Vol. 6, Issue 1 and Issue 2, 2006

NIGERIAN JOURNAL OF CLINICAL AND COUNSELLING PSYCHOLOGY

ISSN: 1118-4053

Information Seeking Behaviour of Agricultural Engineers in Nigeria: Institutional influences, information sources and channels

By

J. U. Igbeka* and **M. I. Atinmo****
*Kenneth Dike Library, **
University of Ibadan.
Department of Library, Archival and
*Information Studies, University of Ibadan. ***

Abstract
The study sought to determine the information seeking behaviour of agricultural engineers in Nigeria. There was also an interest in finding out if they differed in their information seeking behaviour according to their different places of work. It made use of 261 agricultural engineers who were selected from the different organisations where they work by stratified random sampling. Data collection involved the use of the Questionnaire while data analyses involved the use of analysis of variance statistics (for independent groups). The result shows that majority of the agricultural engineers search for information by use of traditional print sources (journals textbooks etc.) On-line sources of information were not popular with the engineers. The results also show that the agricultural engineers differed in their information seeking behaviour according to their different places of work. Recommendations include the supply of current information sources to their different organizations and training facilities as regards computer On-line search for information.

Introduction

One of the characteristics of human beings is the notion of search. We seek and pursue material objects like food, shelter, etc. and abstract objects such as knowledge and justice. Knowledge in this respect could be equated to information. Thus, this paper is concerned with the search

for information that one could call "information seeking"; a process in which humans purposefully engage in order to change their state of knowledge. Information seeking is closely related to learning and problem solving. It is also a behavioural process, hence often referred to as information seeking behaviour. As with learning or problem- solving, a variety of strategies were used while studying information seeking behaviour; including consulting friends, libraries, colleagues or experts, consulting personal collections of books, periodicals, files, conducting empirical investigations and applying formal systems. Formal systems include libraries, research firms, government agencies, electronic networks, and the growing collection of information services that make up the information industry.

Methods of seeking information differ with different categories of users. Knowledge workers for instance continually search for new information. They monitor, store and disseminate company and industry-related information. Their information seeking behaviour may be influenced by their environment or places of work (Grosser, 1991). Scientists and engineers have long uninterrupted segments of time to spend on one study. They spend most of this time obtaining information and writing reports. Most executives on the other hand probably have a support staff to provide the information they need to make their decisions (Baldwin & Rice 1997). Organizational context effectively constraints a person's information behaviours (Katzer & Fletcher, 1992). Organizational characteristics such as size, structure, goals, production organization incentives for gathering information, emphasis on surveillance, risk aversion, all influence managers' use of information. Drott (1973) concluded that in such environments, people decide for themselves how they will acquire information and what services they will use. In general, personal sources of data greatly exceed impersonal sources in importance (Hofer, 1976). In a study that examined how corporations acquired information concerning their strengths and weaknesses, Stevenson (1969), concluded "formal sources were clearly the major source of information on the internal state of the organization, while personal sources were the major source of external information". A

security analyst sums up the information seeking process by saying that "most of his time is spent in an effort to know what everybody else knows, and the future lies in gaining the information that no-body knows" (Kleinflied, 1985)

Agricultural engineers form a sensitive group of information seekers and are in the forefront of seeking and using information in order to achieve an important goal/objective – which is, to find solution to the problems arising in the fields of agriculture and rural living, with the objective of reducing labour, improving agricultural productivity per worker, raising the standard of living of the farmers and increasing the overall earnings per worker. Abimbola (1997) opined that there is a challenge for agricultural engineers in Nigeria to put effort into research and development of simple and more efficient farm tools and equipment in order to meet their objectives.

Knowledge about the information seeking behaviour of the agricultural engineers would benefit policy makers and information scientists since it would enable them provide adequate services and materials for the engineers to meet their objectives.

This background emphasizes the need to bring into focus the present study, which is concerned with how agricultural engineers in Nigeria seek/search for information. Specifically the study sought to identify the information seeking behaviour of agricultural engineers in Nigeria. There was also an interest in finding out if the engineers' information seeking behaviour varies according to their environments/places of work

Methodology

(a) **Sampling procedure and sample size**

Stratified random sampling technique was used to select agricultural engineers according to their places of work, namely: tertiary institutions, government establishments/ministries, research institutes and private organizations. The method of proportional allocation to sample was adopted to obtain the sample size for each stratum.

In all, the sample consisted of 261 agricultural engineers (247 males and 14 females), 105 from tertiary institutions, 45 from private sector, 81 from public sector/ministry, and 30 from research institutes. Their ages ranged from 26-64 years (mean age = 39.15 years, with a standard deviation of 7.803). Their qualification varied from first-degree certificate to Ph.D in agricultural engineering (first degree certificate = 26%, M.Eng/M.Phil = 60.2%, Ph.D = 34%).

(b) **Instrumentation**

Information seeking behaviour scale developed by the researcher was the main tool for data collection. It consists of two sections; A and B. Section A consists of the biodata of the respondents, namely, age, sex, educational qualification, place of work, status, experience/years spent in present place of work, and tasks performed at work. The section B consists of 30 items, which elicited data on the information seeking behaviour of the agricultural engineers. Experts in psychometrics and testing affected the content and face validity of the instrument. The pretest results showed no ambiguities in the instruments and produced a test-retest (two weeks interval) reliability estimate of 0.82.

(c) **Data Analysis and Results**

Data analysis involved the use of frequencies and percentages and analysis of variance (ANOVA) for independent groups, and Scheff-Post test was used to show the differences between groups. Table 1 shows the distribution of information seeking behaviour and sources of information consulted by agricultural engineers in Nigeria. It could be observed from the results that only 25.3% of the engineers search for information from libraries outside their establishment while the rest of the engineers depend on libraries in their establishment. However, 21.1% of them search for information from personal collections at home/office while 8.4% of them seek for information from telephone conversation with colleagues. A slightly

higher percentage (10.7%) of the engineers search for information through verbal discussion with their colleagues in the office.

Table 1: Distribution of Respondents by their Information Seeking Behaviour and Sources Consulted

Item Description	Percentage Response	
	Yes	No
From which of the following sources do you normally search for information?	%	%
Libraries outside your establishment	25.3	74.7
Personal Collections at home/office	21.1	78.9
Telephone conversation with colleagues	8.4	91.6
Discussion in the office with colleagues	10.7	98.3
Radio/television	4.6	95.3
Newspapers	10.0	89.7
Agricultural Engineering Textbooks	97.3	2.7
Professional Journals	95.4	4.6
Abstracts and Indexes	57.5	42.5
Conference Papers	87.7	12.3
Research Publications	91.6	8.4
Dissertations and Thesis	65.5	34.5
Patents	12.6	87.4
References Sources (Eng. Ency. Dictionary)	63.6	35.5
Online Public Access Catalogue OPAC)	11.1	88.9
CD-ROM Literature Search	14.2	85.8
Internet	16.9	83.1
Other sources	0.0	0.0

The use of Radio/television is indicated by 4.6% of the engineers while only 1.5% of the engineers indicated that they search for information from other (unspecified) information sources. A very high percentage (97.3%) of the agricultural engineers search for information mostly from agricultural engineering textbooks. Other fully published research work accounts for 91.6%. There are also indications that a good proportion (57.5%) of the engineers search for information from abstracts

while 65.5% use indexes, dissertation and thesis to search for their information. The table also reveals the extent to which agricultural engineers depend on the following sources of information while searching for information: Internet (16.9%), CD.ROM literature search (14.2%), patents (12.6%), Online Public Access Catalogue (11.1%) and newspapers (10.0%).

On the question about the type of information the engineers sought for in their libraries, table 2 shows that 53.3% sought for information concerning their job; 59.0% sought for information on research publications, 28% sought for general information; 41.4% sought for academic information, while only 22.2% sought for information on how to fabricate machines.

Table 2: Information Seeking Behaviour and Types of Information Sought by respondents

Item Description	Percentage Response	
	Yes	No
Do you search for the following type of information while seeking for information in your library	%	%
Information concerning your job	53.3	76.7
Information for research publications	59.0	41.0
General information	28.0	72.0
Academic information (for teaching etc)	41.4	58.6
Information on how to fabricate machine	22.2	77.8
Others	3.1	96.9

Result of the study showed that the agricultural engineers obtained their current awareness services while attending meetings and conferences, conventions and workshops; 46.4% of them from information analysis products, 36.8% obtained information through their library; 30.7% by correspondence from colleagues, and only a few percentage of the engineers obtained their current awareness services by personal

subscription (13.8%), and by scanning through the information materials themselves (7.7%). On the length of time per week spent on reading and consulting scientific or technical literature, the responses of the engineers varied a great deal. In this category, 28.7% of them spent 3-5 hours; 27.2% spent 6-8 hours, 10.0% of them spent 9-11 hours and 14.6% of them spent about 12 hours and above. Table 3 shows that when searching for information, 27.6% of the engineers use CD-ROM Database, 11.9% make use of OPAC (On-line Public Access Catalogue) and 16.9% use the Internet.

Table 3: Distribution of respondents by their information seeking behaviour and online facilities used.

Item Description	Percentage Response	
	Yes	No
Which of the following facilities do you use when searching for information using the computer?	%	%
CD-ROM Databases (information systems e.g. AGRIS)	27.6	72.4
OPAC (On-line Public Access Catalogue)	11.9	88.1
Internet	16.9	83.1
Do you search for information using the computer by:	%	%
Self	13.0	87.0
Library Staff only	29.9	70.1
Self and Library Staff	19.9	80.1

It also shows that 29.9% of the respondents search for information by means of the computer, using a library staff only (item 31), 13.0% of the respondents conduct their computer search solely by themselves, while 19.9% of the engineers conduct the computer search by themselves in addition to making use of library staff.

Table 4 shows that majority of the respondents prefer searching for information from journals (81.3%), and textbooks (62.8).

Table 4: Information seeking behaviour of respondents and their preference of sources/on-line facilities used

Item Description	Percentage Response	
	Yes	No
Which of the following facilities do you prefer using while searching for information?	%	%
CD-ROM Databases	16.1	83.9
OPAC (On-line Public Access Catalogue)	3.4	96.6
The Internet	24.9	75.1
Journals	81.3	28.7
Textbooks	62.8	37.2
Reference Sources	29.9	70.1

Only a few of the respondents would prefer using the computer-CD-ROM Databases (16.1%), On-line Public Access catalogue (3.4%), and the Internet (24.9%). There are also indications that a small proportion of the respondents (29.9%) prefer reference sources like dictionaries, encyclopaedias, as information source. On the information seeking behaviour of agricultural engineers based on their different places of work, the result of the study showed that 35% of the respondents in the public sector (Ministry) do not have libraries in their places of work. As a result, they search for information from libraries outside their establishment. About 80% of the engineers in the private sector do not have libraries in their various establishments. However only 6.5% of those in research institutes do not have libraries. All the respondents working in the various tertiary institutions have libraries in their institutions. Like their counterparts in the Ministries, 71% of those in the private sector search for information from libraries outside their establishment. All the categories, (Ministry, Private and Research Institution) also seek for information from personal collections at home, telephone conversations with colleagues, radio/television and newspapers.

Table 5 below shows that agricultural engineering textbooks and professional journals are very popular sources of information among all the strata.

Table 5: A General Pattern of Information Seeking Behaviour of Agricultural Engineers in Nigeria based on their different places of work.

Item Description	Percentage of Response according to place of work			
	1	2	3	4
From which of the following sources do you normally search for information?	%	%	%	%
Agricultural Engineering Textbooks	97.5	97.8	96.8	97.1
Professional Journals	93.8	100	93.5	95.2
Abstracts and indexes	37.5	80.0	48.4	65.7
Conference papers	85.0	95.6	93.5	84.8
Research Publications	85.0	95.6	100	92.4
Dissertations and Thesis	56.3	60	83.9	69.5
Patents	15	22.2	16.1	5.7
Reference Sources	57.5	73.3	67.7	62.9
On-Line Public Access Catalogue (OPAC)	8.8	15.6	16.1	9.5
CD-Rom Literature Search	13.8	33.3	12.9	6.7
The Internet	13.8	31.1	16.1	16.2
Others	7.5	2.2	3.2	1.0
Which of the following type of information do you search for?				
Information concerning your job	66.3	95.6	35.5	30.5
Information for research publication	42.5	22.2	83.9	80.0
General information	16.3	46.7	38.7	25.7
Academic information (for teaching etc)	12.5	11.1	32.3	79.0
Information on how to fabricate machines	17.5	42.2	29.0	15.2
Others	2.5	8.9	3.2	1.0

Key:
Place of Work: Ministry = 1 Research Institutes = 3
Private = 2 Universities/Tertiary Institutions = 4

The difference appears mainly with the abstracts and indexes where 80% of those in the private sector and 65.7% of those in the tertiary institutions search for information from them compared with 37.5% (Ministry) and 48.4% (Research Institutes) respectively. Conference Papers and Research Publications are also, popular sources of information, which cut across all areas despite their different places of work. Dissertations and thesis and reference sources are also notable sources very popular with the engineers as compared to the on-line sources. The Engineers in the private sector seem to be more familiar with the On- line sources, - (33.3%) with CD-ROM, and 31.1% with the internet than the other groups of agricultural engineers.

Though the engineers differ in some of the sources where they seek for information, they all search for information from among some popular sources like journals, textbooks, etc.

The engineers seem to differ on the type of information they seek for from these sources. Table 6 shows that the engineers in the Ministry, (66.6%) and private sector (95.6%) seek mainly for information concerning their job while only 35.5% (Research institute and (30.5%) of those in the tertiary institutions seek for information concerning their job. Information for research publication is mainly sought by those in research institutes (83.9%) and (80.5%) of those in research institutes. Only 22.2% of those in the Private Sector seek for this information. 79.0% of those in the tertiary institution seek for academic information, compared to 11.1% of those in the private sector. However, 42.2% of the engineers in the private sector seek for information on how to fabricate machine while 15.2% of those in the tertiary institutions seek for this type of information respectively.

All the agricultural engineers mainly obtain their current awareness services from conference seminars and workshops (Table 6), though quite a high percentage of those in the research institutes (64.5%) obtain their current awareness services from the library.

Table 6: Distribution of agricultural engineers and current awareness strategies adopted according to their place of work

Current Awareness Strategies	1	2	3	4
Information analysis products	36.3	44.4	64.5	49.5
Through your library	27.5	42.2	64.5	33.3
Correspondence with colleagues	23.8	48.9	22.6	30.5
By scanning yourself	6.3	24.4	00	5.7
Attending meetings, conferences, workshop	72.5	71.1	71	56.2
By personal subscription.	18.8	11.1	22.6	10.5

The engineers did vary in the amount of time they spent in the library while reading and consulting scientific journals. Online search for information is not popular with the respondents. The agricultural engineers in the private sector (71.1%) are more versatile with On-line search than others. An equal percentage (70%) of those in the public sector, and (71%) of the engineers in the research institutes do not search for information by means of the computers. In the same vein, 56.2% of those in the tertiary institutions do not carry out information search also by means of the computer.

Table 7 shows that the engineers still preferred using the traditional tools while searching for information irrespective of their places of work. Journals and Textbooks play important role in their search for information, though only 45.7% of the agricultural engineers in the tertiary institutions prefer the use of textbooks compared to their counterparts in the private sector (82.2%).

Table 7: Distribution of agricultural engineers and preference of information sources according to their places of work

Sources of Information	1	2	3	4
CD-ROM Literature Search	8.8%	28.9	16.1	16.2
OPAC (On-Line Public access catalogue)	3.8%	4.4	00	3.8
The Internet	11%	35.6	38.7	24.8
Journals	67.5%	62.2	80.6	75.2
Textbooks	71.3%	82.2	71.0	45.7
Reference Sources	23.8%	60.0	32.3	21.0

However, (80.6%) of those in the research institute, and 75.2% in the tertiary institution prefer the use of Journals. Similarly, those in the public sector (67.5%) and (62.2%) in the private sector prefer the use of journals. In as much as there are differences in percentages, majority of them in all sectors prefer the use of these traditional print materials. It is important to note that those in the private sector prefer searching for information from reference sources (60%) compared to those in the other sectors. Interestingly very few of the engineers in all the sectors preferred the use of the On-line sources (CD-ROM, OPAC & Internet) while searching for information.

Based on the analysis of variance carried out on the information seeking behaviour of agricultural engineers in Nigeria by the place of work, the result showed that there are significant differences in the information seeking behaviour of the engineers in respect of their place of work ($F = 20.226$, $df = 3,257$; $P < 0.05$).

Table 8: Analysis of Variance on information seeking behaviour of respondents by Place of Work

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig. of F
ISB	6435.183	3	2145.061	20.226	.000
Explained	6435.183	3	2145.061	20.226	.000
Residual	27156.020	257	106.055		
Total	33631.203	260	129.582		

Key: ISB = information seeking behaviour

Further investigation using Scheff-Post test, reveal that significant differences exist mainly between information seeking behaviour of the agricultural engineers working in the ministry and those in the private sector and also between those in the private sector and those in the tertiary institution; between those in the private sector and those in the research institute.

Discussion and Conclusion

Only 25.3% of the engineers search for information from libraries outside their environment mainly because most of the engineers have libraries within their establishments, and might find it time consuming and inconveniencing to search for information outside their own establishments. As noted by Cheu (1972), several scientists consider time and location factors as playing important roles in their information seeking behaviour and information gathering. In addition, the fact that only a few of the agricultural engineers search for information using the On-line sources is explicable considering that most of their institutional libraries do not have them, or if they do, the engineers are either not aware of them and/or may not know how they could be used. Another reason may be that they may not want to try anything new. They are familiar and comfortable with the traditional print sources. According to Oppenheim (1992) "end users are not necessarily aware of On-line sources or even if they are, they need convincing facts that they actually should use it. Nicholas (1996) is of the view that most end users are not trained on how to use these tools".

It is not surprising that a high percentage of the respondents (59.0%) searched mainly for information for research publication. The reason might be that most of these engineers work in tertiary institutions as lecturers, where it is of primary importance that they must do some research and publish their findings before they can be promoted. The engineers in the private sector would be mainly concerned with information on how to fabricate machines, since they would also like to market these or carry out some consultancy services for institutions, ministries and private people. Information seeking behaviour is significantly influenced by the nature of the institution in which the user works, the searcher's job, subject and rank of the academic training. This view was corroborated by Wersbig (1993), Belkin et al (1982) and Ingwerson (1992) who accepted that information needs and processes depend on workers task.

Information is normally sought when there are problems to be solved. The problems usually depend on the task to be performed. Since these engineers work in different places, their goals and objectives and the

problems to be solved would be different. Their way and method of seeking information would also be different. According to (Ingwerson, 1992) information needs and information processes depend on worker's tasks. The tasks impose information requirements that must be met if the task is to be completed (Wergig, 1973).

Other factors that could affect the differences in information seeking behaviour even in this context are the personality of the individual and availability of information sources. Garvey (1979), noted that even the scientists intellectual browsing in his personal search is interactive, in that his style, subjectivity base, etc all play a part in detection, selective retention, and use of information encountered in the search. Kaulthau, (1991) ascertained that the choice of the action depends on the needs, the perceived accessibility and availability of the information channels and sources, and the personal seeking style.

In the light of the entire result and the associated discussion, the investigator is of the view that:

(i) The engineers should be supplied with adequate libraries in their different places of work.

(ii) Current journals textbooks, manuals and research publications should be made available to these engineers in their various libraries.

(iii) On-line sources of information should be supplied to the engineers both in their various libraries and offices.

(iv) Training courses should be organized for the engineers by their organisational bodies on how to use the computer to search for information. Their various computers should be connected to the Internet for the availability of current information.

References

Baldwin, N.S. & Rice, R.E. (1997). Information-seeking behaviour of securities analyst individual and institutional influences, information sources and channels and outcomes. Journal of the American Society for Information Science 48(8).

Belkin, N.J. and Robinson, A.T. (1982). Ask for information retrieval: Part 1. Background and theory. Journal of Documentation 38 (2), 61-71

Burkett, J. (1992). The growth of industries and information and a related library and information services in the U.K. (3rd ed.) London: Library Association. p. 263

Cheu, F (1994). The relationship of information needs to issue relevance and media use. Journalism Quarterly, 71, 676-688

Drott, C. (1973). Models and measurements of user information needs in the selection of systems for the selective dissemination of information. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Garvey, W.D. (1979). Communication: The Essence Science: Oxford: Pergammon. p.1-5.

Grosser, K. (1991). Human networks in organizational information processing. In M. Williams (Ed.), Annual review of information science ad technology, Vol. 26 (pp. 349-402). Medford, NJ: Learned Information.

Hofer, C.W. (1976). Research on strategic planning: A survey of past studies and suggestions for future efforts. Journal of Economics and Business, 28, 261-286.

Ingwersen, P (1984). A cognitive view of three selected online search facilities. Online Review (5) 46 5-492

Katzer, J., & Fletcher, P. (1992). The information environment of Managers. In M. Williams (Ed.), Annual review of information science and technology. 27: (227-263). Medford, NJ: Learned Information.

Kaulthau, C.C. (1991). Inside the search process: Information seeking from the user's perspective. Journal of the American Society for Information Science. 42(5). 361-371.

Kleinfield, N.R. (1985, October 27). The many faces of the Wall Street analyst. New York Times, late ed., sec. 3:1

Oppenhelm C. (1992). Designing for the end-user market place in: "Hancock Beaulieu." M.Ed. Information system for end-users: Research and development issues. London Taylor Graham, o. 52-34. Paper presented at the UNICEF Development Education Seminar (Moscow, September 1982)

Nicholas, David (1996). An assessment of the Online searching behaviour of practitioner and end users. Journal of Documentation 51. (3) p. 227-251.

Stevenson, H.H. (1969). Defining corporate strengths and weaknesses: An exploratory study. Unpublished doctoral dissertation, Harvard Business School, Cambridge, MA.

Wersig, and Neveling, U. (1976). The phenomena of interest to information science. The information Scientist, 9 (4), 127-140.