs of turnover? (e.g., training cost, workload demands)
		Internal	Which retention strategies are necessary to address each source of turnover?
	22	External	What are the criteria that people use when they vote for "Best Companies in America to Work for?"
18			**Update the Cost of Quality (COQ) system to improve quality performance**
		Internal	What are the expenditures that arise because of poor quality?
		Internal	What expenditures identified in 1) are not addressed in the current COQ system?
19			**Benchmark a competitor's operation management**
		Internal	Which business process do we need to benchmark?
		Internal	And why?
		Internal	Which objective measures would we use to compare companies?
	23	External	Which companies in our industry are known for having the best practices?
		Internal	Are the best practices appropriate and adaptable to our company?
		Internal	How can we implement the changes?
20			**Build a senior management team to launch a business**
		Internal	What are required qualifications of senior managers?
	24	External	Where can I find information on executive recruiters – names, addresses, and areas of specialization?
		Internal	What should our compensation and equity sharing policies be?
21			**Finance a project in an emerging market**
		Internal	What is the project's economic potential?
		Internal	What are the project's technical barriers?
		Internal	What is the project's social/cultural feasibility?
		Internal	What are the expected rates of return and cash flow for the project?
	25	External	What methods of raising capital are available either domestically or internationally?
	26	External	What are the capital structure and financial market's conditions in the country the project is carried on?
22			**Prepare for the merger/acquisition of another company**
		Internal	What are the objectives of acquisition?
		Internal	What are the selection criteria for determining the optimal acquisition target companies?
	27	External	How do we identify companies that meet our selection criteria for acquisition?
	28	External	For a particular target company, what is the financial status of the company?
		Internal	What are the expected synergies from the merger/acquisition?
	29	External	What financing sources are available for the acquisition?
		Internal	How will the transaction be structured? (e.g., tax, accounting considerations)

Table 8. *Tasks and Associated Business Questions, Categorized by Type of Resource Required for Answer*

Task ID	Q ID	Resource	Questions
23			**Prepare to go public (IPO)**
	30	External	What are the risks and opportunities of going public?
	31	External	In the past two years, which investment banking firms have done initial public offerings similar in size and scope to our business?
	32	External	Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?
	33	External	What are the filing requirements for an IPO? *
	34	External	What are the SEC rules/regulations for an IPO? *
24			**Raise money to manage debt**
		Internal	What are the company's financing requirements?
		Internal	How much of this must be raised externally rather than through retained profits?
		Internal	How much of the external funding should be raised through borrowing from a bank or another financial intermediary, and how much capital should be raised selling securities directly to investors?
		Internal	What are the lending criteria used by each of the target sources of the capital?
		Internal	What would be prices of the company's securities in financial market if issued?
25			**Raise venture capital**
	35	External	What venture capital sources are available?
	36	External	Which venture capitalists' preferences would match our company profile?
		Internal	How will a funding source value my company?
		Internal	How will the capital investment be structured?
26			**Start a new business with an innovative idea**
		Internal	What is new and different about the innovation?
	37	External	Who are the competitors?
	38	External	Please find whatever information you can that would allow me to assess the market potential in this e-business.
	39	External	Who are the potential customers for these types of products?
		Internal	Is the innovation technically feasible?
		Internal	What will be tricky or difficult in developing this product?
		Internal	Where would customers purchase the product?
27			**Face challenges from new entrant companies**
	40	External	Which companies are emerging in the industry?
	41	External	What are the emerging companies' visions and objectives?
	42	External	What are the strengths and limitations of the companies?
		Internal	How are we going to compete with those companies?
28			**Develop a marketing plan for a U.S. brand in a foreign country**
	43	External	What are the characteristics of the target customers in a particular foreign country, e.g., Japan?
	44	External	What elements in the cultural environment of this country are likely to affect marketing strategies for these kinds of products significantly?

Table 8. *Tasks and Associated Business Questions, Categorized by Type of Resource Required for Answer*

Task ID	Q ID	Resource	Questions
	45	External	What elements in the economic environment of this country are likely to affect marketing strategies for these kinds of products significantly?
		Internal	Should the company use similar advertising strategies as used in the United States?
29			**Develop an advertising strategy to recruit a new group of customers**
	46	External	What are the characteristics of target customers, e.g., attitudes, lifestyles, and so on?
		Internal	What is the advertising objective? (e.g., awareness, trial, etc.)
		Internal	How much budget should be set for the advertisement?
	47	External	What kind of advertising plan is most appropriate if we want to reach this target audience? We are interested in when and where to advertise.
30			**Enhance a customer satisfaction/loyalty program**
		Internal	What is our company's customer satisfaction level?
		Internal	Why are customers buying from competitors?
	48	External	What are the elements of successful loyalty programs?
		Internal	What are the right variables and right questions to measure customer satisfaction/loyalty?
		Internal	How can we incorporate the customer satisfaction/loyalty findings into business process?

Note: 1) Tasks are arranged by Jonassen's Typology of Problems as in Table 6.
2) Only questions requiring external resources are numbered.
3) * = Question appeared originally as compound question and has been translated to simple questions for analysis.

Table 9. *Number and Percent of Business Questions (Total, External, and Internal) by Task*

Task ID	Task	Total	External	Internal
			Questions	
1	Analyze the total profitability of individual customers	4	0 (0%)	4 (100%)
2	Compare two capital projects in terms of potential value	4	0 (0%)	4 (100%)
3	Determine if a subsidiary is profitable or not and consider an action	5	0 (0%)	5 (100%)
4	Determine the future earnings/performance of a company	3	0 (0%)	3 (100%)
5	Evaluate the effectiveness of and payoffs from human management using Balanced Scorecard	5	0 (0%)	5 (100%)
6	Reengineer business processes using ABC (Activity Based Costing)	4	0 (0%)	4 (100%)
7	Set a price of a product and delivery service using ABC (Activity Based Costing)	3	0 (0%)	3 (100%)
8	Adopt a new information technology (IT)	6	2 (33%)	4 (67%)
9	Decide distribution channels	6	0 (0%)	6 (100%)
10	Decide on a real estate purchase	5	3 (60%)	2 (40%)
11	Outsource a business function	4	1 (25%)	3 (75%)
12	Plan succession in a family-owned business	4	0 (0%)	4 (100%)
13	Search for a job	7	4 (57%)	3 (43%)
14	Select other markets to extend the business	2	2 (100%)	0 (0%)
15	Set an initial price for a product	7	3 (43%)	4 (57%)
16	Make organizational changes in foreign operations	5	5 (100%)	0 (0%)
17	Reduce employee turnover	8	2 (25%)	6 (75%)
18	Update the Cost of Quality (COQ) system to improve quality performance	2	0 (0%)	2 (100%)
19	Benchmark a competitor's operation management	6	1 (17%)	5 (83%)
20	Build a senior management team to launch a business	3	1 (33%)	2 (67%)
21	Finance a project in an emerging market	6	2 (33%)	4 (67%)
22	Prepare for the merger/acquisition of another company	7	3 (43%)	4 (57%)
23	Prepare to go public (IPO)	5	5 (100%)	0 (0%)
24	Raise money to manage debt	5	0 (0%)	5 (100%)
25	Raise venture capital	4	2 (50%)	2 (50%)
26	Start a new business with an innovative idea	7	3 (43%)	4 (57%)
27	Face challenges from new entrant companies	4	3 (75%)	1 (25%)
28	Develop a marketing plan for a U.S. brand in a foreign country	4	3 (75%)	1 (25%)
29	Develop an advertising strategy to recruit a new group of customers	4	2 (50%)	2 (50%)
30	Enhance a customer satisfaction/loyalty program	5	1 (20%)	4 (80%)
	Total	144	48 (33%)	96 (67%)

A notable finding is that the average number of associated business questions seems to vary by task type. The more ill-structured types of tasks, such as strategic performance tasks, situated-case tasks, and design tasks tend to need more business questions than well-structured task types do (Table 10). This finding is not surprising since the outcomes of these tasks are less predictable and more discretion is needed in performing the tasks. At least one type of task, rule-using tasks, has no questions that call for consulting external resources, relying instead on internal resources, such as the performer's own memory or databases internal to the firm. Rule-using is a well-structured task. But, other than for this type of task, no pattern was found between the type of task and the number of business questions requiring external resources.

Table 10. *Average Business Questions and Questions Requiring*
External Resources by Task Type

Task type	Average number of questions	Average number of questions requiring external resources
Rule-using	4.0	0
Decision-making	4.9	2.7
Diagnosis-solution	3.7	2.0
Strategic-performance	5.4	2.3
Situated-case	7.0	3.0
Design	6.7	1.3

Note: Type of task arranged according to decreasing degree of structure in task.

4.2.1 Identifying Question Similarities

Are there similarities in the business questions calling for external resources? And are there concentrations of question types across the types of tasks? To answer these questions, the business questions are characterized first by frame analysis, and then by the focal entity of the question. To illustrate the way a business question was

actually analyzed, Figure 5 shows the analysis for business question 36, "Which

venture capitalists' preferences would match our company profile?" The first step of

the question analysis was to explore the *FrameNet* database to find an appropriate

frame that represents this business question well. The Compatibility frame was

selected for this question because the definition of the Compatibility frame is "Item-1

and Item-2 are compatible with each other if they can exist or function together in

some context without problems, conflict, or other undesirable situation" and that

business question asks for a list of venture capitalists whose interests are compatible

with the company's profile. According to the definitions of core and non-core

elements provided by the frame description, the segment of the business question,

'our company' corresponds to the Item_1 element and 'profile' to the Parameter

element. While these elements are given by the business question, Item_2 is the

empty element that needs to be filled by the answer of the question. This is the

element the questioner is asking about and is the focus of the question.

Question 36: Which venture capitalists' preferences would match our company profile?

Compatibility Frame

Definition
Item_1 and Item_2 are compatible with each other if they can exist or function together in some context without problems, conflict, or other undesirable situation. The set of Item_1 and Item_2 may be expressed jointly as Items. The Degree to which the Items are compatible may also be indicated, as may be a Parameter along whose lines the Items are compatible.

Core elements
Item_1   The Frame Element Item_1 marks the grammatically more prominent of the two entities, i.e. the subject in active clauses, when they are expressed separately.
Item_2   The Frame Element Item_2 marks the grammatically less prominent of The Items when they are expressed separately.
Items   This FE is used when the Items are expressed jointly in a phrase, either a plural or a coordinated NP.
Parameter   This Frame Element is used for expressions that indicate a Parameter or respect in which the Items are said to be compatible, not in conflict.

Non-core elements
Degree   This Frame Element is used for expressions that indicate the extent to which two Items are compatible.

Individual question analysis
36: Which venture capitalists' preferences would match our company profile?
 Item_1 [our company]
 Item_2 [venture capitalists] → *Element being asked about*
 Parameter [profile]

Summary

Question no.	Core elements				Non-core element
	Item_1	Item_2	Items	Parameter	Degree
36	√	X[1]		√	

Focal entity type - X[1]: Company – list

Concept map
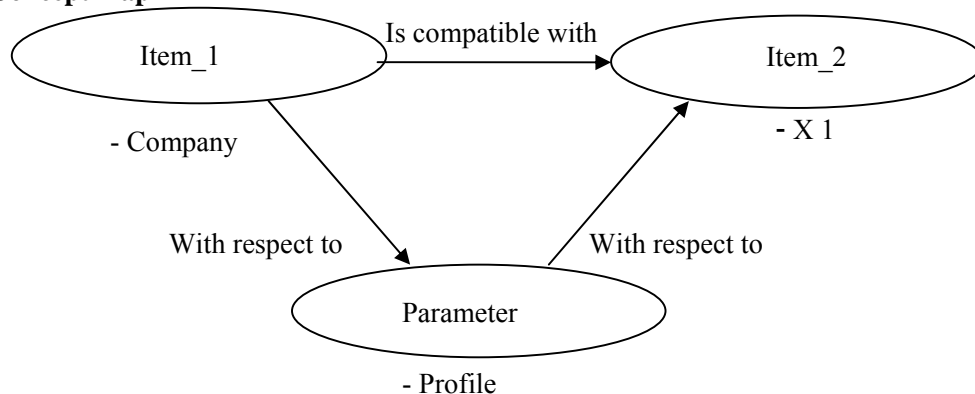
Figure 5. Example of frame-based analysis for one question

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In this example, the analysis is presented in three ways. In the box below the list of core/non-core elements, the major elements are noted: Item_1, Item_2, and Parameter. The business question's elements are related to frame elements as noted by the business question word or words in brackets following each element. Item_2 indicates the focal entity of the question, i.e., the element being sought. In the summary table, the frame elements whose contents are pre-specified in the given business question are designated by a check mark and the element whose content is wanted by the question is designated as "X" to show that the element is currently empty. The concept map shows this graphically and indicates the relationships among the elements (shown by the annotated arrows between elements).

In Figure 6, the Means frame applies to three business questions (10, 25, 47). As shown in the concept map, all three business questions want the Means element to be filled by information. Two business questions explicitly state an agent as I and We. Three purposes given by the questions include raise capital, reach the target audience, and get a job. The questions require knowing the means that would help achieve each purpose.

Q10: Considering my background, how should I develop my resume so that I can actually get a job?
Q25: What methods of raising capital are available either domestically or internationally?
Q47: What kind of advertising plan is most appropriate if we want to reach this target audience?

Means Frame

Definition
An Agent makes use of a Means (either an action or a (system of) entities standing in for the action) in order to achieve a Purpose.

Core elements
Agent   The Agent uses the Means to achieve a Purpose.
Means   The action performed by the Agent.
Purpose   The goal or purpose of the Agent.

Individual question analyses
10: Considering my background, how should I develop my resume so that I can actually get a job?
  Agent [I]
  Purpose [get a job]
  Means [resume] → *Element being asked about*

25: What methods of raising capital are available either domestically or internationally?
  Purpose [raise capital]
  Means [methods of raising capital] → *Element being asked about*

47: What kind of advertising plan is most appropriate if we want to reach this target audience?
  Agent [we]
  Purpose [to reach this target audience]
  Means [advertising plan] → *Element being asked about*

Summary

Question no.	Core elements		
	Agent	Means	Purpose
10	√	X^1	√
25		X^2	√
47	√	X^3	√

Focal entity type - X^1: Topic, X^2: Topic, X^3: Topic

Figure 6. Example of frame analysis with multiple questions for same frame

Concept map
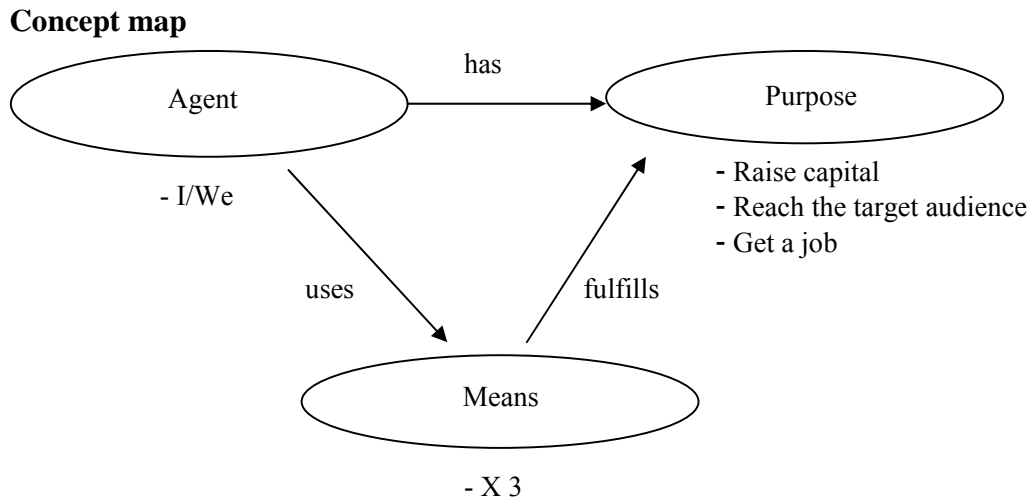
Figure 6. Example of frame analysis with multiple questions for same frame (Continued)

Appendix F describes the definitions and elements of the frames identified and the analysis results of business questions using those frames (see Appendix E for frame analysis results for individual questions). Appendix F is arranged by frame and thus groups multiple questions that belong to the same frame. By carefully analyzing the data in these analysis summary tables, it is possible to see the patterns of the business questions, that is, which elements are provided and asked about by which business questions in which frames.

Tables 11, 12 and 13 are closely related. Table 11 lists the business questions by task and indicates the frame of the question. Table 12 ranks the frames by the number of business questions each represents, and identifies the questions for each frame. Table 12 serves as a frame index to Table 11. Table 13 briefly defines each frame mentioned in Tables 11 and 12. Each definition sketches the scenario underlying the frame and includes both the core and non-core elements of the frame. Each definition is from *FrameNet*.

Table 11. *Frames for Business Questions Requiring External Resources, Arranged by Task*

Q no.	Tasks and questions	Frame
	Adopt a new information technology (IT)	
1	Who are the vendors for Business Intelligence (BI) software? *	Instance
2	What do they offer? *	Commerce_ scenario
	Decide on a real estate purchase	
3	I need to determine how land within a mile or so of the land I'm considering is being used, for example, the mix of big box retail, specialty retail and entertainment, apartments, and offices. Assume he gives the location.	Locale_by_use
4	What is the market demand for apartments in this area?	Needing
5	What are the land use regulations that affect land development in the area?	Law
	Outsource a business function	
6	Which providers are available for information systems and services outsourcing?	Instance
	Search for a job	
7	For an industry of interest, I need an industry overview and discussion of trends in it.	Summarizing
8	And who are the major players, i.e., which are the leading companies in the field?	First_rank
9	For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?	Summarizing
10	Considering my background, how should I develop my resume so that I can actually get a job?	Means
	Select other markets to extend the business	
11	What information can you find that would allow us to assess the market potential for our product in this market segment?	Assessing
12	What are the characteristics of potential customers, e.g., attitudes, lifestyles, and so on?	Distinctiveness
	Set an initial price for a product	
13	What are the characteristics of the target market?	Distinctiveness
14	What are the competitors' prices for comparable products?	Evaluative_ Comparison
15	Are there legal constraints on pricing?	Law
	Make organizational changes in foreign operations	
16	I need information about its [the Myer-Briggs personality-type indicator assessment] use for these purposes [to gain information about our employees to improve communication and to develop teams in combination with other approaches] in other organizations or firms. *	Using
17	Especially about its [the Myer-Briggs personality-type indicator assessment] effectiveness for these objectives [to gain information about our employees to improve communication and to develop teams in combination with other approaches]. *	Usefulness

Table 11. *Frames for Business Questions Requiring External Resources, Arranged by Task*

Q no.	Tasks and questions	Frame
18	How should one go about measuring how successful change efforts have been?	Assessing
17	Especially about its [the Myer-Briggs personality-type indicator assessment] effectiveness for these objectives [to gain information about our employees to improve communication and to develop teams in combination with other approaches]. *	Usefulness
20	Would you please find any characterizations of the culture in Latin American pharmaceutical firms or information that would help us to characterize that culture ourselves?	Distinctiveness
	Reduce employee turnover	
21	What is the standard or normal turnover rate in this industry?	Measurable_ Attributes
22	What are the criteria that people use when they vote for "Best Companies in America to Work for?"	Choosing
	Benchmark a competitor's operation management	
23	Which companies in our industry are known for having the best practices?	First_rank
	Build a senior management team to launch a business	
24	Where can I find information on executive recruiters – names, addresses, and areas of specialization?	Source_of_ getting
	Finance a project in an emerging market	
25	What methods of raising capital are available either domestically or internationally?	Means
26	What are the capital structure and financial market's conditions in the country the project is carried on?	State_of_entity
	Prepare for the merger/acquisition of another company	
27	How do we identify companies that meet our selection criteria for acquisition?	Choosing
28	For a particular target company, what is the financial status of the company?	State_of_entity
29	What financing sources are available for the acquisition?	Source_of_ getting
	Prepare to go public (IPO)	
30	What are the risks and opportunities of going public?	Assessing
31	In the past two years, which investment banking firms have done initial public offerings similar in size and scope to our business?	Similarity
32	Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?	Source_of_ getting
33	What are the filing requirements for an IPO? *	Have_as_ requirement
34	What are the SEC rules/regulations for an IPO? *	Law
	Raise venture capital	

Table 11. *Frames for Business Questions Requiring External Resources, Arranged by Task*

Q no.	Tasks and questions	Frame
35	What venture capital sources are available?	Source_of_ getting
36	Which venture capitalists' preferences would match our company profile?	Compatibility
	Start a new business with an innovative idea	
37	Who are the competitors?	Competition
38	Please find whatever information you can that would allow me to assess the market potential in this e-business.	Assessing
39	Who are the potential customers for these types of products?	Commerce_ Scenario
	Face challenges from new entrant companies	
40	Which companies are emerging in the industry?	Coming_to_be
41	What are the emerging companies' visions and objectives?	Purpose
42	What are the strengths and limitations of the companies?	State_of_entity
	Develop a marketing plan for a U.S. brand in a foreign country	
43	What are the characteristics of the target customers in a particular foreign country, e.g., Japan?	Distinctiveness
44	What elements in the cultural environment of this country are likely to affect marketing strategies for these kinds of products significantly?	Objective_ Influence
45	What elements in the economic environment of this country are likely to affect marketing strategies for these kinds of products significantly?	Objective_ Influence
	Develop an advertising strategy to recruit a new group of customers	
46	What are the characteristics of target customers, e.g., attitudes, lifestyles, and so on?	Distinctiveness
47	What kind of advertising plan is most appropriate if we want to reach this target audience? We are interested in when and where to advertise.	Means
	Enhance a customer satisfaction/loyalty program	
48	What are the elements of successful loyalty programs?	Distinctiveness

Note: * Originally phrased as a compound question; rephrased as simple question for analysis.

As Table 11 notes, tasks are not characterized by a series of business questions that are similar semantically, that is, questions with the same frame basis do not cluster in specific tasks. Instead a person doing a particular task faces business questions that are somewhat dissimilar semantically.

Table 12. *Frames Ranked by the Number of Questions Represented*

Frame	N and % of questions	Tasks	
		Total	Task ID
Distinctiveness	7 (15%)	6	14, 15, 16, 28, 29, 30
Assessing	4 (8%)	4	14, 16, 23, 26
Source_of_Getting	4 (8%)	4	20, 22, 23, 25
Law	3 (6%)	3	15, 23, 25
Means	3 (6%)	3	13, 21, 29
State_of_Entity	3 (6%)	3	21, 22, 27
Choosing	2 (4%)	2	17, 22
Commerce_Scenario	2 (4%)	2	8, 26
First_rank	2 (4%)	2	13, 19
Instance	2 (4%)	2	8, 11
Objective_Influence	2 (4%)	1	28
Summarizing	2 (4%)	1	13
Coming_to_be	1 (2%)	1	27
Compatibility	1 (2%)	1	25
Competition	1 (2%)	1	26
Evaluative_Comparison	1 (2%)	1	15
Have_as_Requirement	1 (2%)	1	23
Locale_by_use	1 (2%)	1	10
Measurable_Attributes	1 (2%)	1	17
Needing	1 (2%)	1	10
Purpose	1 (2%)	1	27
Similarity	1 (2%)	1	23
Usefulness	1 (2%)	1	16
Using	1 (2%)	1	16
Total	48	45	

Considerable diversity exists across the business questions in this study. The 48 questions belong to 24 semantic frames (Table 12), but half the frames are represented by only a single business question. The concentrations ranged from 2 to 7, with the most popular frames being Distinctiveness (7 questions; 15 %) and Assessing and Source_of_Getting (4 questions; 8% each).

Table 13. *Definitions of Frames Identified for Business Questions*

Frame	Definition
Assessing	An Assessor examines a Phenomenon to figure out its Value according to some Feature of the Phenomenon. This Value is a factor in determining the acceptability of the Phenomenon. In some cases, a Method (implicitly involving an Assessor) is used to determine the Phenomenon's Value.
Choosing	A Cognizer decides upon the Chosen (either an item or a course of action) out of a set of Possibilities . The Cognizer may have an Intended_purpose for the Chosen. Often a Reason, which serves as the basis of the choice, is given.
Coming_to_be	An Entity comes into existence at a particular Place and Time which may take a certain Duration_of_endstate, have a Cause, or be formed from Components.
Commerce_Scenario	Commerce is a situation in which a Buyer and a Seller have agreed upon an exchange of Money and Goods (possibly after a negotiation), and then perform the exchange, optionally carrying it out with various kinds of direct payment or financing or the giving of change.
Compatibility	Item-1 and Item-2 are compatible with each other if they can exist or function together in some context without problems, conflict, or other undesirable situation. The set of Item-1 and Item-2 may be expressed jointly as Items. The Degree to which the Items are compatible may also be indicated, as may be a Parameter along whose lines the Items are compatible.
Competition	This frame is concerned with the idea that people (Participant_1, Participant_2, or Participants) participate in an organized rule governed activity (the Competition) in order to achieve some advantageous outcome (often the Prize). Rank and Score are different criteria by which the degree of achievement of the advantageous outcome is judged.
Distinctiveness	A Feature of an Entity serves to distinguish the Entity from other members of its type which have a different value for the Feature. Note that the Entity is often implicit.
Evaluative_Comparison	This frame is about the static comparison of an Profiled_item to a Standard_item, often with respect to some Attribute. In this frame, there is an inherent asymmetry between Profiled_item and Standard_item in that the two cannot be expressed jointly as a subject. Degree expressions are also found that indicate how close the items are to each other on the scale evoked by the Attribute. Furthermore, the particular value of the standard or item on a certain scale may be given by the Standard_attribute of the

Table 13. *Definitions of Frames Identified for Business Questions*

Frame	Definition
	Profiled_attribute respectively.
First_Rank	An Item is located at the top end of a scale of importance or social rank (or some other Attribute) in comparison to other members of a Contrast_set (usually, implicit) that is otherwise similar in kind to the Item. Oftentimes, the limits of the Contrast_set are determined by an expression of the Limits_of_consideration.
Have_as_Requirement	The obtaining of a Requirement state of affairs or the presence of a Required_entity is profiled as a prerequisite for the obtaining or occurring of a Dependent state-of-affairs.
Instance	This frame concerns transparent nouns that denote Instances of Types of entities or events.
Law	A Law regulates activities or states of affairs within a Jurisdiction, dictating what Required states should be the case and what Forbidden states should not.
Locale_by_Use	Geography as defined by use.
Means	An Agent makes use of a Means (either an action or a (system of) entities standing in for the action) in order to achieve a Purpose.
Measurable_Attributes	An Entity has a particular scalar Attribute with some Value. An absolute Value may be specified or the Value pertaining to the Entity may be implicitly compared to other possible Value(s).
Needing	The speaker believes that some state of affairs or entity (the Requirement) must be present in order to cause some other dependent state of affairs to occur (the Dependent). In the typical case, the Cognizer desires the occurrence of the Dependent and so also desires the obtainment or occurrence of the Requirement.
Objective_Influence	An Influencing_variable, an Influencing_situation, or an Influencing_entity has an influence on a Dependent_entity, Dependent_variable, or a Dependent_situation.
Purpose	An Agent wants to achieve a Goal, or an object, a Means , has been created or is used to allow the creator or a user to achieve a Goal. The Goal is a state of the world that does not currently obtain but which the Agent wants to realize and is planning and/or working towards.
Similarity	Two or more distinct entities, which may be concrete or abstract objects or types, are characterized as being similar to each other. Depending on figure/ground relations, the entities may be expressed in two distinct frame elements and constituents ,

Table 13. *Definitions of Frames Identified for Business Questions*

Frame	Definition
	Entity_1 and Entity_2, or jointly as a single frame element and constituent, Entities. The similarity may be based on appearance, physical properties, or other characteristics of the two entities. However, no such Dimension has to be specified explicitly. The Entities may be like each other to a greater or lesser Degree. Notice that, although similarity presupposes the notion of a judge who assesses similarity, that judge is not part of the frame of similarity.
Source_of_Getting	A Goal has a Source from which it has gotten a Theme. The Goal may be a sentient recipient who has actively obtained the Theme but it may also be a non-sentient entity that gets the Theme as a result of natural or other processes that it does not control.
State_of_Entity	An Entity is in a specified State. When not explicitly specified, the State usually concerns the Entity's health, repair of functioning. The State is also often assessed with an Evaluation and it may be specified to apply only to a particular Parameter of the Entity.
Summarizing	A Communicator processes some information (either from textual or real-world/perceptual sources) regarding a State_of_affairs into a concise form (a summary) that contains the essential content in briefer form, and communicates this summary to an Addressee, or records it in a Medium. The State_of_affairs may be represented directly (e.g., outline what happened, the situation abroad), or as a textual source (summarizing the documents), or metonymically as some focal entity (a synopsis of the candidates).
Usefulness	An Entity aids in the successful completion of a Purpose. Its Degree of utility may also be expressed.
Using	An Agent manipulates an Instrument in order to achieve a Purpose.

Note: These definitions are from FrameNet (available at
http://framenet.icsi.berkeley.edu/index.php?option=com_frontpage&Itemid=1).

4.2.2 Coreness of Entities in Business Questions

In frame analysis the elements of the business question are matched

systematically to the elements of the frame. Since each frame designates its elements

as core and non-core, it is possible then to determine if the information provided in a

question and the information desired is core to the frame. It also allows for a

systematic way of identifying the focal point in the question, which is the desired information.

In 81 percent of the business questions (39 of 48), the desired information is a core-element in the frames (Table 14). Ninety-two percent of the business questions (44 out of 48) provide information for at least one core element with or without a non-core element.

Table 14. *Combinations of Core and Non-core Elements Provided and Wanted in Business Questions*

Provided	Wanted	N of questions
Core	Core	31
Core	Non-core	7
Non-core	Core	4
Core and non-core	Core	4
Core and non-core	Non-core	2
Total		48

The most frequent pattern is that a business question provides information for one core element and wants one core element to be filled by the answer (31 out of 48). For example, business question 41, "What are the emerging companies' visions and objectives?" is represented by the Purpose frame. In this question, Agent, a core element, is given (emerging companies) and another core element, Goal, is sought after (visions and objectives). Looking at exceptional cases, the nine questions that want information for non-core elements belong to Assessing, Choosing, Needing, Summarizing, and Usefulness. For example, the business question 7, "For an industry of interest, I need an industry overview and discussion of trends in it," provides information for a core element, State_of_affair, (industry of interest) and

want information for a non-core element, Summary (overview and discussion of trends) in the Summarizing frame. Notably, the business questions that belong to Assessing and Summarizing frames consistently ask for non-core elements.

The dominance of core elements for the information wanted and the existence of the exceptional cases can be explained by the nature of core and non-core elements in connection with the characteristics of business questions. Core elements in *FrameNet* usually include items or affairs, their features, and parameters among the items/affairs involved in a focal concept described in a frame. Whereas, non-core elements include secondary information such as time, place, frequency, degree, manner, outcome, summary, and evaluation. Since a majority of business questions identified in this study ask for information about specific entities such as companies, industry, and customers as discussed in subsequent paragraphs, the questions are likely to desire information for core elements rather than non-core elements. This also explains why the business questions that belong to Assessing and Summarizing frames ask for non-core elements; the wanted information in those questions -- summary, evidence, value, means, and criteria -- all belong to non-core elements. It would be interesting to see if the information wanted still tends to be core to the frame in other domains where there are no or few special entities.

Another cause that may contribute to this phenomenon is that the business questions were derived from existing literature and they were generalized to some extent to be essential questions. Unlike real questions that are closely wedded to a specific context, the business questions in this study do not specify circumstantial information related to a user's context (e.g., time, place) or secondary information

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(e.g., frequency, manner).

4.2.3 Focal Entities in Business Questions

The elements wanted in the business question are considered the foci of the business questions. After identifying them through frame analysis, they were further categorized by entity type. Entity types are search units used in business databases. The business questions focused on seven entities: company, topic, customer, law, country, product, and industry. Company (16; 33%) and topic (14; 29%) are the most prevalent (see Table 15).

Table 15. *Focal Entities in Questions,*
Ranked by Frequency of Occurrence

Entity type	Total
Company	16 (33 %)
A list of companies	11 (23 %)
Company features	5 (10 %)
Topic	14 (29 %)
Customer	7 (15 %)
Law	4 (8 %)
Country	3 (6 %)
Product	2 (4 %)
Industry	2 (4 %)
Total	48 (100%)

For company, five questions address a specific feature of a particular company and eleven ask for a list of companies with a common attribute(s). Identifying the relationships among these focal entity types helps to put them in perspective. A *company* belongs to a particular *industry* and produces *products* that it sells to *customers*. It operates within the constraints of a particular *country*, one of which is the country's *laws*. Topic is the most ambiguous entity and includes, for example,

strategies, risks and opportunities, and programs. The relationships between topic

and the other focal entity types are likely to vary, depending on the specific topic.

Table 16 summarizes the overlap of business question types across the tasks.

Columns 2 through 4 progress in order of specificity of overlap from overlap of the

same frame, same element, and same focal entity. Numbers in each row rely on the

previous number in the same row. In other words, business questions must overlap

by frame to be able to overlap by element to be able to overlap by the same focal

entity. Each row constitutes a set of business questions that overlaps to some degree.

Applying the most rigorous definition of overlap (the fourth column), only 7 sets

totaling 17 questions are identified that belong to the same frames, ask for the same

elements, and ask about the same focal entity types. In the first row, for example,

four questions are in the assessing frame; two questions ask for the same elements

and have the same focal entity types. The numbers of those two questions are noted

in the final column. To identify the other questions with this frame, see Table 11.

Several examples clarify the varying degrees of overlap identified in Table 16.

Business questions 1 and 6 are different on the surface: "Who are the vendors for

Business Intelligence (BI) software?" (Q1) and "What do they offer?" (Q6). But they

not only belong to the same frame, they also want the same element, and that element

is the same entity type for each question. This combination represents the most

stringent overlap. They both belong to the Instance frame because they intend to

identify the instances of a certain type of entity. The element that needs to be filled

by the answers is the same -- the Instance element, which denotes a thing/instance of

Table 16. *Overlap of Questions by Frame*

Frame	Same frame[1]	Same element[2]	Same focal entity[3]	Business question[4]
Assessing	4	2	2	11, 38
Choosing	2	0	0	N/A
Commerce_Scenario	2	0	0	N/A
Distinctiveness	7	7	4	12, 13, 43, 46
First_rank	2	2	2	8, 23
Instance	2	2	2	1, 6
Law	3	3	3	5, 15, 34
Means	3	3	0	N/A
Source_of_Getting	4	4	2	29, 32
State_of_Entity	3	3	2	28, 42
Summarizing	2	2	0	N/A
Total	34	28	17	

Note: Excludes frames with only one question. Frames are arranged alphabetically.
1) The number of questions that belong to the same frame.
2) The number of questions that belong to the same frame and ask for the same element.
3) The number of questions that belong to the same frame, ask for the same element, and ask about the same focal entity type.
4) Business questions that belong to 3). N/A = not applicable.

the type. The type of focal entity being asked about is a list of companies in both business questions. To summarize, these two questions, although apparently dissimilar, ask for a list of companies of a certain type. Only the information or values given by the two questions are different.

In the second example, business questions 7 and 9 belong to the same frame, Summarizing, as both of the questions need a summary that contains essential content of an affair or an object: "For an industry of interest, I need an industry overview and discussion of trends in it" (Q7) and "For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?" (Q9). The two questions want information for the same element, which is the Summary element, but they ask about

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different focal entity types. Business question 7 asks about an industry and business question 9, a company.

In the final example, business questions 22 and 27 share only the same frame -- Choosing: "What are the criteria that people use when they vote for Best Companies in America to Work for?" (Q22) and "How do we identify companies that meet our selection criteria for acquisition?" (Q27). Both questions involve choosing an entity out of a set of possibilities, and this is the only commonality they have. Business question 22 is concerned with why people choose certain entities (element wanted: Reason, focal entity type: topic) and business question 27 is more concerned with the possibilities to choose from (element wanted: Possibilities; focal entity type: company – list).

In addition to developing an inventory of business tasks and related questions, including those calling for both internal and external resources, the analysis in this chapter characterizes the business questions requiring external resources semantically via frame analysis and identifies seven focal entities for these questions. Frame analysis was particularly useful for seeing similarities across seemingly disparate business questions, identifying the centrality of information provided and asked for, and identifying the focal entity for each question.

Chapter 5: Influence of Tasks on Librarians' Database Selection Process

The second phase of the project focuses on determining how business tasks influence database selection and on the relationships among the variables: task, business questions, information type, and database selection criteria. The data for the analysis in this section come from responses to the survey questions that elicited participants' judgments about the information types needed for each business question, the databases they would use to locate the information, and their criteria for selecting the database(s) and from a broad survey question: "Generally, how does knowing the task the user is involved in affect how you respond to his information need and business questions?" (see Appendix D - 3). The majority of the survey questions address specific tasks and business questions essential to their completion. Participants' judgments and comments in response to these provide critical incident level data and allow for a more complete understanding of one segment of the overall model derived from the general question. The response rate for each survey questionnaire variant is shown in Table 4.

Figure 7 shows the summary of responses for one business question as an example; all summaries appear in Appendix G. For each business question, the responses are aggregated to show the information types and databases selected by all participants addressing that business question.

1. What are the risks and opportunities of going public?

Information Types Needed	Responses (N=4)	Databases and Information Needed
SWOT analysis	4	▪ MarketLine
Case studies	3	▪ ABI/Inform, BSP, HBS website
Company profiles	3	▪ BCRC - to get as much information as possible about the company
Financial reports	3	▪ Financial reports - to understand where the company is today ▪ BCRC
Magazine/Journal articles	3	▪ ABI/Inform, BSP
Newspaper articles	3	▪ Factiva, The Wall Street Journal
Industry reports	2	▪ BCRC
Investment analysis reports	2	
Laws/Regulations	2	
Statistics/Demographics	2	
Consumer analysis reports	1	
Total	28	
Average	7	

Figure 7. Example of summary responses (information types and databases) for one question

The broad survey question will be analyzed first, since it establishes a general model of participants' perception of the role of task in information seeking.

5.1 Overall Model of the Role of Tasks

The overall model shown in Figure 8 provides a broad picture of how tasks influence the participants' information seeking processes in general and how the findings of this study particularly fit into this picture. The participants see four broad roles for task (see the boxes). They are more expansive about some of these roles, as indicated by the bulleted items below some boxes. In the following explication of the model, comments from the participants reflect the aspect of the model being discussed.

Tasks

```
                                    Tasks
        ┌──────────┬─────────────┴──────────┬─────────────┐
        ↓          ↓                        ↓             ↓
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Identify hidden needs	Obtain insights into	Make judgments about	Improve efficiency and effectiveness

• Client experience
  - with task
  - in industry
  - research generally
• Client objective
• Time factors
• Nature of information
  to be provided
  - level of detail
  - expertise required to
    understand info

• Emphasis on information
  or process in a response
• Questions in reference interview
  and interaction with a client
• Resources
  - number of resources/DBs
  - type of resources/DBs
  - search strategy within DBs
• When to go outside the box
• Relevance judgments
  - completeness
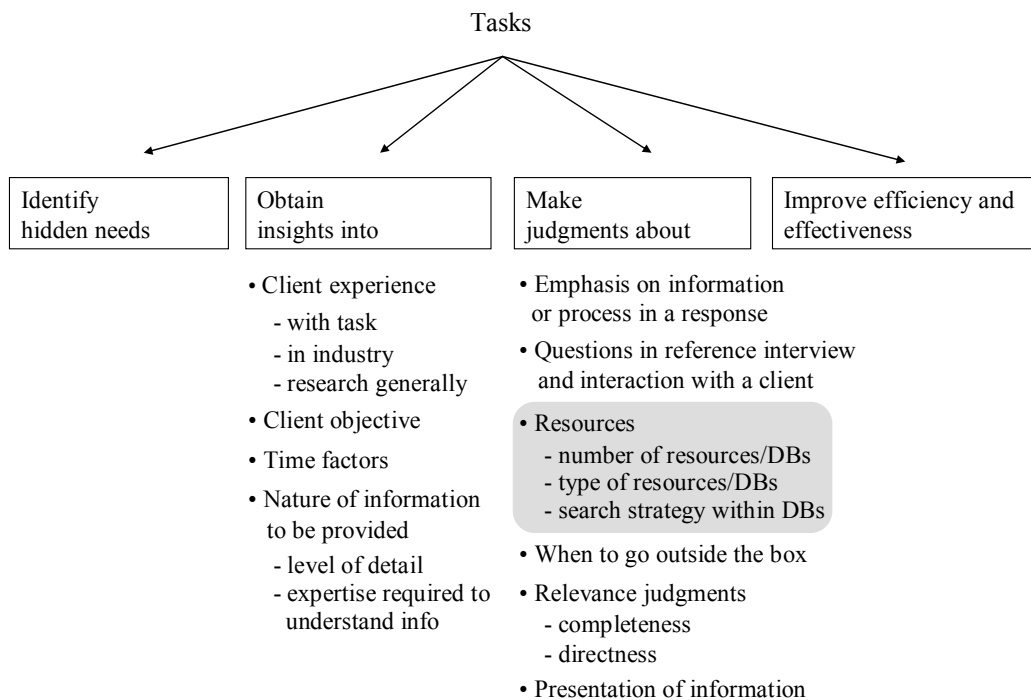 - directness
• Presentation of information

Figure 8. Overall model of the role of task in information-seeking derived from participants' responses

First, users are not always effective in phrasing their information needs, and knowledge of the task *helps identify the users' true needs.* The participants mention specifically the notion of "hidden needs":

Knowing the task puts the information need into clearer context. It helps define the problem and assists in leading to likely sources to answer the specific question(s) that are "hidden" within the task. It also helps in clarifying what the true needs of the client are...the client must articulate more precisely what they are trying to accomplish…allowing the information professional to consider all likely information that may be necessary to answer

the client's request. (Participant 12)[4]

Second, knowing users' tasks provides a basis for *obtaining insight into several factors* related to the user and the situation:

• User experience (in industry, task, research generally): P3 recognizes a user's experience in a task by saying a PhD student needs a more detailed answer than an undergrad or MBA. The participant also points out a user's experience in an industry:

If they have worked in a similar line of biz before, they don't need as much detail as if they're just starting to explore a new line and are unfamiliar with the basics. (P3)

• User objective:

[I would] definitely show someone wanting to find company information who is career searching different resources than someone wanting to find company information for a M&A takeover deal. (P4)

• Time factor (time available for answering question, deadline):

A PhD student has a greater level of detail needed (and time available) than an undergrad MBA with a paper due the next day. (P3)

• Nature of information to be provided (level of detail, required expertise to understand information):

If a student is working on a 3 page paper he wouldn't want the in-depth information that a student writing a dissertation would. Databases vary tremendously in how much information they provide. A student wanting only

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[4] The participants were numbered to preserve their anonymity. In subsequent attributions for quotations, Participant is shortened to P.

basic information will not want to be shown every possible database. (P8)

In summary, a user's objective, experience in a task/industry/research, and time factor are elements that are embedded in the task context, and they influence the nature of information to be provided.

Third, knowing users' tasks *establishes a basis for making judgments and guides*:

• Decision to emphasize information or process in response:

If one knows that the information needed is for a real situation, as might be the case with internships or field studies, it is critical to have more correct and probably more current information. If it's an academic exercise, the process is important but the information may not be as critical. (P27)

• Interactions with user to focus need:

[Knowing users' tasks helps a participant] focus on their need and anticipate the next question. (P13)

• Resource-related decisions (type of resource, number and type of databases, search strategy within databases): Many participants acknowledge the importance of the effect of users' tasks on the resource-related decisions.

Understanding exactly what it will be used for is extremely important. It has everything to do with knowing the best sources and the methodology to use. (P28)

As with almost any type of reference transaction, the more relevant details you get about what information is needed the better search strategies you can develop. (P18)

• Decisions about "when to go outside the box," i.e., find alternatives not requested explicitly:

It is essential (to me) to know all the particulars of a patron's request. There are usually solutions 'outside of the box' and understanding the full scope of a patron's research project allows me to recommend as many viable options as possible to satisfy their research needs. (P11)

• Relevance judgments about completeness and directness:

It is good to know the background of the question to suggest more relevant materials that cater to the needs more directly. (P15)

• Information presentation, i.e., decisions about the manner of presenting the information efficiently and effectively:

Source selection, and efficient and information presentation of information found. (P26)

Finally, tasks help to *improve the efficiency and effectiveness of reference transaction* as P14 states, "The more information the business librarian has about how the information is to be used the more efficiently and effectively he or she can respond."

It is obvious from the participants' responses that, while they indeed see task as important for making the database-related decisions (see the shaded section in Figure 8) that are the foci of this dissertation, they also see task as influential in eliciting insights and making judgments about other activities in information seeking. An awareness of users' tasks is so pervasive, affecting so many aspects of the

participants' work, that the participants may not realize and be able to verbalize the direct influence of the tasks on a particular aspect.

The following sections focus on database selection and develop this overall model more specifically in that area. These sections are based on participants' responses related to one or more tasks and the business questions associated with them and provide more specific information.

5.2 Types of Information Needed

In the survey questionnaires, a brief task description is provided for each task to give the participants a sense of the task. The descriptions, adapted from the HBS case summaries, often include the company or entrepreneur who is performing the task, the goal of the task, the industry the company belongs to, and sometimes include geographical areas the task is taking place. Working from the base of task-related information and information presented by the business questions, the participants identify potential information types or possible packages of information that provide an answer to the business question. Two significant findings appear in these results related to number of databases used to answer a business question and the flexibility of the information types. The participants often seem to piece information together from multiple databases to answer a single business question. The average number of information types used per question is 4.8 (S.D. 1.9), ranging from 1.25 to 9. It is not always clear from responses if the participants view resources as alternatives or if they gradually cumulate the answer, with segments coming from each resource, but the participants' comments at times support the latter. For example, for the

seemingly simple business question, "Who are the competitors of a company," the participants select directories, industry reports, journal/magazine/newspaper articles, company profiles, and Strengths, Weaknesses, Opportunities, and Threats (SWOT) analyses. While directories and industry reports usually list similar companies in the industry, relevant journal articles allow for identifying less recognized companies, which are often newer in the industry. Company profiles and SWOT analyses can provide in-depth information for any companies identified. Articles also provide current issues related to those companies.

Besides the 17 possible options for information types listed in the survey questionnaire, the participants suggested websites and Web search engines, the former often for companies or associations. Although websites and Web search engines may be regarded as information sources rather than information types by some researchers (see, for example, Abels and Klein (forthcoming)), the participants mention them as information types. These are listed as a single type in Table 17, which ranks the information types by the extent of use across business questions. All the information types in the survey are used, even the most specific, such as patents/trademarks.

Table 17. *Information Types, Ranked by Number of Business Questions*

Information type	N	%	Question ID
			Questions
Magazine/Journal articles	45	94	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48
Newspaper articles	40	83	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48
Industry reports	31	65	6, 7, 8, 11, 12, 13, 14, 15, 20, 21, 22, 23, 27, 28, 29, 30, 31, 32, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48
Company profiles	26	54	8, 9, 11, 12, 13, 16, 17, 20, 22, 23, 24, 25, 26, 27, 28, 30, 31, 36, 37, 40, 41, 42, 43, 44, 47, 48
Investment analysis reports	26	54	7, 8, 9, 11, 12, 13, 14, 20, 23, 27, 28, 29, 30, 31, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 48
Case studies	23	48	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 30, 36, 38, 39, 41, 42, 43, 46, 47, 48
Market research reports	23	48	1, 2, 6, 11, 12, 13, 14, 20, 21, 23, 27, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48
Statistics/Demographics	21	44	3, 4, 7, 11, 12, 13, 14, 20, 21, 22, 30, 31, 37, 38, 39, 43, 44, 45, 46, 47, 48
Financial reports	20	42	8, 9, 12, 15, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 35, 36, 38, 41, 42, 45
SWOT analysis	20	42	8, 9, 13, 14, 18, 19, 20, 22, 23, 27, 28, 29, 30, 36, 38, 40, 41, 42, 43, 48
Website, search engine, associations/agencies, etc.	20	42	3, 7, 9, 10, 11, 13, 14, 16, 17, 18, 22, 23, 31, 32, 33, 34, 35, 37, 41, 46
Directories	16	33	1, 2, 3, 6, 8, 9, 11, 20, 24, 25, 27, 31, 32, 35, 36, 37
Consumer analysis reports	13	27	11, 12, 13, 14, 30, 37, 38, 39, 43, 44, 46, 47, 48
Monographs	12	25	7, 9, 10, 19, 23, 25, 35, 38, 44, 45, 47, 48
Laws/Regulations	11	23	5, 15, 22, 25, 26, 27, 30, 33, 34, 38, 44
Country reports	10	21	15, 20, 25, 26, 28, 38, 43, 44, 45, 46
Product catalogs/reviews	10	21	1, 2, 6, 13, 14, 23, 32, 37, 43, 44
Patents/Trademarks	4	8	11, 23, 37, 42

Note: N of questions = 48; number has been adjusted to count compound questions separately.

Five types are used for more than half the business questions:

magazine/journal articles (45; 94%); newspaper articles (40; 83%); industry reports

(31; 65%); investment analysis reports and company profiles (26; 54% respectively).

The first two are broad and their general applicability is not surprising, but even more

specialized information types, such as investment analysis reports, have multiple uses.

Investment analysis reports can be used to identify leading companies in an industry (business question 8) or to know the characteristics of target markets (business question 13), among others. Not all of the uses are investment-related.

Table 18 ranks the databases by frequency of use. The top four databases are all article databases: *Business Source Premier, Factiva, LexisNexis Academic,* and *ABI/Inform*. All but *LexisNexis Academic* emphasize business.

Table 18. *Databases Ranked by Frequency of Use*

Database	N of times used	Questions
Business Source Premier	26	3, 4, 5, 6, 7, 10, 12, 13, 14, 16, 17, 18, 19, 20, 23, 25, 26, 30, 36, 39, 40, 41, 42, 43, 44, 47
Factiva	24	3, 4, 5, 7, 10, 11, 12, 13, 16, 17, 19, 21, 22, 24, 25, 26, 27, 28, 30, 37, 43, 44, 45, 48
LexisNexis Academic	18	4, 5, 11, 13, 16, 17, 18, 20, 23, 24, 25, 26, 33, 34, 37, 41, 44, 45
ABI/Inform	12	11, 15, 16, 17, 18, 19, 20, 23, 26, 30, 41, 48
Reuters Research on Demand	8	8, 10, 14, 38, 39, 40, 41, 42
Investext	7	11, 23, 27, 28, 29, 40, 42
MarketLine	6	12, 13, 20, 30, 36, 40
Hoover's Online	5	10, 20, 24, 40, 41
Mintel	5	38, 39, 40, 43, 46
Business & Company Resource Center	4	18, 20, 30, 31
Bloomberg	4	27, 28, 29, 31
Business Source Complete	4	10, 21, 22, 28
EIU Country Reports	4	20, 43, 44, 45
MarketResearch.com	4	11, 12, 38, 39
Simmons Study of Media and Markets	4	38, 39, 46, 47
Business & Industry	3	14, 23, 44
Capital IQ	3	27, 28, 29
EIU Country Commerce	3	25, 26, 44
Euromonitor	3	26, 42, 43
Global Business Browser	3	37, 41, 43
Global Market Information Database	3	20, 38, 43
ISI Emerging Markets	3	38, 40, 45
Mergent Online	3	20, 27, 28
ReferenceUSA	3	3, 11, 37
S&P Industry Surveys	3	7, 8, 20
S&P Net Advantage	3	12, 31, 40
SDC Platinum	3	25, 29, 31
ThomasNet (Thomas Register)	3	1, 2, 12
Business Wire	2	3, 4
CCH Accounting Research Manager	2	33, 34
CIA World Factbook	2	20, 26
EIU ViewsWire	2	26, 45

Table 18. *Databases Ranked by Frequency of Use*

Database	N of times used	Questions
Mediamark	2	38, 39
PscyInfo	2	16, 17
TableBase	2	46, 47
Thomson Business Intelligence	2	13, 14
Thomson ONE Banker	2	9, 31
American FactFinder	1	3
America's Newspapers	1	5
Associations Unlimited	1	11
Book of Lists	1	24
EIU Country Risk Guides	1	26
Culturegrams	1	44
EDGAR	1	28
EIU Country Finance	1	25
eMarketer eStat	1	37
First Call	1	23
General Business File	1	19
IBIS World	1	12
Mergestat	1	31
Market Share Reporter	1	43
National Trade Database	1	20
OnceSource International	1	20
ORBIS	1	28
PROMPT	1	14
Regional Business News	1	12
S&P Market Insight	1	15
SDC M&A	1	27
USPTO	1	42
Zephyr	1	31
Total	215	

The relationship between the task type and information types selected is noteworthy. The average number of information types needed increases slightly as the task type becomes more ill-structured (Table 19). These findings are aligned with previous studies illustrating that, as task complexity increases, the complexity of information needed increases (Byström & Järvelin, 1995) and thus, the number of

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information types used increases.

The average number of resources selected, however, does not show any patterns according to the types of task. The participants selected about three resources regardless of the task type, and this is because the survey questionnaires limited the number of databases to select up to three.

Table 19. *Average Number of Information Types and Resources Selected by Task Type*

	N of information types	N of resources
Task type		
Decision-making	4.0	2.6
Diagnosis-solution	4.3	3.0
Strategic-performance	4.7	3.1
Situated-case	5.4	2.7
Design	6.1	2.7

Note: Type of task arranged according to decreasing degree of structure in task.

5.3 Database Selection Criteria

The purpose of this section is to identify the factors and criteria the participants mention in connection with selecting databases, not to indicate the extent of use by the participants, so numbers are not included. Factors should be differentiated from criteria: *factors* provide a basis for applying the criteria, and the *criteria* are the values people consider when selecting databases. For example, authoritativeness is a criterion the participants mention in choosing a database. The database-related factor that would allow them to judge authoritativeness may be its being published by the major professional organization in the field. The criteria identified are grouped into general database-related criteria, question-related criteria, and task-related criteria.

5.3.1 General Database-related Criteria

Depth of Coverage Depth of coverage refers to the degree of specificity of information covered in a database/resource on a particular topic. P2 weighed two databases in terms of the depth of coverage by saying "Global Market Information Database – a little more hit or miss in the depth of coverage than Mintel." P10 stated "There are books that would discuss this, probably in some detail."

Scholarly Orientation Scholarly orientation refers to the extent to which the database includes scholarly journals or practice-oriented journals. Publishers or creators of documents in the database and the intended audience are factors that influence the database's scholarly orientation. P3 selected *Business Source Premier* because it has "tons of scholarly journals…"

Currency Currency or recency means "the comparative newness of a document with regard to the respondent's topic" (White & Wang, 1997) when selecting an article. Applying this definition to database selection, "document" can be replaced with "database." The time range of the documents included in the database and the frequency of update are factors that help a user to judge the currency of a database. P9 expected *Factiva* to provide her "with recent information about the companies that may clue me into their visions/objectives." P5 shared this opinion by selecting *Business Source Premier* "to find current business articles and news."

Affordability Affordability refers to the ability to access and pay for a search in a fee-based database. Some fee-based databases are expensive and thus, the price becomes a factor that determines database selection as evidenced in P25's remark

"Market research reports may already have covered this ground, so [if] you have a budget, you could look for … ."

Authoritativeness Authoritativeness refers to the reputation of the source of information that it is knowledgeable. For example, the fact that a database is published by the major professional organization in a field is a factor to judge authoritativeness. P15 selected EIU reports because "EIU reports are authoritative in country reports."

5.3.2 Question-related Criteria

Topicality Topicality refers to the match between the subject coverage of the database and the topic of the question. The participants in this study seldom explicitly mention topicality as a database selection criterion, probably because topic match is so fundamental, and they are more concerned with other criteria that would narrow down the selection among topically matched databases. Instead, the participants sometimes indicate specific information provided in the database that would help answer the given question. For example, to answer the business question "Which companies in our industry are known for having the best practices?" (Q23), P10 selected *Business Rankings Annual* because "it includes rankings of various kinds that would be indicators of a company's performance." This was not regarded as topicality, because this print source does not cover best practices. Also, the participants often select a specific information type that covers the topic. For example, for business question 39, "Who are the potential customers for these types of products?" P13 selected *Mintel, MarketResearch.com,* and *Reuters* for "market

research reports to find characteristics of users." This answer was coded as an information type database selection criterion because she selected those databases for market research reports. However, topicality is implicit in the above cases and presumably others even when the participant does not mention any content or topic of the given business question. Therefore, even though there is no case coded as using topicality as a database selection criterion in this study, it does not mean the participants did not consider topics when selecting databases, but they were not expressing that criterion explicitly because it was assumed any source should be topically relevant.

Information type As explained in the literature review section, business databases are diverse in terms of information types, for example, databases containing newspaper articles, industry reports, investment analyst reports, statistics, and/or directories. It is important to know that a database contains certain types of information that match with a given request before searching. Many participants in this study frequently resort to particular information types according to a given business question. For example, for the question, "Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?" (Q32), P18 listed several print directories "since this question calls for a directory and I can think of a few resources." It is also often the case the participants select a certain type of information instead of specific databases as shown in P11's statement "Any article searching database would be used to retrieve newspaper and magazine articles."

Usability Usability refers to the functionality and efficiency of a database.

Search features and ease of use are important factors that influence the judgment of the usability aspect of databases. Search features may influence ease of use. P10 chose *ReferenceUSA* because "this directory database enables searching by industry codes that could generate a list of companies in the industry." P1 selected *Zephyr*, *SDC*, and *Bloomberg* because they are "focused on query, fast, ease of use."

The general database-related criteria and question-related criteria are not new. What is interesting though is that most of these criteria are more influenced by individual business questions than by tasks. Restated, the characteristics of a given business question tend to determine a specific topic area, an information type, and the usability aspect of databases. Depth of coverage, scholarly orientation, currency, and authoritativeness seem to be related to the business questions, but evidence is weak for supporting this claim, so they are categorized as general database-related criteria. The only criterion related to a librarian or his environment is affordability. This criterion is independent of the task or question.

5.3.3 Task-related Criteria

In most responses about individual business questions, the participants did not explicitly indicate that task-related criteria played a role in their database selection decisions. It is difficult to isolate solely the influence of tasks on the selection process because tasks are not independent of other variables involved in the database selection process. In a few situations, however, the participants explicitly considered task-related criteria in the database selection process. Table 20 arranges all task-

related criteria by the number of business questions in which the criteria appear and identifies the business questions in which they appear.

Table 20. *Task-related Criteria*

Criteria	N of questions	Question No.
Industry sector	4	21, 31, 37, 43
Geographical setting – country	3	25, 20, 40
Geographical setting - region of interest	2	12, 24
Geographical setting – international	2	44, 45
Company size	2	6, 37
Company type	1	37
Business stage	1	37

Note: Criteria are arranged according to the number of business questions in which the criteria appear.

Only for twelve business questions do the participants explicitly consider task-related criteria. This result should not be seen as evidence demonstrating that users' tasks are trivial in participants' work. As noted in section 5.1, tasks are so pervasive and fundamental in a variety of participants' activities. The participants may resort to task-related criteria only when the business questions do not provide enough information to select appropriate databases.

The identified criteria are explained as follows, with comments from the participants:

Company type Company type refers to the distinction between public and private companies. Data are more readily available for publicly-held companies because their behavior needs to be open to public scrutiny. Because some databases cover only public companies and others cover both public and private companies, a participant needs to match the type of a company associated with the given task and the company type covered in a database. P4 said "if [the company is] public, SEC

filings for instance [will be useful]" to find company reports.

Company size Company size is another aspect of a company that influences database selection. For this criterion, the participants consider company size – a small, medium, or large company – to select specific types of information as P5 stated "Telephone directory, if this is a small company interested in outsourcing. They typically can't afford the large, national companies."

Industry sector Industry sector refers to the branch of industry a company belongs to. Some databases specialize in specific industry sectors. Selecting an industry-specific database usually assures coverage of a particular company and gives more accurate and in-depth information about that industry. P1 stated, "It depends on the industry. Pharma is covered particularly well in *ReCap*, for example."

Geographical setting The geographical setting refers to the geographical area a task is being performed in or the task is targeting. Several dimensions regarding the geographical setting are evident in the responses: domestic vs. international, specific countries, and specific regions of interest (e.g., metro area). With some databases covering only certain geographical areas, databases that cover a particular geographical area of interest are judged relevant. P3 selected *Global Market Information Database* because it contains "variety of data available on relevant LA [Latin American] countries."

Business stage Business stage refers to where a business person is located in the process of business. The main activities that need to be performed and a user's possession of information differ depending on a business stage and, accordingly, information needed and the approach to gather the information often differ. In this

study, one task particularly describes an initial stage of a business – an entrepreneur is about to start a new business with an innovative idea (Task 26). Focusing on this initial stage, one participant selected case studies and other information types.

The following case studies illustrate the use of task-related criteria.

Case 1: Start a new business with an innovative idea

In entrepreneurship, an entrepreneur is often starting a new business based on an innovative idea (Task 26). This is a strategic-performance task. In the actual HBS case, the entrepreneur's objective is to start the first e-commerce company devoted to herbal remedy products and information. In the process of doing this, he needs to identify his competitors (Business question 37). Three participants addressed this question, selecting twelve databases in total. On average, each participant selected more than eight information types and the degree of agreement on the type of information needed was very high. All the respondents agreed to use directories, industry reports, magazine/journal articles, and newspaper articles.

To find a list of similar companies in the industry, P13 noted the *company size* and the *company type* from the description of the task: "This product and producers are not from large public companies, so start with specific trade sources to ID [sic] companies." The company size and the company type were not explicitly stated in the task but she drew inferences based on the description of the task given in the survey questionnaire. This participant selected buyer guides from trade press and exhibiters' lists to serve the small-sized private company. Drawing on this case and others, the matches between *company size* and *company type* in the task and database were influential in selecting databases.

Also, this participant recommended associations as an additional information type, suggesting natural remedies- or alternative medicine-related associations. The suggestion of these associations is evidence that *the industry sector* the business belongs to is an important criterion in selecting databases/resources. Similarly, P10 selected eMarketer eStat because it "contains extensive data on all aspects of e-marketing" focusing on the electronic commerce aspect of the industry sector. However, P2 stated that "if the patron was unsure what industries would include his or her major competitors" in the *beginning stage of the business*, he would explore case studies and other types of information to first identify the industry sectors this business might fit in and then companies in those industry sectors. *Business stage* is another task-related criterion that determines the selection of information types needed.

Another database selection criterion used in this case is usability of databases. P10 selected ReferenceUSA among many available directories because "This directory database enables searching by industry codes that could generate a list of companies in the industry." The decision to use ReferenceUSA has nothing to do with the task or context behind the question. The participant selected this database simply because it is *easy to use* and quick to identify a list of companies, which is what the business question seeks. Therefore, usability is more influenced by question rather than task.

Case 2: Finance a project in an emerging market

In finance, how to obtain the funds for a company's activities is an essential task (Task 21). This is a strategic-performance task. The HBS case from which this task is elicited describes a company that is considering financing for their project ongoing in a Middle East country. The company's financial adviser had recommended using multiple sources from international, regional, and local capital pools. To that end, the company needs to ask what methods of raising capital are available either domestically or internationally (business question 25). Three participants who responded to this question selected six databases in total. On average, each participant selected about four information types and agreement on the type of information needed was modest. Magazine/journal articles were agreed by all three participants.

In addition, two out of the three participants selected country reports such as EIU Country Commerce. Although the business question does not ask directly about a particular country and country reports do not provide information as to what kinds of methods are available to raise capital, the participants acknowledged that the given task, financing a project in an emerging market, required supplementary information to work in that *country* as evidenced in P6's remark, "[I select] US State Department Country Commercial Guides - for background on any restrictions on working in *the country*." Again, the participants inferred the importance of country information from the task description.

In selecting appropriate databases for this business question, information type is the most important database selection criterion. Using this criterion, the

participants selected article databases such as Business Source Premier, LexisNexis Academic, and Factiva and selected the databases containing country reports such as EIU Country Commerce. The information gathered from the article databases and country reports should be integrated to provide useful information for this question.

Case 3: Outsource a business function

Outsourcing is an important management task to develop a company's competitive strategies (Task 11). This is a decision-making task that requires a decision among outsourcing vendors. In the actual HBS case, the company is considering transferring its information system activities to a third-party vendor. In the process of doing this, it needs to know which providers are available for information systems and services outsourcing (business question 6). Two participants addressed this question, selecting 3 databases in total. On average, 3.5 information types were selected and agreement on the types of information needed was low.

Product catalogs/reviews was the only information type both participants selected for this business question. Directories, industry reports, market research reports, and journal/magazine/newspaper articles were selected once.

P5 recommended a local telephone directory in particular because "This is a small company interested in outsourcing. They typically can't afford the large, national companies." Considering the *size of the company*, which is not presented in the given business question, but conjectured based on the task description, the participant thought that a local telephone directory would be more useful for this small-sized company.

For this business question, a specific type of information, product catalogs/reviews, was most appropriate, but *company size*, one of task-related criteria, was also considered.

Case 4: Develop a marketing plan for a U.S. brand in a foreign country

In Marketing, a frequent task is to develop a marketing plan for a product (Task 28). This is a design task. In the actual HBS case, a cosmetics company is developing a marketing plan in a foreign country. To perform this task, the company needs to ask about the characteristics of the target customers in the country (business question 43) and the elements in the cultural (business question 44) and economic environments of the country that are likely to affect marketing strategies for these kinds of products (business question 45). Three participants responded to these three questions and selected six to seven databases for each.

For business question 43, the average number of information types needed was 7.6. Information type was the most frequent database selection criterion to select databases containing market research reports, consumer analysis reports, statistics, and so on. The use of these information types is natural considering the business question is concerned with customers, and the degree of agreement on the information types needed was high. In addition to the information type, P29 matched *the industry sector* covered in Mintel with the cosmetics industry presented in the task description and P16 considered the international coverage when selecting Market Share Reporter.

For business question 44, the average number of information types needed

was 5, and the most frequent information type was market research reports with information type as a database selection criterion.

For business question 45, the average number of information types selected was 4.3 and all participants agreed to use country reports and newspaper articles. P15 also considered Factiva's international coverage. This response is not surprising given that the task is targeting a foreign country.

Case 5: Select other markets to extend the business

Selecting other markets to extend a business is a marketing task that strives to achieve further growth (Task 14). This is a decision-making task. The actual HBS case illustrates a company's decision-making process to expand their business into other markets. In the process of doing this, the company needs to ask a question about the characteristics of potential customers in the candidate markets (business question 12). Four participants who responded to this question selected eight databases in total. On average, each participant selected about five information types and agreement on the type of information needed was modest. Magazine/journal articles, consumer analysis reports, and statistics were most frequent. For this question, information type, geographical setting, and currency were used as database selection criteria. P12 selected S&P Net Advantage to determine if there was any related industry survey (information type) and Regional Business News and Factiva to find information about regional companies and activities, which shows that *regions of interest* also influence database selection. P14 selected Business Source Premier for current magazine/journal coverage (currency).

These criteria may be incorporated into a user's task or context, and the participants consider these criteria in orienting the information searching process, including database selection, directly to the given task. All of the criteria are basically business-specific, but geographic setting and task stage influence database selection in other domains as well.

5.4 Patterns among Elements

The third research question calls for identifying the relationships among tasks, questions, and database selection criteria. To answer this research question, a careful analysis reveals some patterns among the elements. For each business question, Table 21 shows the categories assigned by task type, focal entity, frame name, information types, and database selection criteria. The business questions are grouped in the table by task type, based on the tasks with decreasing degrees of structure. All business questions, for example, from a decision making task, the most structured type of task in the data, appear together. Within the same task type, business questions are arranged by focal entity types.

Table 21. *Task Type, Focal Entity, Frame, Information Types, and Database Selection Criteria for Each Question, Grouped by Task Type*

Task type	Focal entity	Frame name	Information types	Database selection criteria	Q
Decision	Company – List	First_Rank	Industry reports, Investment analyst reports, Magazines/Journals	Information type	8
Decision	Company – List	Instance	Directory	Search features, Information type	1
Decision	Company – List	Instance	Product catalogs/reviews	Company size	6
Decision	Company – Feature	Summary	Magazines/Journals, Company profiles	Information type	9
Decision	Customer	Assessing	Magazines/Journals, Newspapers, Investment analyst reports, Market research reports, Etc (ASS)	Information type	11
Decision	Customer	Distinctiveness	Magazines/Journals, Newspapers, Industry reports, Market research reports	Geographical setting, Currency, Information type	12
Decision	Customer	Distinctiveness	Market research reports, Magazines/Journals, Investment analyst reports, SWOT analysis	Information type	13
Decision	Industry	Summary	Industry reports, Magazines/Journals, Newspapers	Currency	7
Decision	Law	Law	Law	N/A	5
Decision	Law	Law	Industry reports, Law, Magazines/Journals	Information type, Geographical setting	15
Decision	Product	Commerce_Scenario	Directory	Search features, Information type	2
Decision	Product	Evaluative_Comparison	Product catalogs/reviews, Market research reports, Industry reports, Investment analyst reports, Newspapers	Information type	14

Table 21. *Task Type, Focal Entity, Frame, Information Types, and Database Selection Criteria for Each Question, Grouped by Task Type*

Task type	Focal entity	Frame name	Information types	Database selection criteria	Q
Decision	Topic	Locale_by_Use	Directory, Newspapers	Currency	3
Decision	Topic	Means	Monographs	N/A	10
Decision	Topic	Needing	Newspapers, Statistics	Geographical setting	4
Diagnosis	Company – feature	Distinctiveness	Industry reports, Market research reports, Company profiles, Magazines/Journals, Newspapers	Geographical setting, Company type, Information type, Price	20
Diagnosis	Industry	Measurable_ Attributes	Industry reports, Magazines/Journals, Newspapers	Information type	21
Diagnosis	Topic	Assessing	Magazines/Journals, Newspapers, Case studies	Scholarly, Information type	18
Diagnosis	Topic	Choosing	Newspapers	Information type	22
Diagnosis	Topic	Distinctiveness	Magazines/Journals, Newspapers, Monographs	Information type	19
Diagnosis	Topic	Useful	Magazines/Journals, Monographs, Case studies	Currency, Depth of coverage, Industry sector, Information type	17
Diagnosis	Topic	Using	Magazines/Journals, Newspapers, Case studies, Etc (Web)	Scholarly, Information type	16
Strategic	Company – List	Choosing	Finance reports, Investment analyst reports	Information type	27
Strategic	Company – list	Compatibility	SWOT analysis	Information type	36
Strategic	Company – list	Competition	Directory, Magazines/Journal, Newspapers, Product catalogs/reviews, Industry reports, Market research reports	Business stage, Search features, Company type Company size, Industry category, Information type	37
Strategic	Company – List	First_Rank	Magazines/Journals, SWOT analysis, Investment analyst reports, Newspapers	Information type	23

Table 21. *Task Type, Focal Entity, Frame, Information Types, and Database Selection Criteria for Each Question, Grouped by Task Type*

Task type	Focal entity	Frame name	Information types	Database selection criteria	Q
Strategic	Company – List	Similarity	Finance reports, Investment analyst reports, Industry reports	Search features, Industry category, Information type	31
Strategic	Company – List	Source_of_ Getting	Investment analyst reports	N/A	29
Strategic	Company – List	Source_of_ Getting	Law	N/A	32
Strategic	Company – Feature	State_of_ Entity	Finance reports, Company profiles	Information type	28
Strategic	Country	State_of_Entity	Country reports, Magazines/Journals, Newspapers	N/A	26
Strategic	Customer	Assessing	Market research reports, Consumer analyst reports, Statistics	Search features, Depth of coverage, Information type	38
Strategic	Customer	Commerce_ Scenario	Market research reports, Consumer analyst reports, Magazines/Journals	Search features, Information type	39
Strategic	Law	Have_as_ Requirement	Law	N/A	33
Strategic	Law	Law	Dir	N/A	34
Strategic	Topic	Assessing	SWOT analysis, Case studies, Company profiles, Finance reports, Magazines/Journals, Newspapers, Industry reports	Information type	30
Strategic	Topic	Means	Magazines/Journals, Country reports	Information type	25
Strategic	Topic	Source_of_ Getting	Magazines/Journals, Newspapers, Case studies, Etc (Web)	Scholarly, Information type	24
Strategic	Topic	Source_of_ Getting	Directory	N/A	35
Situated_	Company –	Coming_to_be	Industry reports, Investment analyst	Geographical setting,	40

Table 21. *Task Type, Focal Entity, Frame, Information Types, and Database Selection Criteria for Each Question, Grouped by Task Type*

Task type	Focal entity	Frame name	Information types	Database selection criteria	Q
case	list		reports, Market research reports, Company profiles, Newspapers	Information type	
Situated_ case	Company – feature	Purpose	Company profiles, Investment analyst reports, Magazines/Journals, Newspapers	Currency, Information type	41
Situated_ Case	Company – Feature	State_of_Entity	Magazines/Journals, Investment analyst reports, SWOT analysis	Information type	42
Design	Country	Objective_ Influence	Country reports, Newspapers	Information type	44
Design	Country	Objective_ Influence	Country reports, Newspapers	Authoritativeness, Information type, Geographical setting,	45
Design	Customer	Distinctiveness	Market research reports, Newspapers, Statistics, Country reports, Magazines/Journals	Geographical setting, Information type	43
Design	Customer	Distinctiveness	Company profiles, Market research reports, Magazines/Journals, Statistics	Information type	46
Design	Topic	Distinctiveness	Directory, Magazines/Journals, Newspapers, Company profiles	Geographical setting, Search features, Information type	48
Design	Topic	Means	Market research reports, Consumer analyst reports, Magazines/Journals, Statistics	Information type	47

Note: 1) Only those types at least two participants agreed to select were included to identify core information types needed.
2) In the database selection criteria column, all responses were included.
3) These questions are grouped by task type, based on the tasks with decreasing degrees of structure.
4) Question numbers appear in last column.

Drawing on table 21, no task type forms a pattern across all types of variables: focal entity types, semantic frames, information types, and database selection criteria. In other words, the value for each of these variables was not the same for a single type of task.

Table 22 shows the focal entity types called for in business questions for each task.

Table 22. *Focal Entity Types by Task Type*

Task type	Questions per task type	Focal entity types	N and percentage of questions by task type
Diagnosis-solution	7	Topic	5 (71%)
		Company – feature	1 (14%)
		Industry	1 (14%)
Strategic-performance	17	Company – list	7 (41%)
		Topic	4 (24%)
		Customer	2 (12%)
		Law	2 (12%)
		Company – feature	1 (6%)
		Country	1 (6%)
Decision-making	15	Company – list	3 (20%)
		Customer	3 (20%)
		Topic	3 (20%)
		Law	2 (13%)
		Product	2 (13%)
		Company – feature	1 (7%)
		Industry	1 (7%)
Design	6	Customer	2 (33%)
		Country	2 (33%)
		Topic	2 (33%)
Situated-case	3	Company – feature	2 (66%)
		Company – list	1 (33%)
Total	48		48

Note: In the first column, the numbers of the business questions that belong to the task type are in parenthesis. In the last column, the percentages are based on the number of questions in the row.

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With so few cases for each type of task drawing some generalities is difficult based on this table. For diagnosis-solution and strategic-performance tasks, however, some dominance on a single focal entity is apparent. In diagnosis-solution tasks, the focus is on topic with 5 (71%) of the examples. When participants need to identify a fault state of an object, for example, a problematic situation in a company (diagnosis-solution task), they tend to scan literature on a certain topic to find a solution. In strategic-performance tasks, the focus is on company-list with 7 (41%) of the examples and, if the focus is extended to another company-related focal entity type, company-feature, this number increases to 8 (47%). When carrying out strategic-performance tasks, people apply a number of tactical activities to meet a complex strategy while maintaining 'situational awareness.' For situational awareness or environmental scanning, companies need to monitor their competitors' performance and this situation may explain the connection between strategic-performance tasks and company-related focal entities. Only in these two task types is there any dominance. The others focus on multiple focal entity types.

In Figure 9, focal entity types are related to information types and database selection criteria. In other words, for a particular focal entity, the respondents use the information types listed (numbers of associated business questions are noted in parentheses after the information type), and they mention the criteria in the third column for the particular business questions. The information types are in bold when the information type is selected for more than half of the business questions associated with the focal entity type. The relationship between specific information types and specific

Focal Entity Types
(N of associated questions)

Focal Entity Types	Information Types (N of associated questions)	DB selection criteria
Company (list) (11)	**Investment analysis reports (6),** Industry reports (4), Magazine/Journal articles (3), Newspapers (3)	**Information type (8),** Search features (3)
Company (feature) (5)	**Magazines/Journals (4), Company profiles (3),** Investment analysis reports (2), Newspapers (2)	**Information type (5)**
Topic (14)	**Newspapers (9), Magazine/Journal articles (8),** Case studies (5), Directories (3), Monographs (3)	**Information type (10),** Scholarly (3), Currency (2), Geographical setting (2)
Customers (7)	**Market research reports (7), Magazines/Journal articles (6),** Newspapers (3), Statistics (3)	**Information type (7),** Geographical setting (2), Depth of coverage (2), Search features (2)
Law (4)	**Law (3),** Newspapers (1), Directories (1), Industry reports (1)	**Information type (2),** Geographical setting (1)
Country (3)	**Country reports (3), Newspapers (3),** Magazine/Journal articles (1)	**Information type (2),** Authority (1), Geographical setting (1)
Industry (2)	**Industry reports (2), Magazine/Journal articles (2), Newspapers (2)**	Information type (1), Currency (1)
Product (2)	Directories, Product catalogs/reviews, Market research reports, Industry reports, Investment analysis reports, Newspapers; all (1)	**Information type (2),** Search features (1)

Figure 9. Patterns among focal entity types, information types, and database selection criteria

Note: Figure 9 is based on Table 21. As the table note for Table 21 indicates, only information types mentioned by two respondents for a single business question were included. In other words, if only one respondent mentioned an information type for a business question, without corroboration from another respondent, the information type was not listed for that question.

criteria was not always noted. In each row, the database selection criteria are aggregated across the information types.

Information type is a dominant selection criterion in this figure. Once the participants determine that a particular type of information is useful, the fact that a database covers that type seems to outweigh almost all other variables. The prevailing pattern is to look for magazines/journal articles and newspaper articles, using information type as the database selection criterion, although this criterion is also used to select other types of information such as directories and SWOT analysis. Other than magazine/journal articles and newspaper articles, the participants also use specialized sources as follows:

- List of companies: Investment analysis reports and industry reports

- Company features: Company profiles and investment analysis reports

- Topic: Case studies and directories

- Customers: Market research reports and statistics

- Law: Laws/regulations, directories, and industry reports

- Country: Country reports

- Industry: Industry reports

- Product: Most eclectic, using directories, product catalogs/reviews, market research reports, industry reports, and investment analysis reports

Some specialized sources appear only for the specific focal entity types they emphasize:

- Country reports: Country

- Laws/regulations: Law

- Company profiles: Company features

- Statistics: Customers

- Product catalogs/reviews: Product

The participants use other resources noted below, even those that appear somewhat specialized, for multiple focal entities, showing the flexibility of these resources:

- Investment reports: List of companies, company features, and product

- Industry reports: List of companies, law, industry, and product

- Market research reports: Customers and product

- Directories: Topic, laws, and product

5.5 Database Selection Process Model

The tentative model suggested in section 1.2 has been revised based on the findings from the survey to describe a database selection process from the perspective of users' tasks in the business domain (Figure 10). This model expands the shaded box in the overall model (Figure 8).
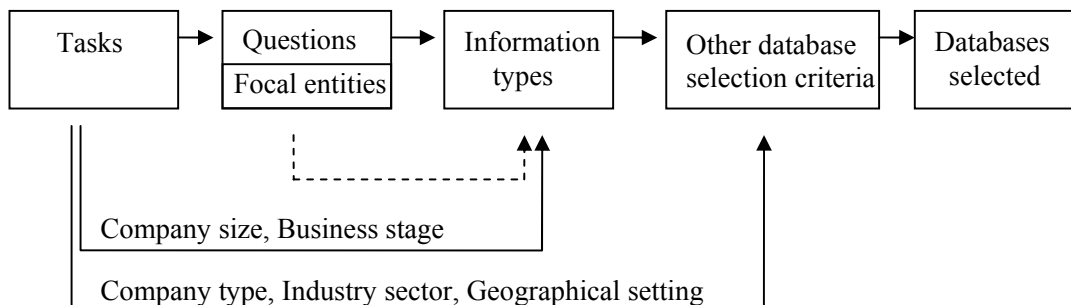
Figure 10. Database selection process model

In this model, a business task involves a set of essential business questions that need to be answered to complete the task. The characteristics of the business questions related to the task influence database selection criteria and selected databases. Information type clearly stands out as an important database selection criterion in selecting databases. A prevailing database selection behavior is that a participant selects a database whose scope includes the particular information type needed. Usually, once she identifies a relevant information type, she uses other database selection criteria to refine her choice of specific databases containing that information type. Some information types are related to certain focal entity types in a business question, for example, country reports are useful for country-related questions and laws/regulations for legal questions. Other information types, however, are often used across focal entity types. The dashed line in the figure indicates that the direct influence of focal entities on information type is not absolute.

In some cases, task or context-related criteria directly influence information types regardless of the focal entity type. In particular, the company size and the business stage influence the choice of information types needed. Company type, industry sector, and geographical setting influence the selection of specific databases rather than information types to identify databases that match with certain company type, industry sector, or geographical area of interest.

Chapter 6: Significant Findings, Discussions, Implications, and Future Research

6.1 Significant Findings and Discussions

This section summarizes the most significant findings regarding business task and question analysis and the influence of tasks on librarians' database selection processes.

The study develops an inventory of representative business tasks and the related essential business questions that experts associate with these tasks. The inventory is an important contribution itself because it begins to set the stage for developing a task-based database selection system. In the process of developing this inventory, a range of task types appear – design tasks, situated-case tasks, strategic-performance tasks, diagnosis-solution tasks, decision-making tasks, and rule-using tasks - but they tend to be ill-structured. About two-thirds of the tasks call for a mix of information from internal and external resources, but one noticeable finding is that all rule-using tasks, the most structured task type identified in this study, call only for internal resources. Aside from rule-using tasks, no correlation was found between task types and the number of associated questions requiring external information. The average number of associated business questions and the average number of information types selected for the questions increase, however, as the task types become more ill-structured. These findings are aligned with previous studies showing that, as task complexity or ill-structuredness increases, the complexity of information needed increases (e.g., Byström & Järvelin, 1995).

The business questions are diverse, representing 24 frames, with the most prevalent being Distinctiveness, Assessing, and Source_of_Getting. Some overlap

among the questions occurs, showing the potential of frame analysis for seeing similarities among questions that appear, on the surface, to be dissimilar. Of the 48 business questions, 7 sets, representing 17 questions, are similar in terms of the frames they belong to, the elements being wanted in the frames, and the focal entity types being asked about. The most common focal entity types are company, topic, and customers. The frame analysis and the focal entity analysis in tandem allow for characterizing the business questions that call for external resources.

This process indirectly validates the business question typology developed by Abels (1996) and adds some new business question types (see Figure 11). Abels' classification scheme was developed through question analysis of a set of real business requests posed by small business entrepreneurs in the state of Maryland from 1994 to 1995. It classifies business questions based on information needs using six facets - Who, What, When, Where, Why, and How - and focuses, in a different way, on the unknown entity in questions. The business questions in this study fit into this scheme and extend it by adding some new question types.

Figure 11 is a subset of Abels' business question typology (1996). The business question types added to this typology are bolded.

1. Who?
    1.1 Who meets given criteria?
        1.1.1 Who (companies) meet given criteria?
        1.1.2 Who (companies) are the best in terms of a given attribute?
        1.1.3 Who (companies) are compatible with our company?
    1.2 Who is in the industry?
        1.2.1 Who (companies) are emerging in the industry?
        1.2.2 Who (companies) are competitors?
    1.3 Who (people/companies) is market for [industry/service/product]?
        1.3.1 Who (companies) gives out [product/service]?
2. What?
    2.1 What is market?
        2.1.1 What is current market?
        2.1.2 What is potential market?
    2.2 What is description of entity?
        2.2.1 What is company profile?
        2.2.2 What are company plans/objectives?
        2.2.4 What are the characteristics of companies having the same attribute?
    2.3 What is value of an attribute of entity?
        2.3.1 What is value of an attribute of [product/service]?
        2.3.2 What is value of an attribute of [industry]?
    2.4 What is an analysis of entity?
        2.4.1 What is analysis of [company]?
        2.4.2 What is financial analysis?
        2.4.3 What is analysis of [country]?
        2.4.4 What is demand/supply for [product/service]?
    2.5 What are trends of an entity?
        2.5.1 What are industry trends?
    2.6 What entity fills given condition?
        2.6.1 What (products/services) are offered?
        2.6.2 What financing sources are available?
    2.7 What are legal process and/or procedure?
        2.7.1 What are requirements?
        2.7.2 What are rules/regulations?
    2.8 What are opportunities/problems/solutions?
3. Why?
    3.1 Why does entity fail/succeed?
    3.2 Why does the event occur or condition exist?
4. How?
    4.1 How is an entity processed?
    4.2 How should means/methods be developed to reach a goal?
    4.3 How effective?

Figure 11. A subset of business question types from Abels' Typology of Business Questions identified in this study

To answer a single business question, the librarians use several different information types, but the data are not clear if these are alternatives or if they are used additively with portions of the answer coming from different information types. Comments at times support the latter, which is not surprising with the ill-structured tasks in this study. The information types come from multiple databases or information resources, such as websites. Broad bibliographic resources are particularly important despite the fact that the business field has many databases focusing on non-bibliographic focal entities. The general applicability of broad bibliographic resources across topics and focal entities seems to be the reason for their popularity.

The study develops a general model that describes the influence of tasks on librarians' information gathering processes. In this model, the process of identifying a user's task helps to:

• Identify a user's hidden need;

• Provide a basis for obtaining insight into a user's experience, objective, and the nature of information to be provided;

• Establish a basis for making judgments about or guides which to emphasize between information itself and process in a response, questions in the reference interview and interaction with a user to focus need, resource-related decisions, relevance judgments about completeness and directness, and information presentation;

• Improve efficiency and effectiveness of reference transaction.

As shown in this model, librarians regard task as important for making resource-related decisions, but they also regard it as important for eliciting insights and making judgments about other activities in information seeking.

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The resource-related decision area in the model is further developed as a database selection process model based on librarians' responses to survey questions about one or more tasks and the business questions associated with them. This segment of the general model shows five task or context-related criteria as influential in database selection: company size, company type, industry sector, geographical setting, and business stage. Most previous studies in task-based information searching research generally looked at an inherent characteristic or aspect of a task itself such as task difficulty and task complexity (see, for example, Tiamiyu, 1992), but this study identifies these contextual aspects of a task as important. Although some task descriptions given in the survey questionnaire did not present these criteria explicitly, the respondents conjectured them from the task descriptions, knowing their importance in database selection decisions from experience. In a real situation, the librarians may have tried to elicit these criteria through reference interviews. Among these criteria, company size, company type, and industry sectors are business-specific, but geographical setting and task stages are more general and have helped to explain the information searching process in previous studies. As reviewed in 2.1.1., in the beginning stage of research, people usually identify a problem or generate an idea (Chu, 1999) and, to do that, they tend to consult a wide range of resources and judge general background and theoretical information particularly relevant (Vakkari, et al., 2003). These findings are consistent for the business domain in this study. For example, to identify competitors for an entrepreneur who is in the beginning stage of his business, a librarian would explore many information types, including case studies to identify the related industry sectors. Geographical coverage is also a popular attribute in previous database selection systems by which a user narrows

down the options of databases (e.g., Trautman & Flittner, 1989).

Company type, industry sector, and geographical setting are noted when a librarian selects specific databases/resources. Company size and business stage are more connected to explaining the information types needed.

Information type stands out among all database selection criteria identified in this model. Information type has been a popular attribute that characterizes databases both for general database selection systems (e.g., Trautman & Flittner, 1989) and for business-specific ones (e.g., Zahr & Chang, 1992). Zahr and Chang's (1992) prototype expert system particularly allowed users to select one information type from business news, corporate profile, reports, government documents, marketing, securities, government regulations, court decisions, and federal status.

Some information types are closely related to certain focal entity types being asked about in business questions, for example, company profiles for the company features and country reports for country. The information type categories provided by Zahr and Chang's (1992) system somewhat correspond to the types of business focal entities in this study.

To summarize, a database selection decision is a function of interplay among task-related criteria that encompass an information-searching process and other criteria influenced by specific questions associated with the task.

6.2 Implications

6.2.1 Theoretical and Practical Implications

The outcomes of this study have implications in advancing theory, practice, and

research methods in task-based information searching in the business domain. Theoretically, this study broadens the realm of the task-based information seeking research area in several ways. First, a significant outcome of this study is in developing a broad model of the role of task in the information seeking process. This model shows that the user's task influences many different aspects of librarians' information seeking process, establishing a basis for judgments and helping the librarians to operate more efficiently and effectively. Second, the most completely developed part of this model expands the understanding of the influence of tasks on the database selection process. Instead of merely making a general statement that users' tasks influence database selection, it establishes some systematic patterns among business tasks, questions, information types needed, database selection criteria, and appropriate databases. The identified relationships between tasks and database selection fill a research gap in task-based information searching. Third, this study finds that more than one-third of the identified tasks call for internal resources only and many tasks called for a mix of information from internal resources and from external resources. This implies that an information retrieval (IR) system or an intranet tool that can incorporate internal and external resources as needed in a task process would be very useful for the user to complete his task. Fourth, this study goes beyond a task environment common in task-related research in which students or scholars search bibliographic databases to write papers to look at the business domain where a wide variety of business tasks demand the use of various types of databases. The business tasks and related business questions are an important beginning to develop a repository of formalized information needs in the business field.

Practically, the findings should help librarians establish better service practices that take users' ultimate tasks into account. Business librarians working in corporate or nonprofit organization settings and public or academic libraries benefit from the inventory of business tasks and questions to understand better the users' tasks or goals behind the overt information need and to customize database selection to the tasks. Business librarians can mentally check users' questions and tasks against a list of important task or context-related criteria found in this study - company size, company type, industry sector, geographical setting, and business stage - while conducting a reference interview to select appropriate databases according to those criteria. In addition, the findings suggest new ways of structuring curriculum related to business task and related information requirements, both in information schools and in business schools. To some extent, the reliance on cases in many business schools already reflects a task-oriented approach, but this approach does not always incorporate related information-seeking. Moreover, the findings suggest that database vendors and developers should take task and task-related criteria into consideration in structuring databases and providing means of access. The most common indexing practice to date in commercial business databases - keyword-based and topic-oriented - often fails to accurately capture users' needs or tasks behind search queries, resulting in insufficient support for query formation and poor retrieval performance. For example, entering "set a price of a new product" in a keyword-based information retrieval system may not produce a set of useful documents that discuss the steps involved in setting a price of a new product. The inventory of business tasks and questions will be useful for establishing task-oriented indexing. It may be necessary to market the task-related approach aggressively to

database producers and developers of subject-centric websites in libraries.

Methodologically, the study tested research methods for identifying users' needs represented as tasks and questions within one discipline -- business domain -- through content analysis. This textually-based process may be applicable to other disciplines if there is relevant literature representing real information needs in the discipline, such as HBS cases in business. This methodology would increase the feasibility of automating the process of information needs identification based on the literature available in the field.

The frame analysis method may be used for analyzing questions in other disciplines as well. The advantages of using frames for question analysis are many. They:

• Allow for semantic level analysis beyond syntax level,

• Allow for identifying the values in specific elements within a frame and relationships among the elements, resulting in identifying a focus of the question, and

• Generate generic questions by grouping the questions that belong to the same frame and seek after the same element.

With these advantages, the frame analysis method can characterize the questions in a discipline more deeply.

6.2.2 Implications for Task-based Database Selection System

This study provides the underpinnings for a task-based database selection system for business databases. It is well-known that the questions users pose to information systems do not always result in complete resolution of their problems. What they request

by entering one or two keywords into systems is often the tip of iceberg of what is really needed. A problem that arises is that, without knowing tasks/context behind the need, systems provide all users with the same generic response, and that response is likely to be too broad or off target to some extent. Although efforts are being made to develop a general-purpose task-oriented system, it is still difficult to identify a user's task automatically and optimize search algorithms for that task. Until general-purpose systems can address complexities in defining and determining task characteristics that are meaningful for information retrieval, one solution is the development of domain-specific database selection systems. With specialized knowledge bases, they can guide users through the process from recognizing a task to identifying relevant business questions to selecting appropriate databases that match the needs of the task.

In the business domain, the system needs a knowledge base that stores a list of business tasks, related business questions, types of information needed, and appropriate databases. The databases should also be stored along with metadata that includes titles, information types, subjects, keywords, or other criteria usable as access points. In such a domain-specific task-oriented system, the interface leads the user through understanding the task and essential business questions associated with it and formulating searches to retrieve relevant information. Such a tool has great potential not only for helping users formulating their information needs and selecting databases but also for assisting business users to obtain domain knowledge.

6.2.3 Implications for Information Packaging

Results from this study can contribute to the development of intelligent IR

systems, which can support packaged information according to users' tasks. In most search engines or IR systems, search results presented to the end-user are organized based on relevance feedback algorithms or in an alphabetic order. A new trend in the presentation of responses is a packaged response. For example, Google Finance beta (http://finance.google.com/finance, accessed August 28, 2006) provides packaged responses for company searches that include stock information and Web links to related articles on the top, followed by financial facts, company summary, a list of related companies, blog posts, and more. This packaged presentation appears for any company name. Such a generic package may help some end-users find information that they are looking for, but not all users are looking for the same information. More targeted packages of information could easily be based on the context or task related to the end-user's information need.

This study indicates that pieces of information are combined to address a specific business question coming from a specific business task. If future research can identify more complex patterns between business tasks, related questions, the most appropriate databases, and information sought after in those databases, a knowledge base can be created to provide an intelligent IR system that provides packaged information gathered from multiple databases tailored to a given business question/task.

6.3 Future Research

This study develops a model of a task-based database selection process by examining business librarians' database selection decisions. In addition, this research was conducted as the first step toward the development of a task-based information

system for business databases. Continued efforts are needed in two different directions: to verify the theoretical model in different settings and through different methodological approaches and to develop an application that realizes the model in a particular domain. These two directions can proceed in parallel with the first direction informing the second. More specifically, further studies should be conducted on:

- Expanding the inventory of business tasks and related business questions;

- Replicating the study in settings with more specialized databases, such as corporate libraries;

- Refining the method of using frame-analysis for identifying similarities among questions;

- Studying *actual* practices in selecting databases in real settings, collecting data through other methods, such as observation followed by interviews;

- Developing and evaluating a task-based database selection system for business databases;

- Designing a knowledge base and testing its viability prior to actual development of an intelligent IR retrieval system;

- Applying the methodological approach to other domains.

A significant outcome of this study is an inventory of a set of business tasks and associated questions. The inventory should be expanded with more business tasks and related questions in the future.

In terms of methodology, this study shows how to take advantage of frame analysis in characterizing questions and this method should be refined to be a more robust tool in identifying similarities among questions. This study focuses mainly on

identifying the individual elements provided and wanted in a business question, but in the future, the relationships among the elements can be further analyzed to more fully exploit frames for question analysis.

Doing a similar study focusing on the more specialized collections likely to exist in corporate libraries may supplement the findings of this study in useful ways. Corporate libraries may face more tasks and more detailed questions in some subject areas. Surveys with corporate librarians therefore may yield results not found in the current study.

Another unexplored area of the study is librarians' actual database selection decisions in real situations. This study presented simulated business tasks extracted from case studies and asked participants to think as if the tasks/questions belong to their real users. In future research, observation or critical-incident interviews could reveal how librarians deal with real users performing real tasks/questions, what aspects of tasks/contexts play a significant role in crafting search strategies and selecting databases, and what difficulties the librarians encounter in identifying and using users' actual tasks. Different characteristics of tasks carried on in academic environments and in corporate could disclose different elements of the tasks that affect database selection.

In tandem with the theoretical verification, system development should proceed based on the results of the study. Drawing on the inventory, a task-based databases selection system for business databases can be developed. The evaluation of the system with real users will give insight into how such a system can benefit business information seekers not only in database selection but in learning business task processes.

A knowledge base for an intelligent IR system could be built to represent business

information needs represented as business tasks and associated questions and the way different information types are combined to address individual tasks/questions. Other resources than the findings of this study, for example, business textbooks should be examined to improve the knowledge base.

Taking a step forward, the methodological approach used in this study can be applied to other domains. Since this approach identifies a representative sample of tasks, and subsequently related questions and resources, a domain in which various types of tasks are performed would be particularly beneficial. Potential domains are law, health care, and engineering areas, to name a few. In the law domain, for example, there must be a set of representative tasks lawyers usually perform and frequently asked questions to perform the tasks. Those tasks and questions could be elicited either automatically or manually through existing literature or through obtrusive methods such as surveys. Experts could identify a set of appropriate resources for the questions. Drawing on the identified tasks, questions, resources, and possibly task-related database selection criteria unique to this field, a task-based selection system can be developed to assist lawyers in selecting appropriate databases for their tasks.

Appendices

Appendix A. Translation table for Task ID numbers: Text to Appendix, Appendix to Text

Note: The numbers applied to the case/task in the text and appendices differ so this translation table matches the number as used in the text to the appendix number and vice versa. The number in the first and last columns corresponds to the number used in the text, including tables. For the second and third columns, disciplines are abbreviated as follows: AC = Accounting; EN = Entrepreneurship; FN = Finance; MG = Management; MK = Marketing. The number following these abbreviations indicates the order in Appendices B, C.

Text → Appendix		Appendix → Text	
1	AC4	AC1	3
2	FN2	AC2	5
3	AC1	AC3	6
4	FN5	AC4	1
5	AC2	AC5	18
6	AC3	AC6	7
7	AC6	EN1	26
8	MG3	EN2	12
9	MK5	EN3	20
10	FN6	EN4	13
11	MG4	EN5	25
12	EN2	EN6	23
13	EN4	FN1	24
14	MK4	FN2	2
15	MK2	FN3	21
16	MG1	FN4	22
17	MG2	FN5	4
18	AC5	FN6	10
19	MG5	MG1	16
20	EN3	MG2	17
21	FN3	MG3	8
22	FN4	MG4	11
23	EN6	MG5	19
24	FN1	MG6	27
25	EN5	MK1	30
26	EN1	MK2	15
27	MG6	MK3	28
28	MK3	MK4	14
29	MK6	MK5	9
30	MK1	MK6	29

Appendix B. Harvard Business School Cases Used to Identify Tasks
Note: This bibliography of cases is arranged alphabetically by discipline, then alphabetically by author name within each discipline. The translation table in Appendix A matches the case noted here (abbreviated by a two-digit code and the number assigned in this appendix, e.g. AC1) to the task identified in the text and the number assigned to the task in the text, where the arrangement is by task type. Appendix C's arrangement matches the arrangement in this table.
    Abstracts are taken verbatim from the Harvard Business School website:
http://harvardbusinessonline.hbsp.harvard.edu/b02/en/cases/cases_home.jhtml .

Accounting (AC)

1) Bruns, William J., Jr. *Prestige Telephone*, No. 9-197-097 (May 22, 1997; revised Jun 11, 2003)
An independent regulated telephone company has established a computer services subsidiary that seems to remain unprofitable. Managers must determine whether it is profitable or not and consider changes in pricing or promotion that might improve profitability.

2) Datar, Srikant M. & Epstein, Marc J. *Verizon Communications, Inc.: Implementing a Human Resources Balanced Scorecard,* No. 9-101-102 (Jun 21, 2001; revised Oct 19, 2001)
In early 2000, Verizon Communications implemented a Human Resources Balanced Scorecard to evaluate the effectiveness of and payoffs from human resource management. This case describes the benefits of the scorecard and the challenges of measurement and implementation. Teaching Purpose: To help students understand: 1) how to implement a Balanced Scorecard, 2) how to measure and improve the effectiveness of support functions, and 3) how to link non-financial measures to financial measures of support functions when financial benefits are difficult to quantify.

3) Kaplan, Robert S. & Datar, Srikant. *The Co-operative Bank*, No. 9-195-196 (Mar 23, 1995; revised Apr 22, 1997)
A British bank with strong roots in the cooperative movement encounters declining profitability in an increasingly competitive and deregulated financial services industry. It attempts to grow by broadening its customer base and increasing the range of products and services offered. It turns to activity-based costing as part of its reengineering effort to learn more about the process and product costs and customer profitability, and contemplates what actions to take based on this new information.

4) Kaplan, Robert S. *Manufacturers Hanover Corporation: Customer Profitability Report*, No. 9-191-068 (Oct 9, 1990)
Banking company noting declining profitability from its traditional lending activities has started to measure the total profitability of its lending relationships. A loan pricing model estimates the profit and return-on-equity from commercial loans. Additional work was required to recognize the revenue from fee-for-service business for the same customer that is performed by other units in the bank. The case raises the problem of how revenues and expenses from diverse activities can be combined to produce an accurate picture of customer profitability.

5) Kaplan, Robert S. & Ittner, Christopher D. *Texas Instruments: Cost of Quality (A),* No. 9-189-029 (Aug 18, 1988; revised Nov 26, 1988)
Texas Instruments implements a Cost of Quality (COQ) system as part of a company-wide "Total Quality Thrust." After several years of operation, group management questions whether or not the COQ system should be updated to make it more useful in identifying areas for quality

improvement. The case documents the current system and asks students to analyze the role it played in the quality control process and areas in which it could be improved.

6) Narayanan, V. G. & Brem, Lisa. *Owens & Minor, Inc.* (A), No. 9-100-055 (Feb 14, 2000; revised Feb 14, 2002)
A forward-thinking manager at Owens & Minor (O&M), a large national medical and surgical distribution company, enlisted the help of both logistics and cost managers to develop an innovative pricing schedule based on the customer's activities instead of the price of the product since the existing cost-plus pricing structure made it impossible for O&M to price services appropriately. The case also explores the customer resistance to his new proposal.

Entrepreneurship (EN)

1) Amabile, Teresa M. & Tempest, Nicole. *Ken Hakuta: AllHerb.com*, No. 9-899-250 (Mar 29, 1999; revised Feb 4, 2000)
Ken Hakuta had been an entrepreneur all his life. Having started a number of consumer-oriented ventures, he became well-known as "Dr. Fad," the initiator of the "Wacky Wallwalker" toy craze in the 1980s. Wishing to strike out in an exciting new direction in 1998, he capitalized on his long-standing interest in herbal medicine to found AllHerb.com, the first e-commerce company devoted solely to herbal remedy products and information.

2) Davis, John A. *The Pellegrins* (A), No. 9-899-009 (Jul 24, 1998; revised Feb 12, 2004)
A father and son working together in their family-owned publishing company are at a decision point because the son feels he is ready to become president at the age of 31.

3) Hart, Mura M. & Dror, Judith. *3Plex.com*, No. 9-801-152 (Oct 11, 2000; revised Oct 19, 2000)
A start-up team is faced with the challenge of building a senior management team with relevant industry experience. The marriage of e-commerce and the transportation logistics industry creates unusual problems in blending "old economy" employees and employee practices (compensation/equity) and company cultures.

4) Hart, Myra M., Wojewoda, Susan, & Ely, Robin. *Carol Fishman Cohen: Professional Career Reentry* (A), No. 9-803-185 (May 14, 2003; revised Mar 16, 2006)
Explores the career challenges facing highly successful women who leave the full-time workforce for several years to manage family commitments. Carol Cohen is a 1985 Harvard MBA who has professional line experience in a manufacturing environment, followed by a successful transition into investment banking. Details Cohen's decision to return to a professional career after almost 11 years out of the full-time workforce. Describes her decision-making process, including discussions with her husband about shared parenting responsibilities, and provides details of her professional networking, resume development, and interview preparation. Concludes with a job offer to Cohen from Sankaty Advisors, a Bain Capital Partners company. Discussion centers on the decision to return to work, the strategic plan and specific steps, and concludes with questions about setting expectations--both at home and at work--and negotiating terms.

5) Roberts, Michael J. & Mahesh, Shripriya. *Hotmail*, No. 9-899-165 (Feb 9, 1999; revised Jun 23, 1999)
Sabeer Bhatia, cofounder and CEO of Hotmail, is making efforts to finance and grow this business, which is based on free Web-based e-mail. Describes early, successful efforts at raising several rounds of venture capital and presents choices around a next stage of financing.

6) Sahlman, William A. & Katz, Laurence E. *Amazon.com: Going Public*, No. 9-899-003 (Oct 22, 1998; revised Aug 3, 1999)

Amazon.com, an early pioneer in electronic commerce, prepares its initial public offering in the face of turbulent market conditions. Joy Covey, Amazon.com's CFO and the case protagonist, discusses the risks and opportunities of going public and the nature of electronic commerce business models in comparison to traditional land-based retail models. This case presents an opportunity to discuss the public offering process and the inter-relationship between a young company's financing strategy and business strategy.

Finance (FN)

1) Baker, Malcolm P. & Quinn, James. *Corning: Convertible Preferred Stock*, No. 9-206-018 (Dec 1, 2005)

Corning, with large investments in fiber optic technology, was hit particularly hard by the collapse of the telecommunications industry in 2001. With over $4 billion in debt, the firm's survival appears to rest on raising additional equity capital. James Flaws, the chief financial officer, is considering raising $500 million with an issue of mandatory convertible preferred stock.

2) Chan, Su Han, Wang, Ko, & Ho, Mary. *Phuket Beach Hotel: Valuing Mutually Exclusive Capital Project*, No. HKU145 (Aug 15, 2001)

Phuket Beach Hotel has an opportunity to lease its underutilized space to a karaoke pub and earn a rental income. Alternatively, the hotel could develop the unused space and create its own pub. The general manager of the hotel must decide which of the two capital projects to recommend to the hotel owners. This case presents sufficient information to build cash flow forecasts for each project and to rank the mutually exclusive projects using various evaluation criteria.

3) Esty, Benjamin C. & Sesia, Aldo, Jr. *Aluminium Bahrain (Alba): The Pot Line 5 Expansion*, No. 9-205-027 (Jan 5, 2005; revised Jul 11, 2005)

In September 2002, Aluminium Bahrain (Alba) needed to decide how to finance its proposed $1.7 billion pot line. The company's financial adviser, Taylor De-Jongh (TDJ), had recommended Alba employ a multisourced financing strategy using as many as five sources of debt from international, regional, and local capital pools. TDJ believed that the strategy would generate competition among the lenders which, in turn, would save Alba millions in financing costs. But the multisourced financing strategy went against the grain of typical project financings in the Middle East and was not without its risks. Alba management must decide how many financing sources to use, which ones, and how much to get from each one. If the market rejects the multisourced financing strategy, the project might become tainted, which could jeopardize Alba's long-term growth objectives.

4) Nohria, Nitin & Weber, James B. *The Royal Bank of Scotland: Masters of Integration*, No. 9-404-026 (Aug 15, 2003; revised Jun 10, 2005)

Describes the acquisition of Nat West by Royal Bank of Scotland. Describes the strategic rationale for the acquisition and the process by which the integration of the two banks was accomplished. The acquisition is remarkable for how successful it was, given the typical high rate of failure of similar acquisitions.

5) Riedl, Edward J. *Kevin McCarthy and Westlake Chemical Corp.*, No. 9-106-049 (Feb 7, 2006; revised Mar 24, 2006)

Examines forecasting earnings/performance for a commodity chemical firm during a period of high uncertainty, highlighting the combined effects of input process (natural gas), industry capacity/utilization, and cyclicality. Assuming the role of Kevin McCarthy (the top chemical

industry analyst in 2004), students must analyze macro, industry, and firm-level data to determine the future performance of this firm.

6) Segel, Arthur I. & Katzin, Joshua A. *Buckingham Park*, No. 9-205-085 (Mar 16, 2005; revised Mar 28, 2006)

In September, 2004, Stephen Lebowitz, President of CBL, a $6 billion publicly traded shopping mall real estate investment trust (REIT) with over 70 million square feet, is considering acquiring 170 acres for a new retail development at a racetrack site in Southern New Hampshire. First, Stephen has to calculate the value of the land to make his bid based on current market conditions and local zoning. Next, Stephen has to consider how the public securities markets will react, good and bad, to a shopping center REIT doing a new development at this time.

Management (MG)

1) Beer, Michael & Weber, James B. *Merck Latin America (A)*, No. 9-401-029 (March 12, 2001; revised Sep 16, 2002)

Introduces Grey Warner, the vice president of Merck's Latin America region, and his efforts to improve the organizational effectiveness of the region and to introduce a more global business culture and values. Discusses Merck's ethics and values, its Latin American organization, the change methodologies used, and the political and economic conditions in the region. The change methodologies included Myers Briggs personality type assessment, 360 degree feedback management evaluations, a new strategic planning process, and especially, organizational fitness profiling to discover and overcome barriers to achieving the strategic vision.

2) DeLong, Thomas J. & Vijayaraghavan, Vineeta. *Harrah's Entertainment, Inc.: Rewarding Our People*, No. 9-403-008 (Jul 23, 2002; revised Jan 7, 2003)

Marilyn Winn, head of human resources at Harrah's Entertainment, must make a recommendation to the company's president and CEO about whether the existing bonus payout program is effective at motivating employees or whether it should be revised and/or replaced. A recent downturn in economic conditions led Winn to wonder whether customer service payouts were the most efficient way to make Harrah's a service-driven and customer-driven company.

3) McAfee, Andrew & Wagonfeld, Alison Berkley. *Business Intelligence Software at SYSCO*, No. 9-604-080 (Jun16, 2004; revised Jul 19, 2004)

The large food service company SYSCO has decided to purchase business intelligence (BI) software, a technology intended to provide superior monitoring and analysis capabilities. Twila Day, assistant vice president of technology and applications, is in charge of the BI project and must determine exactly how much software to buy. She must also plan the BI implementation throughout the company. After conferring with Business Objects, the BI application's vendor, SYSCO has decided initially to configure the software and train employees to address only a limited set of questions.

4) McFarlan, F. Warren & Seger, Katherine N. *General Dynamics and Computer Sciences Corp.: Outsourcing the IS Function (A*), No: 9-193-144 (Apr 16, 1993; revised May 5, 1994)

Designed to generate discussion on the issues of outsourcing from the perspective of a firm thinking about turning over its IS activities to a third-party vendor.

5) Pisano, Gary P. & Rossi, Sharon. *American Connector Co. (A)*, No. 9-693-035 (Oct 6, 1992; revised Dec 7, 1992)

American Connector Co. is forced to reexamine operations at its Sunnyvale plant when a Japanese competitor announces plans to build an "ultimate" plant in the United States. Case

examines issues related to benchmarking a competitor's manufacturing capabilities and productivity.

6) Siegel, Jordan & Chang, James Jinho. *Samsung Electronics*, No. 9-705-508 (Jun 30, 2005; revised Aug 2, 2005)

When is it possible to create a dual advantage of being both low cost and differentiated? In this case, students assess whether Samsung Electronics has been able to achieve such a dual advantage, and if so, how this was possible. Moreover, Samsung Electronics' long-held competitive advantage is under renewed attack. Students also can assess how Samsung should respond to large-scale Chinese entry into its industry.

Marketing (MK)

1) Colarelli, Gina & Maslyn, William T. *Customer Value Measurement at Nortel Networks - Optical Networks Division*, No. 9-501-050 (Feb 13, 2001; revised Jun 6, 2002)

Since 1995, Nortel Networks' Optical Networks (ON) division has been incorporating customer satisfaction and loyalty measures into its business practices to increase customer value. Over the years, key process owners in various parts of the organization have become accustomed to receiving such information in the format with which they are familiar. Recent initiatives by the Customer Value Measurement (CVM) team have shown that the current methodology does not provide all the insights required to achieve the full potential of customer value measurement. The CVM team now needs to present Nortel's senior management with the optimal combination of the many choices for soliciting customer perceptions that would make the best use of available resources, minimize the intrusion on customers' time, and add value for the business and customers alike.

2) Godes, David B. *Avon Co.*, No. 9-590-022 (Aug 9, 1989; revised Oct 30 1989)

Avon has always sold its products through a large independent direct-selling organization. However, it is now considering whether it should sell directly to the consumer. The company's independent representatives number 500,000 in the United States alone. Yet, there seems to be potential for Avon to grow their business on the web in new and different ways. What benefits might Avon reap from using the Web to improve its relationship with its customers, with its representatives, and between the representatives and their customers. Includes color exhibits.

3) Jones, Geoffrey G., Kiron, David, Dessain, Vincent & Sjoman, Anders. *L'Oreal and the Globalization of American Beauty*, No. 9-805-086 (Apr 28, 2006; revised Feb 2, 2006)

Examines L'Oreal's acquisition of leading U.S. cosmetics brands, including Maybelline, Redken, and Kiehl's, and their subsequent renewal and globalization. Reviews the history of L'Oreal, now the world's largest cosmetics company, from its origins in France in 1907. The company entered the United States in 1953, and from 1990, expanded rapidly with the acquisition of U.S. brands, which were renewed and then taken international. Focuses on Kiehl's--since 1851, a quirky New York luxury brand--which L'Oreal acquired in 2000 and is now expanding globally. Shows how L'Oreal developed a portfolio of U.S. and European brands that are now sold globally. Explores the corporate strategy and marketing challenges facing consumer products firms as they globalize and how acquisitions can facilitate globalization.

4) Narayandas, Das & Caravella, Mary Neuner. *Color Kinetics, Inc. (A)*, No. 9-501-077 (Mar 30, 2001; revised Aug 2, 2001)

Two-year-old start-up Color Kinetics has developed unique colored lighting technology using digitally controlled LEDs, and has developed that technology into a successful line of products for its first targeted market of "retailtainment." Now in November 1999, the management team is

evaluating how to best extend this success into other markets and/or strategic initiatives and achieve the growth it has targeted internally and with investors.

5) Quelch, John A. & Isaacson, Bruce. *Goodyear: Aquatred Launch*, No. 9-594-106 (Jul 23, 1993; revised Sep 7, 1994)

After many years of R&D, Goodyear has developed the Aquatred, an innovative new tire. However, the tire industry has matured and evolved, raising questions concerning the Aquatred's ability to gain support from Goodyear's independent tire dealers. Students must use information on channel evolution and consumer behavior to make two decisions: whether to launch the Aquatred and whether to expand Goodyear's distribution network. Also explores issues involved in managing a complex distribution structure during a time of rapid change.

6) Silk, Alvin J. & Klein, Lisa R. *Dewar's (A): Brand Repositioning in the 1990s*, No. 9-596-076 (Mar 22, 1996; revised Nov 12, 1997)

Dewar's, a major brand of Scotch whisky, produced by United Distillers of the U.K., and the U.S. leader in the Scotch category with a 15% market share, faced a declining market among traditional consumers of distilled spirits. Given the growing societal, legal, and regulatory opposition to drinking in the U.S., the marketing options were limited. In addition, drinking preferences had shifted away from distilled spirits to lighter, lower alcohol beverages like wine, wine coolers, and beer. In early 1993, Dewar's U.S. importer, Schieffelin and Somerset, in cooperation with the brand's longstanding advertising agency, Leo Burnett, began to explore the opportunities for repositioning Dewar's to younger adults. Repositioning Dewar's was a necessity for the brand to remain viable in the long term. Its existing customer base was aging, and younger drinkers who did drink Scotch were consuming less. The issue is how to update the brand's image to attract younger consumers. The brand manager faces the decision of planning the strategy for a repositioning or "recruitment" campaign for the brand.

Appendix C. Resources Consulted to Identify Business Questions, Arranged by Discipline, Task, and Question

Note: The arrangement in this Appendix matches that in Appendix B: by discipline, then by task number. Code ID refers to discipline, number assigned in Appendix B, and question number. Example: AC1-1 = Accounting, first case in Appendix B in that category, and the first question for that case. See the translation table in Appendix A to match task IDs in text with the task/case code used in this table.

Code	Question source
AC1-1	1) Case
AC1-2	1) Case
AC2-1	1) The Office of Information Technology, Federal Aviation Administration. (1995). Activity based costing. In *Business Process Improvement (Reengineering): Handbook of Standards and Guidelines* (chap. 5). Retrieved June 8, 2006, from http://www.faa.gov/ait/bpi/handbook/chap5.htm 2) Case
AC2-2	1) The Office of Information Technology, Federal Aviation Administration. (1995). Activity based costing. In *Business Process Improvement (Reengineering): Handbook of Standards and Guidelines* (chap. 5). Retrieved June 8, 2006, from http://www.faa.gov/ait/bpi/handbook/chap5.htm 2) Case
AC2-3	1) The Office of Information Technology, Federal Aviation Administration. (1995). Activity based costing. In *Business Process Improvement (Reengineering): Handbook of Standards and Guidelines* (chap. 5). Retrieved June 8, 2006, from http://www.faa.gov/ait/bpi/handbook/chap5.htm 2) Case
AC2-4	1) The Office of Information Technology, Federal Aviation Administration. (1995). Activity based costing. In *Business Process Improvement (Reengineering): Handbook of Standards and Guidelines* (chap. 5). Retrieved June 8, 2006, from http://www.faa.gov/ait/bpi/handbook/chap5.htm 2) Case
AC3-1	1) Horngren, C. T., Foster, G., & Datar, S. M. (2002). Ch 14: Revenues, sales-variances, and customer-profitability analysis. In *Cost accounting: A managerial emphasis*. 11th ed. Prentice Hall. 2) Case
AC3-2	1) Horngren, C. T., Foster, G., & Datar, S. M. (2002). Ch 14: Revenues, sales-variances, and customer-profitability analysis. In *Cost accounting: A managerial emphasis*. 11th ed. Prentice Hall. 2) Case
AC3-3	1) Case
AC4-1	1) The Office of Information Technology, Federal Aviation Administration. (1995). Activity based costing. In *Business Process Improvement (Reengineering): Handbook of Standards and Guidelines* (chap. 5). Retrieved June 8, 2006, from http://www.faa.gov/ait/bpi/handbook/chap5.htm 2) Case
AC4-2	1) Case
AC4-3	1) Case

Code	Question source
AC5-1	1) Balanced Scorecard Institute. (1998). *What is the balanced scorecard?* Retrieved June 8, 2006, from http://www.balancedscorecard.org/basics/bsc1.html 2) Case
AC5-2	1) Balanced Scorecard Institute. (1998). *What is the balanced scorecard?* Retrieved June 8, 2006, from http://www.balancedscorecard.org/basics/bsc1.html 2) Case
AC5-3	1) Balanced Scorecard Institute. (1998). *What is the balanced scorecard?* Retrieved June 8, 2006, from http://www.balancedscorecard.org/basics/bsc1.html 2) Case
AC5-4	1) Balanced Scorecard Institute. (1998). *What is the balanced scorecard?* Retrieved June 8, 2006, from http://www.balancedscorecard.org/basics/bsc1.html 2) Case
AC5-5	1) Balanced Scorecard Institute. (1998). *What is the balanced scorecard?* Retrieved June 8, 2006, from http://www.balancedscorecard.org/basics/bsc1.html 2) Case
AC6-1	1) Case
AC6-2	1) Case
AC6-3	1) Killough, L. N., & Leininger, W. E. (1984). Ch. 14: The uses of making nonroutine decisions. In *Cost accounting: Concepts and Techniques for Management.*
AC6-4	1) Killough, L. N., & Leininger, W. E. (1984). Ch. 14: The uses of making nonroutine decisions. In *Cost accounting: Concepts and Techniques for Management.* 2) Case
AC6-5	1) Killough, L. N., & Leininger, W. E. (1984). Ch. 14: The uses of making nonroutine decisions. In *Cost accounting: Concepts and Techniques for Management.* 2) Case
EN6	1) Gabrielle, M. (2001, April 6). *10 tips on how to go public*. Retrieved June 8, 2006, from http://www.cfo.com/article.cfm/2993269 2) Entrepreneur.com. (2005, December 1). *Going public*. Retrieved June 8, 2006, from http://www.entrepreneur.com/article/0,4621,300892,00.html
EN1-1	1) Entrepreneur.com. (2005, December 1). *Going public*. Retrieved June 8, 2006, from http://www.entrepreneur.com/article/0,4621,300892,00.html
EN1-2	1) Gabrielle, M. (2001, April 6). *10 tips on how to go public*. Retrieved June 8, 2006, from http://www.cfo.com/article.cfm/2993269
EN1-3	1) Gabrielle, M. (2001, April 6). *10 tips on how to go public*. Retrieved June 8, 2006, from http://www.cfo.com/article.cfm/2993269
EN2-1	1) Ward, S. (n.d.). *Succession planning issues for family-run businesses*. Retrieved June 8, 2006, from http://sbinfocanada.about.com/cs/buysellabiz/a/succession1.htm
EN2-2	1) Ward, S. (n.d.). *Succession planning issues for family-run businesses*. Retrieved June 8, 2006, from http://sbinfocanada.about.com/cs/buysellabiz/a/succession1.htm 2) Lambing, P., & Keuhl, C. R. (2000). Ch. 4: Family business. In *Entrepreneurship*. 2[nd] ed. NJ: Prentice Hall.
EN2-3	1) Ward, S. (n.d.). *Succession planning issues for family-run businesses*. Retrieved June 8, 2006, from http://sbinfocanada.about.com/cs/buysellabiz/a/succession1.htm

Code	Question source
EN3-1	1) WebFeet. (n.d.). *6 steps to a job search action plan*. Retrieved June 8, 2006, from http://www.wetfeet.com/Content/Articles/6/6%20steps%20to%20a%20job%20search%20action%20plan.aspx
EN3-2	1) WebFeet. (n.d.). *6 steps to a job search action plan*. Retrieved June 8, 2006, from http://www.wetfeet.com/Content/Articles/6/6%20steps%20to%20a%20job%20search%20action%20plan.aspx 2) Barsh, A. (2005, December 7). *Useful resources for interview preparation*. Retrieved June 8, 2006, from Carnegie Mellon University Libraries Web site: http://www.library.cmu.edu/Research/Business/Business/interview.html
EN3-3	1) Barsh, A. (2005, December 7). *Useful resources for interview preparation*. Retrieved June 8, 2006, from Carnegie Mellon University Libraries Web site: http://www.library.cmu.edu/Research/Business/Business/interview.html
EN3-4	1) WebFeet. (n.d.). *6 steps to a job search action plan*. Retrieved June 8, 2006, from http://www.wetfeet.com/Content/Articles/6/6%20steps%20to%20a%20job%20search%20action%20plan.aspx 2) Barsh, A. (2005, December 7). *Useful resources for interview preparation*. Retrieved June 8, 2006, from Carnegie Mellon University Libraries Web site: http://www.library.cmu.edu/Research/Business/Business/interview.html
EN3-5	1) WebFeet. (n.d.). *6 steps to a job search action plan*. Retrieved June 8, 2006, from http://www.wetfeet.com/Content/Articles/6/6%20steps%20to%20a%20job%20search%20action%20plan.aspx 2) Barsh, A. (2005, December 7). *Useful resources for interview preparation*. Retrieved June 8, 2006, from Carnegie Mellon University Libraries Web site: http://www.library.cmu.edu/Research/Business/Business/interview.html
EN4-1	1) Meakin, V., & Snaith, B. (1997). Putting together a goal-scoring team. In Sue Birley & Daniel F. Muzyka (Eds.), *Mastering Enterprise*. London: Financial Times/Pittman. 2) Case
EN4-2	1) Meakin, V., & Snaith, B. (1997). Putting together a goal-scoring team. In Sue Birley & Daniel F. Muzyka (Eds.), *Mastering Enterprise*. London: Financial Times/Pittman. 2) Case
EN4-3	1) Case
EN5-1	1) Gladstone, D., & Gladstone, L. (2002). Ch.1: Anyone can raise venture capital. In *Venture Capital Handbook: An Entrepreneur's Guide to Raising Venture Capital*. NJ: Prentice Hall. 2) Morebusiness.com. (n.d.). *A venture capital analysis*. Retrieved June 8, 2006, from http://www.morebusiness.com/running_your_business/financing/vent-cap.brc
EN5-2	1) Gladstone, D., & Gladstone, L. (2002). Ch.1: Anyone can raise venture capital. In *Venture Capital Handbook: An Entrepreneur's Guide to Raising Venture Capital*. NJ: Prentice Hall. 2) Morebusiness.com. (n.d.). *A venture capital analysis*. Retrieved June 8, 2006, from http://www.morebusiness.com/running_your_business/financing/vent-cap.brc
EN5-3	1) Gladstone, D., & Gladstone, L. (2002). Ch.1: Anyone can raise venture capital. In *Venture Capital Handbook: An Entrepreneur's Guide to Raising Venture Capital*. NJ: Prentice Hall. 2) Morebusiness.com. (n.d.). *A venture capital analysis*. Retrieved June 8, 2006, from http://www.morebusiness.com/running_your_business/financing/vent-cap.brc

Code	Question source
EN5-4	1) Gladstone, D., & Gladstone, L. (2002). Ch.1: Anyone can raise venture capital. In *Venture Capital Handbook: An Entrepreneur's Guide to Raising Venture Capital*. NJ: Prentice Hall. 2) Morebusiness.com. (n.d.). *A venture capital analysis*. Retrieved June 8, 2006, from http://www.morebusiness.com/running_your_business/financing/vent-cap.brc
EN6-1	1) Gwendolyn, B. (2005, May 9). You have a great idea. Now what? *New York Times*, pp. R1, R2, R3, R4. 2) Lehmann, D. R., & Winer, R. S. (2005). Ch. 9: New products. In *Product Management*. 4th ed. McGraw-Hill.
EN6-2	1) Lehmann, D. R., & Winer, R. S. (2005). Ch. 9: New products. In *Product Management*. 4th ed. McGraw-Hill.
EN6-3	1) Gwendolyn, B. (2005, May 9). You have a great idea. Now what? *New York Times*, pp. R1, R2, R3, R4. 2) Lehmann, D. R., & Winer, R. S. (2005). Ch. 9: New products. In *Product Management*. 4th ed. McGraw-Hill.
EN6-4	1) Gwendolyn, B. (2005, May 9). You have a great idea. Now what? *New York Times*, pp. R1, R2, R3, R4. 2) Lehmann, D. R., & Winer, R. S. (2005). Ch. 9: New products. In *Product Management*. 4th ed. McGraw-Hill.
EN6-5	1) Gwendolyn, B. (2005, May 9). You have a great idea. Now what? *New York Times*, pp. R1, R2, R3, R4.
EN6-6	1) Gwendolyn, B. (2005, May 9). You have a great idea. Now what? *New York Times*, pp. R1, R2, R3, R4. 2) Lehmann, D. R., & Winer, R. S. (2005). Ch. 9: New products. In *Product Management*. 4th ed. McGraw-Hill.
FN1-1	1) Internet Center for Management and Business Administration. *Capital budgeting*. Retrieved June 9, 2006, from http://www.netmba.com/finance/capital/budgeting/ 2) Smart, S. B., et al. (2004). Ch. 7: Capital budgeting process and techniques. In *Corporate Finance*. South-Western.
FN1-2	1) Internet Center for Management and Business Administration. *Capital budgeting*. Retrieved June 9, 2006, from http://www.netmba.com/finance/capital/budgeting/ 2) Case
FN1-3	1) Case
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Appendix D. Survey Questionnaires

1) Consent Form (for online survey)

Please read this informed consent statement before completing the survey.

Informed Consent Statement
This is a research project being conducted by Marilyn Domas White (Soojung Kim, Student Researcher) at the University of Maryland, College Park. We are inviting you to participate in this research because you are at least 18 years of age and you are business librarians working in an academic library. The purpose of this research is to analyze business librarians' database selection process from the perspective of users' tasks.

Participants will be asked to select appropriate databases for reference questions in the context of 1 to 2 business tasks. The questionnaire will ask you to analyze the question, choose one or more databases, and indicate why you chose it/them. You do not have to find the answer to the reference question. There are no known risks associated with participating in this research project.

If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-0678. This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

This research is not designed to help you personally, but the results will allow us to learn more about business librarians' database selection process from the perspective of users' tasks. In the future, other people might benefit from this study through improved understanding of how users' tasks affect the needed types of information and selected databases.

We will do our best to keep your personal information confidential. To help protect your confidentiality: (1) your name will be included on the surveys or other collected data only for follow-up purposes; (2) in using the questionnaire, you and your institution will be coded numerically; (3) through the use of this identification key, the researchers will be able to link your survey to your identity; and (4) only the researchers will have access to the identification key. Your identity and your institution's identity will not be noted in any report of the project. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.
If you have any questions about the research study itself, please contact Marilyn Domas White at: The University of Maryland, College of Information Studies, Room 4117F Hornbake Library Building, South Wing, 301-405-2047 or whitemd@umd.edu.

Your response to the survey will indicate that you have read and agree with information on this consent form.

2) Consent Form (for print)

Project Title	The Effect of Tasks on Database Selection
Why is this research being done?	This is a research project being conducted by Marilyn Domas White (Soojung Kim, Student Researcher) at the University of Maryland, College Park. We are inviting you to participate in this research because you are at least 18 years of age and you are business librarians working in an academic library. The purpose of this research is to analyze business librarians' database selection process from the perspective of users' tasks.
What will I be asked to do?	The procedure involves a survey where you will be asked to select appropriate databases for reference questions in the context of 1 to 2 business tasks. The questionnaire will ask you to analyze the question, choose one or more databases, and indicate why you chose it/them. You do not have to find the answer to the reference question.
What about confidentiality?	We will do our best to keep your personal information confidential. To help protect your confidentiality: (1) your name will be included on the surveys or other collected data only for follow-up purposes; (2) in using the questionnaire, you and your institution will be coded numerically; (3) through the use of this identification key, the researchers will be able to link your survey to your identity; and (4) only the researchers will have access to the identification key. Your identity and your institution's identity will not be noted in any report of the project. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.
What are the risks of this research?	There are no known risks associated with participating in this research project.
What are the benefits of this research?	This research is not designed to help you personally, but the results will allow us to learn more about business librarians' database selection process from the perspective of users' tasks. In the future, other people might benefit from this study through improved understanding of how users' tasks affect the needed types of information and selected databases.
Do I have to be in this research? Can I stop participating at any time?	Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop

	participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.
What if I have questions?	This research is being conducted by Marilyn Domas White (Soojung Kim, Student Researcher) in the College of Information Studies at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Marilyn Domas White at: The University of Maryland, College of Information Studies, Room 4117F Hornbake Library Building, South Wing, 301-405-2047 or whitemd@umd.edu. If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-0678 This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

Statement of Age of Subject and Consent	Your signature indicates that:
	   you are at least 18 years of age;,
	   the research has been explained to you;
	   your questions have been answered; and
	  you freely and voluntarily choose to participate in this research project.

Signature and Date	NAME OF SUBJECT SIGNATURE OF SUBJECT DATE

3) Nine Sets of Survey Questionnaire

Note: Only the first survey set includes the survey questions; changeable parts only (task and business questions) are noted for Sets 2 through 9. Ref question refers to business question, as used in the text of the dissertation.

<Survey Set 1>

Task 1: Set an initial price for a product.
Avon engineers developed a new type of electric adjustable speed drive. Members of the sales department wondered what pricing recommendations they should make for this product. To set an appropriate initial price of the product, they ask the following questions. ("Avon Co.", HBS case, 9-590-022)

Ref question 1: **What are the characteristics of the target market?**

----

1. What type of information is needed to answer this question? Check all that apply.
   - □ Case studies
   - □ Company profiles
   - □ Consumer analysis reports
   - □ Country reports
   - □ Directories
   - □ Financial reports
   - □ Industry reports
   - □ Investment analyst reports
   - □ Laws/Regulations
   - □ Magazine/Journal articles
   - □ Market research reports
   - □ Monographs
   - □ Newspaper articles
   - □ Patents/Trademarks
   - □ Product catalogs/reviews
   - □ SWOT analysis
   - □ Statistics/Demographics
   - □ Others, please go to the next question.

2. If the kinds of information you would seek are not in this list, please describe them.

3. List up to **3 databases/websites/print resources** you would consult to answer this reference question and explain **why you selected** each one (if more than one reason affects your thinking, please indicate all of them). If any special strategies are important, for example, getting parts of the answer from different sources or order of use, please note them.

Ref question 2: **What are the competitors' prices for comparable products?**
----

4. What type of information is needed to answer this question? Check all that apply.
          □ Case studies
          □ Company profiles
          □ Consumer analysis reports
          □ Country reports
          □ Directories
          □ Financial reports
          □ Industry reports
          □ Investment analyst reports
          □ Laws/Regulations
          □ Magazine/Journal articles
          □ Market research reports
          □ Monographs
          □ Newspaper articles
          □ Patents/Trademarks
          □ Product catalogs/reviews
          □ SWOT analysis
          □ Statistics/Demographics
          □ Others, please go to the next question.

5. If the kinds of information you would seek are not in this list, please describe them.

6. List up to **3 databases/websites/print resources** you would consult to answer this reference question and explain **why you selected** each one (if more than one reason affects your thinking, please indicate all of them). If any special strategies are important, for example, getting parts of the answer from different sources or order of use, please note them.

Ref question 3: **Are there legal constraints on pricing?**
----

7. What type of information is needed to answer this question? Check all that apply.
          □ Case studies
          □ Company profiles
          □ Consumer analysis reports
          □ Country reports
          □ Directories
          □ Financial reports
          □ Industry reports
          □ Investment analyst reports
          □ Laws/Regulations
          □ Magazine/Journal articles
          □ Market research reports
          □ Monographs
          □ Newspaper articles

□ Patents/Trademarks
□ Product catalogs/reviews
□ SWOT analysis
□ Statistics/Demographics
□ Others, please go to the next question.

8. If the kinds of information you would seek are not in this list, please describe them.

9. List up to **3 databases/websites/print resources** you would consult to answer this reference question and explain **why you selected** each one (if more than one reason affects your thinking, please indicate all of them). If any special strategies are important, for example, getting parts of the answer from different sources or order of use, please note them.

Task 2: Finance a project in an emerging market.
Aluminium Bahrain (Alba) needs to decide how to finance its proposed $1.7 billion smelter pot line that will be built in a Middle East country. The company's financial adviser had recommended Alba use multiple sources from international, regional, and local capital pools. To successfully finance the project, the firm's financial unit is asking the following questions. ("Aluminium Bahrain (Alba): The Pot Line 5 Expansion", HBS case, 9-205-027)

Ref question 1: **What methods of raising capital are available either domestically or internationally?**
----
10. What type of information is needed to answer this question? Check all that apply.
□ Case studies
□ Company profiles
□ Consumer analysis reports
□ Country reports
□ Directories
□ Financial reports
□ Industry reports
□ Investment analyst reports
□ Laws/Regulations
□ Magazine/Journal articles
□ Market research reports
□ Monographs
□ Newspaper articles
□ Patents/Trademarks
□ Product catalogs/reviews
□ SWOT analysis
□ Statistics/Demographics
□ Others, please go to the next question.

11. If the kinds of information you would seek are not in this list, please describe them.

12. List up to **3 databases/websites/print resources** you would consult to answer this reference question and explain **why you selected** each one (if more than one reason affects your thinking, please indicate all of them). If any special strategies are important, for example, getting parts of the answer from different sources or order of use, please note them.

Ref question 2: **What are the capital structure and financial market's conditions in the country the project is carried on?**
----
13. What type of information is needed to answer this question? Check all that apply.
   □ Case studies
   □ Company profiles
   □ Consumer analysis reports
   □ Country reports
   □ Directories
   □ Financial reports
   □ Industry reports
   □ Investment analyst reports
   □ Laws/Regulations
   □ Magazine/Journal articles
   □ Market research reports
   □ Monographs
   □ Newspaper articles
   □ Patents/Trademarks
   □ Product catalogs/reviews
   □ SWOT analysis
   □ Statistics/Demographics
   □ Others, please go to the next question.

14. If the kinds of information you would seek are not in this list, please describe them.

15. List up to **3 databases/websites/print resources** you would consult to answer this reference question and explain **why you selected** each one (if more than one reason affects your thinking, please indicate all of them). If any special strategies are important, for example, getting parts of the answer from different sources or order of use, please note them.

16. Generally, how does knowing the task the client is involved in affect how you respond to his information need and questions?

17. Please provide your name and e-mail address. We need to gather information abut the resources and characteristics of your institution and may need to contact you for follow-up and clarification. Neither you nor your institution will be cited by name in the study.
Name _____
Email _____

<Survey Set 2>

Task 1: Prepare to go public (IPO).
Amazon.com prepares its initial public offering in the face of turbulent market conditions. For a successful IPO, officials at the firm ask the following questions. ("Amazon.com: Going Public", HBS case, 9-899-003)

Ref question 1: What are the risks and opportunities of going public?

Ref question 2: In the past two years, which investment banking firms have done initial public offerings similar in size and scope to our business?

Ref question 3: Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?

Ref question 4: What are the filing requirements and SEC rules/regulations for an IPO?

Task 2: Adopt a new information technology (IT).
The large food service company SYSCO has decided to purchase business intelligence (BI) software. The assistant vice president of technology and applications in charge of the BI project asks the following question. ("Business Intelligence Software at SYSCO", HBS case, 9-604-080)

Ref question 1: Who are the vendors for Business Intelligence (BI) software and what do they offer?

<Survey Set 3>

Task 1: Reduce employee turnover.
Harrah's Entertainment is suffering from high employee turnover. To lower the turnover rate, they are asking the following questions. ("Harrah's Entertainment, Inc.: Rewarding Our People", HBS case, 9-403-008)

Ref question 1: What is the standard or normal turnover rate in this industry?

Ref question 2: What are the criteria that people use when they vote for "Best Companies in America to Work for?"

Task 2: Prepare for the merger/acquisition of another company.
The Royal Bank of Scotland is considering the acquisition of another bank. To successfully implement the acquisition, they ask the following questions.
("The Royal Bank of Scotland: Masters of Integration", HBS case, 9-404-026)

Ref question 1: How do we identify companies that meet our selection criteria for acquisition?

Ref question 2: For a particular target company, what is the financial status of the company?

Ref question 3: What financing sources are available for the acquisition?

<Survey Set 4>

Task 1: Develop a marketing plan for a U.S. brand in a foreign country.
To develop a marketing plan for Kiel's, a New York based luxury brand of cosmetics, in foreign countries, L'Oreal's global marketing teams ask the following questions. ("L'Oreal and the Globalization of American Beauty", HBS case, 9-805-086)

Ref question 1: What are the characteristics of the target customers in a particular foreign country, e.g., Japan?

Ref question 2: What elements in the cultural environment of this country are likely to affect marketing strategies for these kinds of products significantly?

Ref question 3: What elements in the economic environment of this country are likely to affect marketing strategies for these kinds of products significantly?

Task 2: Raise venture capital.
The co-founder and CEO of Hotmail is making efforts to finance and grow the business. To successfully raise venture capital, he asks the following questions.
("Hotmail", HBS case, 9-899-165)

Ref question 1: What venture capital sources are available?

Ref question 2: Which venture capitalists' preferences would match our company profile?

<Survey Set 5>

Task 1: Start a new business with an innovative idea.
A life-long and successful entrepreneur just started AllHerb.com, the first e-commerce company devoted solely to herbal remedy products and information. To make his business successful, he asks the following questions. ("Ken Hakuta: AllHerb.com", HBS case, 9-899-250)

Ref question 1: Who are the competitors?

Ref question 2: Please find whatever information you can that would allow me to assess the market potential in this e-business.

Ref question 3: Who are the potential customers for these types of products?

Task 2: Benchmark a competitor's operation management.
American Connector Co. is forced to reexamine operations at its Sunnyvale plant. To benchmark a successful competitor, firm employees ask the following question. ("American Connector Co. (A)", HBS case, 9-693-035)

Ref question 1: Which companies in our industry are known for having the best practices?

Task 3: Enhance a customer satisfaction/loyalty program.
The Customer Value Measurement (CVM) team in Nortel Networks' Optical Networks division needs to implement new customer satisfaction and customer loyalty programs. To that end, team members ask the following question. ("Customer Value Management at Nortel Networks - Optical Networks Division", HBS case, 9-501-050)

Ref question 1: What are the elements of successful loyalty programs?

<Survey Set 6>

Task 1: Build a senior management team to launch a business.
A start-up team of 3Pex.com is faced with the challenge of building a senior management team with relevant industry experience. To recruit competent senior managers, the team asks the following question. ("3Plex.com", HBS case, 9-801-152)

Ref question 1: Where can I find information on executive recruiters – names, addresses, and areas of specialization?

Task 2: Make organizational changes in foreign operations.
The vice president of Merck's Latin America region is trying to make organizational changes to improve the organizational effectiveness of the region. His concerns are twofold: 1) How to select, use, and evaluate change methodologies/strategies; 2) How to solve a mismatch between its organizational values, which emphasized input from employees in management changes and strong ethical values related to health, research, work with government agencies and officials, and normal business approaches and practices about these issues among Latin American pharmaceutical firms., that is, how to bring about congruence among Latin American units with the organizational values. ("Merck in Latin America (A)", HBS case, 9-401-029)

Ref question 1: Merck is considering using the Myer-Briggs personality-type indicator assessment as a way of gaining information about our employees to improve communication and to develop teams in combination with other approaches. I need information about its use for these purposes in other organizations or firms, especially about its effectiveness for these objectives.

Ref question 2: How should one go about measuring how successful change efforts have been?

Ref question 3: Would you please identify and characterize some successful change strategies that can be used within an organization, with particular attention to sequencing the strategies themselves or elements within them?

Ref question 4: Would you please find any characterizations of the culture in Latin American pharmaceutical firms or information that would help us to characterize that culture ourselves?

<Survey Set 7>

Task 1: Face challenges from new entrant companies.
Samsung Electronics' long-held competitive advantage is under attack as it faces large-scale Chinese entry into the semiconductor industry. To effectively respond to the challenges from the new entrant companies, firm employees are asking the following questions. ("Samsung Electronics", HBS case, 9-705-508)

Ref question 1: Which companies are emerging in the industry?

Ref question 2: What are the emerging companies' visions and objectives?

Ref question 3: What are the strengths and limitations of the companies?

Task 2: Develop an advertising strategy to recruit a new group of customers.
Dewar's, a major brand of Scotch whisky, faces a declining market among traditional consumers of distilled spirits. To attract younger customers and to update the brand's image, firm employees ask the following questions. ("Dewar's (A): Brand repositioning in the 1990s", HBS case, 9-596-076)

Ref question 1: What are the characteristics of target customers, e.g., attitudes, lifestyles, and so on?

Ref question 2: What kind of advertising plan is most appropriate if we want to reach this target audience? We are interested in when and where to advertise.

<Survey Set 8>

Task 1: Select other markets to extend the business.
Color Kinetics has developed unique colored lighting technology and has created a successful line of products using that technology for its first targeted market of retail and entertainment firms, e.g., theme restaurants, retail stores needing fancy light displays. Now the management is evaluating how to best extend this success into other markets to achieve growth.
For a potential strategy they are considering – expanding upwards into higher performance theatrical and entertainment markets, such as concerts, they ask the following questions. ("Color Kinetics, Inc. (A)", HBS case, 9-501-077)

Ref question 1: What information can you find that would allow us to assess the market potential for our product in this market segment?

Ref question 2: What are the characteristics of potential customers, e.g., attitudes, lifestyles, and so on?

Task 2: Decide on a real estate purchase.
The president of CBL, a $6 billion publicly traded shopping mall real estate investment trust (REIT) with over 70 million square feet, is considering acquiring 170 acres for a new retail development in Southern New Hampshire. For a successful real estate investment, he asks the following questions. ("Buckingham Park", HBS case, 9-205-085)

Ref question 1: I need to determine how land within a mile or so of the land I'm considering is being used, for example, the mix of big box retail, specialty retail and entertainment, apartments, and offices. Assume he gives the location.

Ref question 2: What is the market demand for apartments in this area?

Ref question 3: What are the land use regulations that affect land development in the area?

<Survey Set 9>

Task 1: Search for a job.
A female 1985 Harvard MBA has professional line experience in manufacturing and investment banking environments. To return to a professional career after 11 years out of the full-time workforce, she asks the following questions. ("Carol Fishman Cohen: Professional Career Reentry (A)", HBS case, 9-803-185)

Ref question 1: For an industry of interest, I need an industry overview and discussion of trends in it.

Ref question 2: And who are the major players, i.e., which are the leading companies in the field?

Ref question 3: For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?

Ref question 4: Considering my background, how should I develop my resume so that I can actually get a job?

Task 2: Outsource a business function.
General Dynamics and Computer Sciences Corporation are considering turning over its information system (IS) activities to a third-party vendor. For a successful outsourcing, they are asking the following question. ("General Dynamics and Computer Sciences Corporation (A)", HBS case, 9-193-144)

Ref question 1: Which providers are available for information systems and services outsourcing?

4) Solicitation email

Dear librarian,

I am a doctoral student in the College of Information Studies at the University of Maryland and have been associated with the Virtual Business Information Center (www.vbic.umd.edu) here since 2002. For my doctoral research I am investigating how individual business librarians choose appropriate databases to respond to questions clients ask when doing business-related tasks. I hope that you are willing to answer a brief Web survey for me. The survey will give you 2 or 3 sets of tasks and related *reference* questions and ask you to analyze the questions and select the most appropriate databases to answer the questions. The number of reference questions (not tasks) 5. You will not have to *answer* the reference questions – just analyze each question as you normally do, identify the database(s) you consider useful, and indicate what factors influenced you to select each database you have selected. The survey should take approximately 20 to 30 minutes to complete.

Please follow this link (LINK IS HERE) to read the consent form before completing the survey. The consent form provides more information about your rights as a participant, but responses will be kept confidential and the identity of your library and you will not be revealed in any documents. Your response to the survey indicates that you have read and agree with information on the consent form. If you would prefer to receive the questionnaire in print form, please send me a fax number and/or mailing address and one will be sent to you, along with the consent form and a stamped addressed envelope.

This research will help the field and users seeking business information by providing information that can be incorporated into Web sites and used in instruction both for users and librarians. I hope you will be willing to share your knowledge and judgments about this area of information seeking with me. Your participation will have a significant impact on the outcome of the study. If you do not think you are the logical person to respond to this survey, please forward it to that person and copy me.

If you have any questions regarding this research project, feel free to contact me via e-mail, iam@umd.edu or my advisor, Dr. Marilyn Domas White (whitemd@umd.edu). Thank you in advance for assisting me in this effort.

If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland, 20742; (e-mail) irb@deans.umd.edu; (telephone) 301-405-0678.

Sincerely
Soojung Kim

5) Reminder email

Dear librarian,

Two weeks ago, I emailed to ask you to participate in a Web survey regarding a database selection process for business tasks and related questions. Having not received your response yet, please take a moment to fill the questionnaire at (LINK IS HERE).

To remind you, I am exploring factors that may affect database selection in the business field. The survey will give you 2 or 3 sets of tasks and related *reference* questions, and you will analyze the questions and select the most appropriate databases to answer the questions (attached is the previous email that describes the survey in details).

If you have any questions regarding this research project, feel free to contact me via e-mail, iam@umd.edu or my advisor, Dr. Marilyn Domas White (whitemd@umd.edu). I appreciate your help with my dissertation.

Sincerely
Soojung Kim

6) Institutional Review Board Application Approval Notification Letter

UNIVERSITY OF MARYLAND

INSTITUTIONAL REVIEW BOARD

2100 Lee Building
College Park, Maryland 20742-5121
301.405.4212 TEL 301.314.1475 FAX
irb@deans.umd.edu
www.umresearch.umd.edu/IRB

June 27, 2006

MEMORANDUM

Application Approval Notification

To:	Marilyn Domas White
	Soojung Kim
	College of Information Studies
From:	Roslyn Edson, M.S., CIP
	IRB Manager
	University of Maryland, College Park
Re:	**IRB Application Number: 06-0294**
	Project Title: "The Effect of Tasks on Database Selection"
Approval Date:	June 26, 2006
Expiration Date:	June 26, 2007
Type of Application:	New Project
Type of Research:	Nonexempt
	(Please note: The research does not qualify for exempt review because (1) the survey results are person-identifiable and (2) the disclosure of some of the survey responses outside the research could be damaging to a subject's reputation and/or employability. The use of confidentiality measures reduces the risks to subjects but does not affect the non-exempt status of the research)
Type of Review For Application:	Expedited

The University of Maryland, College Park Institutional Review Board (IRB) approved your IRB application. The research was approved in accordance with 45 CFR 46, the Federal Policy for the Protection of Human Subjects, and the University's IRB policies and procedures. Please reference the above-cited IRB application number in any future communications with our office regarding this research.

Recruitment/Consent: For research requiring written informed consent, the IRB-approved and stamped informed consent document is enclosed. The IRB approval expiration date has been stamped on the informed consent document. Please keep copies of the consent forms used for this research for three years after the completion of the research.

(continued)

Continuing Review: If you intend to continue to collect data from human subjects or to analyze private, identifiable data collected from human subjects, after the expiration date for this approval (indicated above), you must submit a renewal application to the IRB Office at least 30 days before the approval expiration date.

Modifications: Any changes to the approved protocol must be approved by the IRB before the change is implemented, except when a change is necessary to eliminate apparent immediate hazards to the subjects. If you would like to modify the approved protocol, please submit an addendum request to the IRB Office. The instructions for submitting a request are posted on the IRB web site at: **http://www.umresearch.umd.edu/IRB/irb_Addendum%20Protocol.htm.**

Unanticipated Problems Involving Risks: You must promptly report any unanticipated problems involving risks to subjects or others to the IRB Manager at 301-405-0678 or redson@umresearch.umd.edu.

Student Researchers: Unless otherwise requested, this IRB approval document was sent to the Principal Investigator (PI). The PI should pass on the approval document or a copy to the student researchers. This IRB approval document may be a requirement for student researchers applying for graduation. The IRB may not be able to provide copies of the approval documents if several years have passed since the date of the original approval.

Additional Information: Please contact the IRB Office at 301-405-4212 if you have any IRB-related questions or concerns.

Appendix E. Frame Analysis for Individual Business Questions

Note: Questions are grouped by frame.

11: What information can you find that would allow us to assess the market potential for our product in this market segment?

ASSESSING
Assessor [us]
Phenomenon [market potential for our product in this market segment]
Evidence [information] → *Element being asked about*

18. How should one go about measuring how successful change efforts have been?

ASSESSING
Assessor [one]
Phenomenon [change efforts]
Feature [how successful]
Method [X] → *Element being asked about*

30: What are the risks and opportunities of going public?

ASSESSING
Phenomenon [going public]
Value [the risks and opportunities] → *Element being asked about*

38: Please find whatever information you can that would allow me to assess the market potential in this e-business.

ASSESSING
Assessor [me]
Phenomenon [market potential in this e-business]
Evidence [information] → *Element being asked about*

22: What are the criteria that people use when they vote for "Best Companies in America to Work for?"

CHOOSING
Chosen [Best Companies in America]
Intended purpose [to Work for]
Cognizer [people]
Reason [the criteria] → *Element being asked about*

27: How do we identify companies meet our selection criteria for acquisition?

CHOOSING
Cognizer [we]
Intended_purpose [acquisition]
Possibilities [companies that meet our selection criteria] → *Element being asked about*

40: Which companies are emerging in the industry?

COMING_TO_BE
Place [in this industry]
Entity [companies] → *Element being asked about*

2: What do they offer?

COMMERCE_SCENARIO
Seller [vendors for BI software] Goods [X] → *Element being asked about*

39: Who are the potential customers for these types of products?

COMMERCE_SCENARIO
Goods [products] Buyer [potential customers] → *Element being asked about*

36: Which venture capitalists' preferences would match our company profile?

COMPATIBILITY
Item_1 [our company] Item_2 [venture capitalists] → *Element being asked about* Parameter [profile]

37: Who are the competitors?

COMPETITION
Participant_2 [competitors] → *Element being asked about*

12: What are the characteristics of potential customers, e.g., attitudes, lifestyles, and so on?

DISTINCTIVENESS
Entity [potential customers] Feature [characteristics] → *Element being asked about*

13: What are the characteristics of the target market?

DISTINCTIVENESS
Entity [target market] Feature [characteristics] → *Element being asked about*

19: Would you please identify and characterize some successful change strategies that can be used within an organization, with particular attention to sequencing the strategies themselves or elements within them?

DISTINCTIVENESS
Entity [successful change strategies] Feature [characterize….with particular attention to sequencing the strategies themselves or elements within them] → *Element being asked about*

20: Would you please find any characterizations of the culture in Latin American pharmaceutical firms or information that would help us to characterize that culture ourselves?

DISTINCTIVENESS
Entity [culture in Latin American pharmaceutical firms] Feature [characteristics] → *Element being asked about*

43: What are the characteristics of the target customers in a particular foreign country, e.g. Japan?

DISTINCTIVENESS
Entity [target customers in a particular foreign country] Feature [characteristics] → *Element being asked about*

46: What are the characteristics of target customers, e.g., attitudes, lifestyles, and so on?

DISTINCTIVENESS
Entity [target customers]
Feature [characteristics] → *Element being asked about*

48: What are the elements of successful loyalty programs?

DISTINCTIVENESS
Entity [successful loyalty programs]
Feature [elements] → *Element being asked about*

14: What are the competitors' prices for comparable products?

EVALUATIVE_COMPARISON
Profiled_item [competitor's products]
Profiled_attribute [prices] → *Element being asked about*

8: Who are the major players, i.e., which are the leading companies in the field?

FIRST_RANK
Limits_of_consideration [in this field]
Item [major players] → *Element being asked about*

23: Which companies in our industry are known for having the best practices?

FIRST_RANK
Limits_of_consideration [in our industry]
Item [companies having the best practices] → *Element being asked about*

33: What are the filing requirements [for an IPO]?

HAVE_AS_REQUIREMENT
Dependent [an IPO]
Requirement [filing requirements] → *Element being asked about*

1: Who are the vendors for Business Intelligence (BI) software?

INSTANCE
Type [vendors for Business Intelligence (BI) software]
Instance [X] → *Element being asked about*

6: Which providers are available for information systems and services outsourcing?

INSTANCE
Type [providers for information systems and services outsourcing]
Instance [X] → *Element being asked about*

5: What are the land use regulations that affect land development in the area?

LAW
Use [affect land development]
Law [land use regulations] → *Element being asked about*

15: Are there legal constraints on pricing?

LAW
Use [constraints on pricing]
Law [X] → *Element being asked about*

34: What are the SEC rules/regulations for an IPO?

LAW
Use [for an IPO]
Law [SEC rules/regulations] → *Element being asked about*

3: I need to determine how land within a mile or so of the land I'm considering is being used, for example, the mix of big box retail, specialty retail and entertainment, apartments, and offices.

LOCALE_BY_USE
Locale [land within a mile or so of the land I'm considering]
Constituent_parts [the mix of big box retail, specialty retail and entertainment, apartments, and offices]
Use [X] → *Element being asked about*

10: Considering my background, how should I develop my resume so that I can actually get a job?

MEANS
Agent [I]
Purpose [get a job]
Means [resume] → *Element being asked about*

25: What methods of raising capital are available either domestically or internationally?

MEANS
Purpose [raise capital]
Means [methods of raising capital] → *Element being asked about*

47: What kind of advertising plan is most appropriate if we want to reach this target audience?

MEANS
Agent [we]
Purpose [to reach this target audience]
Means [advertising plan] → *Element being asked about*

21: What is the standard or normal turnover rate in this industry?

MEASURABLE_ATTRIBUTES
Entity [this industry]
Attribute [standard turnover rate]
Value [X] → *Element being asked about*

4: What is the market demand for apartments in this area?

NEEDING
Requirement [apartments]
Place [in this area]
Degree [X] → *Element being asked about*

44: What elements in the cultural environment of this country are likely to affect marketing strategies for these kinds of products significantly?

OBJECTIVE_INFLUENCE
Dependent_situation [marketing strategies]
Influencing_situation [elements in the cultural environment of this country] → *Element being asked about*

45: What elements in the economic environment of this country are likely to affect marketing strategies for these kinds of products significantly?

OBJECTIVE_INFLUENCE
Dependent_situation [marketing strategies]
Influencing_situation [elements in the economic environment of this country] → *Element being asked about*

41: What are the emerging companies' visions and objectives?

PURPOSE
Agent [emerging companies]
Goal [X] – visions and objectives → *Element being asked about*

31: In the past two years, which investment banking firms have done initial public offerings similar in size and scope to our business?

SIMILARITY
Entities [investment banking firms] → *Element being asked about*
Dimension [that have done initial public offerings similar in size and scope to our business]

24: Where can I find information on executive recruiters - names, addresses, and areas of specialization?

SOURCE_OF_GETTING
Goal [I]
Theme [information on executive recruiters – names, addresses, and areas of specialization?]
Source [X] → *Element being asked about*

29: What financing sources are available for the acquisition?

SOURCE_OF_GETTING
Theme [for acquisition]
Source [X] → *Element being asked about*

32: Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?

SOURCE_OF_GETTING
Goal [I]
Theme [specialized professionals – accounting firms, attorneys, auditors, and a stock transfer agent]
Source [X] → *Element being asked about*

35: What venture capital sources are available?

SOURCE_OF_GETTING
Theme [venture capital]
Source [X] → *Element being asked about*

26: What are the capital structure and financial market's conditions in the country the project is carried on?

STATE_OF_ENTITY
Entity [the country the project is carried on]
Parameter [capital structure and financial market]
State [conditions] → *Element being asked about*

28: For a particular target company, what is the financial status of the company?

> **STATE_OF_ENTITY**
> Entity [a particular target company]
> Parameter [financial]
> State [status] → *Element being asked about*

42: What are the strengths and limitations of the companies?

> **STATE_OF_ENTITY**
> Entity [companies]
> State [strengths and limitations] → *Element being asked about*

7: For an industry of interest, I need an industry overview and discussion of trends in it.

> **SUMMARIZING**
> State_of_affairs [industry of interest]
> Summary [industry overview and discussion of trends] → *Element being asked about*

9: For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?

> **SUMMARIZING**
> State_of_affairs [company of interest]
> Summary [company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on] → *Element being asked about*

16: I need information about its [the Myer-Briggs personality-type indicator assessment] use for these purposes [gaining information about our employees to improve communication and to develop teams in combination with other approaches in other organizations or firms],

> **USING**
> Agent [I]
> Instrument [the Myer-Briggs personality-type indicator assessment]
> Purpose [for these purposes]
> Role [X] → *Element being asked about*

17: especially about its effectiveness for these objectives.

> **USEFULNESS**
> Entity [it (Myer-Briggs personality-type indicator assessment)]
> Purpose [these objectives]
> Degree [use for these purposes in other organizations or firms, especially its effectiveness] → *Element being asked about*

Appendix F. Frame Analysis Results

Assessing

Definition	
An Assessor examines a Phenomenon to figure out its Value according to some Feature of the Phenomenon. This Value is a factor in determining the acceptability of the Phenomenon. In some cases, a Method (implicitly involving an Assessor) is used to determine the Phenomenon's Value.	
Core elements	
Assessor	The sentient entity that evaluates the Phenomenon.
Feature	The type of property or feature that the Phenomenon is being judged on.
Medium	Medium is the physical entity or channel used by the Assessor to make the assessment.
Method	An event or procedure that allows the Assessor to evaluate the Phenomenon.
Phenomenon	The entity whose Value according to a Feature is being measured.
Non-core elements	
Beneficiary	This extrathematic FE applies to participants that derive a benefit from the occurrence of the event specified by the target predicate. Further, the target predicate should involve some sort of Agent that intends that the benefit go to the Beneficiary.
Circumstances	The state of the world at a particular time and place.
Co_participant	A person who participates along with the Assessor in the assessing event.
Degree	This frame element selects some gradable attribute and modifies the expected value for it.
Depictive	This FE describes a participant of the state of affairs introduced by the target as being in some state during the action. The depicted state does not necessarily or usually facilitate or cause the state of affairs reported by the target.
Evidence	Some fact perceived by the Assessor which leads to their evaluation of the Phenomenon.
Frequency	This frame element is defined as the number of times assessing occurs per some unit of time.
Manner	Any secondary effect of the action or characterization of the Assessor which saliently affects the character of the assessment.
Means	The means by which assessment occurs
Place	The location where the assessing takes place.
Purpose	The goal that the Assessor hopes to accomplish by assessing the Phenomenon.
Result	The result of the assessing.
Standard	An entity that the Phenomenon is compared to in the assessment.
Time	The time at which the Assessor makes the assessment.

Value	The value (according to some scale) that the Phenomenon is deemed to have. The Value is taken to indicate the Phenomenon's acceptability.

11: What information can you find that would allow us to assess the market potential for our product in this market segment?
18. How should one go about measuring how successful change efforts have been?
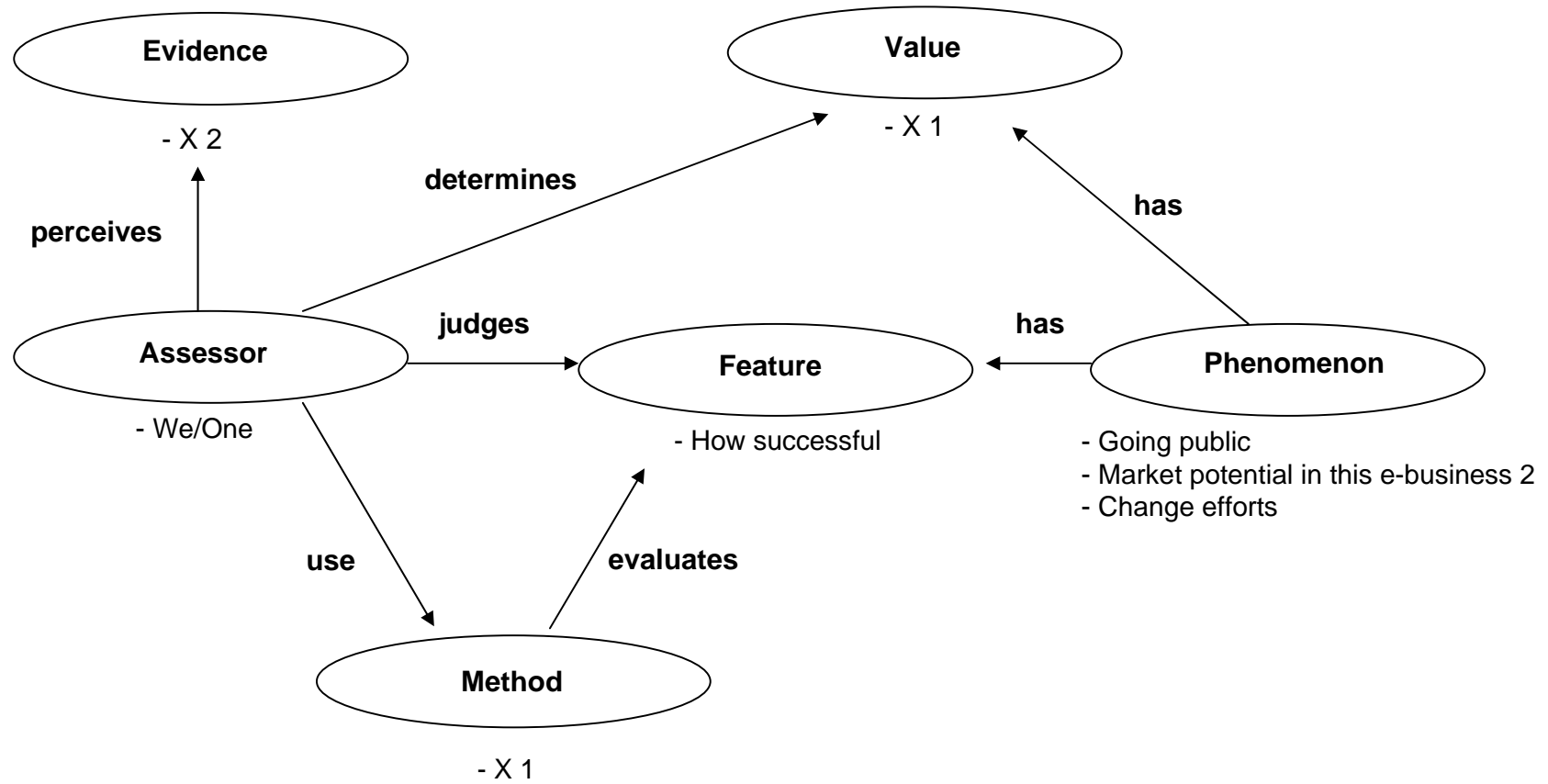30: What are the risks and opportunities of going public?
38: Please find whatever information you can that would allow me to assess the market potential in this e-business.

Question no.	Core elements					Non-core elements				
	Ass	Fea	Med	Met	Phe	Ben	Cir	Co	Deg	Dep
11	√	√								
18	√	√			√					
30					√					
38	√				√					

Non-core elements									
Evi	Fre	Man	Mea	Pla	Pur	Res	Sta	Tim	Val
X^1									
			X^2						
									X^3
X^4									

Focal entity type – X^1: Customers, X^2: Topic, X^3: Topic, X^4: Customers

<Assessing concept map>

Evidence
- X 2

perceives

Value
- X 1

determines

has

Assessor
- We/One

judges

Feature
- How successful

has

Phenomenon
- Going public
- Market potential in this e-business 2
- Change efforts

use

evaluates

Method
- X 1

Choosing

Definition
A Cognizer decides upon the Chosen (either an item or a course of action) out of a set of Possibilities . The Cognizer may have an Intended_purpose for the Chosen. Often a Reason, which serves as the basis of the choice, is given.

Core elements

Chosen	Chosen identifies the entity or course of action which is selected from among the Possibilities.
Cognizer	The Cognizer chooses the Chosen out of the Possibilities.
Possibilities	A cognizer makes a choice from among a set of Possibilities. Possibilities are commonly expressed via an oblique phrase which indicates the alternative or alternatives, or by a subordinate clause (choosing to do it or choosing not to do it), typically headed by "whether or "if".

Non-core elements

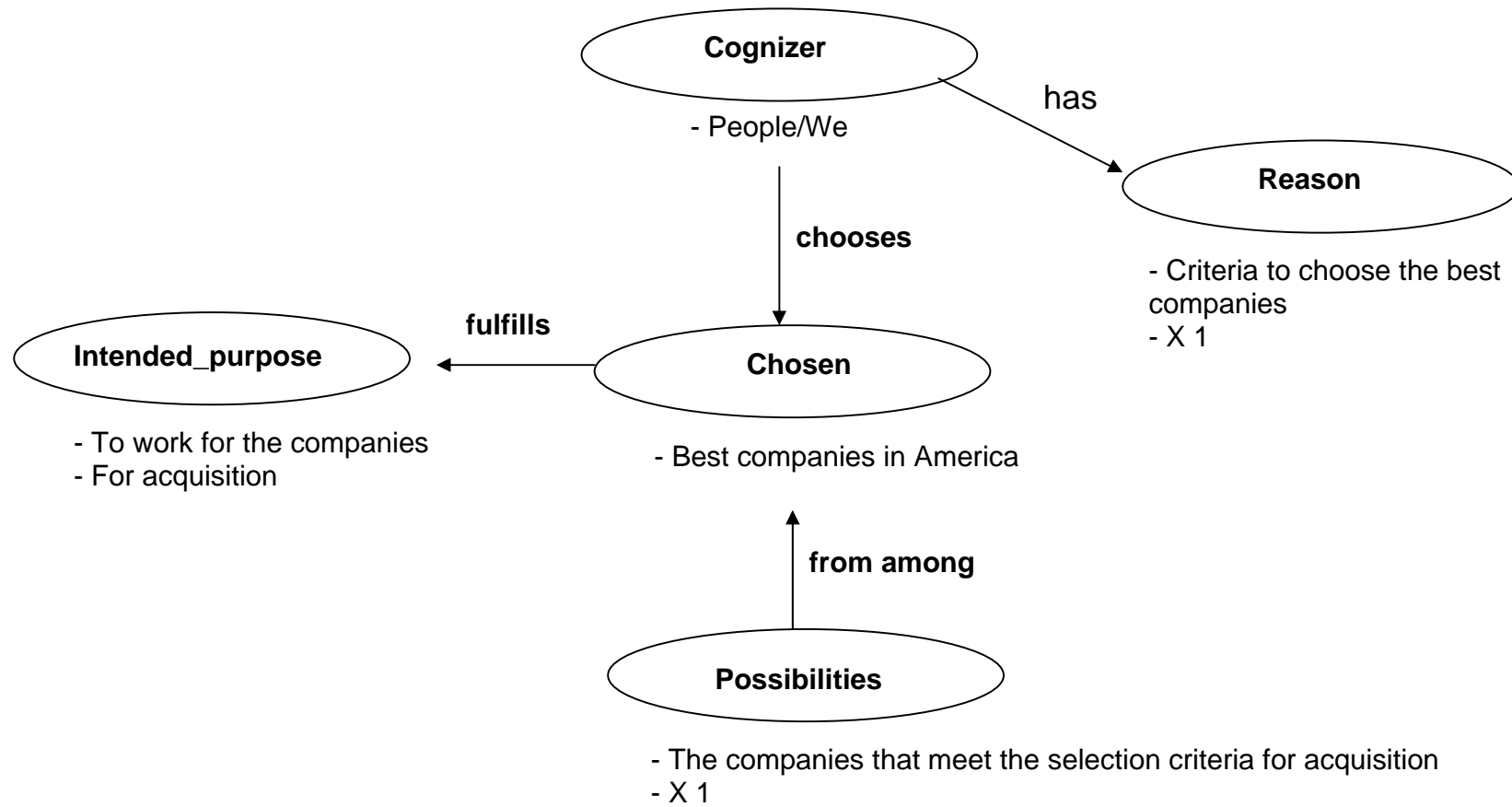|	
Depictive	Depictive labels an independent descriptor of a Cognizer in a choosing event.
Intended_purpose	The Cognizerintends the Chosen to fulfill an Intended_purpose.
Larger_purpose	This FE identifies the Larger_purpose for which the Cognizer chooses. It exemplifies what the Cognizer hopes to accomplish by choosing the particular Chosen.
Manner	Any description of the selecting event which is not covered by more specific FEs, including epistemic modification (probably, presumably, mysteriously), secondary effects (quietly, loudly), and general descriptions comparing events (the same way). It may indicate salient characteristics of a Cognizer that also affect the action (presumptuously, coldly, deliberately, eagerly, carefully).
Means	This FE identifies the Means by which the Cognizer accomplishes the choosing.
Place	This FE identifies the Place where the choosing occurs.
Reason	This FE identifies the Reason for which the Cognizer chooses the Chosen.
Time	This FE identifies the Time when the Cognizer chooses the Chosen.
Topic	Topic occurs quite rarely in this frame and usually only as a PP Complement of a noun target.

22: What are the criteria that people use when they vote for "Best Companies in America to Work for?"
27: How do we identify companies meet our selection criteria for acquisition?

	Core elements			Non-core elements								
Q no.	Cho	Cog	Pos	Dep	Int	Lar	Man	Mea	Pla	Rea	Tim	Top
22		√			√					X^1		
27	√	√	X^2		√							

Focal entity type - X^1: Topic, X^2: Company – list

<Choosing concept map>

Cognizer

- People/We

has

Reason

- Criteria to choose the best companies
- X 1

chooses

fulfills

Intended_purpose

- To work for the companies
- For acquisition

Chosen

- Best companies in America

from among

Possibilities

- The companies that meet the selection criteria for acquisition
- X 1

Coming_to_be

Definition
An Entity comes into existence at a particular Place and Time which may take a certain Duration_of_endstate, have a Cause, or be formed from Components.

Core elements
Entity   Concrete or abstract entity that did not exist before the Time of the event.
Non-core elements
Cause   This FE labels the Cause of the formation of the Entity.
Components   This FE identifies the components out of which the Entity forms.
Duration_of_endstate   This FE identifies the length of time that the Entity exists after coming to be.
Period_of_iterations   This FE identifies the Period_of_Iterations during which habitual or iterative actions are performed.
Place   This is the Place where the new Entity comes into being.
Role   The form in which the Entity comes to be.
Time   This FE identifies the Time when a new Entity comes into existence.

40: Which companies are emerging in the industry?

| Q no. | Core element | Non-core elements | | | | | | |
	Entity	Cause	Components	Duration	Period	Place	Role	Time
40	X[1]					√		

Focal entity type - X[1]: Company - list

<Coming_to_be concept map>

Entity

comes into existence

Place

- X 1

- In the industry
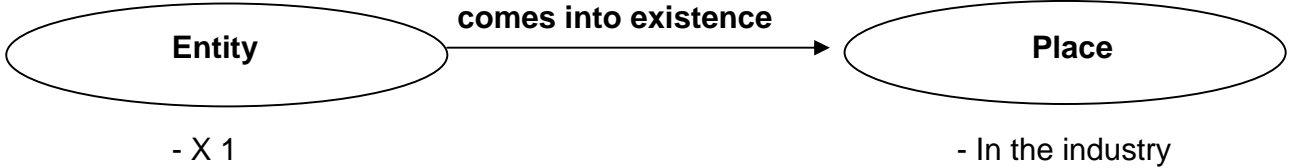
Commerce_scenario

Definition
Commerce is a situation in which a Buyer and a Seller have agreed upon an exchange of Money and Goods (possibly after a negotiation), and then perform the exchange, optionally carrying it out with various kinds of direct payment or financing or the giving of change.

Core elements
Buyer   The Buyer has the Money and wants the Goods.
Goods   Goods are anything including labor or time, for example, which is exchanged for Money in a transaction.
Money   Money is given in exchange for Goods in a transaction.
Seller   The Seller has the Goods and wants the Money.
Non-core elements
Manner   Manner of performing an action
Means   The means by which a commercial transaction occurs.
Purpose   A state of affairs that the agent intends to bring about as a result of participating in the Commercial Transaction.
Rate   In some cases, price or payment is described per unit of Goods.
Unit   This FE is any unit in which goods or services can be measured. Generally, it occurs in a by-PP.
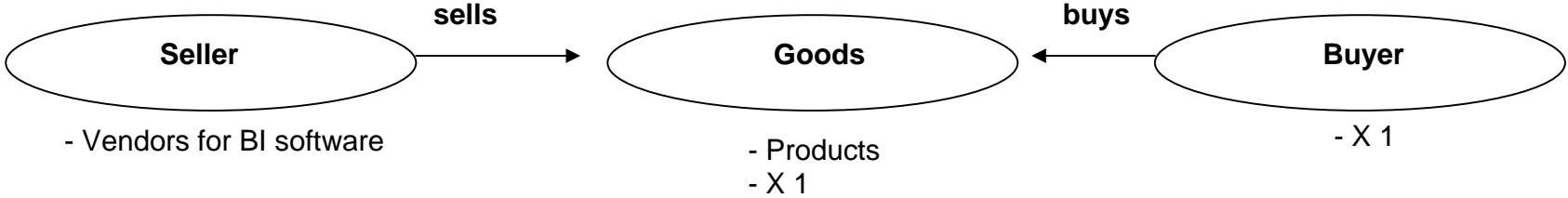

2: What do they offer?
39: Who are the potential customers for these types of products?

Q no.	Core elements				Non-core elements				
	Buyer	Goods	Money	Seller	Manner	Means	Purpose	Rate	Unit
2		X^2		√					
39	X^1	√							

Focal entity type – X^1: Product, X^2: Customers

\<Commerce_scenario concept map\>

Seller

- Vendors for BI software

sells →

Goods

- Products
- X 1

← **buys**

Buyer

- X 1

Compatibility

Definition
Item-1 and Item-2 are compatible with each other if they can exist or function together in some context without problems, conflict, or other undesirable situation. The set of Item-1 and Item-2 may be expressed jointly as Items. The Degree to which the Items are compatible may also be indicated, as may be a Parameter along whose lines the Items are compatible.

Core elements

Item_1	The Frame Element Item_1 marks the grammatically more prominent of the two entities, i.e.the subject in active clauses, when they are expressed separately.
Item_2	The Frame Element Item_2 marks the grammatically less prominent of the Items when they are expressed separately.
Items	This FE is used when the Items are expressed jointly in a phrase, either a plural or a coordinated NP.
Parameter	This Frame Element is used for expressions that indicate a Parameter or respect in which the Items are said to be compatible, not in conflict.

Non-core elements

Degree	This Frame Element is used for expressions that indicate the extent to which two Items are compatible.

36: Which venture capitalists' preferences would match our company profile?

Q no.	Core elements				Non-core element
	Item_1	Item_2	Items	Parameter	Degree
36	√	X[1]		√	

Focal entity type - X[1]: Company – list

<Compatibility concept map>
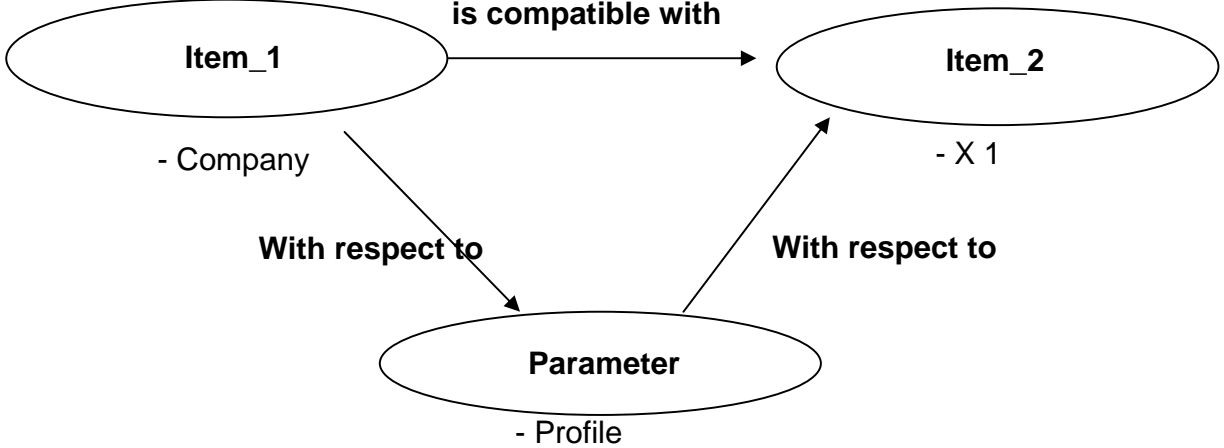
Competition

<div style="border:1px solid">

Definition
This frame is concerned with the idea that people (Participant_1, Participant_2, or Participants) participate in an organized rule governed activity (the Competition) in order to achieve some advantageous outcome (often the Prize). Rank and Score are different criteria by which the degree of achievement of the advantageous outcome is judged.

Core elements
Competition   This FE is used for the name of the competition.
Participant_1   This FE identifies the first (or only) participant in a competition.
Participant_2   This FE identifies the second participant in a competition.
Participants   This FE is used for plural NP participants in a competition.
Non-core elements
Degree   This FE describes the intensity of competition.
Duration   FN: This FE is used to describe the length of time over which competition occurs.
Manner   The way the Participants compete.
Means   The action the Participants (or Participant_1) is involved in that constitutes a Competition.
Place   Where the event takes place. A constituent tagged as Place may require annotation on a secondary FE-layer.
Prize   This FE indicates a prize won in a competition.
Purpose   This FE is used to describe the intended outcome of the competition.
Rank   This FE is used for the ranked results of a competition, and is translatable into a numerical value.
Score   This FE is used for the score in a game.
Time   The period of time when the Competition occurs.
Venue   This FE is for the named venue of a competition, particularly when the place has been built for the purpose of a competition.

</div>

37: Who are the competitors?

	Core elements				Non-core elements										
Q no.	Com	Part1	Part2	Parts	Deg	Dur	Man	Mea	Pla	Pri	Pur	Ran	Scor	Tim	Ven
37			X^1												

Focal entity type - X^1: Company - list

<Competition concept map>

- Company

compete with

Participant_1

Participant_2

- X 1
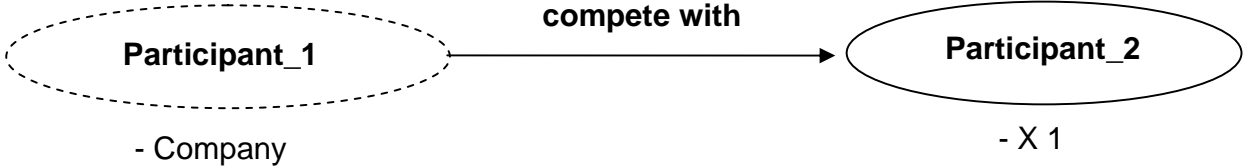
Note: Participant_1, which is implicit in the question, is represented in dash line.

Distinctiveness

Definition
A Feature of an Entity serves to distinguish the Entity from other members of its type which have a different value for the Feature. Note that the Entity is often implicit.

Core elements
Entity   The item which differs from other members of its class in the Feature's value.
Feature   The aspect of the Entity which makes it different from the other members of its class.
Non-core elements
Degree   The extent to which the values of the Feature of the Entity and the Comparison_set are similar to each other.

12: What are the characteristics of potential customers, e.g., attitudes, lifestyles, and so on?
13: What are the characteristics of the target market?
19: Would you please identify and characterize some successful change strategies that can be used within an organization, with particular attention to sequencing the strategies themselves or elements within them?
20: Would you please find any characterizations of the culture in Latin American pharmaceutical firms or information that would help us to characterize that culture ourselves?
43: What are the characteristics of the target customers in a particular foreign country, e.g. Japan?
46: What are the characteristics of target customers, e.g., attitudes, lifestyles, and so on?
48: What are the elements of successful loyalty programs?

| Q no. | Core elements | | Non-core element |
	Entity	Feature	Degree
12	√	X^1	
13	√	X^2	
19	√	X^3	
20	√	X^4	
43	√	X^5	
46	√	X^6	
48	√	X^7	

Focal entity type – X^1: Customers, X^2: Customers, X^3: Topic, X^4: Company - features, X^5: Customers, X^6: Customers, X^7: Topic

<Distinctiveness concept map>

Entity —— **has** ——→ Feature
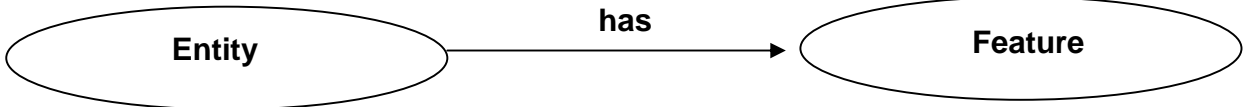
- Target market
- Potential customers
- Target customers in a particular foreign country
- Successful loyalty programs
- Successful change strategies
- Culture in Latin American pharmaceutical firms

- X 6

Evaluative_comparison

Definition
This frame is about the static comparison of an Profiled_item to a Standard_item, often with respect to some Attribute. In this frame, there is an inherent asymmetry between Profiled_item and Standard_item in that the two cannot be expressed jointly as a subject. Degree expressions are also found that indicate how close the items are to each other on the scale evoked by the Attribute. Furthermore, the particular value of the standard or item on a certain scale may be given by the Standard_attribute of the Profiled_attribute respectively.

Core elements
Attribute   This Frame Elements marks constituents that indicate in which respect Item-1 and Item-2 are equal to each other.
Profiled_attribute   The Profiled_attribute is a particular value on a scale which is being compared to a Standard_item or Profiled_attribute.
Profiled_item   In active sentences, the Profiled_item is the grammatically more prominent one of the items that are compared and realized as the subject.
Standard_attribute   The Standard_attribute is used when the standard is a specific value on a scale.
Standard_item   In active setnnces, the Standard_item is the grammatically less prominent element, i.e. the object or an oblique.
Non-core elements
Comparison_set   The Comparison_set includes the Standard_item and is what the Profiled_itemis judged with respect to.
Degree   This Frame Element marks expressions that indicate how close the Profiled_item and the Standard_item are to each other on the scale evoked by the Attribute.
Manner
Place   The location where the Profiled_item rivals the Standard_item.
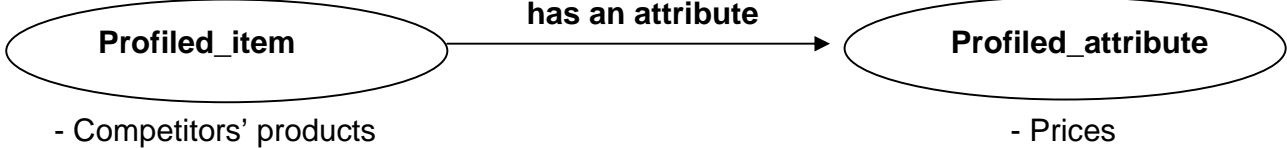Time   The time at which the Profiled_item rivals the Standard_item.

14: What are the competitors' prices for comparable products?

Q no.	Core elements					Non-core elements				
	Attribute	Pro_attr	Pro_item	Sta_attr	Sta_item	Com_set	Degree	Manner	Place	Time
14		X^1	√							

Focal entity type - X^1: Product

\<Evaluative_comparison concept map\>

Profiled_item ── **has an attribute** ──▶ **Profiled_attribute**

- Competitors' products

- Prices

First_rank

Definition
An Item is located at the top end of a scale of importance or social rank (or some other Attribute) in comparison to other members of a Contrast_set (usually, implicit) that is otherwise similar in kind to the Item. Oftentimes, the limits of the Contrast_set are determined by an expression of the Limits_of_consideration.

Core elements
Contrast_set   The Contrast_set is a group of entities similar to the Item out of which the Item is the most preeminent.
Item   An Item is the foremost thing in the Contrast_set.
Limits_of_consideration This FE identifies the domain (usually temporally or spatially defined) within which the Item is primary among its kind.

Non-core elements
Attribute   The Attribute of the Item which is under consideration.

8: Who are the major players, i.e., which are the leading companies in the field?
23: Which companies in our industry are known for having the best practices?

	Core elements			Non-core element
Q no.	Contrast_set	Item	Limits_of_consideration	Attribute
8		X^1	√	
23		X^2	√	

Focal entity type – X^1: Company – list, X^2: Company – list

<First_rank concept map>

Item

- X 2

is top in the domain

Limits_of_consideration

- In our industry
- In our field

Have_as_requirement

33: What are the filing requirements [for an IPO]?

	Core elements			Non-core elements						
Q no.	Dependent	Req_ent	Req	Condition	Degree	Domain	Exp	Place	Req_ind	Time
33	√		X^1							

Focal entity type - X^1: Law

<Have_as_requirement concept map>

Dependent

requires

Requirement

- IPO

- Filing requirements
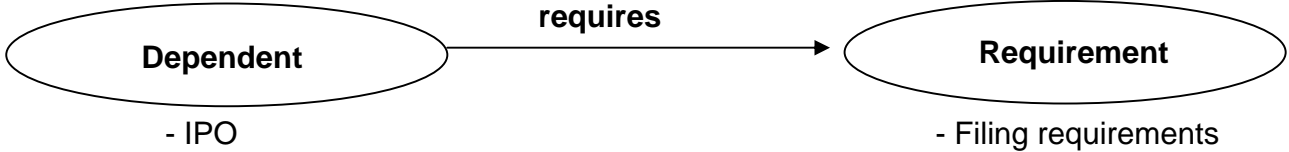
Instance

<table>
<tr><td>

Definition
This frame concerns transparent nouns that denote Instances of Types of entities or events.

Core elements
Instance   A thing or episode of a certain Type.
Type   The category of thing or event of which an Instance is picked out.
Non-core elements
Instance_Prop   A property of the Instance.

</td></tr>
</table>

1: Who are the vendors for Business Intelligence (BI) software?
6: Which providers are available for information systems and services outsourcing?

	Core elements		Non-core element
Question no.	Instance	Type	Instance_Prop
1	X^1	√	
6	X^2	√	

Focal entity type - X^1: Company – list, X^2: Company – list

<Instance concept map>

- X 2

- Vendors for Business Intelligence (BI) software
- Providers for information systems and services outsourcing

Law
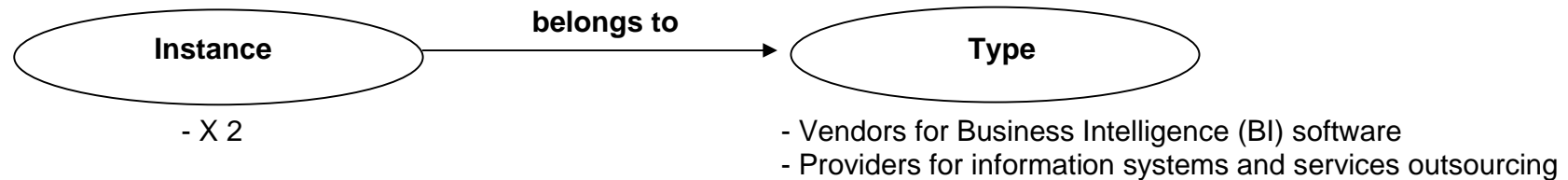
Definition
Definition
A Law regulates activities or states of affairs within a Jurisdiction, dictating what Required states should be the case and what Forbidden states should not.
Core elements
Forbidden — The state-of-affairs which is disallowed by the Law.
Law — This FE identifies the rule designed to guide activity, deprecating some types of activity and/or requiring other types of activity.
Required — A state-of-affairs which the Law declares must be maintained.
Non-core elements
Creator — An individual or individuals that bring the Law into existence.
Jurisdiction — The location where a given Law is in force.
Name — The term used to refer to a Law.
Part — Any indication of what makes up the Law.
Time_of_creation — The time at which a Law comes into existence.
Type — An indication of the subtype of Law.
Use — The use for which a law is intended.

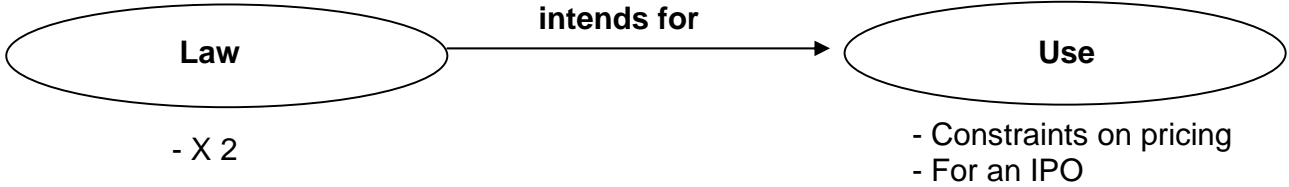5: What are the land use regulations that affect land development in the area?
15: Are there legal constraints on pricing?
34: What are the SEC rules/regulations for an IPO?

	Core elements			Non-core elements							
Question no.	Forbidden	Law	Required	Creator	Jurisdiction	Name	Part	Time	Type	Use
5		X^1								√
15		X^2								√
34		X^3								√

Focal entity type – X^1: Law, X^2: Law, X^3: Law

<Law concept map>

Law

intends for

Use

- X 2

- Constraints on pricing
- For an IPO

Locale_by_use

<table>
<tr><td colspan="2">

Definition
Geography as defined by use.

Core elements
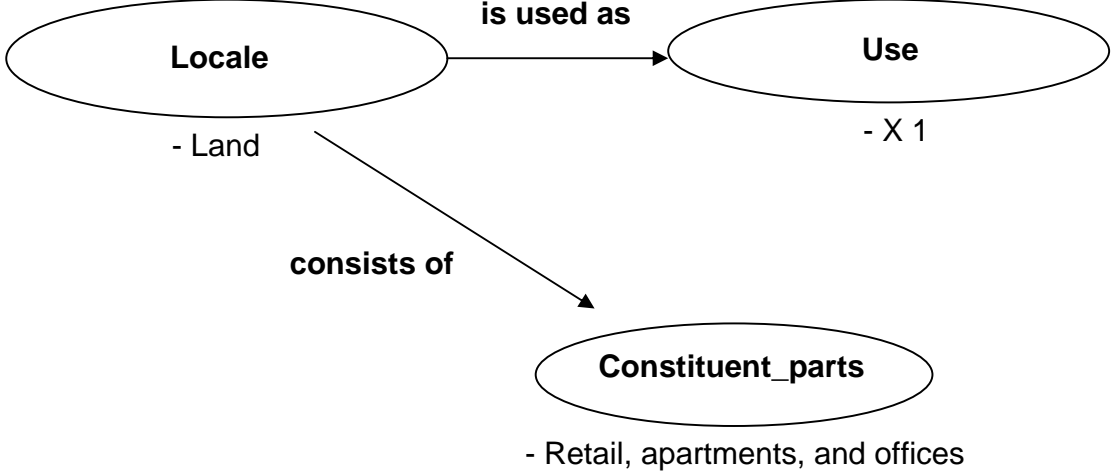|	
Locale	A stable bounded area. It is typically the designation of the nouns of Locale-derived frames.
Use	The activity that is carried out in the Locale.

Non-core elements
Constituent_parts	Salient parts that make up a Locale.
Container_possessor	The location that the Locale is a part of.
Descriptor	Any feature or characteristic of the Locale not covered by more specific FEs.
Formational_cause	Indicates the action (or causer) which brings the features of the Locale about.
Name	This FE is used for the Names of Locales.
Relative_location	A place that a Locale is located with respect to.

</td></tr>
</table>

3: I need to determine how land within a mile or so of the land I'm considering is being used, for example, the mix of big box retail, specialty retail and entertainment, apartments, and offices.

	Core elements		Non-core elements					
Question no.	Locale	Use	Con_parts	Con_posssessor	Descriptor	Formational_cause	Name	Relative_location
3	√	X[1]	√					

Focal entity type - X[1]: Topic

<Locale_by_use concept map>

Locale

is used as

Use

- Land

- X 1

consists of

Constituent_parts

- Retail, apartments, and offices

Means

Definition
An Agent makes use of a Means (either an action or a (system of) entities standing in for the action) in order to achieve a Purpose.

Core elements
Agent   The Agent uses the Means to achieve a Purpose.
Means   The action performed by the Agent.
Purpose   The goal or purpose of the Agent.

10: Considering my background, how should I develop my resume so that I can actually get a job?
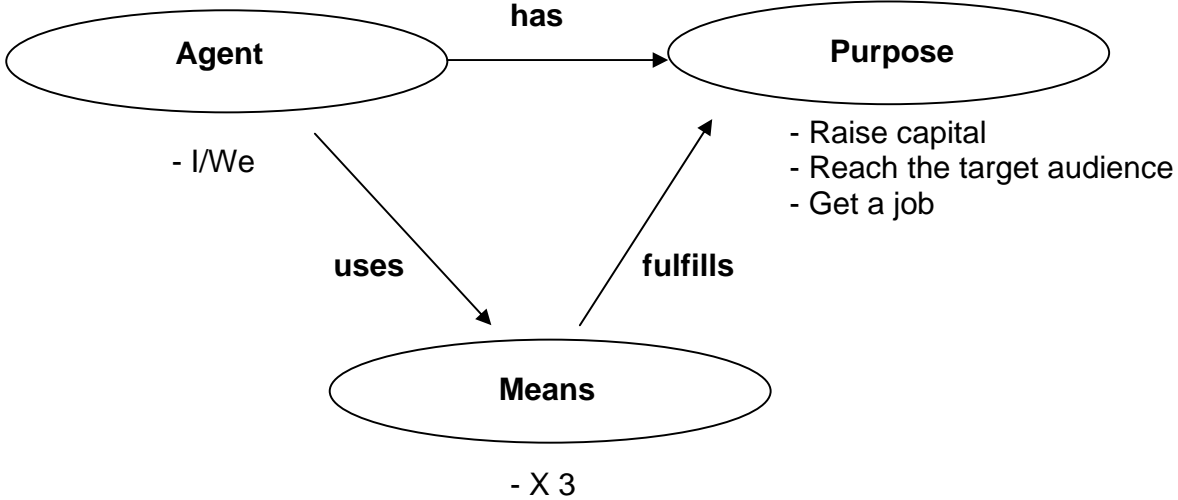25: What methods of raising capital are available either domestically or internationally?
47: What kind of advertising plan is most appropriate if we want to reach this target audience?

Question no.	Core elements		
	Agent	Means	Purpose
10	√	X^1	√
25		X^2	√
47	√	X^3	√

Focal entity type - X^1: Topic, X^2: Topic, X^3: Topic

<Means concept map>

Measurable_attributes

Definition
An Entity has a particular scalar Attribute with some Value. An absolute Value may be specified or the Value pertaining to the Entity may be implicitly compared to other possible Value(s).

Core elements
Attribute   The feature of an Entity which is under discussion.
Degree   A modifier expressing the deviation of the Value from the norm.
Entity   The Entity for which a particular gradable Attribute is appropriate and under consideration.
Value   A quantity or other characterization of the Entity's state with respect to the Attribute.
*Non-core elements*
Circumstances   Some specification of the circumstances under which the Entity has a particular Value for the Attribute
Time   The Time during which the Entity is in the state of having a particular Value for the Attribute.

21: What is the standard or normal turnover rate in this industry?

Question no.	Core elements				Non-core elements	
	Attribute	Degree	Entity	Value	Circumstances	Time
21	√		√	X[1]		

Focal entity type - X[1]: Industry

<Measurable_attributes concept map>

Entity

has

Attribute

- Industry

- Standard turnover rate

contains

Value

- X 1
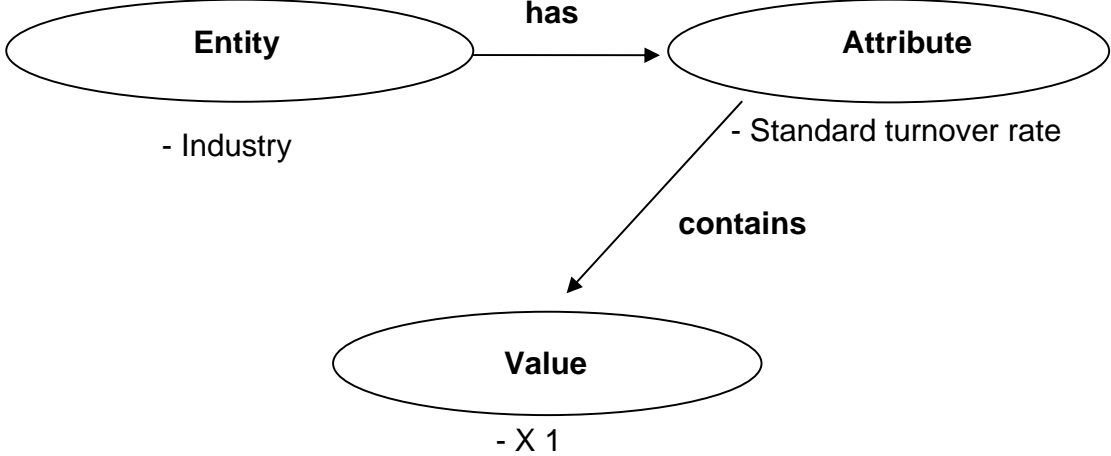
Needing

Definition
The speaker believes that some state of affairs or entity (the Requirement) must be present in order to cause some other dependent state of affairs to occur (the Dependent). In the typical case, the Cognizer desires the occurrence of the Dependent and so also desires the obtainment or occurrence of the Requirement.

Core elements
Cognizer	The Cognizer requires or believes he/she requires the Requirement to hold so that the Dependent will occur.
Consequences	An undesirable state-of-affairs that results if the Requirement is not met.
Dependent	The state-of-affairs which cannot hold without the Requirement.
Requirement	The entity or state-of-affairs that must be present or obtain in order for the Dependent to obtain.

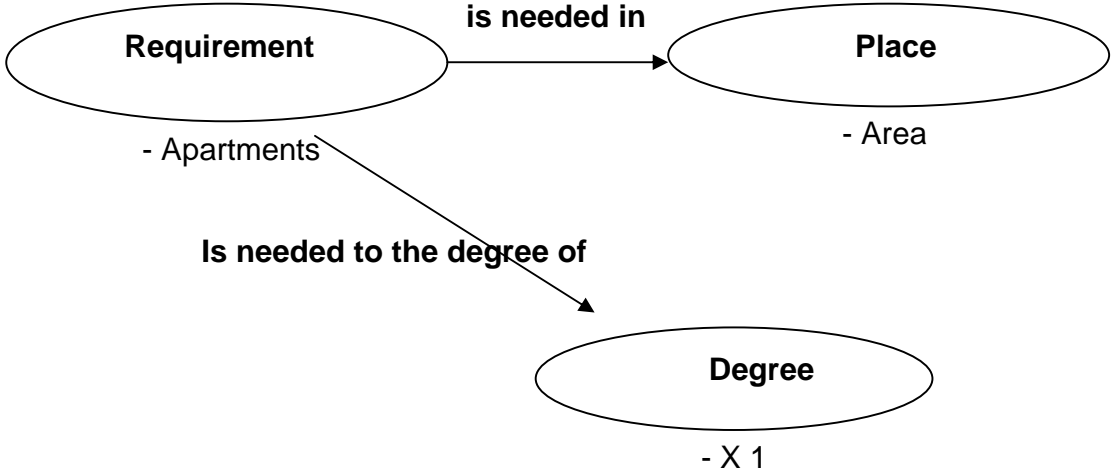*Non-core elements*
Circumstances	Some specification of the conditions under which the Requirement is likely to be needed.
Degree	The extent to which the Dependent depends on the presence of the Requirement.
Place	The location of the Cognizer when he/she requires the Requirement.
Time	The Time at which the Cognizer requires the Requirement.

4: What is the market demand for apartments in this area?

	Core elements				Non-core elements			
Question no.	Cognizer	Consequences	Dependent	Requirement	Circumstances	Degree	Place	Time
4				√		X^1	√	

Focal entity type - X^1: Topic

<Needing concept map>

Requirement

is needed in

Place

- Apartments

- Area

Is needed to the degree of

Degree

- X 1

Objective_influence

<table>
<tr><td colspan="2">

Definition
An Influencing_variable, an Influencing_situation, or an Influencing_entity has an influence on a Dependent_entity, Dependent_variable, or a Dependent_situation.

Core elements

</td></tr>
<tr><td>Degree</td><td>The Degree to which the Influencing_entity effects the Dependent_entity.</td></tr>
<tr><td>Dependent_entity</td><td>An entity, usually a thing, that is influenced in its behavior by an Influencing_entity or an Influencing_situation.</td></tr>
<tr><td>Dependent_situation</td><td>A situation that whose temporal or other characteristics are influenced by an Influencing_entity, Influencing_event, or Influencing_variable.</td></tr>
<tr><td>Dependent_variable</td><td>A scalar variable, whose value depends on the behavior of an Influencing_entity, a Influencing_variable, or an Influencing_situation.</td></tr>
<tr><td>Influencing_entity</td><td>A thing or person whose behavior has an effect on an Dependent_situation, Dependent_variable, or Dependent_entity.</td></tr>
<tr><td>Influencing_situation</td><td>N/A</td></tr>
<tr><td>Influencing_variable</td><td>A scalar variable (with unspecified value) which has an effect on the Dependent_entity, Dependent_variable, or Dependent_situation.</td></tr>
<tr><td colspan="2">

Non-core elements

</td></tr>
<tr><td>Manner</td><td>Any description of the event which is not covered by more specific FEs, including force (hard, softly), secondary effects (quietly, loudly), and general descriptions comparing events (the same way). It may also indicate salient characteristics of an Influencing_entity that also affect the action (presumptuously, coldly, deliberately, eagerly, carefully).</td></tr>
<tr><td>Place</td><td>The location at which the influencing occurs.</td></tr>
<tr><td>Time</td><td>The time at which the influence occurs.</td></tr>
</table>

44: What elements in the cultural environment of this country are likely to affect marketing strategies for these kinds of products significantly?
45: What elements in the economic environment of this country are likely to affect marketing strategies for these kinds of products significantly?

Question no.	Core elements							Non-core elements		
	Degree	Dep_ent	Dep_sit	Dep_var	Inf_ent	Inf_sit	If_var	Manner	Place	Time
44			√			X^1				
45			√			X^2				

Focal entity type - X^1: Country, X^2: Country

<Objective_influence concept map>

Dependent_situation

influences

Influencing_situation

- Marketing strategies 2

- X 2

Purpose

Definition
An Agent wants to achieve a Goal, or an object, a Means , has been created or is used to allow the creator or a user to achieve a Goal. The Goal is a state of the world that does not currently obtain but which the Agent wants to realize and is planning and/or working towards.

Core elements

|	
Attribute	This FE marks expressions that indicate an Attribute for which it is the Agent's goal that it have or reach a particular Value .
Value	This FE marks expressions that indicate which Value the Agent wants the Attribute to reach.
Agent	The volitional actor who intends to achieve a goal.
Goal	The action or state of affairs that the Agent wants to achieve.
Means	A Means is an object that is used or designed to achieve a particular Goal.

Non-core elements

Domain	This frame element expresses a sphere of activity within which an Agent has a Goal.
Restrictor	This FE marks expressions that indicate a spatial or temporal or individual framework relative to which the Goal is said to hold. More than one Restrictor can be mentioned.
Time	This Frame Element expresses a time period during which an Agent had a particular Goal.

41: What are the emerging companies' visions and objectives?

	Core elements					Non-core elements		
Question no.	Attribute	Value	Agent	Goal	Means	Domain	Restrictor	Time
41			√	X[1]				

Focal entity type - X[1]: Company - features

<Purpose concept map>

Agent

- Emerging companies

has →

Goals

- X 1
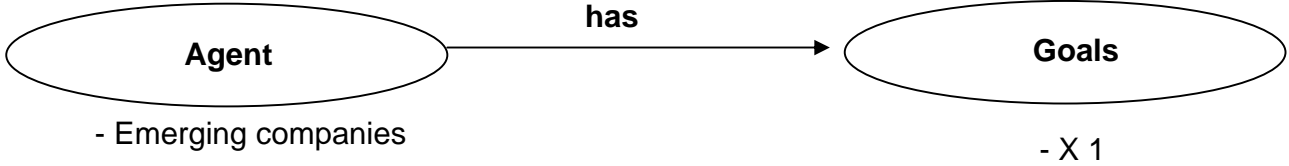
Similarity

Definition
Two or more distinct entities, which may be concrete or abstract objects or types, are characterized as being similar to each other. Depending on figure/ground relations, the entities may be expressed in two distinct frame elements and constituents , Entity_1 and Entity_2, or jointly as a single frame element and constituent, Entities. The similarity may be based on appearance, physical properties, or other characteristics of the two entities. However, no such Dimension has to be specified explicitly. The Entities may be like each other to a greater or lesser Degree. Notice that, although similarity presupposes the notion of a judge who assesses similarity, that judge is not part of the frame of similarity.

Core elements
Entities   This FE marks constituents that express the set of objects or types whose similarity is at issue.
Entity_1   When there is an asymmetry, Entity_1 is the entity characterized by its similarity to Entity_2, whose characteristics are assumed to be known. Entity_1 is often an external argument.
Dimension   This FE marks constituents which express a property in respect to which the similarity of the entities is assessed.
Entity_2   When the Entities are expressed separately, Entity_2 is the one whose characteristics are assumed to be known; it serves as a basis for establishing characteristics of Entity_1.
Non-core elements
Cause   An inanimate entity or process that causes the similarity.
Depictive   This FE is used for any Depictive phrase describing the state of the Entities.
Manner   This FE identifies the Manner in which Dimension is similar or different.
Place   The Place is the general area in which similarity occurs or exists.
Time   This FE identifies the Time when the similarity occurs or exists.
Degree   The extent to which entities are similar to each other, in general or with respect to some Dimension(s).

31: In the past two years, which investment banking firms have done initial public offerings similar in size and scope to our business?

Question no.	Core elements				Non-core elements					
	Entities	Entity_1	Dimension	Entity_2	Cause	Depictive	Manner	Place	Time	Degree
31	X^1		√							

Focal entity type - X^1: Company – list

<Similarity concept map>

```
  _____                                    _____
 /           \      are similar in terms of     /           \
(   Entities  ) ----------------------------->  (  Dimension )
 _____/                                   _____/

   - X 1                        - That have done initial public offerings
                                  similar in size and scope to our business
```

Source_of_getting

Definition
A Goal has a Source from which it has gotten a Theme. The Goal may be a sentient recipient who has actively obtained the Theme but it may also be a non-sentient entity that gets the Theme as a result of natural or other processes that it does not control.

Core elements
Goal   An entity or individual that has acquired a Theme from the Source.
Source   A concrete or abstract entity from which the Goal has gotten the Theme.
Theme   The abstract or concrete thing acquired by the Goal from the Source.
Non-core elements
Descriptor   Any evaluative or descriptive characterization of the Source, pertaining either to temporary or permanent properties.

24: Where can I find information on executive recruiters - names, addresses, and areas of specialization?
29: What financing sources are available for the acquisition?
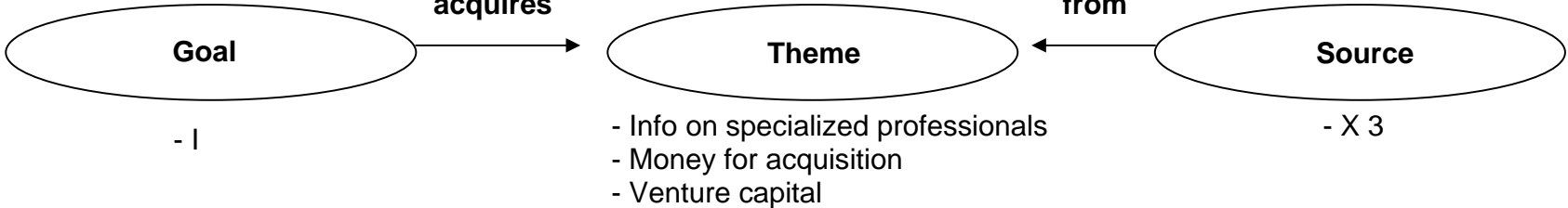32: Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?
35: What venture capital sources are available?

| | Core elements | | | Non-core element |
Question no.	Goal	Source	Theme	Descriptor
24	√	X^1	√	
29		X^2	√	
32	√	X^3	√	
35		X^4	√	

Focal entity type – X^1: Topic, X^2: Company – list, X^3: Company – list, X^4: Topic

<Source_of_getting concept map>

Goal

acquires

Theme
- Info on specialized professionals
- Money for acquisition
- Venture capital

from

Source

- I

- X 3

State_of_entity

<table>
<tr><td>Definition
An Entity is in a specified State. When not explicitly specified, the State usually concerns the Entity's health, repair of functioning. The State is also often assessed with an Evaluation and it may be specified to apply only to a particular Parameter of the Entity.

Core elements
Entity   The entity whose State is specified and/or evaluated.
State   A relation in which the Entity participates or a property that the Entity possesses.
Non-core elements
Evaluation   An assessment or characterization of the Entity's State.
Parameter   A subpart or characteristic of the Entity that is in a specified State.</td></tr>
</table>

26: What are the capital structure and financial market's conditions in the country the project is carried on?
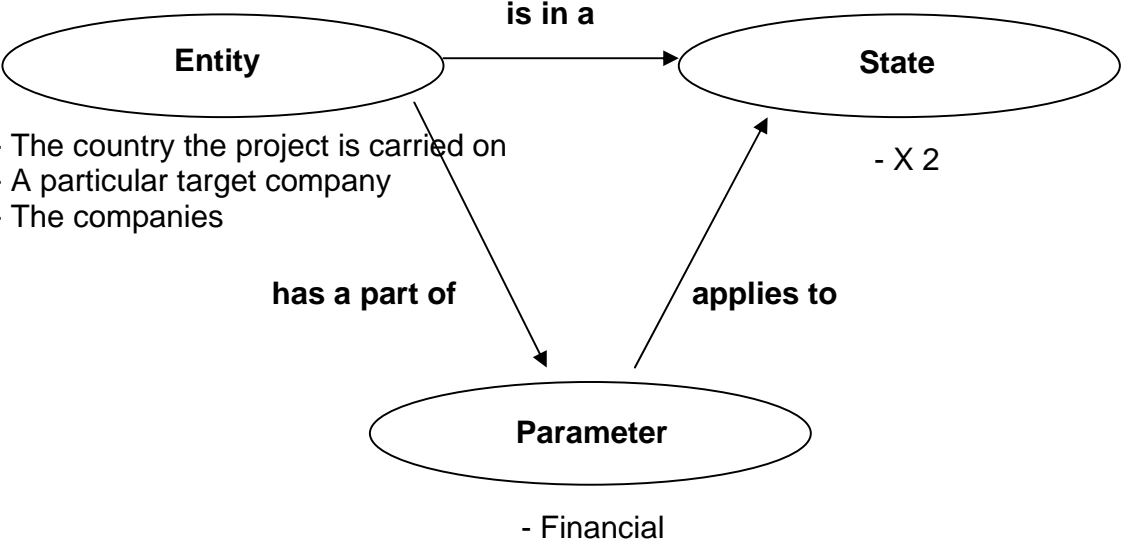
28: For a particular target company, what is the financial status of the company?

42: What are the strengths and limitations of the companies?

Question no.	Core elements		Non-core elements	
	Entity	State	Evaluation	Parameter
26	√	X^1		√
28	√	X^2		√
42	√	X^3		

Focal entity type - X^1: Country, X^2: Company – features, X^3: Company - features

\<State_of_entity concept map\>

is in a

Entity

- The country the project is carried on
- A particular target company
- The companies

State

- X 2

has a part of

applies to

Parameter

- Financial

Summarizing

7: For an industry of interest, I need an industry overview and discussion of trends in it.

9: For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?

Question no.	Core elements			Non-core elements							
	Com	Med	Sta	Add	Dur	Man	Mea	Pla	Pur	Sum	Tim
7			√							X^1	
9			√							X^2	

Focal entity type - X^1: Industry, X^2: Company - features

<Summarizing concept map>

State_of_affairs   **is summarized into** → Summary

- Industry of interest
- Company of interest

- X 2
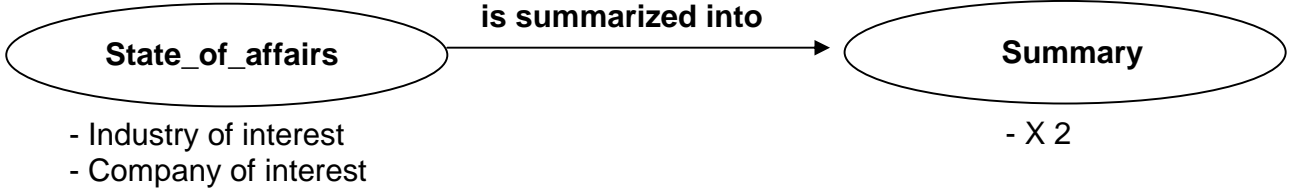
Usefulness

Definition An Entity aids in the successful completion of a Purpose. Its Degree of utility may also be expressed. *Core elements* Entity   The item which is useful for some purpose. Purpose   The kind of task which is promoted by the use or presence of the Entity. *Non-core elements* Degree   The amount that the presence of the Entity aids in the completion of the (desirable) Purpose.

17: especially about its effectiveness for these objectives.

	Core elements		Non-core elements
Question no.	Entity	Purpose	Degree
17	√	√	X^1

Focal entity type - X^1: Topic

<Useful concept map>

Entity
is useful for → **Purpose**

- Myer-Briggs personality-type
  indicator assessment

- To gain info about employees to improve communication
  and to develop teams in combination with other approaches

to the degree of

Degree

- X
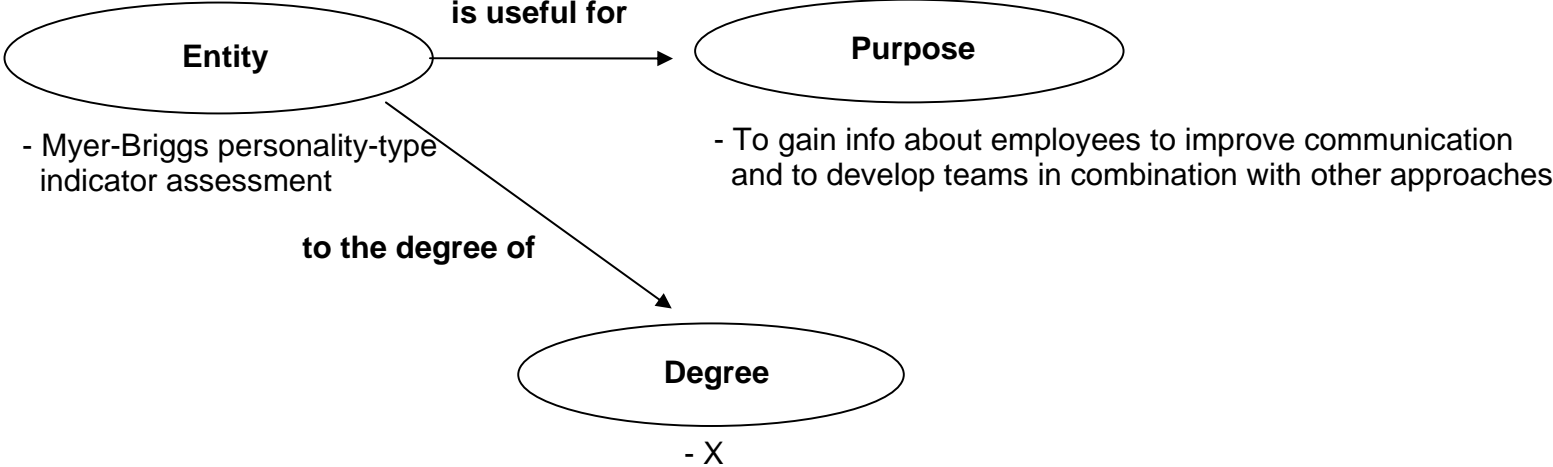
Using

Definition	
An Agent manipulates an Instrument in order to achieve a Purpose.	
Core elements	
Agent	The Agent uses the Instrument to achieve their Purpose.
Instrument	An entity directed by the Agent that serves to bring about the Purpose of the Agent.
Purpose	This FE identifies the purpose for which an Agent uses the Instrument.
Role	An Instrument that has a function associated with it.
Non-core elements	
Circumstances	Circumstances describe the state of the world (at a particular time and place) which is specifically independent of the event itself and any of its participants.
Containing_event	An event within which the Agent uses the Instrument. Often, the Containing_event will also give an indication of the Agent's Purpose.
Co_participant	A person who participates along with the Assessor in the assessing event.
Depictive	This FE describes a participant of the state of affairs introduced by the target as being in some state during the action. The depicted state does not necessarily or usually facilitate or cause the state of affairs reported by the target.
Explanation	The Explanation denotes a proposition from which the main clause (headed by the target) logically follows. This often means that the Explanation causes the target's proposition, but not in all cases.
Frequency	This frame element is defined as the number of times an event occurs per some unit of time. A Frequency expression answers the question "how often."
Group	This FE identifies the population within which the Using event occurs.
Manner	Any description of the intentional act which is not covered by more specific FEs, including secondary effects (quietly, loudly), and general descriptions comparing events (the same way). In addition, it may indicate salient characteristics of an Agent that also affect the action (deliberately, eagerly, carefully).
Means	This FE identifies the Means by which an Agent uses the Instrument.
Outcome	The Outcome is the failure or success of the Agent's using the Instrument to achieve their Purpose.
Period_of_iterations	This FE modifies a clause with an iterative interpretation, which may be signified by the simple present tense on the main verb.
Place	This FE identifies the place where the Agent uses the Instrument.
Time	This FE identifies the time when the Agent uses the Instrument.

16: I need information about its [the Myer-Briggs personality-type indicator assessment] use for these purposes [gaining information about our employees to improve communication and to develop teams in combination with other approaches in other organizations or firms],

Question no.	Core elements				Non-core elements					
	Age	Ins	Pur	Role	Cir	Con	Co	Dep	Exp	Fre
16	√	√	√	X^1						

Non-core elements						
Gro	Man	Mea	Out	Per	Pla	Tim

Focal entity type - X^1: Topic
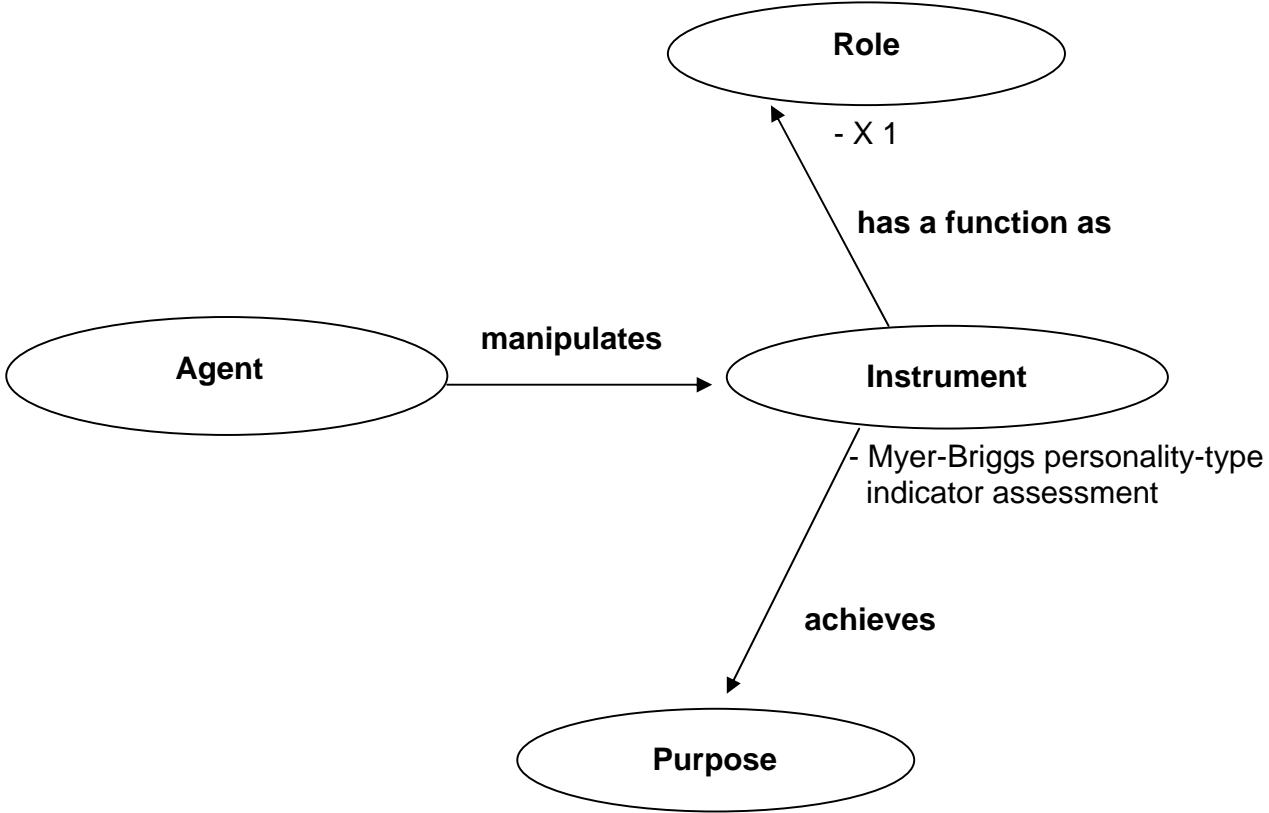
<Using concept map>

Role

- X 1

has a function as

Agent **manipulates** Instrument

- Myer-Briggs personality-type
  indicator assessment

achieves

Purpose

- To gain info about employees to improve communication
  and to develop teams in combination with other approaches

Appendix G. Summary of Reponses

1. Who are the vendors for Business Intelligence (BI) software?

Information types needed	N of responses (N=3)	Databases & information needed
Directories	3	▪ ThomasNet - to find businesses, products and consultants
Magazine/journal articles	1	▪ Magazine/journal articles may describe how the product worked for another company and also rate the various products.
Market research reports	1	▪ *Forrester, Faulkner's,* the library's IT research guide
Product catalogs/reviews	1	▪ ThomasNet
Total	6	
Average	2	

      Directories in the field would be quick to identify companies that sell the software. In addition, magazine/journal articles would supplement to see how the product worked for another company.

2. What do they [the vendors for Business Intelligence (BI) software] offer?

Information types needed	N of responses (N=3)	Databases & information needed
Directories	3	▪ ThomasNet - to find businesses, products and consultants
Magazine/journal articles	1	▪ Magazine/journal articles may describe how the product worked for another company and also rate the various products.
Market research reports	1	▪ *Forrester, Faulkner's,* the library's IT research guide
Product catalogs/reviews	1	▪ ThomasNet
Total	6	
Average	2	

       Directories in the field would be quick to identify companies that sell the software. In addition, magazine/journal articles would supplement to see how the product worked for another company.

3. I need to determine how land within a mile or so of the land I'm considering is being used, for example, the mix of big box retail, specialty retail and entertainment, apartments, and offices. Assume he gives the location.

Information types needed	N of responses (N=2)	Databases & information needed
Directories	2	▪ ReferenceUSA - to collect a list of companies within a specific range of the area the client is interested in
Newspaper articles	2	▪ Business Wire - to review recent articles in the local newspaper ▪ Factiva - for possible coverage of the area
Etc	1	▪ Local municipal planning and/or business licensing agencies, Local chambers of commerce, Financial institutions in the area
Magazine/journal articles	1	▪ BSP - for possible coverage of the area ▪ Factiva - for possible coverage of the area
Statistics/demographics	1	▪ American FactFinder, Census of Business - for economic census and city & county business pattern data
Total	7	
Average	3.5	

Directories would be quick to collect a list of companies within a specific range of the area and statistics would provide business pattern data and economic census in the area. Articles would provide recent information on the local area.

4. What is the market demand for apartments in this area?

Information types needed	N of responses (N=2)	Databases & information needed
Newspaper articles	2	▪ Business Wire - to review local newspaper articles on population growth and housing development ▪ BSP, Factiva, LNA - for any coverage of the housing market in the specific area
Statistics/demographics	2	▪ US Census - for housing starts and population data ▪ Government agencies - for housing statistics or demand ▪ Local boards of realtors - for a report on market for multiple family housing
Magazine/journal articles	1	
Total	5	
Average	2.5	

Articles and statistics would provide housing development statistics and related issues. This question requires only 2.5 information types on average.

5. What are the land use regulations that affect land development in the area?

Information types needed	N of responses (N=2)	Databases & information needed
Laws/regulations	2	▪ Local government agencies or state agencies depending on the jurisdictions involved, Local urban planning office
Magazine/journal articles	1	
Newspaper articles	1	▪ America's Newspapers, BSP, Factiva, LNA
Total	4	
Average	2	

       Laws/regulations that regulate land use surely would give a straightforward data and article searches would provide additional insights into it.

6. Which providers are available for information systems and services outsourcing?

Information types needed	N of responses (N=2)	Databases & information needed
Product catalogs/reviews	2	▪ Thomas Register
Directories	1	▪ Local telephone directory, Thomas Register
Industry reports	1	▪ S&P Industry Surveys
Magazine/journal articles	1	
Market research reports	1	▪ *Forrester or Gartner*
Newspaper articles	1	▪ BSP - An article search about the top companies in the industry
Total	7	
Average	3.5	

Product catalogs/reviews and directories would find out which supplier companies are available for the information systems/services outsourcing. Article searches would identify the top companies in the industry. Product catalogs/reviews would also allow for comparison among the companies' products/services for decision making.

7. For an industry of interest, I need an industry overview and discussion of trends in it.

Information types needed	N of responses (N=2)	Databases & information needed
Industry reports	2	▪ S&P Industry Surveys - to find out trends and current information about the industry
Magazine/journal articles	2	▪ BSP ▪ Factiva - for articles in trade journals; A good way to learn about new things going on in an industry.
Newspaper articles	2	▪ BSP
Investment analyst reports	1	▪ Investment analyst reports provide industry overviews with financials and competitors
Monographs	1	
Statistics/demographics	1	
Etc	0	▪ The Vault Guides - to find out about career searches within that particular industry
Total	9	
Average	4.5	

Industry reports and investment analyst reports typically provide overview and trends of an industry. Beside, articles are a good way to learn about current business news.

8. And who are the major players, i.e., which are the leading companies in the field?

Information types needed	N of responses (N=2)	Databases & information needed
Industry reports	2	▪ S&P Industry Surveys - lists who they consider to be a leader in each industry
Investment analyst reports	2	▪ Investment analyst reports point out which companies in an industry are leading the way ▪ RRD
Magazine/journal articles	2	▪ Fortune magazine - provides lists about the "best" companies
Newspaper articles	2	
Company profiles	1	
Directories	1	
Financial reports	1	
SWOT analysis	1	
Total	12	
Average	6	

Industry reports and investment analyst reports usually indicate leading companies in the industry. Magazine/journal/newspaper articles also provide various rankings about the best companies.

9. For a company of interest, what is the company profile, including its culture and values, in addition to more standard information about its size, product emphasis, and so on?

Information types needed	N of responses (N=2)	Databases & information needed
Company profiles	2	▪ The company's website offers information about their culture and values ▪ Hoover's Online
Magazine/journal articles	2	▪ BSC, BSP, Factiva - articles may provide insight on the culture of a company.
Newspaper articles	2	
Directories	1	
Etc	1	▪ Company website
Financial reports	1	▪ Thomson ONE Banker
Investment analyst reports	1	▪ Investment analyst reports may provide insight on the culture of a company. ▪ RRD
Monographs	1	
SWOT analysis	1	
Total	12	
Average	6	

Company websites and company profiles provided by fee-based databases are good resources to obtain basic information about a company. Articles would also provide insight on the culture of a company.

10. Considering my background, how should I develop my resume so that I can actually get a job?

Information types needed	N of responses (N=2)	Databases & information needed
Monographs	2	▪ *Monographs about resume writing*
Etc	1	▪ Company website - to use the same types of terminology on her resume that the company uses to describe itself
Magazine/journal articles	1	
Newspaper articles	1	▪ BSP - to find out more about what's going on with the company right now so she can position herself to fit in with that company
Total	5	
Average	2.5	

While monographs would provide resume writing tips, a company website and articles would be useful for scanning the current issues in the company.

11. What information can you find that would allow us to assess the market potential for our product in this market segment?

Information types needed	N of responses (N=4)	Databases & information needed
Magazine/journal articles	4	▪ ABI/Inform, BSP, Factiva, LNA - to determine how active the market is and what potential issues might be arising in the marketplace
Newspaper articles	4	▪ Factiva, LNA
Industry reports	3	
Investment analysis reports	3	▪ Investext
Market research reports	3	▪ MarketResearch.com - to determine if there is a market report that relates to the display lighting market. This database could provide useful statistics and projections
Company profiles	2	
Etc	2	▪ Trade/professional association and publications for internal reports and contacts
Consumer analysis reports	1	
Directories	1	▪ Associations Unlimited - to locate large national trade groups in the field ▪ ReferenceUSA - to generate a list of potential customers; arenas, concert support agencies, etc.
Patents/trademarks	1	
Statistics/demographics	1	
Total	25	
Average	6.25	

An initial scan of the business literature would be useful to determine how active the market is and what potential issues might be arising. Market research data presented in market research reports, industry reports, and investment analyst reports would provide industry trends, statistics, and projections, etc.

12. What are the characteristics of potential customers, e.g., attitudes, lifestyles, and so on?

Information types needed	N of responses (N=4)	Databases & information needed
Magazine/journal articles	4	▪ BSP
Consumer analysis reports	3	
Statistics/demographics	3	
Industry reports	2	▪ S&P Net Advantage
Market research reports	2	▪ IBIS World, MarketLine, MarketResearch.com - for reports on analysis or statistical data on consumer behavior
Newspaper articles	2	▪ Factiva, Regional Business News – to find information about regional companies and activities
Company profiles	1	
Financial reports	1	
Investment analysis reports	1	
Directories	0	▪ Thomas Register - to seek out information service and supplier companies for this industry
Product catalogs/reviews		
SWOT analysis		
Total	19	
Average	4.75	

  To explore the characteristics of potential customers, the respondents agreed with the selection of magazine/journal article databases. Market research reports, consumer analysis reports, and statistics would also provide reports on analysis or statistics data about consumer behaviors.

13. What are the characteristics of the target market?

Information types needed	N of responses (N=4)	Databases & information needed
Market research reports	4	▪ MarketLine
Industry reports	3	
Investment analysis reports	3	▪ TBI – for analyst reports about the industry which might discuss market factors.
Magazine/journal articles	3	▪ Factiva, LNA - for Advertising Age (trade publication) ▪ Factiva – for market data
Case studies	2	
Company profiles	2	
Consumer analysis reports	2	
Statistics/demographics	2	
SWOT analysis	2	▪ BSP
Etc	1	▪ Company, association websites - for reports/internal contacts
Newspaper articles	1	▪ Factiva – for environmental scans
Product catalogs/reviews	1	▪ Trade catalogs ▪ Article databases - for product reviews
Total	26	
Average	6.5	

To know the characteristics of the target market, the respondents unanimously selected market research reports. When market research reports are not available, article search databases would be useful to do an aggregated search to see if any trade or business publications cite market research data. It was found that in general, article search databases such as Factiva and Business Source Premier (BSP) were a good means to lead for other resources when other means are not available to access the particular resources.

14. What are the competitors' prices for comparable products?

Information types needed	N of responses (N=4)	Databases & information needed
Product catalogs/reviews	4	▪ Competitor catalogs, equipment manufacturers catalogs - to survey prices for similar products
Market research reports	3	▪ RRD
Etc	2	▪ Phone call or store visit, Advertisement, Web search
Industry reports	2	▪ B&I, PROMT
Investment analysis reports	2	▪ TBI – for investment analyst reports which might discuss price points in the industry
Magazine/journal articles	2	
Newspaper articles	2	▪ BSP
Case studies	1	
Consumer analysis reports	1	
Statistics/demographics	1	
SWOT analysis	1	
Total	21	
Average	5.25	

To know the competitors' prices of comparable products, product catalogs/reviews would give information directly on that. Various reports and magazine/journal/newspaper articles which might discuss prices in the industry could supplement the data gathered from the product catalogs/reviews. Phone call, store visit, advertisements, and Web searching are alternative approaches to find out the prices.

15. Are there legal constraints on pricing?

Information types needed	N of responses (N=3)	Databases & information needed
Industry reports	2	▪ S&P's Market Insight – to look for discussion of how the industry operates, including regulations if applicable
Laws/regulations	2	▪ US laws annotated for US ▪ Dept of Commerce, EIU - for other countries
Magazine/journal articles	2	▪ ABI/Inform - to look for discussions of regulations in business terms rather than legalize
Case studies	1	
Country reports	1	
Financial reports	1	
Newspaper articles	1	▪ *Business Aggregators in particular licensing/IP newsletters*
Total	10	
Average	3.3	

To know the legal constraints on pricing, official laws/regulations are a natural choice. In addition to them, industry reports and journal/magazine/newspaper articles are deemed important to look for discussion of regulations from the industry's perspective.

16. I need information about its [the Myer-Briggs personality-type indicator assessment] use for these purposes [as a way of gaining information about our employees] in other organizations or firms

Information types needed	N of responses (N=3)	Databases & information needed
Etc	3	▪ Myers-Briggs website - lists links to articles about the test, and companies that implemented it ▪ SHERM or other professional associations from HR websites - will cover legal issues, successes, failures, implementation, case studies, and possibly recommend tests ▪ Web searches using a search engine or company blogs - to find other examples of companies that have used MBTI ▪ Mental Measurements Yearbook
Magazine/journal articles	3	▪ ABI/Inform - for HR focused articles about other companies' practices ▪ BSP, PsycInfo ▪ Human resources journals - to see if they have profiled any companies or if there have been research papers on using MBTI to improve communications and develop teams
Case studies	2	▪ LNA
Newspaper articles	2	▪ Factiva - news articles may feature other companies who have done similar testing, and mention problems, lawsuits, or successes. ▪ LNA
Company profiles	1	▪ LNA
Total	11	
Average	3.6	

It is hard to find this information in official reports. Related websites and article search databases would be better resources to find out examples of the assessment method and articles that discuss the use of the method.

17. Especially about its [the Myer-Briggs personality-type indicator assessment] effectiveness for these objectives [as a way of gaining information about our employees].

Information types needed	N of responses (N=3)	Databases & information needed
Etc	3	▪ Myers-Briggs website - lists links to articles about the test, and companies that implemented it ▪ SHERM or other professional associations from HR websites - will cover legal issues, successes, failures, implementation, case studies, and possibly recommend tests ▪ Web searches using a search engine or company blogs - to find other examples of companies that have used MBTI ▪ Mental Measurements Yearbook
Magazine/journal articles	3	▪ ABI/Inform - for HR focused articles about other companies' practices ▪ BSP, PsycInfo ▪ Human resources journals - to see if they have profiled any companies or if there have been research papers on using MBTI to improve communications and develop teams
Case studies	2	▪ LNA
Newspaper articles	2	▪ Factiva - news articles may feature other companies who have done similar testing, and mention problems, lawsuits, or successes. ▪ LNA
Company profiles	1	▪ LNA
Total	11	
Average	3.6	

It is hard to find this information in official reports. Related websites and article search databases would be better resources to find out examples of the assessment method and articles that discuss the use of the method.

18. How should one go about measuring how successful change efforts have been?

Information types needed	N of responses (N=3)	Databases & information needed
Magazine/journal articles	3	▪ Journal articles could include an analysis section that does a SWOT on using MBTI ▪ ABI/Inform - for HR focused articles about other companies' practices ▪ BCRC, BSP, LNA
Case studies	2	▪ Case studies could include an analysis section that does a SWOT on using MBTI. ▪ HBS website
Newspaper articles	2	▪ Newspaper articles could include an analysis section that does a SWOT on using MBTI.
Etc	1	▪ Company websites - for specific analysis of using MBTI ▪ SHERM, other hr assoc websites (identified by Associations Unlimited)
SWOT analysis	1	▪ To analyze strengths and weaknesses
Total	9	
Average	3	

For a similar reason as the previous question, articles, case studies, and related websites would be good at providing examples or similar experiences of other companies.

19. Would you please identify and characterize some successful change strategies that can be used within an organization, with particular attention to sequencing the strategies themselves or elements within them?

Information types needed	N of responses (N=3)	Databases & information needed
Magazine/journal articles	3	▪ *EBSCO, FirstSearch, ProQuest* - for articles on Knowledge Management and Organizational Behavior
Case studies	2	
Monographs	2	▪ For case studies published on their successful or unsuccessful transformation
Newspaper articles	2	▪ ABI/Inform, BSP, Factiva, GBF – articles won't give the perfect framework, but ideas to work off of.
SWOT analysis	1	
Total	10	
Average	3.3	

Articles, case studies, and monographs would provide examples or similar experiences of other companies.

20. Would you please find any characterizations of the culture in Latin American pharmaceutical firms or information that would help us to characterize that culture ourselves?

Information types needed	N of responses (N=3)	Databases & information needed
Company profiles	3	▪ Hoover's Online, OneSource International - to identify the regional pharmaceutical firms ▪ MarketLine
Industry reports	3	▪ MarketLine ▪ Mergent Online, S&P Industry Survey – to see if there are any Latin American profiles for pharmaceuticals and to see if they discuss firm culture
Magazine/journal articles	3	▪ ABI/Inform, BCRC, BSP, LNA – for articles about those firms and their culture
Market research reports	3	▪ GMID – the Consumer Lifestyle portion for the different Latin American Countries. The consumer might reflect the culture of the firms in those countries.
Case studies	2	
Investment analysis reports	2	
Newspaper articles	2	▪ LNA - about the culture by industry segment
Country reports	1	▪ CIA World Factbook ▪ EIU country profiles - for drawing informed conclusions, financial climate reports, etc. ▪ MarketLine
Directories	1	
Statistics/Demographics	1	▪ NTD - to see if there was any discussion of the industry for Latin America or some of the countries
SWOT analysis	1	
Total	22	
Average	7.3	

To identify the regional pharmaceutical firms and to understand the culture of individual companies, company profiles are necessary. Industry reports, market research reports, and articles might discuss Latin American pharmaceutical companies' culture in general.

21. What is the standard or normal turnover rate in this industry?

Information types needed	N of responses (N=2)	Databases & information needed
Industry reports	2	▪ BSC
Magazine/journal articles	2	▪ BSC - for trade journal articles ▪ Factiva - for industry-specific publications
Newspaper articles	2	▪ Factiva ▪ Gambling/entertainment association websites - for insiders' news
Case studies	1	
Market research reports	1	▪ BSC
Statistics/demographics	1	▪ BLS website - Job openings, hires, and total separations by industry
SWOT analysis		
Total	9	
Average	4.5	

Trade journals, industry-specific articles/publications, and industry reports would discuss the standard turnover rate in the industry. Statistics on job opinions and hires might give a hint at it too.

22. What are the criteria that people use when they vote for "Best Companies in America to Work for?"

Information types needed	N of responses (N=2)	Databases & information needed
Case studies	1	
Company profiles	1	
Etc	1	▪ greatplacetowork..com website
Financial reports	1	
Industry reports	1	
Laws/regulations	1	
Magazine/journal articles	1	▪ BSC - for Fortune magazine
Newspaper articles	1	▪ Factiva
Statistics/demographics	1	▪ National Compensation Survey, Occupational Employment Stats
SWOT analysis	1	
Total	10	
Average	5	

There is no single dominant resource found for this question. The respondents selected a website, magazine, statistics, and company profiles, etc. to scour literature to look for the criteria for best companies in America to work for.

23. Which companies in our industry are known for having the best practices?

Information types needed	N of responses (N=3)	Databases & information needed
Industry reports	3	
Magazine/journal articles	3	▪ LNA - for trade journals that discuss companies within industries, market leaders
SWOT analysis	3	▪ BSP
Case studies	2	
Company profiles	2	
Investment analysis reports	2	▪ Investext, First Call - analysis also comments on operations
Newspaper articles	2	▪ ABI/Inform, B&I ▪ LNA - includes many newspaper articles that discuss companies within industries, market leaders.
Etc	1	▪ Awards from the industry - trade press and associations ▪ Best Practices.com
Financial reports	1	
Market research reports	1	
Monographs	1	
Patents/trademarks	1	
Product catalogs/reviews	1	
Statistics/demographics	0	▪ The Economic Census - gives benchmark for the industry, but not "best practices." ▪ Business Rankings Annual (print) - for rankings of various kinds that would be indicators of a company's performance.
Total	23	
Average	7.6	

Analysts frequently comment on operations and discuss companies having the best practices in the industry, which are provided in investment analyst reports and industry reports. Magazine/journal/newspaper articles also discuss market leaders. If little is found in those reports and articles, rankings, statistics, and awards from the industry could be indicators of a company's performance.

24. Where can I find information on executive recruiters – names, addresses, and areas of specialization?

Information types needed	N of responses (N=3)	Databases & information needed
Directories	3	▪ Book of Lists - often list top exec recruiters for the city/area of interest and include areas of specialization ▪ LNA ▪ *Directories of executive directors*
Company profiles	2	▪ Hoover's Online - for company profiles, including some executive biographies, company overview, links to website, etc. ▪ LNA - has similar info to Hoovers
Magazine/journal articles	2	▪ LNA - for articles written on executive recruitment
Newspaper articles	2	▪ Factiva – newspaper articles in metro area of interest may mention key players and their true areas of specialization they're active in and that folks have hired them for. ▪ LNA
Etc	0	▪ Careerjournal.com - has tips on executive recruiting
Total	9	
Average	3	

Directories would be quick to find a list of executive recruiters by geographical areas or specialization areas. If the client who asks this question is interested in particular executives, company profiles include some executive biographies and their achievements. For general tips on executive recruitment, magazine/journal articles and career-related websites would be helpful.

25. What methods of raising capital are available either domestically or internationally?

Information types needed	N of responses (N=3)	Databases & information needed
Magazine/journal articles	3	▪ BSP, Factiva, LNA – to do an aggregated search to get a better handle on the topic
Country reports	2	▪ EIU Country Commerce, Country Reports, Country Finance, US State Department Country Commercial Guides - for background on any restrictions on working in the country
Newspaper articles	2	
Case studies	1	
Company profiles	1	
Directories	1	▪ Pratt directory, SDC Platinum VentureXpert - for venture capital
Financial reports	1	
Laws/regulations	1	
Monographs	1	
Total	13	
Average	4.3	

To identify methods to raise capital, magazine/journal/newspaper articles are an essential means to get a sense of what methods are available. Since the task behind this question is to carry on a project in a foreign country, country reports would supplement for background information on any restrictions on working in the country. Case studies, company profiles, directories, and other resources would be also helpful.

26. What are the capital structure and financial market's conditions in the country the project is carried on?

Information types needed	N of responses (N=3)	Databases & information needed
Country reports	3	▪ CIA World Factbook, EIU Country Commerce, Country Risk Guides, EIU ViewsWire, Euromonitor, U.S Country Commercial Guides - for discussions of economic and risk factors, and restrictions on doing business in the country
Magazine/journal articles	2	▪ ABI/Inform, BSP, Factiva
Newspaper articles	2	▪ Factiva, LNA
Case studies	1	
Company profiles	1	
Financial reports	1	
Laws/regulations	1	
Total	11	
Average	3.6	

In this question, country reports are most important resources to know the financial status of a country, which is not surprising. Magazine/journal/newspaper articles are always good to get a better handle on the subject and supplement the data gathered through any reports.

27. How do we identify companies that meet our selection criteria for acquisition?

Information types needed	N of responses (N=2)	Databases & information needed
Company profiles	2	
Financial reports	2	▪ Bloomberg, Capital IQ, Mergent Online
Investment analysis reports	2	▪ Investext
Directories	1	▪ SDC M&A - to look at trends in financial acquisitions
Industry reports	1	
Laws/regulations	1	
Magazine/journal articles	1	
Market research reports	1	
Newspaper articles	1	▪ Factiva
SWOT analysis	1	
Total	13	
Average	6.5	

Chances are high that no single source would answer this question. Various information types are needed to be combined to identify companies that meet the selection criteria. Financial reports, investment analysis reports, and company profiles would be helpful to look inside companies to judge their eligibility.

28. For a particular target company, what is the financial status of the company?

Information types needed	N of responses (N=2)	Databases & information needed
Company profiles	2	▪ BSC
Financial reports	2	▪ Bloomberg, Capital IQ – for stock information
		▪ EDGAR, Mergent Online, ORBIS
Industry reports	2	
Country reports	1	
Investment analysis reports	1	▪ Investext
Magazine/journal articles	1	▪ Factiva - for news, trade pubs, etc. including information about the company culture, etc.
SWOT analysis	1	
Newspaper articles	0	▪ Factiva - for news, trade pubs, etc. including information about the company culture, etc.
Total	10	
Average	5	

In-depth financial information including stock-related data provided in company profiles, financial reports, and industry reports would be most useful to answer this question. Magazine/journal/newspaper articles would also provide insights into the current financial status of the company.

29. What financing sources are available for the acquisition?

Information types needed	N of responses (N=2)	Databases & information needed
Investment analysis reports	2	▪ Investext
Financial reports	1	▪ Bloomberg, Capital IQ - for funding & historical funding ▪ SDC Platinum VentureXpert - for venture capital
Industry reports	1	
SWOT analysis	1	
Directories	0	▪ Galante, Pratt, Nelson's directories
Total	5	
Average	2.5	

Along with general investment information from investment analyst reports, financial transactions data would reveal the financing trends/patterns, and directories would provide information about companies that put together funding for ventures.

30. What are the risks and opportunities of going public?

Information types needed	N of responses (N=4)	Databases & information needed
SWOT analysis	4	▪ MarketLine
Case studies	3	▪ ABI/Inform, BSP, HBS website
Company profiles	3	▪ BCRC - to get as much info as possible about the company
Financial reports	3	▪ Financial reports - to understand where the company is today ▪ BCRC
Magazine/journal articles	3	▪ ABI/Inform, BSP
Newspaper articles	3	▪ Factiva, The Wall Street Journal
Industry reports	2	▪ BCRC
Investment analysis reports	2	
Laws/regulations	2	
Statistics/demographics	2	
Consumer analysis reports	1	
Total	28	
Average	7	

Because SWOT analysis describes both the opportunities and threats the company faces, it is naturally the most important resource to answer this question. However, the respondents suggested 7 types of information on average for this question because there is no single document that can answer this question. An aggregated data gathered from the multiple resources would give insights into the decision on going public. Case studies would help by describing the risks and opportunities a similar company experienced with their IPO. Company profiles, financial reports, magazine/journal/newspaper articles, and other reports would assist in understanding the current status of the company.

31. In the past two years, which investment banking firms have done initial public offerings similar in size and scope to our business?

Information types needed	N of responses (N=4)	Databases & information needed
Financial reports	3	▪ Zephyr, SDC Platinum, Bloomberg
Investment analysis reports	3	▪ BCRC, SDC Platinum, Thomson One Banker - the investment analyst reports would identify the banks involved.
Industry reports	2	▪ S&P Net Advantage
Magazine/journal articles	2	
Statistics/demographics	2	▪ Mergerstat
Company profiles	1	
Directories	1	
Etc	1	▪ Special focus databases with many screening variables
Total	15	
Average	3.75	

Financial reports of other companies, investment analysis reports, and industry reports would identify the banks in involved.

32. Where can I find specialized professionals such as accounting firms, attorneys, auditors, and a stock transfer agent to build a transaction team?

Information types needed	N of responses (N=4)	Databases & information needed
Directories	4	▪ Association directories, Corporate Finance Sourcebook (print), Crain's NY Book of Lists (print), Encyclopedia of Associations Online, Nelsons Directory of Investment Mgrs (print), the library's research guide to Financial Services resources
Etc	1	▪ Company websites
Financial reports	1	▪ Financial reports of other companies would identify the auditor.
Industry reports	1	
Magazine/journal articles	1	
Product catalogs/reviews	1	
Total	9	
Average	2.25	

      To find those professionals, specialized directories would be the best resources. The average number of information types needed across the respondents is very low (2.25) because the single information type, a directory is likely to completely cover the answer.

33. What are the filing requirements for an IPO?

Information types needed	N of responses (N=4)	Databases & information needed
Laws/regulations	4	▪ SEC website - the SEC filings, forms as well as the rules and regulations can be found. ▪ CCH Accounting Research Manager, LNA – rules and regulations are also available in variable detail.
Etc	1	▪ Stock exchange website/publications
Total	5	
Average	1.25	

This question is straightforward, asking the SEC rules, and thus, the SEC website and other laws/regulations resources would easily answer this question.

34. What are the SEC rules/regulations for an IPO?

Information types needed	N of responses (N=4)	Databases & information needed
Laws/regulations	4	▪ SEC website - the SEC filings, forms as well as the rules and regulations can be found. ▪ CCH Accounting Research Manager, LNA – rules and regulations are also available in variable detail.
Etc	1	▪ Stock exchange website/publications
Total	5	
Average	1.25	

This question is straightforward, asking the SEC rules, and thus, the SEC website and other laws/regulations resources would easily answer this question.

35. What venture capital sources are available?

Information types needed	N of responses (N=3)	Databases & information needed
Directories	2	▪ Galante's venture capital & private equity directory, Int'l Directory of Venture Capital Funds (print) - for a listing of venture capital firms
Financial reports	2	
Industry reports	2	
Monographs	2	
Etc	1	▪ Association websites (e.g., National Venture Capital Association)
Investment analysis reports	1	
Magazine/journal articles	1	▪ Journals such as Venture Capital Journal (print)
Newspaper articles	1	
Total	12	
Average	4	

Directories are regarded the best resources to identify venture capital sources by the respondents. Both electronic and print directories are available to answer this question.

36. Which venture capitalists' preferences would match our company profile?

Information types needed	N of responses (N=3)	Databases & information needed
SWOT analysis	2	▪ BSP
Case studies	1	
Company profiles	1	▪ MarketLine
Directories	1	▪ Galante's venture capital & private equity directory, Int'l Directory of Venture Capital Funds for a listing of venture capital firms (print)
Financial reports	1	
Industry reports	1	
Investment analysis reports	1	
Magazine/journal articles	1	▪ Journals such as Venture Capital Journal (print)
Newspaper articles	1	
Total	10	
Average	3.3	

Directories frequently summarize the capitalists' profiles in a concise mannner. SWOT analyst, company profiles, and financial reports would allow for a deeper analysis about the company to see how the capitalists could match with that company.

37. Who are the competitors?

Information types needed	N of responses (N=3)	Databases & information needed
Directories	3	▪ ReferenceUSA - for finding a list of similar companies in the industry
Industry reports	3	▪ GBB, LNA - for finding a list of similar companies in the industry ▪ LNA ▪ eMarketer eStat - indicates if there are any companies already doing e-marketing for that type of product
Magazine/journal articles	3	▪ Factiva - for trade journals that might publish articles related to the industry
Market research reports	3	
Newspaper articles	3	▪ Factiva - for newspapers that might publish articles related to the industry
Company profiles	2	
Product catalogs/reviews	2	▪ Buyer guides/exhibiters lists from similar trade shows ▪ Google search - for similar products
Case studies	1	
Consumer analysis reports	1	
Etc	1	▪ Association for natural remedies and other business that promise the same results (chemical or alterative med)
Investment analysis reports	1	
Patents/trademarks	1	
Statistics/demographics	1	
Total	25	
Average	8.3	

To answer this seemingly simple question, on average 8 information types were suggested by the respondents. To identify a list of similar companies of a given company, directories and industry reports are straightforward. These resources are quick and easy especially when the industry the company belongs to is clear. Buyer guides/exhibiters lists and Google search could identify similar products and finally which companies sell the products.

38. Please find whatever information you can that would allow me to assess the market potential in this e-business.

Information types needed	N of responses (N=3)	Databases & information needed
Consumer analysis reports	3	▪ Mediamark, SSMM - for consumer demographics on the use of products
Industry reports	3	
Magazine/journal articles	3	
Market research reports	3	▪ GMID ▪ IRI Marketing Factbook – indicates purchasing behavior of different types of branded consumer packaged goods ▪ MarketResearch.com, RRD ▪ Mintel - for market research reports on consumer packaged goods. Each one has a section on market size.
Newspaper articles	3	
Statistics/demographics	3	▪ BLS website - Consumer Expenditure Surveys for demographic data and money spent by people on a particular product.
Investment analysis reports	2	
Monographs	2	
Case studies	1	
Country reports	1	
Financial reports	1	
Laws/regulations	1	
SWOT analysis	1	
Total	27	
Average	9	

This question requires as many as 9 information types, ranking the top regarding the number of information types needed to a single question in this study. Demographics, purchasing behaviors, market size, and any information related to customers and goods provided by consumer analysis reports, market research reports, industry reports, magazine/journal/newspaper articles, and statistics should put together as evidences that would enable the client to assess the market potential. When selecting specific databases, however, the librarians recommended databases only for three information types - consumer analyst reports, market research reports, and statistics probably because of constraint on the number of databases the respondents recommend in the survey questionnaire and these three information types were most important in the respondents' opinions.

39. Who are the potential customers for these types of products?

Information types needed	N of responses (N=3)	Databases & information needed
Consumer analysis reports	3	▪ Association websites - have consumer information ▪ Mediamark ▪ SSMM - analysis by various consumer demographics (age, gender, race, income) of who would be the best target markets
Industry reports	3	
Magazine/journal articles	3	▪ BSP - for the articles from consumer magazines and trade journals about the use of such products
Market research reports	3	▪ MarketResearch.com, RRD ▪ Mintel – has market research reports that indicate demographics of potential customers
Newspaper articles	3	
Statistics/demographics	3	
Investment analysis reports	2	
Case studies	1	
Total	21	
Average	7	

Information on various consumer demographics and use of such products is available in consumer analyst reports, industry reports, magazine/journal/newspaper articles, and statistics. These resources in combination would help see who would be the best target customers.

40. Which companies are emerging in the industry?

Information types needed	N of responses (N=4)	Databases & information needed
Industry reports	4	▪ ISI Emerging Markets - for industry reports specific to China ▪ S&P Net Advantage - issues industry reports which provide commentary on current trends and identifies top companies within any given industry
Investment analysis reports	4	▪ Market research reports on the industry - would cover new companies/investment opportunities ▪ Investext, RRD
Market research reports	4	▪ MarketLine - gives an overview of the market in which Samsung works and will highlight the big players ▪ Mintel
Company profiles	3	▪ BSP, Hoover's Online - for company profiles, including competitors.
Magazine/journal articles	3	
Newspaper articles	3	▪ BSP, *EBSCO, ProQuest* - coverage of industry news which will include new companies
SWOT analysis	1	▪ BSP
Total	22	
Average	5.5	

Industry reports, investment research reports, and market research reports usually discuss the industry trends and list top companies within the given industry. On the other hand, article searches could identify less recognized companies, which are newer in the industry. Once any companies are uncovered in the literature search, the company names could be researched for more information. For example, company profiles and SWOT analysis would reveal the strengths and weaknesses of the companies.

In the respondents' answers, the order of information resources used is notable. The outcome of literature search, a company name/s, would become an input into company profile search databases.

41. What are the emerging companies' visions and objectives?

Information types needed	N of responses (N=4)	Databases & information needed
Company profiles	4	▪ GBB - gives information on recent significant achievements of companies ▪ Hoover's Online - provides streaming video on executives in interviews talking about their vision and objective
Investment analysis reports	4	▪ Investment analyst reports cover new companies/investment opportunities ▪ Investext - provides analyst reports on each company and place each company in its industry ▪ RRD
Magazine/journal articles	4	▪ Article searching DBs would retrieve newspaper and magazine articles or interviews detailing a company's vision or objectives.
Newspaper articles	3	▪ Article searching DBs would retrieve newspapers or interviews detailing a company's vision or objectives ▪ ABI/Inform, BSP ▪ Factiva - would provide recent information about the companies that may clue into their visions/objectives
Case studies	1	
Etc	1	▪ Company websites - would include either a mission statement, words from the CEO or access to recent annual reports containing a "Letter from the CEO"
Financial reports	1	▪ LNA - for annual reports which usually state the CEO's vision for the company
Market research reports	1	
SWOT analysis	1	▪ GBB
Total	20	
Average	5	

Company profiles, company websites, and financial reports usually state the companies' visions and objectives explicitly. Investment analyst reports and article searches could uncover new investment opportunities and recent significant achievements that may clue the client into their visions/objectives.

42. What are the strengths and limitations of the companies?

Information types needed	N of responses (N=4)	Databases & information needed
Magazine/journal articles	4	▪ *EBSCO, ProQuest* - Any article searching DBs would provide references to analysis on a targeted company's strengths or weaknesses. ▪ BSP
Company profiles	3	
Investment analysis reports	3	▪ Any analyst reports would provide expert commentary on a targeted company's strengths or weaknesses. ▪ GBB, Investext, RRD
Newspaper articles	3	
SWOT analysis	3	▪ GBB, BSP, Euromonitor
Case studies	2	
Market research reports	2	
Financial reports	1	
Industry reports	1	
Patents/trademarks	1	▪ USPTO database - to identify their intellectual property, a potential sign of their strength in the market
Total	23	
Average	5.75	

Investment analyst reports and SWOT analysis provide expert commentary on a targeted company's strengths and weaknesses, and articles would provide references to analysis on the company's strengths and weaknesses.

43. What are the characteristics of the target customers in a particular foreign country, e.g. Japan?

Information types needed	N of responses (N=3)	Databases & information needed
Consumer analysis reports	3	
Market research reports	3	▪ BSP, Mintel, MSR - for market research ▪ Euromonitor - for the demographic info and lifestyles in the foreign country ▪ GMID - for target demographics
Newspaper articles	3	▪ Factiva – for articles on Japanese consumers
Statistics/demographics	3	▪ *Trade organization and national statistical information online*
Case studies	2	
Country reports	2	▪ EIU Country Reports - for the demographic info and lifestyles in the foreign country
Magazine/journal articles	2	▪ BSP - for trade publications
Company profiles	1	
Industry reports	1	
Investment analysis reports	1	
Product catalogs/reviews	1	
SWOT analysis	1	
Total	23	
Average	7.6	

Market research data, consumer analysis results, and statistics would provide rich data on demographics, purchasing behaviors, lifestyles, and other characteristics related to the target customers. Country reports and magazine/journal/newspaper articles would provide information on the customers of the particular country. With 7.6 information types on average recommended by the respondents, this is one of those questions requiring many types of information to aggregate the data for further analysis.

44. What elements in the cultural environment of the country are likely to affect marketing strategies for these kinds of products significantly?

Information types needed	N of responses (N=3)	Databases & information needed
Market research reports	3	
Country reports	2	▪ Culturegrams - for particulars on customs and cultures ▪ EIU County reports & Country Commerce - for background info on the country
Newspaper articles	2	
Company profiles	1	
Consumer analysis reports	1	
Industry reports	1	
Laws/regulations	1	
Magazine/journal articles	1	▪ B&I - for trade articles on Japanese skincare products ▪ BSP, Factiva, LNA - for profile stories that indulge in those sorts of population generalizations.
Monographs	1	▪ *Monographs on a country's culture.* ▪ *Print publications* like "Doing business in Japan".
Product catalogs/reviews	1	
Statistics/Demographics	1	▪ *Contemporary population surveys*
Total	15	
Average	5	

In tandem with market research reports and country reports, magazine/journal/newspaper articles and monographs are supposed to provide culture profiles that generalize the culture/population. While these resources are focusing on the cultural environment of the country, laws/regulations, industry reports, consumer analysis reports, and product catalogs/reviews, etc. are likely to help establish marketing strategies in the country.

45. What elements in the economic environment of this country are likely to affect marketing strategies for these kinds of products significantly?

Information types needed	N of responses (N=3)	Databases & information needed
Country reports	3	▪ EIU country reports - for a report on Japan, especially the country commerce part.
		▪ EIU VeiwsWire, ISI Emerging Markets, MarketLine - for economic conditions
Newspaper articles	3	▪ Factiva - for international news items
		▪ LNA
Financial reports	1	
Industry reports	1	
Investment analysis reports	1	
Magazine/journal articles	1	
Market research reports	1	
Monographs	1	
Statistics/demographics	1	
Total	13	
Average	4.3	

Country reports and newspaper articles are the best resources in getting the latest information on the economic environment of the country.

46. What are the characteristics of target customers, e.g., attitudes, lifestyles, and so on?

Information types needed	N of responses (N=3)	Databases & information needed
Consumer analysis reports	3	▪ SSMM - gives information on target audience and all sorts of marketing-related demographics
Industry reports	3	
Market research reports	3	▪ Mintel – provides reports identifying the characteristics of the company's customers
Statistics/demographics	3	▪ Governmental statistical websites ▪ TableBase - for demographics in this industry
Country reports	2	
Magazine/journal articles	2	▪ *Any article search databases* would retrieve information on targeted demographic groups.
Case studies	1	
Etc	1	▪ Psychographic reports
Investment analysis reports	1	
Newspaper articles	1	▪ *Any article search databases* would retrieve information on targeted demographic groups.
Total	19	
Average	6.3	

Market research reports would identify target customers for any given product or service. Then, any information related to the target customers including demographics and purchasing behaviors in consumer analyst reports, industry reports, market research reports, and statistics would help characterize the target customers.

47. What kind of advertising plan is most appropriate if we want to reach this target audience? We are interested in when and where to advertise.

Information types needed	N of responses (N=3)	Databases & information needed
Market research reports	3	▪ Market research reports - for demographic data on users of specific products
Case studies	2	
Consumer analysis reports	2	▪ SSMM - for data on users of specific products and the media they use
Industry reports	2	
Magazine/journal articles	2	▪ Looking at competitors (particularly industry leaders) would help identify how similar ad campaigns were constructed and how successful they were.
		▪ BSP
Statistics/demographics	2	▪ TableBase - to see if there are tables/stats in articles that talk about what type of advertising works best for given customers
Company profiles	1	
Monographs	1	▪ *Monographs on marketing/advertising*
Newspaper articles	1	
Total	16	
Average	5.3	

Similar to the previous question, to identify the target customers, market research reports would be consulted first. Consumer analyst reports and articles would be used to know better about the identified target customers. Articles and statistics that talk about similar ad campaigns and their successes/failures would help establish an effective advertising plan.

48. What are the elements of successful loyalty programs?

Information types needed	N of responses (N=3)	Databases & information needed
Industry reports	3	
Magazine/journal articles	3	▪ ABI/Inform ▪ Factiva - includes many trade journals that would discuss this, perhaps on an industry specific level.
Monographs	3	▪ Books have good models.
Newspaper articles	3	
Case studies	2	▪ HBS website
Consumer analysis reports	2	
Investment analysis reports	2	
Statistics/demographics	2	
SWOT analysis	2	
Company profiles	1	
Market research reports	1	
Total	24	
Average	8	

Magazine/journal/newspaper articles usually discuss a successful loyalty program and books have good models for that. The other resources such as investment analysis reports would give a clue on which companies have successful programs.

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