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INFORMATION NEEDS OF AGRICULTURAL ENGINEERS: THE CASE OF IBADAN, OYO STATE CAPITAL, NIGERIA

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The Agricultural Engineers in Ibadan, Oyo State were only about 30 located in different establishments and institutions. Some of them worked in the Ministry of Agriculture, others in Industries and still others in research institutes including the University of Ibadan. Among those in a University were the post graduate students, lecturers and professors. For the purpose of this study, these Engineers were categorized into two groups: the professionals (those in government establishments and industries) and the researchers (those in research institutes and the university).

Justification of Study

It is only when a need is identified and established that one can attempt to satisfy such need. It becomes imperative therefore to know the information needs of Agricultural Engineers and to determine whether the resources available in various libraries/information centres are capable of meeting these needs.

The study has implications for agricultural engineers, and libraries. The needs of these group of users will be better met if they know where and how to find or get information. On the part of the libraries' information centres, they will identify the lapses in their collection and hence try to improve them. The libraries will also improve on their public relationships with their clientele.

The call by the Nigerian Government for increased food production through mechanization seem to have put agricultural engineering profession in the forefront in achieving this task. Agricultural engineering/mechanization cannot be fully and successfully achieved without indepth research into the specific mechanization needs in Nigeria.

The city of Ibadan in Nigeria is chosen because there is a large concentration of these engineers in the city. The reason is because there is a big University here with a number of lecturers and professors in this field, and there are quite a number of research institutes in Ibadan when compared to other parts of the country. There are also a lot of industries and government establishments in Ibadan where these engineers work. Therefore Ibadan has quite a representative number of this group of engineers to others parts of the country. Therefore knowing their information needs will help the various information centres to improve their services and fulfil their objectives and goals towards this group of people.

Objective of study

The main purpose of this study is to examine the different information needs of Agricultural Engineers by:

1) Finding out which types of information they actually require and in what form they require these information.
2) How the Agricultural Engineers obtain the various information they need.
3) Examine the various difficulties they encounter while seeking for information.
4) The study will also investigate whether the information needs of these Engineers in the University and Research Institutes differ from the information needs of those of them in

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Government bodies and industries.

Literature review

Information is concerned with ideas and the use of it is a complex process, which includes both taking in and giving out (Carey 1966). Hanson (1964) has however defined information in a scientific context. According to him, information in this context is normally intended for use rather than for interest. It is sought by the final users for a particular purpose in particular circumstances. Most information given are often recorded and recorded information or documents may take the form of books, periodicals, magnetic tapes and microtexts and all these are found in Libraries (Hanson, 1973). Information need on the other hand, can best be defined, according to Odeinde (1975), by asking the question: «What information would further this job or be recognised as doing so by the recipient?» Information need and information demand are synonymous and are often used interchangeably. Britain (1971) defines information demand as that which may be vocal or written and made known to a library or to some other information system.

Lin (1972) in his review of literature on information needs lists factors that generate different information needs as (i) Type of work one is engaged in (ii) The discipline in which one is working (iii) The spatial, social and mass communication facilities. Hanson (1973) included working habits of individuals as affecting information needs.

The rationale for studying information need is based on the fact that there is a lot of written literature on Science and Engineering and various other disciplines (Information Explosion), Therefore it becomes difficult to find information relating to specific subjects in detail. In support of this (Amaden, 1968, Hazell and Potter, 1969) as result of the study they conducted,found out that Scientists and Engineers spend about 20 - 26% of their time searching for information. According to (Lodge 1966), information needs are studied so that the right information can be supplied to the right person at the right time.

The question sometimes asked is, what is the preferable source of information among scientists and engineers. Heiner (1967) ascertained that the degree of dependence upon scientific literature compared to verbal sources varied and was greater with pure scientists than applied scientists. According to Kremer (1980) on the evaluation of information sources used by engineers, there is an indication of interaction of informal and formal sources. Also, there is general preference for convenient sources and underestimation of library services, and a high emphasis on the importance of random information acquired by chance rather than as a result of specific searching. Baker et al (1961) ascertained that 90% of the information obtained about new technical ideas was a result of oral communication. Also Cullmore (1967) and Hamilton (1961) proved that employees in industries especially those involved in production, testing and design use oral communication with fellow employees in obtaining useful information as opposed to researchers who prefer formal sources of information.

Results of many studies confirm that journals are the predominant form of literature used in science and technology.

In special circumstances, any form may be predominant, for example trade catalogues in buying organization, research reports in fast growing new fields. In general all forms are required within a large group, on some occasions, so that none can be ignored (Hanson, 1973).

The use of libraries and information centres therefore may become more popular when users find it less difficult to find the materials they need from libraries and information centres. With the popularity of Online computer, CD ROM etc., this problem will become solved since this helps users to locate their sources promptly if and when available. Information loss, results from staff's lack of knowledge of information availability, lack of staff contact (that is library staff), and lack of on-line, SD1,

and CD ROM Services in some establishments.

For this study, the questionnaire instrument was used, together with individual interviews held with the Agricultural Engineers. The questionnaires were given out personally by hand and in some cases, collected immediately, in other cases, dates were given when they could be collected. The questionnaire was divided into four sections.

Analysis and discussion of results

In all, twenty-five copies of questionnaires were distributed and all of them returned. All the returned copies of the questionnaire were properly completed hence they were all worthy of being analysed.

Background information

Most of the Engineers 68% of them has Masters degrees, 24% has only the Bachelor of Science degree (B.Sc) and 8% Ph. D. (Doctor of Philosophy)

Area of specialization

About 50% of the respondents specialized in more than one area or scope of Agricultural Engineering. For example, some specialized in Farm Power and Machinery and also in Electric Power and Processing. Another 50% specialized in only one area.

Table 1 shows the pattern of job distribution of the Engineers. 24% in the Ministry of Agriculture/Government establishments and 12% in the industry. This depicts that a large percentage of them are involved in research programmes. They will therefore need and use a lot of current information in their research work.

Table 1: categories of establishments in which agricultural engineers work

Place of work	No	Percentage
Research Institutes University Ministry of Agriculture + Government Establishment	16	64%
	6	24%
Industry	3	12%

Average percentage of time spent on various functions at place of work

Table 2 shows that the respondents differ in the amount of time spent on various functions or assignments. The Ministry/ Government workers spend more time doing administrative and management work (21%) than the industry (10%) and research workers (3,9%). More time is allocated to field work by industry workers (43%) than any other job and they spend 15% of their time doing research. The Ministry or Government workers also spend most their time on field work (37.5%) like the industry workers, but spend only 1.5% of their time for research. On the contrary, the researchers (University lecturers included), spend a good percentage of their time doing teaching (21,1%) and research 20,9%) and use only 10,3% of their time for field work, which is not negligible but small when compared with the industry and government workers. Administrative work is only 3,9% for researchers. A close observation of the table, therefore reveals some major differences in the amount of time given to various functions by the different categories of workers.

This may therefore affect the information needs of these Engineers. The Industry and Ministry/government workers may need more information on field-work, while the researchers on the other hand, may need more current information for their teaching and research.

Table 2: Average percentage of time spent on various functions at place of work

	Industry Workers	Government (Ministry Workers)	Researchers including University Lecturers
Administration/Management	10%	24%	3,9%
Teaching/Lecture	0%	5,5%	21,1%
Research	15%	1,5%	20,9%
Attending meetings	3%	6,7%	6,4%
Maintenance	18%	11,7%	5,1%
Farm work	43%	37,5%	10,3%
Writing reports	7%	5,8%	8,4%
Site Management	1,5%	1,7%	4%
Consultancy Services	7%	4,1%	2,6%

Information needs

Different establishments made provision for facilities that could supply information to their workers. (See table 3) Provision of facilities as can be seen in table 4 varied with type and place of work of the respondents. Circulation of periodicals was more common with the Ministry and Industry workers than with the researchers. A higher percentage (33,3%) of professionals responded that they were informed when new materials arrived in the library, than the researchers (12,5%). Local reports and bulletins are provided on an equal basis to the professionals (66.6%) but a striking difference existed when compared with the researchers. 33% of the Ministry workers claimed that they were supplied with trade literature and 66.6% of the industry workers claimed that this facility was available to them. 83% of the Ministry/Government workers agreed that internal courses were arranged for them, 33.38 of the industry workers accepted that they were provided with this facility while all the researchers responded that this facility was not provided for them.

Table 3: Type of arrangement made by place of work for the supply of current information

Facilities	No	Percentage
1. Library/Information centre	25	100
2. Local Report and bulletins circulated	11	4
3. International Conferences arranged and sponsored	9	36
4. Internal courses	7	28
5. Library gives information when materials arrive	7	28
6.Circulation of periodicals	6	24
7. Trade Literature	5	20

Table 4

Facilities	a	b	c
1. Library/Information Centre	100%	100%	100%
2. Circulation of periodicals	100%	100%	100%
3. Library gives information when new materials arrive	33,2%	33,3%	12,5%
4. Local reports and bulletins circulated	66,6%	66,6%	6,3%
5. Trade Literature	33,3%	66,6%	0%
6. Internal Courses arranged	83%	33,3%	0%
7. International conferences arranged and sponsored	100%	33,3%	8%

100% of category «a» (table 4) that is Ministry/Government workers indicated that international conferences were arranged and sponsored for them by their establishments, 33,3% of the industry workers provided the same answer, while only 8% of the University and Research Institute workers agreed that this facility was provided for them by their institutions. These differences in the type of information facilities provided for these group of users support Odeinde's work (1975). According to Odeinde, those in industries appear to be more interested in current awareness services than others, probably because they are commercially oriented. They are involved in a lot of competition, and industrial security. They are conscious of costs and this means that objectives are constantly being redefined. Whereas in the Universities much of the work proceeds in a multitude of directions, there is less chance of duplication.

Private arrangement for providing self with current information

The Engineers accepted that they do make private arrangement in providing themselves with current information. 64% of the Engineers do this by using the library- (this includes literature searching in libraries) especially with the aid of computers while 84% of them provide themselves with information by subscribing to journals. Subscription journals or use of journals and books seem to be more popular. Other private efforts made by these Engineers include, sponsoring themselves to conferences, belonging to various associations e.g. Nigerian Society of Agricultural Engineers, attending workshops and seminars.

The Engineers were asked to indicate which organizational facilities mentioned in the questionnaire (computer centres, engineering laboratories and large farm settlements) help to make more knowledgeable and abreast with their subject field. Their responses are summarized in (table 6). Result shows therefore that organizational facilities meet the information needs of these engineers.

Apart from using these facilities, the engineers meet their colleagues in these organizations. Questions they need to answer on various information they need might be provided by other users there, during various discussions. Results of studies conducted by Marguis and Myers show that 82% of the information input which evoked the idea for innovation was gained through personal contact.

Table 5: Private arrangement made for the provision of information

Subscription to journals books etc.	No	Percentage
Subscription to journals, books etc.	24	84%
Use of library (includes CD ROM, Literature searching on CD ROM)	16	64%

Table: 6 Organizational facilities used for making themselves more informed

Organization	No	Percentage
Engineering laboratories	12	48%
Large established farms	11	44%
Computer centres	6	24%

Project/Research Engineers involuement

The engineers were asked if they had any project or research going on at present. All the responses given to this particular question, show that all the Agricultural Engineers are involved in one form of project or research. These projects and researches differ according to the different areas of the subject, they will therefore need different types of information

Type of information agricultural engineers need at place of work

About 85% of the researchers indicated that they needed information for the different researches they are doing. Apart from research information, both groups indicated that they also wanted information on design, statistical data, and specification.

About 50% of the researchers indicated that they sometimes need to obtain information by listening to lectures and only 10% of the professionals indicated that they needed lecture information.

This also shows difference of information need according to various functions performed by individuals.

Comparison between type and number of formal sources used by professionals and research

The Engineers differ in some respects on the type of information sources they consult used (see table 7). The professionals used more of the reports of their organization and from other organizations (88%) than researchers. The researcher's main source of information as can be derived from the table are journals, textbooks and manuals.

Table 7: Types of formal sources used by respondents

Formal sources	No	Percentage
a. Technical or scientific journals or conference reports	23	92%
b Books and handbooks	20	80%
c Reports of organization	18	72%
d. Drawings	11	44%
e. Reviews	9	36%
f. Personal notes	8	32%
g. Abstracts and indexes	7	28%
h. Memo's correspondence	7	28%
I. Personal file	7	28%
j. Printout	6	24%
k. Standards	6	24%
l. Bibliographies	4	16%
m. Maps	4	16%
n. Job instruction	3	12%
o. Computer/literature searching CD Rom	3	12%
P. Patents	2	8%
q. Others	2	8%

Efforts in obtaining information

Ordering of publication through libraries

Only 44% of the Engineers order their publications or journals etc. through libraries, others subscribe directly from the source.

Provision of document delivery services by libraries

Sixteen percent (16%) of respondents admitted that their libraries provide delivery services for them. 12% of these indicated that the materials take more than one week to arrive and 4% indicated that their library delivery services normally takes 2 to 3 days.

Compilation of new publications

56% of the Engineers gave a positive answer, to the question if their libraries compile lists of publication for them. 8% indicated that this service was not available in their libraries and 12% made no response at all.

The table showing the list of other services in a library as it applies to the Agricultural Engineers shows that among all the services of the library named, loans and current awareness services appear to be most popular than the other sources. As much as 44% claim that reprographic services are not available in their libraries. The use of CD ROM is not available for literature search in most of their libraries. 20% claim that current awareness services were not available in their libraries also. Among all the services, quick reference service seems to be mostly used by the respondents, or rather to be the most available in libraries (64%).

Table 8: List of other services in a library as it applies to the agricultural engineers library

Services	Not Available	Available but not used	Available but not often used	Available and used frequently
Loans	4%	4%	28%	52%
Photocopies	32%	14%	8%	32%
Reprographic Service	44%	32%	8%	-
Quick Reference	8%	8%	16%	64%
Literature search/ CD ROM usage	16%	12%	36%	24%
Current Awareness	20%	8%	8%	52%
Others	-	-	-	-

Satisfaction of services obtained from libraries

Only 20% of the respondents indicated that they were satisfied with the services of their libraries. The reasons given by these respondents is that they do not find most of the materials they want to use, especially journals, and that the libraries possess very few professional textbooks in Agricultural Engineering. They also indicated other services e.g. literature search, are not adequate enough, and that most libraries do not have good personal relationships with their clientele.

The Engineers (those in government establishments) also mentioned that the opinions and information collected from rural farmers and indigenes are not documented and stored. Some of the preserved or stored information are also not often available to the Engineers, as most cannot be found on the shelves. They also mentioned that some important books recommended by the Engineers to the libraries are never acquired.

How the Engineers will like/prefer to obtain information

Almost 50% of the respondents suggested that libraries should always supply information about future available conferences. Some of the Engineers suggested that titles of recent journals should be published and circulated to the users or placed on bulletin boards. Information about places or positions in the library where these can be obtained should also be made available to the users. Another 20.1% are of the opinion that current awareness facilities by the use of computer print out cards should be made available on individual basis.

Findings, recommendations and conclusion

Findings

1. Findings information needs of the different categories of Agricultural Engineers differ according to their places of work. The professionals for instance used more of reports from their organizations, when seeking for information, while the researchers used more of journals, books and annuals for the provision of information.
2. Provision of information facilities varied with different establishments and the needs of the establishments. The professionals seem to have more facilities provided freely for them, e.g. arrangement of internal courses, conferences etc. than the researchers.
3. Large farm settlements (especially for the professionals), computer centres, and En-

gineering laboratories helped to supply information to these users.

4. To obtain information, the Engineers will want more current textbooks and current journals. Literature searching using computers should be made available to users.
5. The Engineers did not consider library services adequate enough. They had difficulty in obtaining the information they needed and most of the facilities provided in libraries are not enough.
6. The Agricultural Engineers would like current awareness services to be more enhanced in order to make them knowledgeable/aware of materials available in the library.

Recommendations

Based on the responses obtained from these engineers,

1. The Engineers in various establishment should work (e.g. financial contributions, gifts from donors etc.) towards equipping a particular library or information centre so that they can all make use of the facilities there for obtaining the information.
2. Regular user studies should be organised for the Engineers by various libraries so that they can maximize the library facilities e.g. the use of the CD ROM in obtaining information.
3. More current awareness services should be provided by libraries to these Engineers to enable them know what the library has in stock for them.
4. Since oral communication seems to play a big role in providing information for these users, libraries should try and make available list of conferences being held in various subject fields, arrange seminars for different groups of scientists and Engineers according to their specific areas of specialization and also make sure that all the pages presented are collected and sorted for future reference.

Conclusion

The Agricultural Engineers needed a lot of information irrespective of their different places of work. The Engineers found it difficult some times to obtain the various information they needed either because the materials were not available or that services provided by the libraries for the provision of these sources were not adequate enough.

Libraries and information centres should try to meet the needs of these Engineers by providing enough readable materials for them, supplying them with current awareness services and with the new technology output in libraries, supply enough user studies, which will make information obtained in an easier way try users./

A lot of work therefore has not to be done by libraries and information centres in order to meet the needs of this category of users. Information is a valuable commodity that is useful to all individuals. Provision of information to users especially scientists and Engineers is sure to provide more information which in turn will satisfy the need of other users.

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