

Access and use of libraries and information centres by agricultural researchers and extension workers in Zimbabwe

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Abstract

Access to information through libraries and information centres, among others, enhances the timeliness and quality of such information. In this study we sought to establish how information generated by both researchers and extension workers was being managed by the respective divisions for access and posterity. Data was collected through a questionnaire which was distributed to agricultural researchers and extension workers. The study found that there was limited access to libraries which confirms why the majority of extension workers consulted print sources and departmental collections first, as well as their preference for using publications in disseminating information to farmers. The respondents also utilised alternative sources of information, including circulars from the ministry's head office, personal and departmental collections, media sources (newspapers, radio, audio materials), and other libraries. Libraries in NGOs, ICRISAT, FAO and Seed Co were also mentioned.

Keywords: Agriculture, Extension, Research, Libraries, Zimbabwe.

1. Introduction and background to the study

Research generates information, and the extension system disseminates this information to farmers. In turn, local knowledge held by farmers helps researchers understand farmers' problems. This can be communicated either directly by the farmers or through extension channels. One of the main challenges affecting the adaption or adoption of new technologies by farmers is lack of information. The absence of a coordinated national agricultural information system creates information gaps in an AKIS environment.

Agriculture is the dominant sector in Zimbabwe's economy despite contributing 15-20% of the Gross Domestic Product (GDP) and providing income to over 75% of the population (Muir-Leresche, 2006:99). From a GDP contribution of 23.7% in 1999 to 14.6% in 2003, the specific decline is attributed to the reduction of area planted and in relation to crop type (Moyo, Moyo and Matondi, 2004). Libraries and information centres can be found in universities, colleges, the Ministry Agriculture, Mechanisation and Irrigation Development and its related research institutes and colleges.

According to Ojiambo in Kiplang'at (2004:2), agricultural technology transfer depends on a holistic agricultural information system that comprises of a research subsystem, the extension subsystem, farmers' subsystem and an information subsystem. A national agriculture information system ensures that information generated by agricultural agencies, institutions and researchers is collated and made available to a wider audience, including farmers, through channels which include the extension systems. Libraries and information centres play an important role in the dissemination of agricultural information. They provide access to information ranging from broad subject coverage to specific disciplines, depending on the intended clientele and institutions that they represent. The material formats range from books to electronic and web sources and there is a growing trend towards the adoption of electronic information resources, although institutional capacities vary.

According to Dulle, Lwehabura, Mulimila and Matovelo (2001:190), access to timely and relevant information and the proper recording and organisation of information are key issues in the effectiveness of any research system. Their study revealed that the majority of agricultural researchers felt that information provision by many agricultural libraries in Tanzania was inadequate. Among the challenges faced by libraries were: lack of comprehensive journal collections; lack of up-to-date information; lack of information technology facilities (internet, CD-ROMs); inadequate funding; poor information access skills; and book mutilation, among other factors. Due to the poor collections, Dulle, Lwehabura, Mulimila and Matovelo (2001:190) found that the respondents (researchers) resorted to libraries outside the country or international organisations like ICRAF to address their information needs.

2. Purpose of the study

The purpose of this study was to investigate access and utilisation of libraries and information centres by agricultural researchers and extension workers within the Ministry of Agriculture, Mechanisation and Irrigation Development's research and extension divisions and research institutes.

3. Methodology

Both qualitative and quantitative techniques were used in the study and data was collected through a questionnaire distributed to researchers and extension workers. Zimbabwe has 10 provinces of which two, Harare and Bulawayo, were not included in the study because they cover urban areas. Extension workers were drawn from eight provinces which yielded eight provincial extension officers and 60 district extension officers. Additional district extension officers from 14 districts were selected using random sampling to provide field experiences, although this category was mostly investigated in Mashonaland Central Province. The study also looked at the 91 subject matter specialists in the eight provinces, including those stationed at the head office. The categories of Agricultural Extension Officers, Agricultural Extension Supervisors and Agritex workers were drawn from Mashonaland Central Province to constitute a representative sample of agro-regions II to V. Due to the large number of

extension workers involved at ward level, the study did not investigate this category at a national level, but was restricted to Mashonaland Central Province, which was considered representative in terms of agricultural practices. Purposive sampling was applied for Mashonaland Central Province in which all the seven districts were investigated. Random sampling was then conducted for the different wards.

From the 111 questionnaires distributed to researchers, 60 were returned (a return rate of 54%). However, errors were identified in four of the questionnaires and they were discarded. Usable returns therefore amounted to 56. The total target population for extension workers in this study was three hundred and eighteen (318). Two directors (Technical and Field) and one deputy director were interviewed and were not required to complete the questionnaires. A total of one hundred and seventy two (172) questionnaires were completed, a return rate of 54%.

4. Results

4.1 Access to a library or information resource centre

This question asked the respondents whether they had access to a library, information resource centre or information kiosk in their work environment or community. The results indicated that 129 (56.6%) of the respondents had access, while 99 (43.7%) did not have access to the mentioned facilities. Those who had access represented 78 (45.3%) of the extension workers and 51 (91.1%) of the researchers, while 94 extension workers (54.7%) and 5 researchers (8.9%) did not have access.

The libraries were all located within the research institutes, either as part of the main administration buildings or as a separate building and this made the libraries more accessible to users within the institutes. The libraries' sizes were relative to other units within the buildings, although space was considered inadequate, both in terms of shelves and sitting space.

4.1.2 Staffing and membership

The MOA's research institutes face a critical staff challenge as only the Central Library had a librarian, while the remaining libraries were manned by a library assistant, an executive assistant and research officers. The libraries' opening hours were standard working hours and where there was no library staff in charge, these were dependent on the availability of the research officers in charge or their alternate. Membership was open to all ministry employees (including those from other government departments), students, researchers, and members of the public on request.

4.2 Information seeking purposes

Overall, the majority of respondents (172; 75.4%) indicated that they required information when assisting farmers and least when 24 (10.5%) when assisting researchers, as summarised in Table 1 below.

Table 1: Information seeking purposes**Extension workers N=172 and Researchers N=56**

| Information seeking purposes | Agricultural Extension Workers | | Agricultural Researchers | | Total | |
|----------------------------------|--------------------------------|------|--------------------------|------|-------|------|
| | N | % | N | % | N | % |
| To conduct research | 95 | 55.2 | 44 | 78.6 | 139 | 61 |
| General awareness | 73 | 42.4 | 13 | 23.2 | 86 | 37.7 |
| When assisting extension workers | 61 | 35.5 | 19 | 33.9 | 80 | 35.1 |
| When assisting farmers | 149 | 86.6 | 23 | 41.1 | 172 | 75.4 |
| When assisting researchers | 18 | 10.5 | 6 | 10.7 | 24 | 10.5 |

*Table denotes multiple responses

4.2.1 Primary source when in need of information

The respondents were asked to indicate whom they consulted first when they needed information. The majority (57; 25%) indicated that they first consulted the internet, followed by departmental collections (54; 23.7%), colleagues (46; 20.2%), personal collections (38; 16.7%), and the library (30; 13.2%). Most extension workers (48; 27.9%) consulted departmental collections, while the majority of researchers (28; 50%) consulted the internet as shown in Table 2.

Table 2: Primary source when in need of information**Extension workers N=172 and Researchers N=56**

| Who or what do you consult first when in need of information? | Agricultural Extension Workers | | Agricultural Researchers | |
|---|--------------------------------|------------|--------------------------|------------|
| | N=172 | % | N=56 | % |
| Library | 24 | 14 | 6 | 10.7 |
| Internet | 29 | 16 | 28 | 50.0 |
| Colleagues | 37 | 21 | 9 | 16.1 |
| Personal collection | 31 | 18 | 7 | 12.5 |
| Departmental collection | 48 | 27.9 | 6 | 10.7 |
| Workshops & seminars | 3 | 1.7 | - | - |
| Total | 172 | 100 | 56 | 100 |

4.2.2 Print and electronic sources

The respondents were asked to indicate what they would consult or choose first between print and electronic sources when in need of information. Print sources were selected by an overwhelming 175 (76.8%) of the respondents, while 53 (23.2%) indicated that they would use electronic sources first. The results point to issues of connectivity.

The responses of extension workers indicate that 156 (90.7%) preferred print sources, with only 16 (9.3%) mentioning electronic sources. The responses from researchers show that the majority (37; 66.1%) preferred electronic sources, with 19 (33.9%) mentioning print sources.

4.2.3 Importance of information sources in keeping up-to-date

The respondents had to indicate the importance of different sources of information in keeping up-to-date with scientific developments in the respondents' related field. The responses reveal that technical reports were considered to be very important by 164 (71.9%) of the respondents, specifically 126 (73%) of the extension workers and 38 (67.9%) of the researchers. Journals were considered to be important/ very important by researchers, with only 1(1.8%) not believing this to be the case. Consulting knowledgeable persons in the field or the supervisor was considered to be important/very important by 164 (95.3%) of the extension workers. Table 3 below provides a detailed analysis of the information sources.

Table 3: Importance of various information sources
Extension workers N=172 and Researchers N=56

| Information Resource | Relative Importance | Agricultural Extension Workers | | Agricultural Researchers | | Total | |
|--------------------------------------|---------------------|--------------------------------|------|--------------------------|------|-------|------|
| | | N | % | N | % | N | % |
| Journal articles | Very important | 51 | 29.7 | 38 | 69.7 | 89 | 39 |
| | Important | 92 | 53.4 | 17 | 30.4 | 109 | 47.8 |
| | Not important | 29 | 16.9 | 1 | 1.8 | 30 | 13.2 |
| Review articles | Very important | 43 | 25 | 24 | 42.9 | 67 | 29.4 |
| | Important | 102 | 59.3 | 31 | 55.4 | 133 | 58.3 |
| | Not important | 27 | 15.7 | 1 | 1.8 | 28 | 12.3 |
| Conference abstract and proceedings | Very important | 41 | 23.8 | 22 | 39.3 | 63 | 27.6 |
| | Important | 85 | 49.4 | 31 | 55.4 | 116 | 50.9 |
| | Not important | 46 | 26.7 | 3 | 5.4 | 49 | 21.5 |
| Books | Very important | 123 | 71.5 | 24 | 42.9 | 147 | 64.5 |
| | Important | 43 | 25 | 29 | 51.8 | 72 | 31.6 |
| | Not important | 6 | 3.5 | 3 | 5.4 | 9 | 3.9 |
| Professional meetings/ workshops | Very important | 116 | 67.4 | 30 | 53.6 | 146 | 64 |
| | Important | 51 | 29.7 | 24 | 42.9 | 75 | 32.9 |
| | Not important | 5 | 2.9 | 2 | 3.6 | 7 | 3.1 |
| Sources of contents / contents pages | Very important | 38 | 22.1 | 6 | 10.7 | 44 | 19.3 |
| | Important | 93 | 54.1 | 35 | 62.5 | 128 | 56.1 |
| | Not important | 41 | 23.8 | 15 | 26.8 | 56 | 24.6 |
| Indexing and abstracting journals | Very important | 29 | 16.9 | 16 | 28.6 | 45 | 19.7 |
| | Important | 89 | 51.7 | 34 | 60.7 | 123 | 53.9 |
| | Not important | 54 | 31.4 | 6 | 10.7 | 60 | 26.3 |
| Research reports/ patents | Very important | 85 | 49.4 | 42 | 75 | 127 | 55.7 |
| | Important | 70 | 40.7 | 13 | 23.2 | 83 | 36.4 |
| | Not important | 17 | 9.9 | 1 | 1.8 | 18 | 7.9 |
| Technical reports | Very important | 126 | 73.3 | 38 | 67.9 | 164 | 71.9 |
| | Important | 39 | 22.7 | 15 | 26.8 | 54 | 23.2 |
| | Not important | 7 | 4.1 | 3 | 5.4 | 10 | 4.4 |

| | | | | | | | |
|--|----------------|-----|------|----|------|-----|------|
| Fact sheets | Very important | 121 | 70.3 | 16 | 28.6 | 137 | 60.1 |
| | Important | 40 | 23.3 | 30 | 53.7 | 70 | 30.7 |
| | Not important | 11 | 6.4 | 10 | 17.9 | 21 | 9.2 |
| Pamphlets/ leaflets | Very important | 101 | 58.7 | 13 | 23.2 | 114 | 50 |
| | Important | 62 | 36 | 34 | 60.7 | 96 | 42.1 |
| | Not important | 9 | 5.2 | 9 | 16.1 | 18 | 7.9 |
| Internet sources | Very important | 87 | 50.6 | 50 | 89.3 | 137 | 60.1 |
| | Important | 46 | 26.7 | 6 | 10.7 | 52 | 22.8 |
| | Not important | 39 | 22.7 | - | - | 39 | 17.1 |
| Theses and dissertations | Very important | 26 | 15.1 | 22 | 39.3 | 28 | 21.1 |
| | Important | 74 | 43 | 28 | 50 | 102 | 44.7 |
| | Not important | 72 | 41.9 | 6 | 10.7 | 78 | 34.2 |
| Newsletters | Very important | 51 | 29.7 | 16 | 28.6 | 67 | 29.4 |
| | Important | 98 | 57 | 34 | 60.7 | 132 | 57.9 |
| | Not important | 23 | 13.4 | 6 | 10.7 | 29 | 12.7 |
| Library catalogue | Very important | 49 | 28.5 | 7 | 12.5 | 56 | 24.6 |
| | Important | 80 | 46.5 | 36 | 64.3 | 116 | 50.9 |
| | Not important | 43 | 25 | 13 | 23.2 | 56 | 24.6 |
| Face to face conversations/ discussions | Very important | 100 | 58.1 | 24 | 42.9 | 124 | 54.4 |
| | Important | 59 | 34.3 | 31 | 55.4 | 90 | 39.5 |
| | Not important | 13 | 7.6 | 1 | 1.8 | 14 | 6.1 |
| Email/ list serve/ discussion forums | Very important | 45 | 26.2 | 19 | 33.9 | 64 | 28.1 |
| | Important | 81 | 47.1 | 30 | 53.6 | 111 | 48.7 |
| | Not important | 46 | 26.7 | 7 | 12.5 | 53 | 23.2 |
| Librarian/ library staff | Very important | 38 | 22.1 | 11 | 19.6 | 49 | 21.5 |
| | Important | 82 | 47.7 | 25 | 44.6 | 107 | 46.9 |
| | Not important | 52 | 30.2 | 20 | 35.7 | 72 | 31.6 |
| Consult knowledgeable persons in the field/ supervisor | Very important | 101 | 58.7 | 31 | 55.4 | 132 | 57.9 |
| | Important | 63 | 36.6 | 22 | 39.3 | 85 | 37.3 |
| | Not important | 8 | 4.7 | 3 | 5.4 | 11 | 4.8 |

*Table indicates multiple responses

4.2.4 Frequency of use of information sources

Having identified the importance of information sources, the respondents were required to indicate how often they consulted the sources. Table 4 below provides a combined summary of the responses.

Table 4: Frequency of use of information sources

Extension workers N=172 and Researchers N=56

| Information Source | Frequency of access | | | | | | | |
|-------------------------------------|---------------------|------|-------|------|-----------|------|-------|------|
| | Very often | | Often | | Sometimes | | Never | |
| | N | % | N | % | % | % | N | % |
| Journal articles | 38 | 16.7 | 49 | 21.5 | 117 | 51.3 | 24 | 10.5 |
| Review articles | 30 | 13.2 | 54 | 23.7 | 117 | 51.3 | 27 | 11.8 |
| Conference abstracts & proceedings | 16 | 7.0 | 60 | 26.3 | 102 | 44.7 | 50 | 21.9 |
| Books | 118 | 51.8 | 78 | 34.2 | 29 | 12.7 | 3 | 1.3 |
| Professional meetings/workshops | 63 | 27.6 | 86 | 37.7 | 76 | 33.3 | 3 | 1.3 |
| Sources of contents (content pages) | 29 | 12.7 | 47 | 20.6 | 105 | 46.1 | 47 | 20.6 |
| Indexing and abstracting journals | 13 | 5.7 | 47 | 20.6 | 95 | 41.7 | 73 | 32 |
| Research reports/patents | 44 | 19.3 | 77 | 33.8 | 82 | 36 | 25 | 11 |

| | | | | | | | | |
|--|-----|------|----|------|-----|------|----|------|
| Technical reports | 85 | 37.3 | 87 | 38.2 | 46 | 20.2 | 10 | 4.4 |
| Fact sheets | 74 | 32.5 | 88 | 38.6 | 51 | 22.4 | 15 | 6.6 |
| Pamphlets/leaflets | 72 | 31.6 | 86 | 37.2 | 51 | 22.4 | 19 | 8.3 |
| Internet sources | 76 | 33.3 | 32 | 14 | 48 | 21.1 | 72 | 31.6 |
| Thesis and dissertations | 17 | 7.5 | 48 | 21.1 | 71 | 31.1 | 92 | 40.4 |
| Newsletters | 32 | 14 | 62 | 27.2 | 106 | 46.5 | 28 | 12.3 |
| Library catalogue | 15 | 6.6 | 47 | 20.6 | 100 | 43.9 | 66 | 28.9 |
| Face-to-face conversations/ discussions with colleagues | 100 | 43.9 | 72 | 31.6 | 43 | 18.9 | 13 | 5.7 |
| Email/list serve/discussion forums | 29 | 12.7 | 42 | 18.4 | 81 | 35.5 | 76 | 33.3 |
| Librarian/library staff | 15 | 6.6 | 32 | 14 | 93 | 40.8 | 88 | 38.6 |
| Consult knowledgeable person in the field/supervisor | 96 | 42.1 | 74 | 32.5 | 46 | 20.2 | 12 | 5.3 |

*Table denotes multiple responses

The responses indicate that books were the most frequently used information source, with 118 respondents (51.8%) indicating 'very often'. At the top of resources that were never used were theses and dissertations (92 respondents; 40.4%), consulting library staff (88; 38.6%), e-mail/ list serve/ discussion groups (76 33.3%) and internet sources (72; 31.6%).

4.2.5 Awareness of less recent books and journals

This question sought to highlight the significance of older books and journal articles by asking respondents to indicate how they became aware of such sources and the expected role of library staff. 142 (64%) of the respondents indicated citations at the end of journal articles, followed by citations at the end of book chapters (132; 59.5%), browsing older volumes (131; 59%), and the librarian/ library staff (161; 72.5%).

4.2.5.1 Journal titles familiar to the respondents

This question aimed to establish the respondents' familiarity with general or specific journal titles in their subject areas and it was found that the respondents were able to indicate titles covering various aspects of agriculture. The included both local publications (including vernacular) and international publications, e.g. *Mirimi/Umlimi* and *Acta Horticulture*.

4.3 Frequency of visits to the library or information resource centres

The majority of respondents (68; 29.8%) used the facilities monthly, with 27 (11.8%) using the facilities weekly. Table 5 provides a summary of the responses.

Table 5: Frequency of visits to the library or information resource centre**Extension workers N=172 and Researchers N=56**

| Frequency of visits to library/information resource centre | Agricultural Extension Workers | | Agricultural Researchers | | Total | |
|--|--------------------------------|-------|--------------------------|-------|-------|-------|
| | N=78 | 45.3% | N=51 | 91.1% | N=129 | 56.6% |
| Daily | 11 | 6.4 | 8 | 14.3 | 19 | 8.3 |
| Weekly | 14 | 8.1 | 13 | 23.2 | 27 | 11.8 |
| Fortnightly | 10 | 5.8 | 5 | 9 | 15 | 6.6 |
| Monthly | 43 | 25 | 25 | 44.6 | 68 | 29.8 |

Table 5 above shows similar trends running through the responses of researchers and extension workers. For example, monthly visits were mentioned by the majority of both extension workers (43; 25%) and researchers (25; 44.6%), while 99 respondents (43.4%) did not answer this question, of which (94, 54.7%) were extension workers.

4.4 Alternative information access services

This question sought to establish how the respondents who did not have access to a library or information resource centre were able to access information. The question attracted 100 responses, 95 from extension workers and 5 from the researchers. The majority of respondents (36; 15.8%) indicated that they relied on circulars from the Ministry of Agriculture's Head Office, specifically 34 (19.8%) of the extension workers and 2 (3.6%) of the researchers. Departmental and personal collections were mentioned by 29 (12.7%) of the total respondents, representing 28 extension workers (16.3%) and 1 researcher (1.8%). Newspapers, radio and audio materials were mentioned by 19 respondents (8.3%), i.e. 18 extension workers (10.5%) and 1 researcher (1.8%). The respondents also indicated that they utilised other libraries in town, and these must be distinguished from the institutional libraries or community libraries indicated above. This was mentioned by 12 (5.3%) of the total respondents, i.e. 1 (1.8%) researcher and 11 (6.4%) extension workers. Training materials were mentioned by 4 (2.3%) of the extension workers. The libraries that they visited included university libraries, NGOs' libraries, including ICRISAT, high school libraries, public libraries, the FAO Regional Library, and seed companies were also among those mentioned.

4.5 Type of material sought from the library

The study sought to establish the type of material the respondents accessed from the libraries. The majority of respondents (35; 15.3%) indicated that they consulted books, while journals came second, consulted by a total of 31 (13.5%) respondents. Table 6 below provides a summary of the results.

Table 6: Type of material sought from the library

Extension workers N=172 and Researchers N=56

| Type of material sought/consulted | Agricultural Extension Workers | | Agricultural Researchers | | Total | |
|-----------------------------------|--------------------------------|------|--------------------------|------|-------|-------|
| | N=78 | % | N=51 | % | N=129 | 56.6% |
| Books | 30 | 17.4 | 5 | 8.9 | 35 | 15.3 |
| Journals | 11 | 6.4 | 20 | 35.7 | 31 | 13.5 |
| Newspapers | 15 | 8.7 | 10 | 17.9 | 25 | 11 |
| Government publications | 15 | 8.7 | 13 | 23.2 | 28 | 12.3 |
| Reference materials | 7 | 4.1 | 1 | 1.8 | 8 | 3.5 |
| Patents | - | - | 2 | 3.6 | 2 | 0.9 |

99 respondents (43.4%) did not answer this question, the majority being (94, 54.7%) extension workers.

4.6 Frequency of assistance from library staff

Respondents were asked whether they sought any assistance from library staff when they visited libraries. The majority of respondents (73; 30%) indicated that they sometimes sought assistance, representing 45 extension workers (26.1%) and 28 researchers (50%). 25 (11%) never sought assistance, i.e. 10 (5.8%) of the extension workers and 15 (26.8%) of the researchers. 23 (10.1%) of the respondents indicated that they often sought help, with 7 (4.1%) of the extension workers indicating that they ‘very often’ sought help from library staff.

Library guides aid users by providing an indication of where to locate the different resources within the library. These were available in all the libraries except at the Cotton Research Institute and Henderson’s Laboratory section.

4.7 Finding material in the libraries

The study also sought to establish whether the respondents always found the information they were looking for in the library. This would also provide an indication of the level of satisfaction among the patrons. The majority of respondents (86; 37.7%) indicated that they did not always find what they were looking for, representing 46 (26.7%) of the extension workers and 40 (71.4%) of the researchers. A total of 43 (18.8%) of the respondents answered that they found what they were looking for, i.e. 32 extension workers (18.6%) and 11 researchers (19.6%).

4.8 Inter-library loan requests

The inter-library loan service allows a library to request material on behalf of its patron(s) from another holding library when the material is not available from its own stock. This question intended to explore whether this service was available to the respondents in the study. The majority (90; 39.5%) indicated that their libraries did not request material from other institutions, while 39 (17.1%) indicated that the service was provided.

4.9 Database subscriptions and utilisation

Not all libraries were connected to the internet; hence access was, in some instances, available from offices. The Central Library subscribed to the TEEAL database as well as the Global Online Access to Research in Agriculture (AGORA) initiative. While institutes were not subscribing to any databases they had access to TEEAL through the Central Library.

5 Discussions

5.1 Information sources accessed and level of utilisation

The study established that the majority of extension workers consulted their departmental collections first, with 90.7% indicating their preference for print sources. In contrast, the majority of researchers consulted the internet first, with 66.1% indicating their preference for electronic sources. The preference for printed information was confirmed when publications were the most highly rated organisation-based method of communicating information to farmers by extension workers. Researchers, who are usually based in institutions, have greater access to the internet than extension workers who are highly mobile and may not have such access in the field, particularly at ward level. The contradiction lies in the assertion by the majority of extension workers (69.2%) that they could access the internet in the office compared to 23.2% of the researchers. This would imply that while extension workers had relatively high access, they were not utilising the internet for information purposes, while researchers with limited access were maximising their use of this resource. However, an extension worker at ward level is more likely to find a mobile phone useful and not see the point of the internet in their work. In addition, with technological developments, the internet is now available on mobile phones.

Dependence on print sources was therefore not the result of access or connectivity. Technical reports were considered to be a very important source of information by 71.9% of the researchers, followed by books, professional meetings/ workshops, fact sheets, and the internet. This corroborates Gamage's (2006:20) observations that scientific information is communicated by scientists through scientific reports, research articles, papers presented at conferences; dialogue with colleagues, and through workshops. Gamage adds that the continued evolution of ICTs and the internet has also enhanced the availability of information in scientific disciplines. The internet provides access to the most current information, particularly research publications and online journals. This explains why 100% of the researchers considered the internet to be important, while 98.2% considered journals to be important.

Majid and Eisenschitz (2000) and Gamage (2006) observe that besides the formal communication platforms described above, informal channels, like conversations, e-mail and colleagues, also played a significant role in the communication of agricultural information. It can be deduced from this analysis that a variety of sources were consulted by the respondents when faced with an information need, and the preference for print or electronic sources was also influenced by connectivity.

In terms of frequency of utilisation, books were the most frequently consulted formal source, while face-to-face conversations, discussions, and consulting colleagues were the most frequently used informal communication channels. While the internet was regarded to be very important by the researchers, it was nevertheless ignored by 31.6% of the total respondents. The same applied to other resources like the email/ list serve (33.3%) and theses and dissertations (40.4%). The dependence on print sources was also confirmed when the respondents indicated how they became aware of older books and journals, with 64%

mentioning citations at the end of journal articles and 59.5% citations at end of book chapters. The study revealed that information was communicated through a wide range of extension methods, tools and approaches, including manuals and other internal publications such as factsheets, the media (radio and television), and through personal contact via on-farm demonstrations and field days.

The collections were mainly bound volumes of periodicals dating back from the pre-1960s to the early 1980s, in most instances, after which unbound journals emerged. At the Central Library, there were some new titles published in 2003 and 2005. The collections were dated, although some current books and journal titles were available as donations or as exchanges, which was mainly due to budgetary constraints. Budgets, where available, went towards subscription to newspapers, for example- at the Central Library. Donations from CTA, e.g. the *Spore Magazine*, were on display in most libraries.

5.2 Role of institutional libraries

The study also looked at institutional libraries and how they supported or endeavoured to meet the information needs of the respondents. Most respondents (56.6%) indicated that they had access to a library or information kiosk at work or in their community. The study showed that the majority of researchers (91.1%) had access to libraries, while the majority of extension workers (54.7%) did not have access to library services. The frequency of use and utilisation of library resources was therefore low among the extension workers. Dulle (2000) made similar observations, finding that the use of libraries was very unpopular among extension workers. The absence of access to libraries points to why the majority of extension workers consulted departmental collections first (Table 2), why they consulted print sources first (4.2.2), and their preference for using publications in disseminating information to farmers. This demonstrates that extension workers generally have a propensity to use print sources. The respondents also utilised alternative sources of information, including circulars from the ministry's head office, personal and departmental collections, media sources (newspapers, radio, audio materials), and other libraries.

Mangstl (in Rhoe, Oboh and Shelton, 2010:2) posits that libraries support agricultural research by enhancing access to information through the effective management of its resources and the provision of a wide range of information services and products to researchers, scientists, and policy makers in the agricultural sector. The libraries of the ministry were generally not adequately equipped to support the information needs of researchers and extension workers, with 37.7% of the respondents indicating that they did not always find what they were looking for, even with the assistance of library staff.

Although the Central Library had access to variety of databases, users were not able to access these resources from other centres or institutes. The respondents expressed dissatisfaction with the performance of the ministry's information services as the resources were only concentrated in one locality and the quality of resources was poor. The use of the inter-library loan service was low, with 39.5% of the respondents indicating that their libraries did not provide this service.

In order to maximise access, an immediate solution for providing access to current information services would be for research institutes and other users in the periphery to fully utilise the TEEAL and AGORA databases. Institutes could send their information requests to the Central Library, which would in turn conduct searches and send the retrieved information electronically or as hard copies. Given adequate staff, the Central Library could also develop SDI profiles for the research institutes, to whom they would send contents pages from

databases on a regular basis. Researchers and extension workers could also utilise the Central Library each time they visited the Head Office.

The most utilised resources were books (15.3%), journals (13.5%) and government publications (12.3%). However, when the respondents were asked to indicate the journal titles they were familiar with, they suggested outdated titles like *Kirkia* and the *Zimbabwe Journal of Agricultural Research*, which have not been in press for some time. The library, as an information resource, was not rated highly by both categories of respondents (22.7% of the extension workers and 26.8% of the researchers indicated that the services were poor). However, 6.9% of the extension workers and 17.9% of the researchers stated that they were satisfied with the libraries' resources. This lack of confidence in library services stems from the libraries' inability to enforce their status as information providers within the different institutions surveyed. Studies by Dulle, Lwehabura, Mulimila and Matovelo (2001) and Rhoe, Oboh and Shelton (2010) revealed similar challenges facing libraries in meeting agricultural information needs, emanating mostly from poor funding which affected their capacities to expand.

On the importance of various information sources, 129 (75%) of the extension workers indicated that the library catalogue was important. This is despite earlier indications by extension workers, where 94 (54.7%) indicated having no access to a library in their work environment or community. This again highlights some of the contradictions and inconsistencies in the responses. Respondents indicated consulting other institutional libraries, and this represented 39 (22.7%) of the extension workers and 32 (57.1%) of the researchers. While the extension workers and researchers indicated that they had access to ICTs, the majority of libraries did not have any, leaving the patrons to access ICTs from their offices and other sources.

6. Conclusion

The information seeking pattern of the respondents was largely determined by the information sources and their availability in terms of proximity and format. The majority of the agricultural extension workers indicated that their first point of call, when in need of information, was their departmental collections, with 90.7% of the extension workers preferring print sources. In contrast, most researchers consulted internet sources and hence preferred electronic sources. The library, as the first point of call, was poorly rated (14% of the extension workers and 10.7% of the researchers).

The researchers and extension workers also used libraries in their information seeking processes. The study showed that the majority of researchers had access to a library or information resource centre in their work environment or community, while the majority of extension workers did not have such access. In terms of frequency of use, the majority of researchers and extension workers who had access visited the libraries monthly. Government circulars, departmental and personal collections, newspapers, the radio, and training materials were mentioned as alternative sources of information by those who did not have access to libraries. Traditional print sources (books, journals and government publications) were the main types of material accessed in the libraries, ostensibly due to the absence of other material in these libraries. The respondents indicated that they sought assistance from library staff when using libraries at different times, although 11% claimed that they never sought such assistance.

In terms of fulfilment in the use of libraries, the majority indicated that they did not always find what they were looking for. To compound this, most of the libraries did not have an

active inter-library loan (ILL) facility in place. Other libraries, particularly university and NGO libraries were also consulted by the respondents because they provided alternative sources of information. School libraries were also consulted. Overall, however, the respondents still felt that their libraries were offering a significant service.

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