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A Content Analysis of the Recent Information Needs and Uses Literature

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This investigation used content analysis to examine the information needs and uses literature published from 1990–1994. Analyses measured the degree of interdisciplinarity evident in references cited, determined whether this literature was concerned with users' cognitive processes and with systems' design and use, and identified the research methods used. Secondary analyses included journal type, author type, article type, whether the literature was grounded in theory, and user groups considered. The value of this study was in the development of content analysis categories specifically applicable to the information needs and uses literature, that measure particular aspects of interest to researchers working in this area.

The field of information needs and uses in library and information science (LIS) is broadly defined as that which is concerned with information seeking, determining users' needs for information, and information use. In this study, the term "users" means clients or patrons of libraries or other information services, as well as individuals or groups whose particular information needs are addressed by LIS research and practice.

Information needs and uses studies in LIS have a long history. Scanning this literature from Berelson's (1949) study of public library users, which he concluded by calling for a recommitment by librarians to their traditional middle-class patrons, to Hewins' (1990) review of information needs and uses studies, it becomes clear that information service practitioners and researchers have, with varying degrees of sophistication and success, attempted to discern who library patrons are, how they use libraries, and, more recently, what the information needs of people are and how various sources of information help or do not help them, independently of formal information delivery systems such as libraries.

Although the research literature of information needs and uses constitutes only approximately 8% of the total research literature of LIS (Jarvelin & Vakkari, 1990), analysis of LIS research, in general, has significant consequences. As Hernon (1992)

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and Hernon and Schwartz (1993) recognize, identifying good quality LIS research can provide researchers with models to improve their own investigations, and assist in decision making. McClure and Bishop (1989, p. 127) argue that careful consideration of the status of research is necessary for LIS to "progress as a discipline," and Jarvelin and Vakkari (1990) suggest that self-analysis is necessary to improve teaching and research in LIS. Buttlar (1991, p. 52) notes that analysis of the literature of LIS has additional value in documenting the "historical development of librarianship." Feehan et al. (1987, p. 174) argue that the "subject concerns of a discipline are nowhere better reflected than in its research literature," and that "analysis of research in library science over time will help our discipline to monitor its progress and to identify both subjects in need of further research and underutilized research methods" (p. 182).

Analyzing the information needs and uses literature, Hewins (1990) noted several recent trends, some of which formed the basis of this investigation. Of specific interest were Hewins' observations that: (1) the literature of information needs and uses now can be found in many disciplines; (2) research is focusing on the cognitive processes of users and relating these processes to systems design; and (3) some diversification is occurring in the research methodologies used to investigate information needs and uses.

In response to these observations, Hewins (1990) called for increased interdisciplinarity in the library science research of information needs and uses. She suggested that research in this area should integrate research being conducted in other disciplines (e.g., Psychology, Cognitive Science, and Computer Science) which is relevant especially to the study of cognitive processes (p. 162). Other writers have made the same argument for LIS research in general (Grover & Greer, 1991; Hernon, 1992; Van House, 1991). Yerkey and Glogowski (1990) show, through a cluster analysis of databases, that many documents relevant to research in LIS can be found in non-LIS databases. Despite the arguments in favor of interdisciplinary citation, White (1994) suggests that the decision to cite research from LIS or from other disciplines may simply represent personal preference.

Hewins (1990) also suggested that the trends to research users' cognitive processes and to utilize research methodologies other than surveys, should be continued. Jarvelin and Vakkari (1990) argue that, without analysis of methods used in LIS research, researchers will uncritically duplicate these methodologies, and the research results obtained. Atkins (1988, p. 656), however, argues that "there is room for any...methodological approach as long as. . .[it]. . .is justified in a logical manner."

OBJECTIVE

The study objective was to analyze empirically the current information needs and uses literature to determine whether the trends noted by Hewins (1990) could be shown to exist. This investigation tested (1) whether evidence for an attempt towards interdisciplinarity can, indeed, be discerned in the information needs and uses literature of LIS since 1990, (2) whether this literature has continued to be concerned with users' cognitive processes, and (3) whether research methods other than the typical survey are being applied to information needs and uses studies.

Interdisciplinarity refers to an integration of information from disciplines other than LIS. A concern for users' cognitive processes includes, but is not limited to attention to users' "categorization techniques, long- and short-term memory, learn-

ing styles, motivation, personality types, and semantic factors such as vocabulary selection. . ." (Hewins, 1990, p. 164).

METHODOLOGY

The methodology used in this study was content analysis, which "attempts to identify and record the meaning of documents and other forms of communication systematically " (Allen & Reser, 1990, p. 251). This method "assigns documents. . .to classes or categories to quantify one or more of their characteristics" (Allen & Reser, 1990, p. 253).[1]

In this study, content analysis categories were developed according to the objectives outlined above, as well as several secondary areas of interest. To test Hewins' three propositions, a content analysis method was applied to a randomly selected sample of 241 articles out of a total population of 588 articles indexed by *Library Literature* under the terms "information needs" and "use studies," and published between 1990 and 1994. The sample was stratified by publication year and indexing term. Articles selected were full-length feature articles (book reviews, literature reviews, news items, monographs, conference proceedings, theses, encyclopedia articles, and editorials were excluded), written in the English language.

Categories of secondary interest included journal type (professional/scholarly),[2] author type of first author only (practitioner/researcher), article type (commentary/report of service/research study), and judgments about whether the article was concerned with systems design, was grounded in theory, and what user group was considered. Definitions included the following:

- Professional journals were defined as those intended primarily for practitioners and primarily concerned with practical issues, while scholarly journals primarily publish articles addressing theoretical issues and reports of research investigations.

- Practitioners were defined as librarians or information service workers or managers, either currently employed or retired. Researchers were defined as faculty members in schools or departments of LIS or other disciplines. Those authors which did not fit either category were classified as "other."

- Commentaries were defined as articles which offered opinion or argued an issue without reporting research results specifically gathered for publication in that article. Reports of service were those articles that primarily described activities in one information delivery setting (i.e., the "how we done it good" literature). Research studies were those which reported the systematic collection of data for a particular purpose.

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[1]For a full description of a particular and fairly standard type of content analysis methodology, see Krippendorf (1980). Allen and Reser (1990) review and provide examples of research in LIS that has used content analysis as a research method.

[2]The distinction used in this study between professional and scholarly journals can be found elsewhere, for example, see Ali (1985).

- Articles were identified as concerned with systems design or use if they explicitly discussed the design or use of computerized information and retrieval systems to some degree.

- Articles classified as theoretical were those based on a coherent and explicit framework of assumptions, definitions, and propositions that, taken together, have some explanatory power.

- User group categories included students (any level), scholars (faculty or researchers), professionals (e.g., nurses, physicians, and engineers), non-professional employees (people working in a particular workplace who are not professionals), the general public (typically clients of public libraries), and specific groups (persons grouped in another way, e.g., patients). Articles which discussed users in general but did not specify or imply that any particular group was being singled out for consideration were classified as "unspecified" in terms of user group.

The content categories developed to test the primary propositions arising from the Hewins' (1990) review were:

- Interdisciplinarity (operationalized as the percentage of citations from outside LIS in each article);[3]

- Consideration of users' cognitive processes;

- Consideration of systems design and use; and,

- Research methodology employed. The categories of research methods used in this study are conceptually comparable to those used by other researchers (e.g., Feehan et al., 1987), and included experiment, questionnaire (written on paper or computer), interview, ethnography, transaction log analysis, citation analysis, a mixture of two or more (in which one method was clearly not dominant), and "other."

Prior to analysis, all categories were tested on several articles in the sample to refine operational definitions and content indicators.

Cross-tabulations were done to determine whether any significant relationships existed (at the .05 level). Specifically, significant relationships were expected for:

- Author type and interdisciplinarity (i.e., researchers cite a greater percentage of citations from outside LIS than do practitioners);

- Journal type and interdisciplinarity (i.e., scholarly journals publish articles with a higher percentage of citations from outside LIS than do professional journals);

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[3]Using citation analysis as an indication of interdisciplinarity is an accepted measure, for examples, see Khawam (1992) and Gatten (1991).

- Considerations of users' cognitive processes and concern with system design (i.e., articles that were concerned with system design also would be concerned with users' cognitive processes, as is suggested by Hewins [1990]);
- Author type and theoretical grounding of the literature (i.e., researchers are more likely than practitioners to theoretically ground their publications);
- Author type and article type (research study) (i.e., researchers are more likely than practitioners to report the results of a research study); and,
- Journal type and author type (i.e., researchers are more likely to publish in scholarly journals and practitioners are more likely to publish in professional journals).

LIMITATIONS OF THE STUDY

Interpretations based on the results of this study are limited by several factors. The sample was limited by inclusion criteria—only journal articles published in English were included, and a specific research area was analyzed, so inferences beyond the information needs and uses literature may not be valid. Limits imposed by the sampling frame (*Library Literature*), such as indexing practices, could also have limited reliability of the findings. As well, a potential for researcher bias exists since only one coder was used (Allen & Reser, 1990).

RESULTS

Interdisciplinarity

A median of 20% of the citations listed by the authors of the articles in the sample (n = 241) were from outside LIS. The expected significant relationship was found between author type and interdisciplinarity ($p<.05$). Researchers were more likely than practitioners to cite a greater number of references from outside LIS (χ^2 = 11.33, df = 3, Cramer's V = .23). A significant relationship was also found between journal type and interdisciplinarity (χ^2 = 11.21, df = 1, Cramer's V = .23). Thus, scholarly journals published articles containing a greater proportion of citations to literature from outside LIS than professional journals. As well, a significant relationship was found between articles grounded in theory and degree of interdisciplinarity (χ^2 = 25.23, df = 1, Cramer's V = .34); theoretical articles contained more citations to literature outside LIS than nontheoretical articles. Articles concerning systems design and use were also found to be related to degree of interdisciplinarity (χ^2 = 23.88, df = 1, Cramer's V = .33), since these articles contained significantly fewer citations from outside LIS than those articles not concerned with systems design and use.

Cognitive Viewpoint and Systems Design and Use

Twenty-four percent (18) of the sample articles studied or considered users from a cognitive viewpoint, and 51% (123) of the articles were concerned with systems design. However, there was no relationship between articles about system design and those concerned with cognitive processes (χ^2 = 7.84, df = 6, $p<.05$).

Article Type

In the sample as a whole, 25% (60) of articles were commentary, 7% (18) were reports of service, and 68% (163) were research studies.

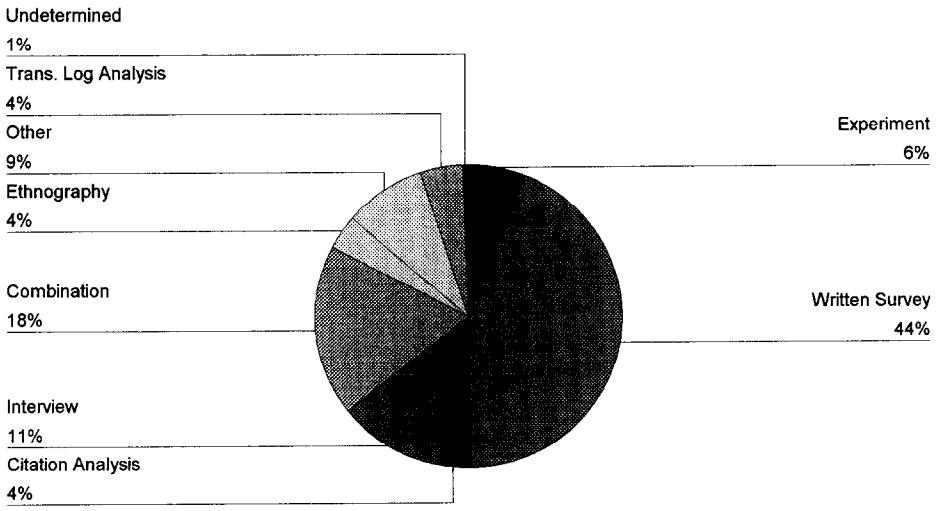
Research Methods

Figure 1 shows that written questionnaires and interviews (survey methods) accounted for 56% of research methodologies employed in research studies. The "other" category of research methods included content analysis, unobtrusive observation, and cluster analysis, among others. A significant relationship was found between author type and research method ($\chi^2 = 37.79$, df = 18, Cramer's V = .28). Researchers are more likely to use experiments and to use more than one research method than practitioners. As well, practitioners are more likely to use survey methods than researchers.

Theory

An interesting finding was that of the 163 research studies identified in the sample, only 28% (45) were theoretically grounded (i.e., were also identified as "theoreti-

FIGURE 1
Research Methods in Information Needs and Uses Studies, 1990–1994



cal"), while 72% (118) were not apparently theoretically grounded. Overall, 68% of the literature was nontheoretical.

A relationship was found between author type and theoretical grounding of the literature (χ^2 = 42.02, df = 3, Cramer's V = .42). Researchers were more likely to theoretically ground their publications, whether these were research studies or not, than practitioners. As well, a significant relationship was found between journal type and theoretical grounding of the literature (χ^2 = 41.83, df = 2, Cramer's V = .42). Scholarly journals were more likely to publish theoretical articles than professional journals. There was no relationship between author type and whether or not articles were research studies (χ^2 = .395, df = 3, $p<.05$).

Journal Type

The information needs and uses literature was largely published in professional journals (74%) (179). It is interesting that 71% (116) of research studies were reported in professional journals, while 29% (47) of research was published in scholarly journals. Looking at scholarly journals only, the proportion of articles reporting research studies was 77% (48).

Author Type

Researchers comprised 39% (94), practitioners 48% (116), and others (mostly master's and doctoral students) 5% (12) of authors. In 8% (19) of articles, the author type could not be determined. Researchers are about equally likely to publish in scholarly journals (where they published 49% (46) of their articles) and in professional journals (51%) (48). Practitioners are much more likely to publish in professional journals (94%) (109) than in scholarly journals (6%) (7). Thus, the relationship between author type and journal type was significant (χ^2 = 55.46, df = 6, Cramer's V = .34).

User Groups

Figure 2 shows that the largest proportion of the literature (30%) (72) did not specifically refer to any one user group.

DISCUSSION AND CONCLUSIONS

Qiu (1992) reports an unpublished finding that in the field of international librarianship, 13% of the references were from outside LIS. Qiu also found that interdisciplinarity in LIS, as measured by collaboration with authors in other disciplines, has increased between 1972 and 1992 from less than 1% to nearly 3%. Peritz (1981) found in research papers published in core LIS journals from 1950 to 1975, that 20% of citations were from outside LIS. This percentage is exactly that found in the present study, which analyzed a portion of the LIS literature some two decades later.

Many other disciplines have been found to cite greater percentages of citations outside their own disciplines. Table 1 shows some comparable figures found by

FIGURE 2
User Groups Studied in Information Needs and Uses Studies, 1990–1994

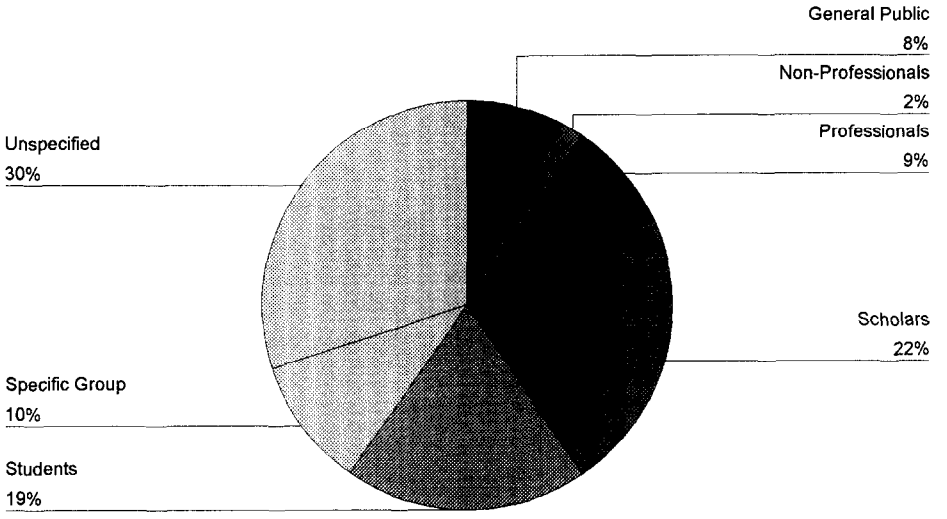


TABLE 1
Interdisciplinarity in Various Scientific Disciplines

Discipline	Percent Citations Outside Discipline
Anthropology	49%*, 70%†
Demography	44%‡
Economics	21%*
Education	57%‡
Management	25%‡
Operations Research	46%‡
Political Science	59%*, 54%¶
Psychology	27%*
Sociology	42%*
Toxicology	84%‡

Notes: *Rigney and Barnes (1980)
†Choi (1988)
‡McCain and Whitney (1994)
¶Dosary (1988)

others. For researchers concerned about "subject dispersion," the 20% rate found for LIS may be a source of comfort, when compared with other disciplines. However, for researchers who view interdisciplinary research trends as appropriate, and who seek to move research in this direction (e.g., Hewins, 1990), the lower rate of interdisciplinarity found in LIS may be a source of concern.

While a median of 20% of the citations outside LIS appears to reveal a degree of interdisciplinarity in the literature of information needs and uses, this degree must be compared with that found in LIS literature in general, and in the LIS literature of information needs and uses over time. Such comparisons would show whether this finding is relatively high, or perhaps insignificant with respect to evidence of interdisciplinarity found elsewhere. Grover and Greer (1991, p. 107) report an unpublished finding that 30% of citations in one sample of research articles published in LIS journals between 1981 and 1985 were from outside LIS. While the data obtained in the present study can be interpreted to mean that this percentage has decreased over time, this conclusion must remain tentative since the current sample was limited to a particular area of LIS research, and included non-research articles.

As well, building on the rather crude measurement of interdisciplinarity used in this study, more sophisticated analyses of citations to literature outside LIS could be done. For example, research might address the ways in which outside resources are used in LIS research (e.g., for comparison?, to provide theoretical models?). Examining the uses made of citations, in general, could provide clues as to the uses of outside resources by writers in LIS (see Khawam (1992) for one such list). An analysis of the disciplines and the specific authors that are being especially drawn upon by LIS researchers in information needs and uses would also be of interest (see Gatten, 1991 for an example that focuses on the uses of sociology literature in LIS literature). Qiu (1992) found that authors in LIS collaborate most with others in Computer Science, Business, Medicine, Engineering, Mathematics and Statistics, and Education. Cronin and Pearson (1990), who address the flip side of the interdisciplinarity coin, attempted to measure the influence of some British LIS researchers on other disciplines by counting citations to their work that appear outside LIS. They found that such influence is limited to a few bibliometric techniques, and information storage and retrieval tools.

Some of the additional findings warrant comparison with results reported by others. Although about half of all articles considered the design and use of computerized information systems, Jarvelin and Vakkari (1993) report that a decade ago, 29.2% of the articles in core LIS journals were about information storage and retrieval, a category roughly comparable to the present study's "concerned with system design" category. Therefore, this increased level of interest in systems design and use in the literature may reflect an increased level of concern about these issues in practice. As well, while the cognitive processes of users are indeed being studied or taken into consideration in nearly one-quarter of the literature, this finding should be compared with articles published over a longer period of time, in order to establish empirically whether this level of interest in users' cognitive processes has remained substantially the same, or has increased, as suggested by Hewins (1990).

The predominance of survey methods (written questionnaires and interviews; 55%) shows that these methods are still the methods of choice for research in information needs and uses. The finding that almost one-fifth of research studies employed more than one method perhaps reflects the increasing emphasis on trian-

gulation of methodologies in the social sciences. A longitudinal analysis of research methods could provide empirical evidence as to whether the ratio of traditional survey methods to all others has changed substantially over time. Analyses of research methods used in general LIS research (i.e., not limited by specific area) have also found that survey methods are prominent. Dimitroff (1992) reports that various researchers have found that surveys account for 20.3%, 38%, and 41.5% of research methods used in LIS. Jarvelin and Vakkari (1993) report that the survey method was the most used research design in LIS between 1965 and 1985, and Seymour (1991) reports that surveys continue to be the most commonly used research method in studies of online public access catalog (OPAC) users.

Kumpulainen (1991) suggests that survey methodology is popular because it is known and understood, and offers quick results. Another reason for the domination of particular research methods in LIS may be that these may be the most appropriate ones to investigate the research questions that have been posed. However, it is clear that with a refocusing of the research questions posed, especially in information needs and uses, a variety of research methods is appropriate (Jarvelin & Vakkari, 1993). That is, as information-seeking behavior is investigated from the point of view of the seeker, methodologies such as the detailed analysis of micro-moments used in Dervin's sense-making research (1992), or Chatman's use of ethnography (1992), may be more appropriate research methods. The degree to which qualitative methods are being used could be determined, and has been attempted, despite potential difficulties in operationalizing terms such as "qualitative" and "quantitative" (e.g., Kumpulainen, 1991).

The results of the analysis of the theoretical basis of the literature were disappointing. If we accept the argument made by many critics of LIS research, such as Van House (1991), that nontheoretical research "is simply description" (p. 87), then these figures are a sobering indictment of research in information needs and uses. An empirical assessment should be made of LIS research in general in order to obtain a clearer understanding of the degree to which it is informed by theoretical constructs. Although more than two-thirds of the literature was not grounded in theory, this does not mean that it does not refer to other literature, for indeed most of it did include citations to other literature. However, nearly 10% of the sample and 8% of the research studies had no citations! Peritz (1981) found that 21% of research papers published between 1950 and 1975 in core LIS journals had no citations; perhaps the lower figure reported here suggests increased scholarliness of the LIS literature.

One unexpected finding was that 68% of the literature consisted of reports of research studies. This result can be compared with several others which found that research comprises 23.6% to 31% of total articles (Dimitroff, 1992). Caution must be exercised, however, in interpreting the significance of the much greater percentage of research studies in this sample, since the results from other studies were based on examination of LIS literature in general. Jarvelin and Vakkari (1993) report that in 1975, 57%, and in 1985, 54% of articles in core LIS journals could be classified as "research," defined substantially the same as in this study. These results are much closer to that reported here.

The finding that much of the research was published in professional journals also was unanticipated. One possible explanation for this outcome is that any authors (researchers or professionals) who publish research results of information needs and

uses studies may be seeking maximum exposure of these results to practicing librarians, and, therefore, they may be more inclined to publish such studies in journals that are read more widely by practitioners. As well, practitioners authored more research studies than researchers (47% vs. 39% of research studies), and practitioners published far more in professional than in scholarly journals. Another explanation may be that a disproportionate number of "use studies" conducted by practitioners and published in the professional literature accounts for this finding, although this possibility was not tested in the present study.

Seventy-seven percent of articles in scholarly journals reported research studies, a figure substantially higher than that suggested by Feehan et al. (1987), who found that 23.6% of articles in scholarly journals could be classified as "research," again defined in the same manner as in this study. While this difference in results must be considered with caution, since the current sample was restricted by area of interest and the unit of analysis was articles instead of journals, this difference suggests that the claim by Van House that the "proportion of articles that are research-related is decreasing" (1991, p. 90) may, in fact, not be true. Van House's (1991) assertion that LIS faculty (researchers) are less likely than professionals (practitioners) to publish in the LIS literature was supported by this study. However, it must be remembered that in absolute numbers, faculty are vastly outnumbered by practitioners.

The findings about what user groups are being studied is an important one for researchers concerned that, in terms of proportion of the literature, user studies tend to focus on the information needs of the privileged (e.g., scholars and professionals) as opposed to the "average citizen." Peritz (1980/81) reports that, of the research papers published in core LIS journals between 1950 and 1975, only 7% were concerned with general users, 48% were concerned with professionals, and 15% with students. Since that time, a concern for professionals seems to have diminished, while interest in students has increased. However, it would be interesting to explore authors' motivations guiding choice of user group in information needs and uses research. It may be that scholars and students are studied for reasons of convenience, since they happen to be available to researchers. Clearly, however, deliberate decisions about groups of particular interest are made as well (e.g., Chatman, 1992).

In addition to the elements of the literature analyzed in this study, many other aspects of LIS research can and should be subjected to rigorous analysis. Writers such as Van House (1991), McClure and Bishop (1989), and Grover and Greer (1991) suggest directions for our research that should be promoted. These aspects of the research could be analyzed according to a method similar to that used in this study. Kumpulainen (1991) and Jarvelin and Vakkari (1990, 1993) used content analysis to examine other characteristics of the literature which may be of interest to an understanding of research specific to information needs and uses, such as organizational context, viewpoint, and social level (individual, organizational and societal). At minimum, the results of this study need to be compared with analogous results for a period prior to 1990 to reveal longitudinal trends in the literature.

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