

## Which Parts of Search Results do Researchers Check when Selecting Academic Documents?

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# Which Parts of Search Results do Researchers Check when Selecting Academic Documents?

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## ABSTRACT<sup>1</sup>

Our goal is to propose an alternative retrieval system of academic documents based on researcher's behavior in practice. In this study, a questionnaire survey was conducted. Question items were developed from findings in the previous observational study for researcher's behavior. From the results of 46 respondents, the top three elements checked in the search results were title, abstract, and the full-text version. They also checked structure "Introduction" in the full-text rather than other structures when they found previous research in an unfamiliar field. These results indicate that researchers use different ways for selecting documents based on the type of documents they look for.

## CCS CONCEPTS

• **Information systems** → **Information retrieval**; **Users** • **Social and professional topics** → **User characteristics**;

## KEYWORDS

Academic bibliographic system, researcher's information behavior, information retrieval system

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## 1 INTRODUCTION

Although some information retrieval systems for various information have been provided, bibliographic databases are still important tools for researchers [1]. Currently, bibliographic

database systems not only display bibliographic information of documents as a search result, but also display links to full-text versions if they are available. Moreover, various search functions such as narrowing search results using facet functions are provided. This enables users to carry out various types of searches for academic documents. Searching for academic documents involves different behavior compared with searches in daily life. However, this behavior is influenced by the spread of search engines. For example, when researchers start to perform a document search, they use databases and search engines equally [2]. Focusing on the context of researcher's search, they change the databases to be used depending on the purpose of the search [3]. In this way, researchers are assumed to employ various search methods depending on the search environment and purpose of their search.

Our goal is to propose an alternative information retrieval system for academic documents considering a researcher's search behavior in practice and their diversity. We employ an approach to observe researcher's actual behavior and then conduct the questionnaire survey to confirm the generality of their behavior with other researchers. In this paper, we report the results of the questionnaire survey.

## 2 QUESTIONNAIRE SURVEY

We identified the elements that researchers checked from the research results and the order of elements checked by the observational study [4,5]. For example, the full-text version of documents is found as a new element. Some researchers use image search rather than the bibliographic database system. Moreover, the researchers' interviews in the conducted survey indicate that they checked different elements according to the type of document they were searching for. Although we recruited 10 participants for the observational survey, we conducted the questionnaire survey to confirm the generality of their behavior. We developed 14 question items based on our findings [6], inquiring the type of databases used daily, order of checked elements in research results, and frequency of use of functions of academic databases.

We obtained 88 respondents (48 researchers and 44 master's program students) from the schools of engineering in two national universities. A student in a Ph.D. program is considered as a researcher. We asked them to complete the online form survey from October 20th to November 10th, 2017. Informed consent was obtained from each respondent. In this paper, we present the responses of 48 researchers to focus on their common behavior.

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<sup>†</sup>The full version of the author's guide is available as acmart.pdf document

<sup>‡</sup>It is a datatype.

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### 3 RESULTS

#### 3.1 Elements Checked in the Search Results

Table 1 lists the elements to be confirmed in the search results (multiple answers allowed) depending on the type of document to be searched. The document to be searched could be of the following three types: to identify appropriate research methods, to find previous research in an unfamiliar field, and to learn the current research trends. Only 46 researchers who used the database ( $N=46$ ) were considered. The top three elements to be confirmed were title, abstracts, and full-texts in any type. The title was the element that was the most confirmed in any case. Only when the researcher was identifying appropriate research methods was the percentage of checking the full-texts higher than that of the abstract. Titles and abstracts were revealed in previous studies as elements to be confirmed [7,8]. This result also indicates that it is common practice to check the text directly. When searching for research methods, the percentage of checking keywords was higher than others. This is considered to be because it confirms whether related methods are included in keywords. In the case of finding previous research in an unfamiliar field, the percentage of confirming the name of the journal and cited counts was higher than the other types. This indicates that these are the criteria for judging whether it is a core literature in that field. In addition, when the researchers wished to know the current research trends, the percentage of checking the publication year was high, since the publication year is important.

**Table 1: Checked elements depending on the type of documents to be searched**

	Research methods		Unfamiliar field		Research trends	
Title	43	93.5%	38	82.6%	39	84.8%
Abstract	37	80.4%	33	71.7%	35	76.1%
Full-text	38	82.6%	32	69.6%	32	69.6%
Publication year	9	19.6%	13	28.3%	24	52.2%
Journal title	14	30.4%	18	39.1%	17	37.0%
Author	14	30.4%	10	21.7%	13	28.3%
Number of pages	3	6.5%	3	6.5%	1	2.2%
Cited counts	10	21.7%	15	32.6%	12	26.1%
Keyword	25	54.3%	21	45.7%	20	43.5%
Research field	15	32.6%	18	39.1%	15	32.6%
Document type	15	32.6%	14	30.4%	13	28.3%
Language	5	10.9%	5	10.9%	3	6.5%
Availability	13	28.3%	13	28.3%	11	23.9%
Images	6	13.0%	6	13.0%	5	10.9%
Others	1	2.2%	1	2.2%	1	2.2%

#### 3.2 Structures Checked in the Full-texts

Table 2 shows the percentages of each structure checked when deciding whether to carefully read the document after seeing the full-text. For example, in the research methods, the ratio of checking Method, Figure, Table, and Formula is overwhelming.

To know the unfamiliar research field, the percentage of confirming Introduction was overwhelmingly larger than the others. In the investigation of the previous research, Introduction is referred to determine the position and outline of the document.

**Table 2: Structures checked in the full-texts depending on the type of documents to be searched**

	Research methods		Unfamiliar field		Research trends	
Introduction	28	60.9%	35	76.1%	30	65.2%
Conclusion	29	63.0%	25	54.3%	26	56.5%
Fig., Table, Formula	32	69.6%	24	52.2%	24	52.2%
Method	33	71.7%	19	41.3%	23	50.0%
References	23	50.0%	23	50.0%	18	39.1%
Related Work	17	37.0%	25	54.3%	20	43.5%
Others	2	4.3%	1	2.2%	1	2.2%

### 4 CONCLUSION

This result indicates that researchers checked different elements in the search results and different structures in the full-text version depending on the types of documents they were searching for. Checking the full texts seems to become more common. Thus, a seamless system providing both bibliographic data and parts of the full text could be useful. Herein, we present the results of two questions, and plan to analyze other questions with all respondents and propose an overall picture of an alternative system.

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