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Electronic Access to Canadian Federal Government Information: How Prepared are the Depository Libraries?

Report to
Depository Services Program
Canadian Government Publishing
Public Works and Government Services Canada

August 1997

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Electronic Access to Canadian Federal Government Information: How Prepared are the Depository Libraries?

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Executive Summary

Canada's Depository Services Program (DSP) has been operating for seventy years providing a vital link between Canadian citizens and their federal government through the free distribution of official publications to full and selective depository libraries. The recent rapid expansion of electronic publication and dissemination of federal government information in Canada has led the DSP to fund the first extensive examination of the state of readiness of depository libraries to adopt the new technologies.

In the fall of 1996 researchers at the Graduate School of Library and Information Science, University of Western Ontario undertook a project to investigate the technological capabilities and related services required by depository libraries to provide permanent public access to Canadian federal government information in electronic form. A self-administered questionnaire was sent to all full and selective depositories in Canada and abroad in order to collect both quantitative and qualitative data. Results are based on the analysis of data from 450 completed questionnaires (representing a 50% return rate). The return rate for Canadian depository libraries is approximately 57%.

The major conclusion of the study are summarized as follows:

Importance of government publications: Canadian federal publications fill a prominent place in collections of official documents maintained by the depositories and government publications themselves are considered to be "very important" or "essential" by a majority of libraries though compared to public libraries a significantly larger percentage of academic libraries rated them as "essential."

Arrangement of collections: The majority of depositories provide a mixed arrangement, some materials are shelved with the main collection, some are housed in separate areas; over the past ten years there has been a move by 16.1% of libraries to integrate their documents with the main collections.

Facilities for electronic access: A large majority of depositories are equipped with online catalogues and of these just over half have dial in access. Throughout the depositories there is a strikingly uneven distribution of personal computers for public use. Academic libraries have 2 public service PCs per 1000 people served while public libraries have only .15 for every 1000 people they are mandated to serve. These figures do not indicate how many PCs are **needed** per 1000 people served but it is reasonable to predict that public libraries will not be able to satisfy increased demand for electronic access to government information. Results also show that academic libraries operate a higher percentage of public access PCs with random access memory in excess of eight megabytes, an indicator of the type of software they are capable of running. There is wide variability in the number of public service CD-ROM drives available, and the most common type of public service printer is the dot matrix, remarkable for its slow speed.

Windows 3.1 and Windows95 operating systems are available in the majority of public service PCs but the 20% of depositories equipped with MS-DOS only will have difficulty accessing information on the World Wide Web via a graphical interface. A large majority of libraries are networked and of those that are not, almost 60% have plans to install a network. Again, a large majority (89%) have access to the Internet and most of the rest have plans for a connection. Public libraries generally have lower bandwidth connections to the Internet. The dominant Web browser is Netscape Navigator.

Fees for service: In most cases (89%) depositories do not charge their patrons for Internet access, though 65% impose fees for printing, a fact that will no doubt result in higher Internet costs for patrons.

Current use and staff preparedness: Electronic formats are used much less frequently compared with print. Many respondents provided observations - a recurrent theme is the lack of computer equipment and staff time to assist users, along with absence of public awareness, the lack of staff time to promote the use of electronic sources, and limited collections in these areas. Most frequently, patrons who use electronic sources ask for help with software. Depositories appear to be short of trained personnel needed to assist with electronic access. Many respondents complain about the absence of funding, the dearth of training programs, and the lack of time available for increasing expertise.

Physical facilities and financial support: Most respondents rated the adequacy of physical facilities as satisfactory or better although analysis shows that public libraries were more likely to rate facilities as being poor or worse. The same is true for adequacy of financial support; most respondents rated their funding as "satisfactory" or better but public libraries were more likely to rate their funding "poor" or "very poor."

Perceived change in use: Respondents were evenly divided in speculating whether or not the shift to electronic government information would lead to increased use, decreased use, or unchanged use of their resources.

In their written comments respondents acknowledged the potential of the Internet for timely access but expressed reservations in the following areas: inadequate bibliographic control and archiving; the threat of inequitable access if fees for service are imposed; the transfer of publishing costs from the government to libraries if they are expected to download and print government information available only on the Internet; and the demands of staff training and costs of maintaining and replacing equipment.

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Electronic Access to Canadian Federal Government Information: How Prepared are the Depository Libraries?

1. Introduction

For seventy years the Depository Services Program (DSP) has provided a vital link between Canadian citizens and their federal government. The Program was formally inaugurated by an Order-in-council in 1927 although the practice of making government publications freely available to the public through members of Parliament and the Queen's Printer was established long before Confederation in 1867. The DSP is currently administered by Canadian Government Publishing - Public Works and Government Services Canada (PWGSC) and distributes federal official publications free of charge to 949 public, academic, and government libraries in Canada and abroad where they are housed, organized, and used to provide reference service for the public, other governments, businesses, and universities.

All Canadian federal government departments and agencies subject to the Treasury Board Communications Policy are responsible for participating in the Program; they provide copies of their publications to the DSP for distribution. The Program absorbs all costs of operation and manages the distribution of priced publications to government depositories. Participating libraries are responsible for all subsequent costs of housing and making the information available to the public.[1]

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[1] "Introducing the DSP" <http://dsp-psd.pwgsc.gc.ca/dsp-psd/About DSP/profile-e.html> (1 August 1997)

Full depository libraries, [2] of which there are 48 in Canada and four abroad, automatically receive shipments of all publications listed in the *Weekly Checklist* of Canadian government publications. Selective depositories[3] (754 Canadian, 143 foreign) use the *Weekly Checklist* to choose items they wish to order for their collections. The *Weekly Checklist* is produced in print and electronic versions.

Recently there has been a rapid expansion of electronic publication and dissemination of federal government information in Canada; many federal departments and agencies are planning and developing initiatives in converting their print publications to electronic formats. And while these developments present significant opportunities for improving public access to official documents, libraries are facing major challenges in adopting the new technologies, developing new methods of handling information products in electronic form, and meeting the associated costs.

The increasing emphasis on the widening range of dissemination options is readily evident:

- The Secretary of Treasury Board has stated that the federal government "...want[s] to use electronic commerce as our preferred way of doing business with other governments, the private sector, and Canadians by 1998." (Harder)
- The National Library of Canada has completed its electronic publications pilot project in response to the explosion in electronic publishing and networked information and is "continuing to build [its] collection of electronic publications and to devise stronger systems support for that collection." (National Library News, p.4)
- Representatives of 20 Canadian libraries have formed the Canadian Initiative on Digital Libraries (CIDL) to work together to improve access to digital resources. The

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[2] Canadian libraries that are nominated and approved by a Committee consisting of representatives of the National Library of Canada and the Depository Services Program are granted full depository status which is designated as either English, or French, or bilingual, depending on the library's clientele.

[3] Selective depository status is granted to public libraries and libraries of educational institutions in Canada which are open to the general public or clientele at least 20 hours per week and have at least one full time employee.

- alliance was proposed at an invitational consultation meeting held at the National Library of Canada in March 1997. (National Library of Canada)
- The prospects of bringing government information into the mainstream of library service are affected by ". . . the formats of government information. . . . [T]here is an inherent obligation upon libraries to provide modes of access to all fairly common formats some of which cannot be simply dealt with by the human eye and the human intellect. At this point those non-standard forms would seem to be microforms, cartographic materials, CD-ROMs, *computer tapes and Internet-delivered information.*" (MacDonald) [emphasis added]

Recent efforts have examined various policy issues concerning the federal government and Canada's Electronic Information Industry (Morton, 1995), the prospects for the Canadian depository system and electronic publishing (Monty, 1996) and the possibility of remodelling the DSP (Partners, 1991). And of course there have been intense interest and initiatives in the United States where an anticipated date of 1998 has been set for the implementation of an "an electronic depository library program." The U.S. Government Printing Office has completed a study to identify measures for a successful transition to an electronic Federal Depository Library Program. (USGPO 1996). Two special issues of the *Journal of Government Information* have been devoted to the challenges facing depository libraries in their efforts to ensure that the move from print to electronic resources will ensure that the benefits of electronic resources will be enjoyed without the loss of traditional services.

Proposed shifts to electronic forms of government information are based on the assumption that many benefits will accrue, including more timely and broader availability of official information and no doubt an increase in cost-effectiveness. Libraries are essential sources and providers of official publications and if they are not fully equipped and prepared for the change a negative rather than positive impact on access to government information may be the result. Systematic investigations into the conditions that will promote effective integration of electronic materials into library collections need

to be undertaken so that the expected demands of users for digital library services may be met. The full and selective depository libraries that constitute the network of the Depository Services Program in Canada make an ideal subject for such an inquiry.

In the fall of 1996 researchers at the Graduate School of Library and Information Science, University of Western Ontario undertook a project funded by the Depository Services Program to investigate the technological capabilities and related services required by full and selective depository libraries in Canada and abroad to provide permanent public access to Canadian federal government information in electronic form. This is the first extensive examination of the state of readiness of Canadian depository libraries during a time of significant challenge for both libraries and the DSP itself.

2. Methodology

The methodology of the project reported on here is a study of all full and selective Canadian federal depository libraries in Canada and abroad. The research instrument is a self-administered questionnaire which was developed in various phases over several months in the fall of 1996. The initial version was revised after having been tested in four libraries: two public, one college, and one university. Consultations followed with members of the Depository Services Program and the Statistics Canada Library resulting in further improvements. The instrument was sent to Statistics Canada to be vetted by an expert in questionnaire design, revised again, and translated into French. The outcome of all these efforts is a comprehensive questionnaire in four parts extending to fifty questions and available in English or French (Attachment C); it covers a library profile, facilities for electronic access to government information, support and preparedness for electronic access, and user needs and services. Packages including the questionnaire, covering letters from the researchers and from the DSP (Attachments A and B), and postage-paid return envelopes were mailed to all depositories in December 1996. Both quantitative and qualitative data were collected. The former were collected to provide factual information about the physical and human resources of the depository libraries

while the latter were sought to help understand and interpret the factual data. The main research questions under investigation are as follows:

- Do depository libraries have the necessary technological capabilities to provide effective access to official information products in electronic form?
- What is the actual state and nature of their physical resources?
- Are the libraries adequately equipped with computers?
- Are they networked?
- Do they have sufficient (and adequately trained) staff to meet perceived increases in demands for government information in electronic form?
- Have the depositories policies in place for the management of electronic services?
- Are plans for future services being developed?
- What are the most pressing difficulties facing depository libraries in their efforts to serve as local providers of government information products in electronic form?
- What measures need to be taken to overcome difficulties and solve problems?
- And what can the DSP do to assist in all this?

Data were entered into an electronic file (Microsoft Excel, Version 5.0) and analysis undertaken using statistical software SPSS for Windows, Version 6.1.3. Data from 450 completed questionnaires (representing a 50% return rate) were analyzed. The return rate for Canadian depository libraries is approximately 57%.

3. Limitations of the Study

Completed questionnaires were slow to be returned , no doubt because of the detailed nature of the questions and the necessity of distributing the instrument so close to the holiday season. Discrepancies between mailing label information and current names and addresses may also have been a factor here. To encourage wide participation in the study two follow up messages were sent by the DSP in February and March 1997 to those libraries that had not responded. Questionnaires continued to be received and new data were added to the data file after 19 March 1997. This means that different depository

libraries completed questionnaires during different periods, beginning from December 1996 to June 1997, a time span of seven months. Because of rapid development in the computer industry and the consequent frequent changes in library computer resources (as reflected in some written comments) it is foreseeable that those resources might change significantly over the seven month time period. This poses a problem in research methodology: questionnaires returned at the beginning of the period are not comparable to those returned at the end of the time span. To solve this problem data analysis has been carried out on the 450 questionnaires received by 19 March 1997. By August 1, 1997, a total of 532 questionnaires had been received. To ensure that the 450 which were analyzed were representative of all questionnaires received, the distribution of types of libraries (public, academic, etc.) in this 450 was compared to the distribution for all 532 questionnaires. The distributions were found to be identical when rounded to the nearest whole number. Please refer to section 4.1.1 of this report for a discussion of the distribution of types of libraries.

4. Data Analysis and Results

4.1 Library Profile

4.1.1 Geographical Distribution and Type of Depository Library

The geographical distribution of questionnaire respondents compared to the geographical distribution of existing depository libraries is revealed in Figure 1. The similarity between the two distributions shows that the 450 questionnaires analyzed in this report represent an unbiased geographical sample of the total number of depository libraries. Of the existing 949 DSP libraries 84.5% are Canadian; 91.1% of questionnaire respondents are Canadian. The breakdown of Canadian libraries by type is as follows: academic, 31.3%; public, 51.5%; government, 7.6%, other, 9.6%. This breakdown is not applicable to foreign libraries. Canadian questionnaire respondents are distributed as follows: academic, 34.9%; public, 55.3%; government, 9 %; other, 1.7%. Again, the questionnaire sample reflects the DSP proportionately.

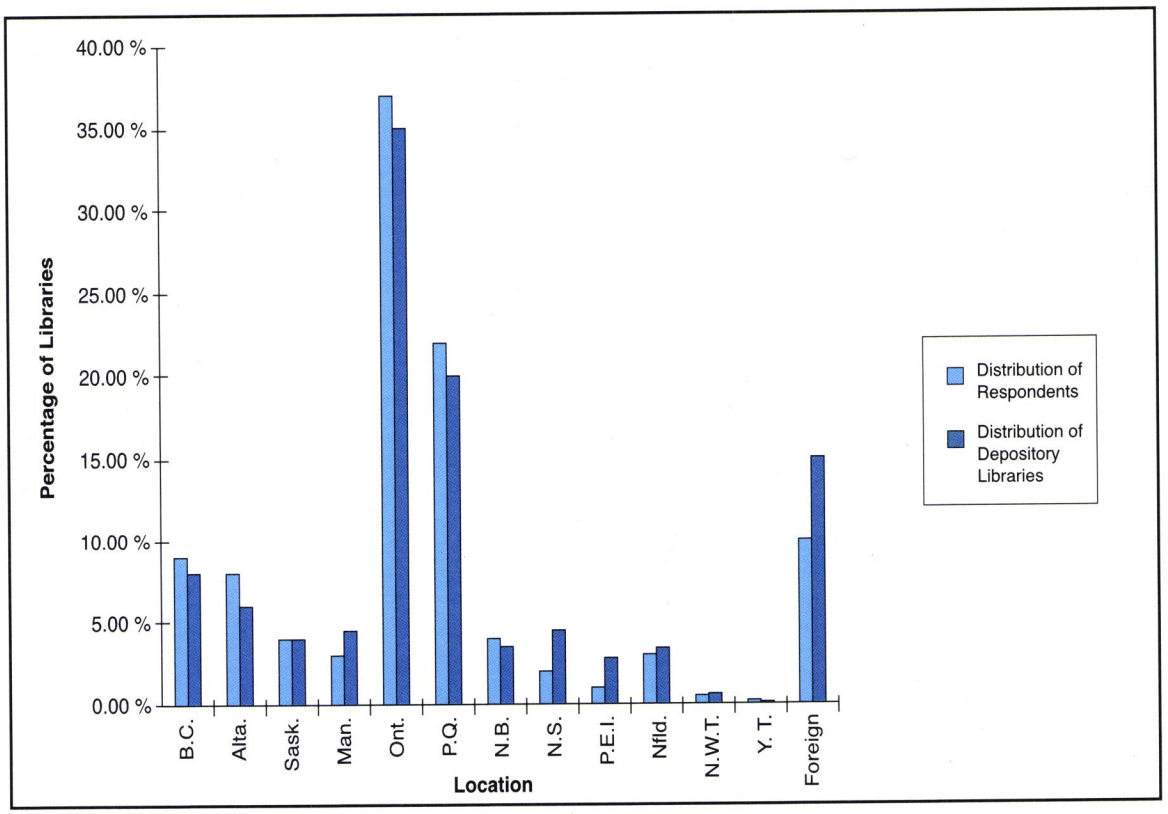

Fig. 1. Geographic Distribution of Questionnaire Respondents

Of those that responded to the questionnaire, public libraries are the most common (50.8%), followed by academic (38.1%) and government (9.6%) libraries[4]. Other types make up only 1.5%. A healthy percentage (74.2) have a designated person in charge of their government documents collections.

Depository libraries serve heterogeneous populations, ranging from a minimum of 85 people to a maximum of over 45 million[5] – a typical library serves a population of 15,000 (median figure). This wide disparity in size is reflected in the number of items (including print materials, CD-ROMs, microforms, etc.) held in collections: as few as 100 at the low end to a maximum of 12 million.

Findings allow a picture of the typical depository library to emerge:

- it serves a population of 15,000 (median figure);
- its collection numbers 85,474 items;
- it has three full-time equivalent[6] staff members providing reference service;
- two of those staff members (67%) are reference librarians;
- it employs one systems librarian or specialist.

Only 107 (23.8%) libraries reported having a data librarian. A typical library has no data librarian (median is 0).

4.1.2 Collections and their Arrangement

Government publications from all jurisdictions make up a significant proportion (more than 10%) of library collections in 149 of the 450 responding depositories: 33 (7.6%)

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[4] For reference, the breakdown of types of libraries for all 532 questionnaires was 51% public, 37.8% academic, and 9.5% government.

[5] Given that Canada's population is only around 30 million, this figure may seem questionable. However, the survey included foreign libraries which, in some cases, may serve an entire country.

[6] Respondents were provided with a suggested method of computing full-time equivalents (FTE): divide the number of hours worked per week by a part-time employee by the number of hours considered by the reporting library to be a full-time work week.

report that over 30% of their materials consists of official documents, 30 (6.9%) indicate holdings of between 21% and 30%, and 86 (19.7%) say that 11% to 20% of their materials fall into this category. Holdings of less than 10% are reported by 288 libraries (65.9%). Thirteen respondents did not answer this question.

A more striking finding shows the prominence of Canadian federal publications in collections of official documents. Only 145 libraries (33%) report holdings of less than 40% in this category. The rest (67%) state that materials from Canadian federal sources constitute more than 40% of government document holdings. Answers were missing in 10 cases. Table 1 provides a breakdown.

Table 1 Canadian Federal Content

No. of depositories	Canadian federal content in depository collections
145 (33%)	less than 40%
119 (27%)	41% to 60%
99 (22.5%)	61% to 80%
77 (17.5%)	over 80%

Depositories were asked to provide information about the organization and shelf arrangement of their document collections, and the availability of special equipment and materials for visually-disabled patrons.

Separate collections are the practice in 28.8% of cases while documents are integrated with the main collection and the reference collection respectively in 10% and 4.7% of reporting libraries as shown in Figure 2. Since 1986 70 depositories (16.1%) have moved from separate groupings to integrated collections, a finding that may reflect a growing tendency to mainstream government publications. The majority (55%) provide a mixed arrangement, that is, some materials are shelved with the main collections, some in a separate area. Other systems were reported by 1.3% of libraries, a figure that includes those who chose more than one category of organization.

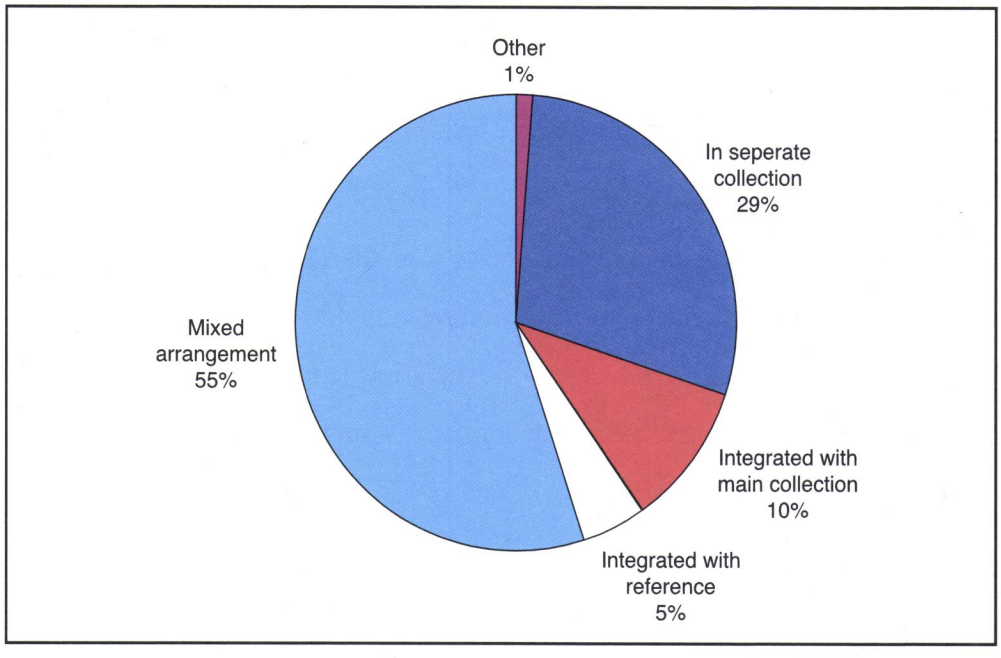

Fig. 2 Organization of Government Document Collections

Little consistency in shelf arrangement is evident from the findings of this study. (Figure 3). A few libraries, 21 (6.1%) and 24 (7%) respectively, employ the CODOC system and the Canadian classification scheme, while 65 (18.9%) use Statistics Canada catalogue numbers. Alphabetical arrangements by agency prevail in 68 cases (19.8%); the largest number, 166 (48.3%), employ some other shelf arrangement. Among those other arrangements imposed on documents collections (as revealed in comments by respondents) are: the Dewey Decimal Classification, various adaptations of CODOC, alphabetical arrangements by subject, call numbers designed in-house, accession number order, and arrangement in vertical files.

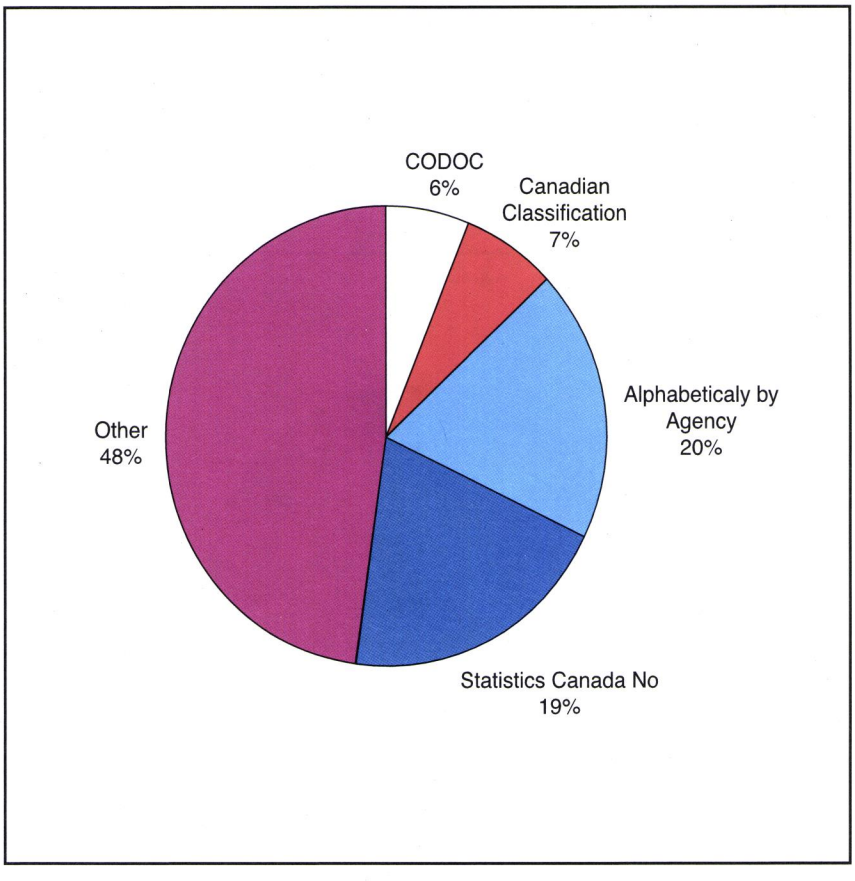

Fig. 3 Shelf Arrangement of Government Documents

Specialized products and equipment for use by visually disabled patrons are provided as follows:

Table 2 Special Equipment

Special Equipment or Format	No. of libraries	Percentage of libraries
Braille	59	13.1%
Electronic voice reader	84	18.7%
Large print	238	52.9%
Sound Cassettes	255	56.7%
Large print screens	99	22.0%

4.1.3 Importance of Government Publications

Respondents were asked in Question 45 to rate the importance of government publications in their collections.

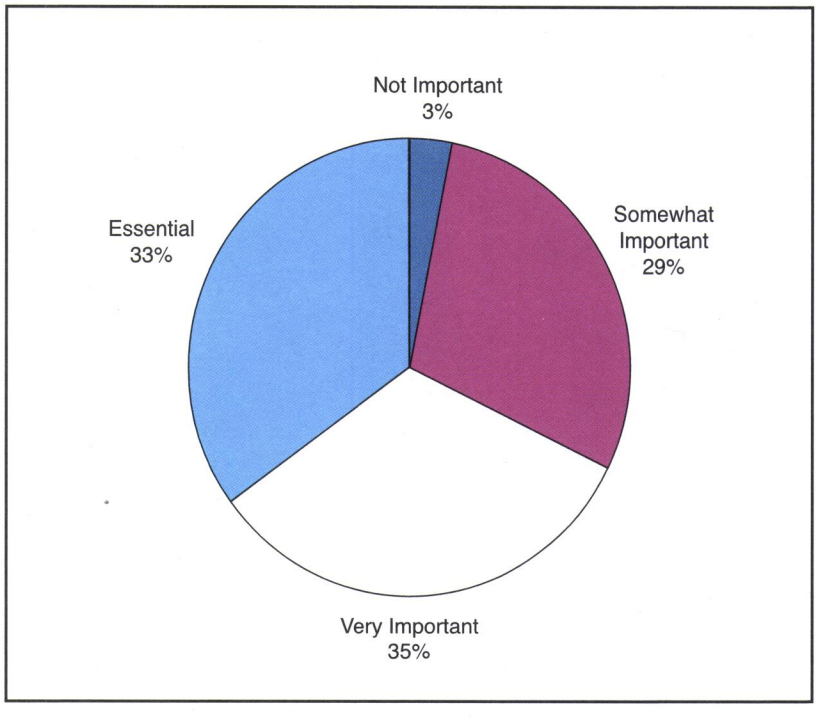

Fig. 4. Importance of Government Publications

The pie chart in Figure 4 shows that government publications are seen to be "very important" or "essential" in about 68% of depositories. They are considered to be "somewhat important" in a little more than 29% of libraries; only 3.4% of respondents said they were "not important." A chi-square test showed that public libraries are less likely to consider government publications to be important than are academic or government libraries ($p<0.001$). Results are displayed in Figure 5. Not surprisingly, official documents are most important to government depositories of which 69.77% said they were "essential" and none reported they were "not important." While public and academic libraries were fairly close in their "not important" and "very important" responses, a much larger percentage of academic libraries said that these materials were "essential" to their organizations (40.48% vs. 20.26% for public libraries) and a larger percentage of public libraries stated that they were only "somewhat important" (37.89%

vs. 22.02% for academic). Given that academic libraries are research oriented, have more users requiring access to statistical and other materials issued by governments, and that they often serve patrons who are referred to them by public libraries, it is perhaps not surprising that official publications are deemed by them to be more important.

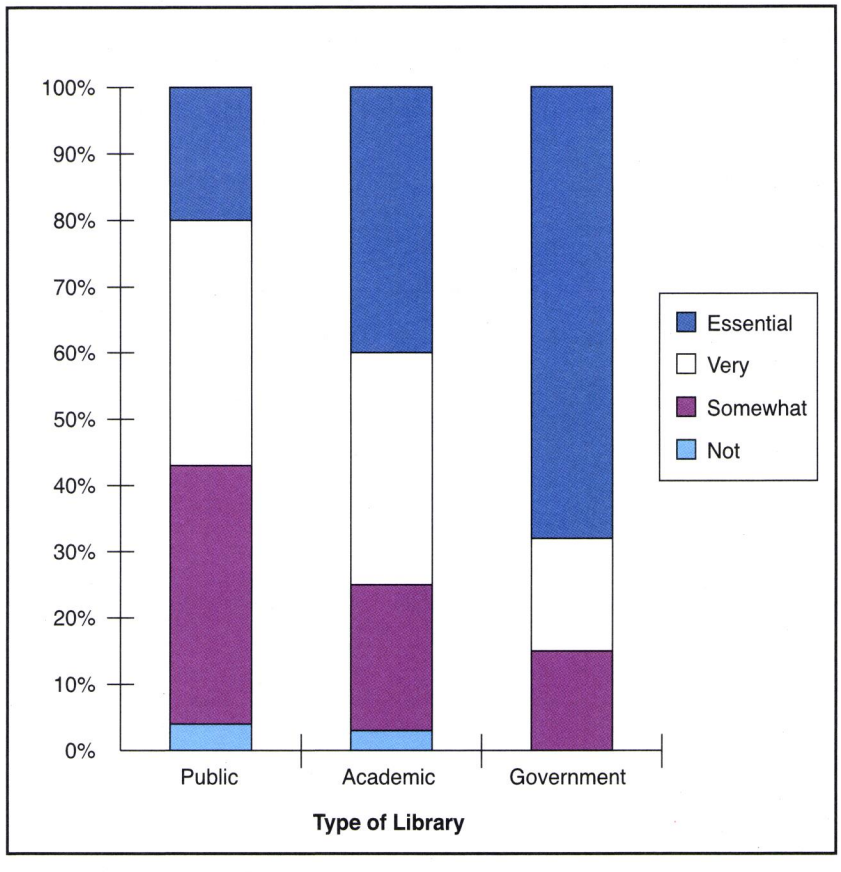

Fig. 5. Importance of Government Publications by Type of Library

It has been suggested that the significance of the government documents collection as perceived by the library is related to the population that the library serves. A Spearman Correlation Coefficient test was conducted between the population served and the perceived significance of government documents. The test result showed that is no relationship between these two variables[7]

[7] correlation coefficient is 0.06, p=0.2

4.2 Facilities for Electronic Access

4.2.1 Hardware Facilities

Online Public Access Catalogues (OPACs)

A large majority of depository libraries, 386 (87.1%), are equipped with online catalogues and of these 51.8% provide dial in access. Library catalogues are accessible from other libraries in 40.9% of cases and from the Internet in 35.1%.

Table 3 Catalogue Access

Government Documents listed in:	No. of Libraries	Percent
Main OPAC	257	62%
Separate OPAC	3	0.72%
Main Card Catalogue	18	4.3%
Separate Card Catalogue	15	3.6%
Microfiche	2	0.48%
Other	16	3.9%
Mixed	103	24.9%

Question nine elicited information about bibliographic control of government publications in the depositories, specifically the types of catalogue used (summarized in Table 3). The majority (257 or 62%) list their documents in the library's main OPAC. While only 3 (0.72%) maintain a separate online catalogue and 2 (0.48%) use microfiche, larger numbers make use of card catalogues. Eighteen (4.3%) and fifteen (3.6%) use the main card catalogue or a separate card catalogue respectively to provide access to their document collections. The most interesting finding here shows that as many as 103 (almost 25%) employ a mixed arrangement, that is, documents are, for the most part, listed in two places. the most prevalent combination consists of the main OPAC and a separate card catalogue. The next most common mix is made up of the main OPAC and the main card catalogue.

Personal Computers (PCs)

An attempt was made to discover how many personal computers are available for public use in the depositories compared to the number reserved for use by staff. This was a difficult question to answer. Libraries were asked to record the number of PCs in use "system wide" and while there seemed to be some confusion about this term results do provide information on how PCs are distributed. There is wide variability among respondents and the standard deviation is high. The typical library provides seven PCs for exclusive staff use and six for use by library patrons. So, on average, the number of PCs allotted for staff members exceeds the number accessible to the public.

By dividing the number of PCs by the population served it can be seen that the typical library has .4 public service PCs per 1000 people served. Academic libraries have 2 PCs per 1000 population, government libraries have 1.7 and public libraries have only .15 PCs for every 1000 people they are mandated to serve. While these figures do *not* show how many PCs are *needed* per 1000 people served they should be kept in mind when one considers that, according to a recent Statistics Canada survey, only 7.4% of Canadian households access the Internet from home. The Statistics Canada data, part of the Household Facilities and Equipment Survey and collected for the first time in 1996, show that while 1.8 million households have a computer with a modem which links consumers to a wide range of services including the World Wide Web, only half of those households with modem-equipped computers have used the Internet. Deterrents to use may vary, says Statistics Canada; among them, the cost of Internet services, long distance charges, and the mysteries of cyberspace. The survey refers to home access only and excludes access at work, school and libraries, etc.[8] It is reasonable to surmise that as the amount of government information available on the Internet increases greater demands will be made on depository libraries for access to it.

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[8] Statistics Canada, *The Daily*, 23 October 1996, p.1

Libraries were asked to report the number of public service PCs available with various CPUs including 286, 386, 486, Pentium, and Macintosh . For purposes of data analysis, when no count was given for one or more categories (i.e. the line was left blank) it was assumed that the libraries had zero computers of that type. It is possible, however, that libraries do possess PCs of the types omitted but that the respondents do not know the exact number. Figures provided here, therefore, may be an underestimate and this should be kept in mind when the results are being interpreted. The distribution of these different types of CPU is shown in Figure 6. It is very encouraging to know that the majority of these computers are 486 and Pentium (69.4%) which are ideal for Internet access. Figure 7 shows the distribution of CPU types across the depositories.

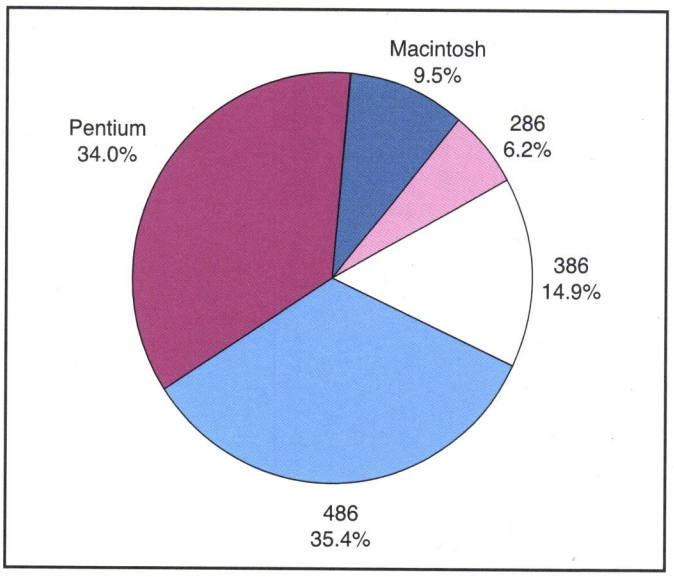

Fig. 6 Percentage of CPU types

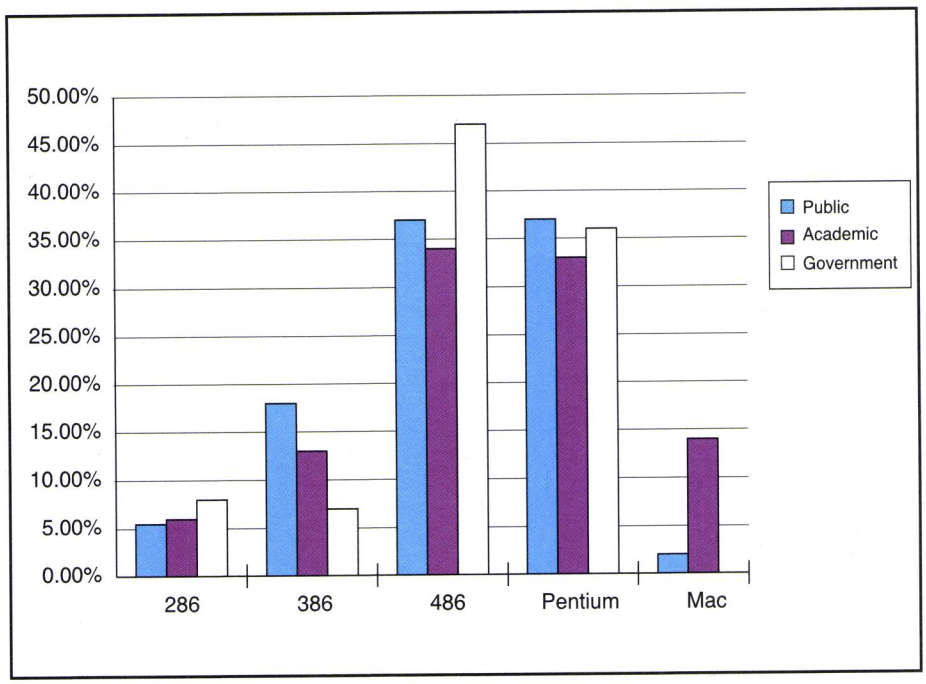

Fig. 7 Percentage of CPU types in different types of libraries

The total number of public service PCs has been calculated for each library and the frequency distribution of this variable is presented in Fig. 8. This figure reveals a strikingly uneven distribution of computers throughout the depositories. The majority of libraries have very few computers while a very small percent of libraries have a large number of computers. The average number of public service PCs a library has is 17.6 (mean) while the number of public service PCs in a typical library is 6 (median). The minimum number is 0 while the maximum number is 300 with a standard deviation of 35.6 representing a huge variability among libraries. This fact presents a significant implication for the electronic access to official publications. If government information is primarily in electronic form, the majority of libraries located at the low end of Figure 7 may not have a sufficient number of public service PCs to satisfy patron needs. Figure 9 shows the same pattern of distribution for the three types of libraries: academic, public, and government.

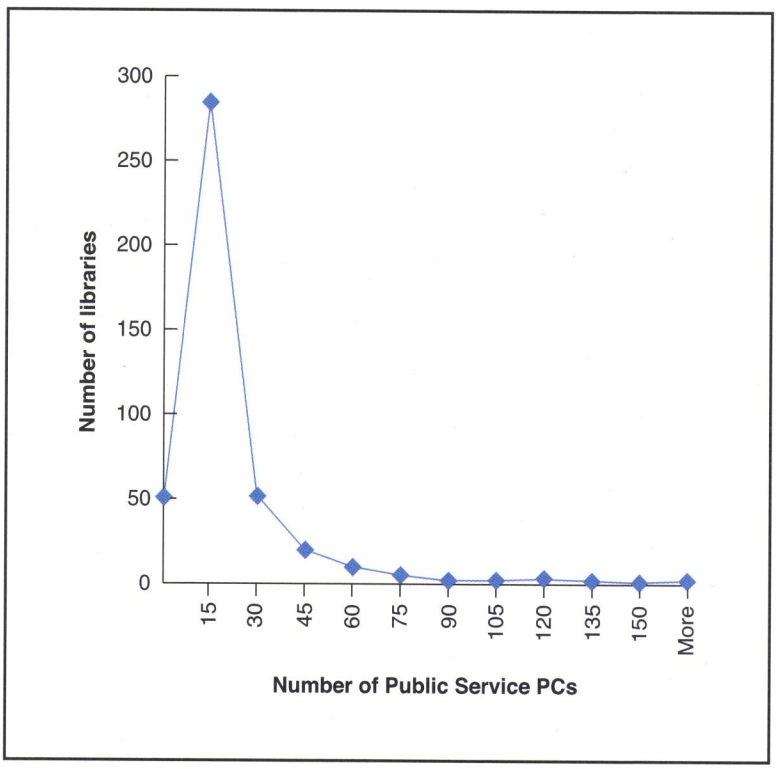

Fig. 8. Frequency Distribution of Number of Public Service PCs

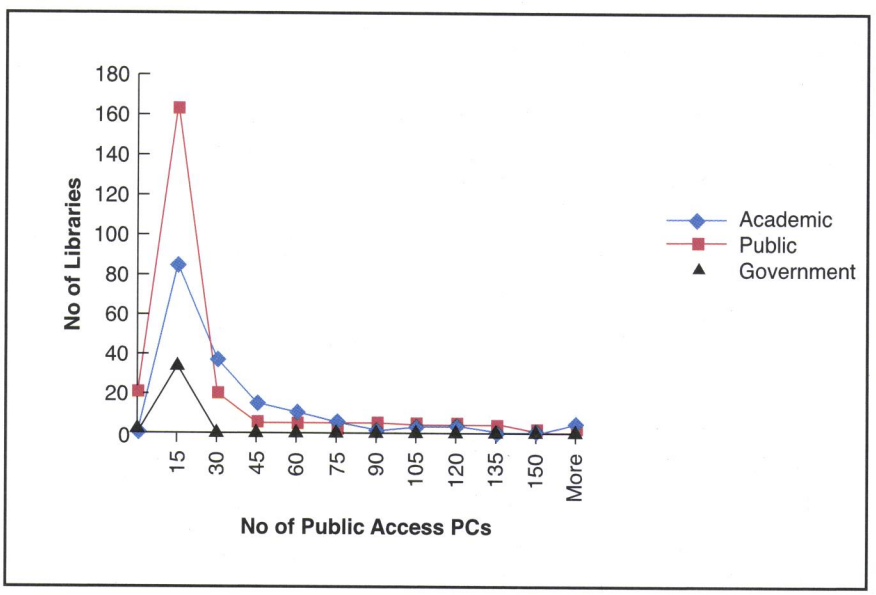

Fig. 9 Frequency Distribution of Number of Public Service PCs for Different Types of Libraries

Random Access Memory (RAM)

The amount of random access memory (RAM) in a computer is one indicator of the type of software it is capable of running. RAM size is shown in Figure 10. In the libraries surveyed 89% of public service computers had a least 4MB of RAM, adequate for running Windows 3.1. Only 48%, however, are equipped with over 8MB of RAM, the practical minimum for Windows95. This shows that while it is safe to develop most, if not all, government information for the Windows environment, both Windows 3.1 and Windows95 should be supported and Windows95 products will need to be carefully designed and tested to accommodate minimum installations of this version of Windows running in 8MB or less of RAM. The 11% that have less than 4MB of RAM will be restricted to DOS or extremely stripped down installations of Windows 3.1. Accommodating these systems will not be easy although use of text-based Internet browsers and DOS interfaces on text-only products may allow at least some information to be made available on them. As for Windows NT, only 5% of systems have more than 16MB of RAM, the minimum for NT. So far at least, development specifically for NT is probably not worthwhile but Windows 3.1 and Windows95 products should be tested for compatibility with NT.

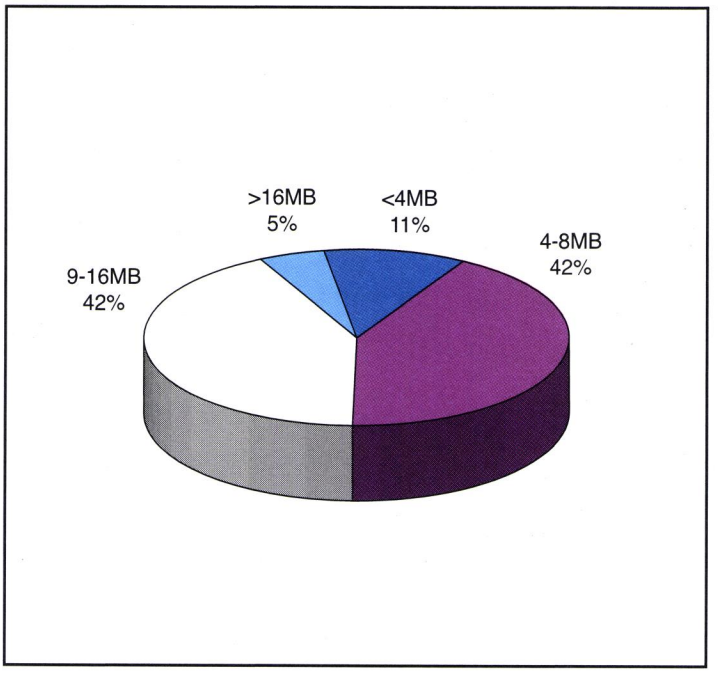

Fig. 10 Amount of RAM in Workstations

Figure 11 shows that academic libraries enjoy a higher percentage of public access PCs with RAM in excess of eight megabytes.

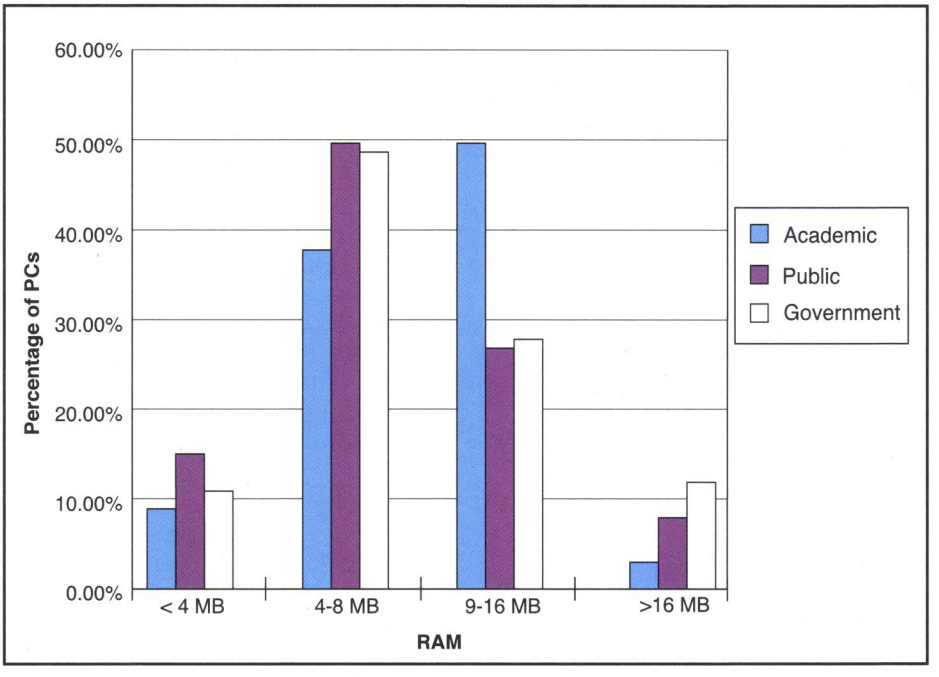

Fig. 11 Amount of RAM in Workstations in Different Types of Library

CD-ROM Drives

Next, the libraries were queried about the number of public service CD-ROM drives mounted on stand alone PCs, and the number attached to a network (see Questions 18 and 19). Of the 450 respondents 394 answered this question. Once again there is wide variability with the typical library reporting two CD-ROMs available on stand alone PCs, and only one accessible through a network. There are a total of 1803 standalone CD-ROM drives reported and 3307 networked CD-ROM drives reported. Therefore, about two-thirds (64.7%) of CD-ROMs in all these libraries are networked.

Figure 12 shows the percentage of CD-ROMs available by type of drive. The type of CD-ROM drive reflects the average speed of data access compared to the original CD-ROM

drives introduced in the 1980s (shown in Fig. 12 as 1x drives). That is, a 2x drive is double the speed of the original, 4x is quadruple, and so on.

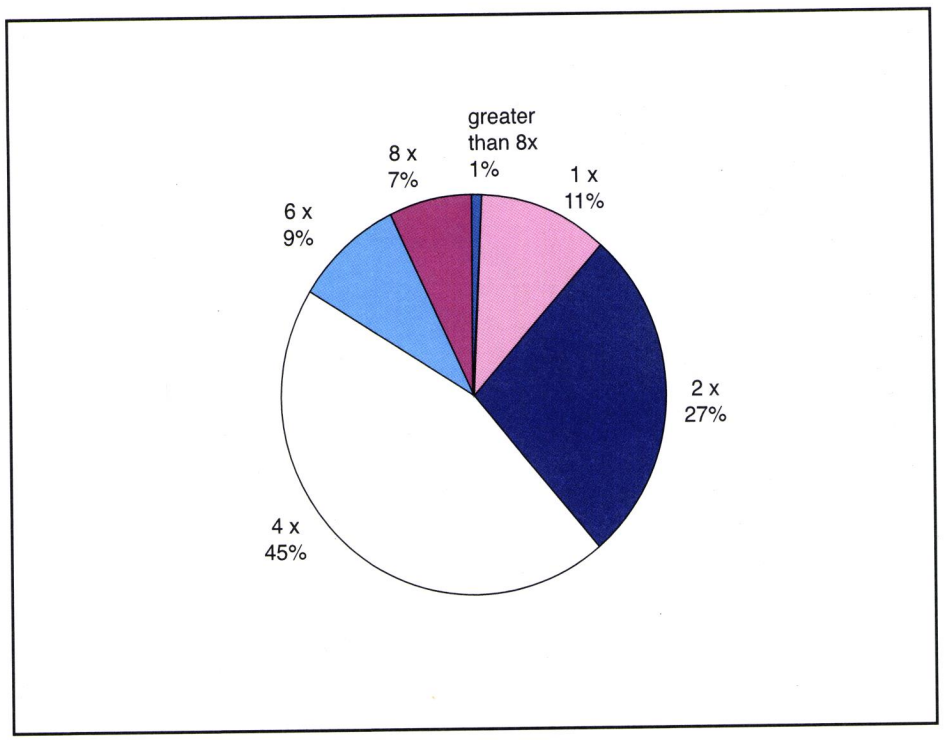

Fig. 12 CD-ROMs by Type of Drive

Clearly, 4x is the most common CD-ROM drive in the responding libraries. These drives were standard at the time of the survey and offered a good price/performance ratio, making them popular for use in network servers, which often have seven or more drives. While the standard is now 10x and increasing fast (16x and 20x drives are now available), 4x drives will remain common because libraries often cannot afford frequent upgrades. The 4x drives are sufficient for most textual products and for still graphics. It would seem reasonable that this is the type of content best suited to depository libraries. Full motion video with or without audio requires faster drives in order to be effective, especially when served on a network, and will need to be introduced more slowly with due notice to libraries which may or may not be able to support it.

Figure 13 shows that there is no significant discrepancy among the three types of libraries in following the pattern of having 2x and 4x drives dominant in the library.

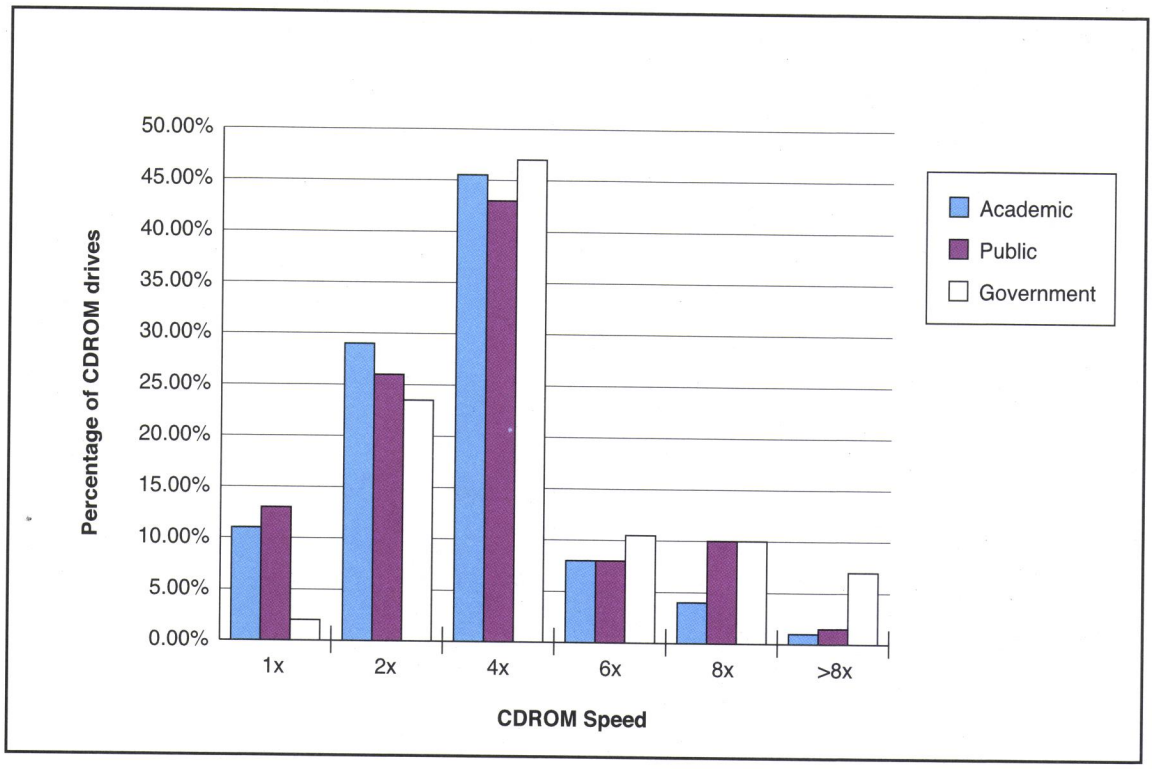

Fig. 13 CD-ROM Drive Speeds by Type of Library

Printers

The availability of printers is crucial in providing adequate access to electronic government publications as opposed to materials in print form. Therefore the number of public service printers in different categories (Dot matrix, Ink jet, Laser, Colour) has also been investigated. Figure 14 presents the results of this investigation. It should be noted that the most common type of public service printer is the dot matrix (representing about 41% of the total number of printers). The slow speed of dot matrix printers in producing graphics and Windows fonts should be kept in mind when making decisions regarding electronic access to government information.

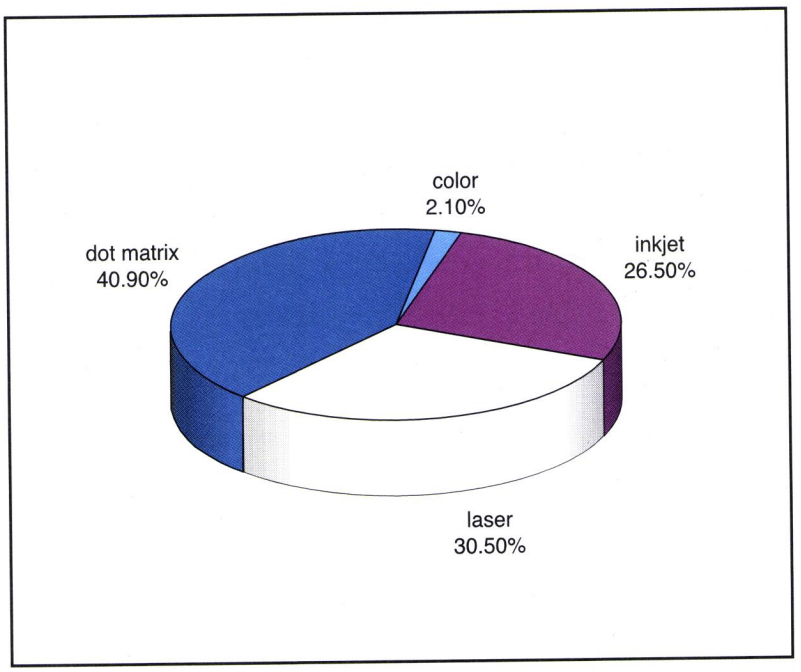

Fig. 14. Percentage of Printer Types for Public Service Use

Figure 15 looks at the printer types with figures broken down by type of library. In general, the pattern holds for all libraries, however it is interesting to note that public libraries are much closer to an even distribution of types of printer while government libraries have a large percentage of inkjet printers in service.

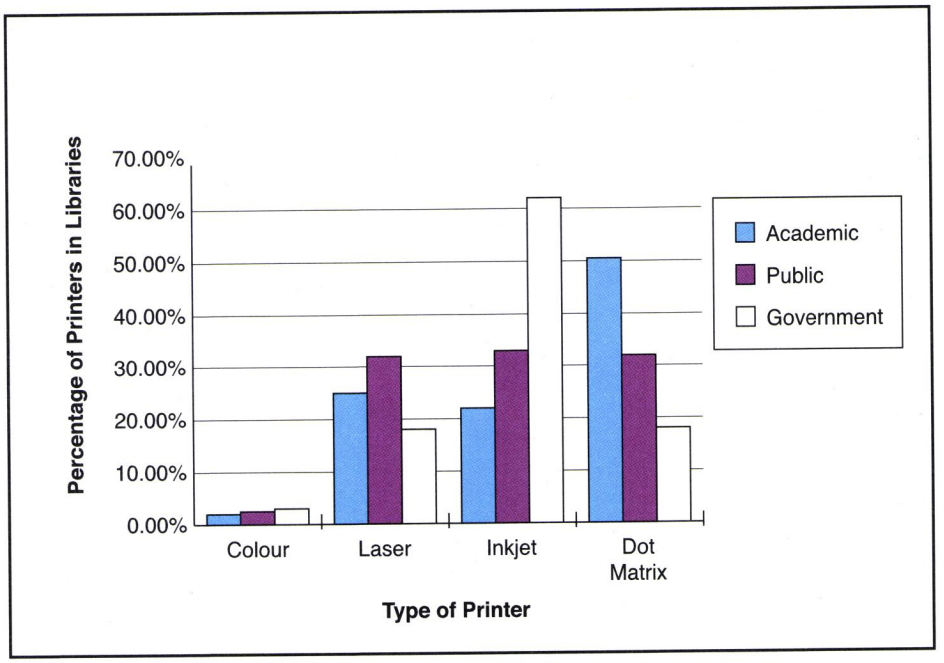

Fig. 15 Printer Types for Public Use by Type of Library

4.2.2 Software Facilities

Libraries were asked to indicate the number of public service PCs equipped with various operating systems including MS-DOS, Windows 3.1, Windows NT, Windows 95, and others. Data are summarized in Fig. 16. It should be pointed out that the 20% of public service PCs equipped with MS-DOS only will have difficulty accessing information on the World Wide Web via a graphical interface, which means that sites using images, frames and multimedia active content will be inaccessible or difficult for them.

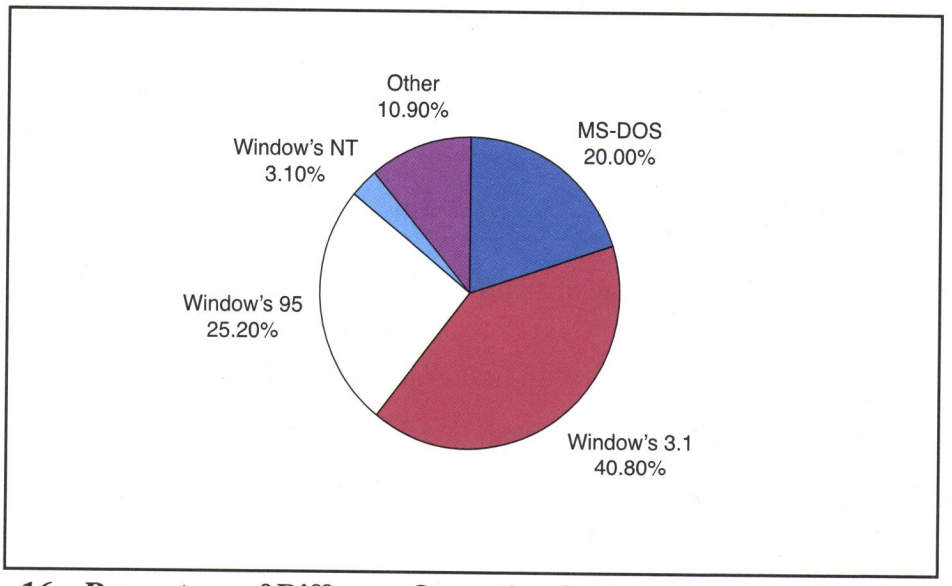

Fig. 16. Percentage of Different Operating Systems on Public Service PCs

Figure 17 shows that there is a higher percentage of Windows 3.x systems in government libraries, but there is otherwise no significant discrepancy among the three types of libraries.

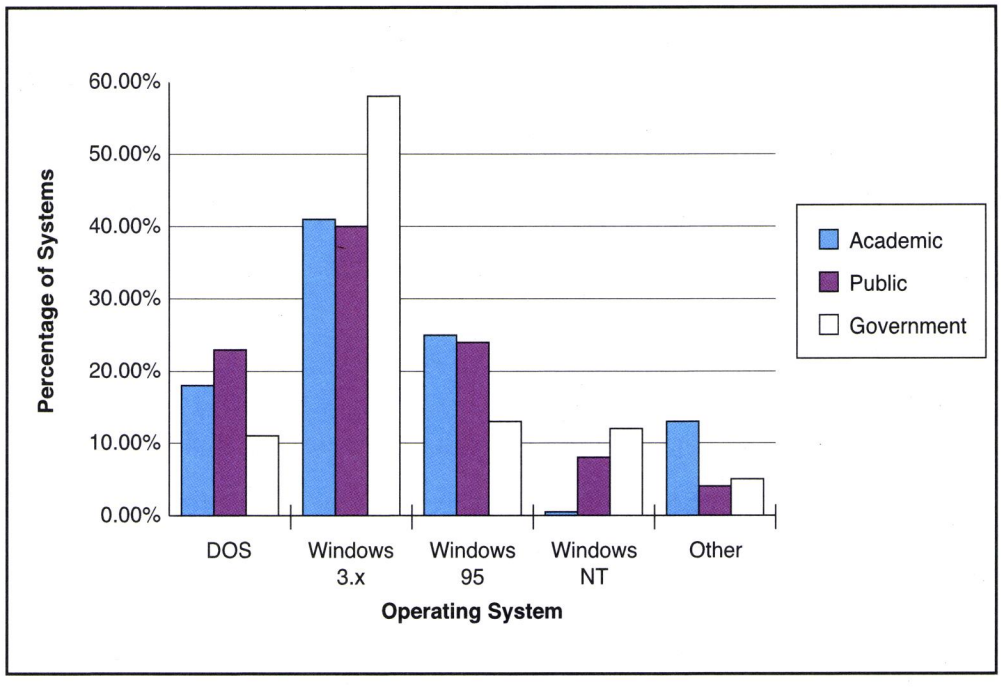

Fig. 17 Operating Systems on Public Service PCs in Different Types of Libraries

4.2.3 Network Facilities

Local Area Network/Wide Area Network (LAN/WAN)

Ninety-eight percent of the depository libraries replied to the question asking whether or not they have a local area network (LAN) or a wide area network (WAN). Seventy-three percent of libraries reported "yes" and 27% reported "no". For those libraries which do have networks, it is not clear whether they have a LAN or a WAN because the survey question did not ask for this breakdown. Of those who are connected to a network 71.7% allow public access to their LAN/WAN while in 28.3% of libraries access is restricted to library staff.

For those libraries not yet networked question 26 inquired about their LAN/WAN plans: 32.8% plan to install a network within one year, 17.2% within two years, 9.8% reported a plan later than 2 years, and 40.2% reported no plan.

Internet

The vast majority of depository libraries (89%) reported having access to the Internet. Those that do not yet have Internet access were asked if they have a plan for this. They responded as follows: 71.1% are planning for access within one year, 17.8% within two years, 8.9% have a plan of later than 2 years, and only 2.2% reported having no plan for Internet access.

For the most part Internet service is provided by a Commercial ISP (47.6%) or by a College/University (43.9%) (See Figure 18.). Freenet is the source for 5.1% of depositories (from Figure 19, it can be seen that these are all public libraries) while 3.4% use some other means of access.

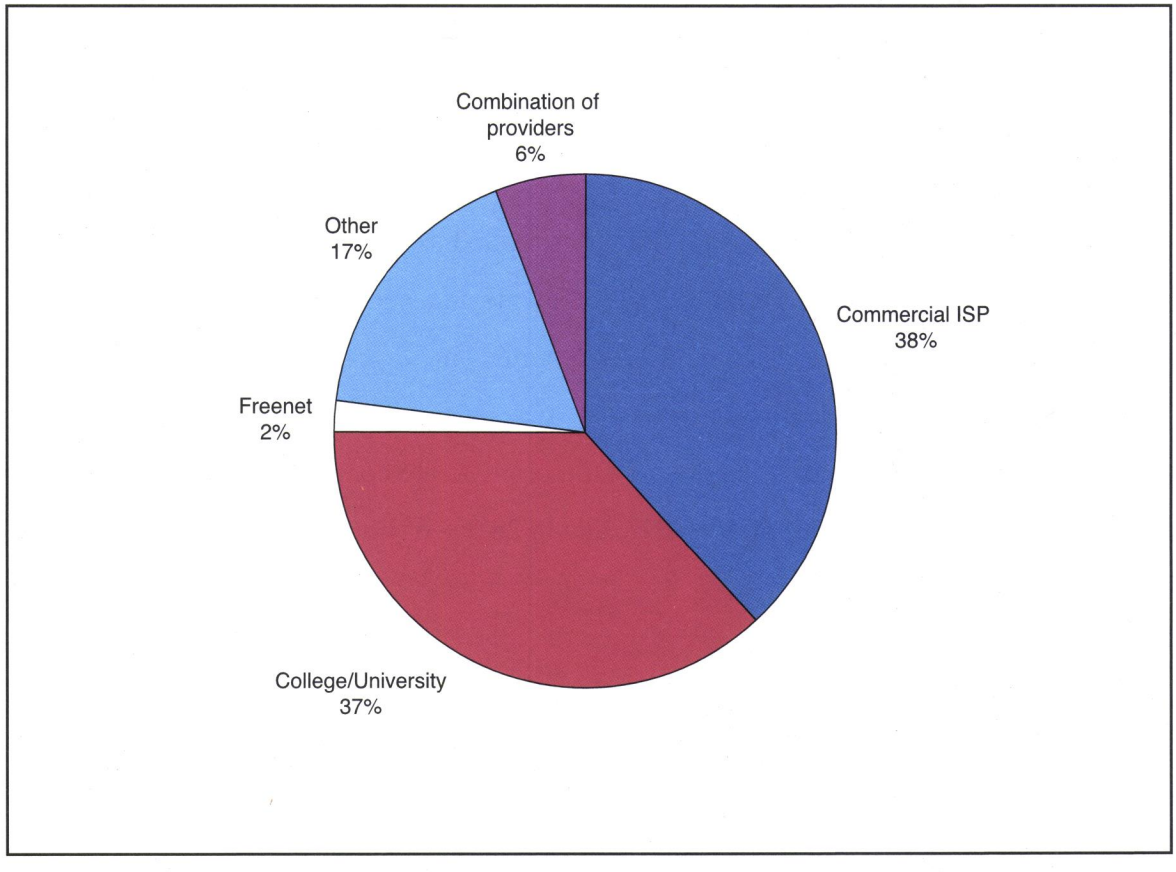

Fig. 18 Type of Internet Service Provider

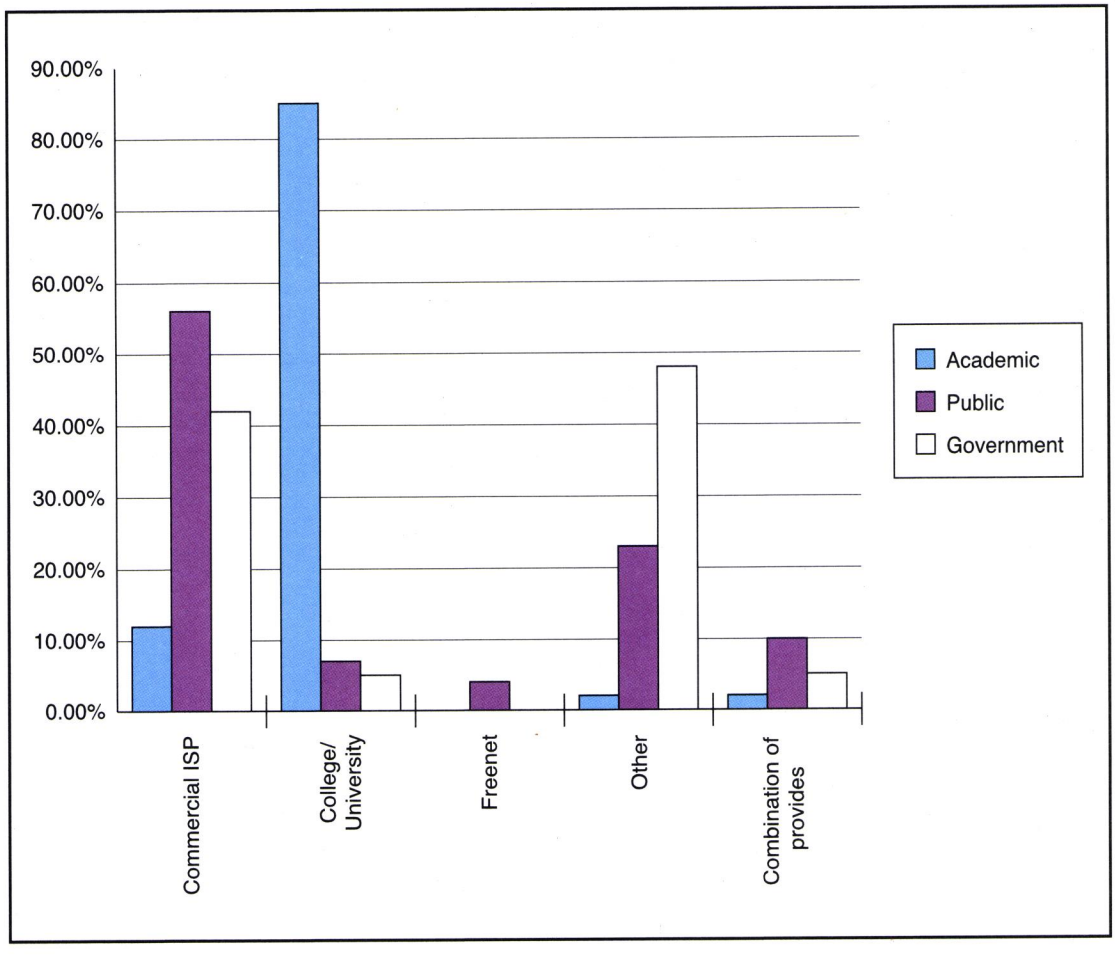

Fig. 19 Internet Service Provider by Type of Library

In examining comments of the respondents it was noted that many libraries gave "SOLS" or "SOLScape" as their Internet provider. SOLS is the Southern Ontario Library Service, an agency of the Ontario government responsible for coordinating many aspects of public library service in the province. One of SOLS' current programs is to provide free dial-up Internet accounts to staff at public libraries. This program is the reason for the number of respondents giving SOLS as their provider, but it is not a stable provider since funding is provided year-by-year. Alternative providers indicated through the comments include municipal governments, local consortia (public libraries partnering with municipal governments, boards of education, and other agencies), and nonprofit agencies.

There is a wide disparity among depositories in the number of public service PCs that provide Internet access; the typical library has two. Of the depositories that offer Internet

access a large proportion (71.8%) offer Internet service to their patrons; 28.2% allow staff use only.

The distribution of the percentage of PCs using the various types of Internet connection is shown in Figure 20.

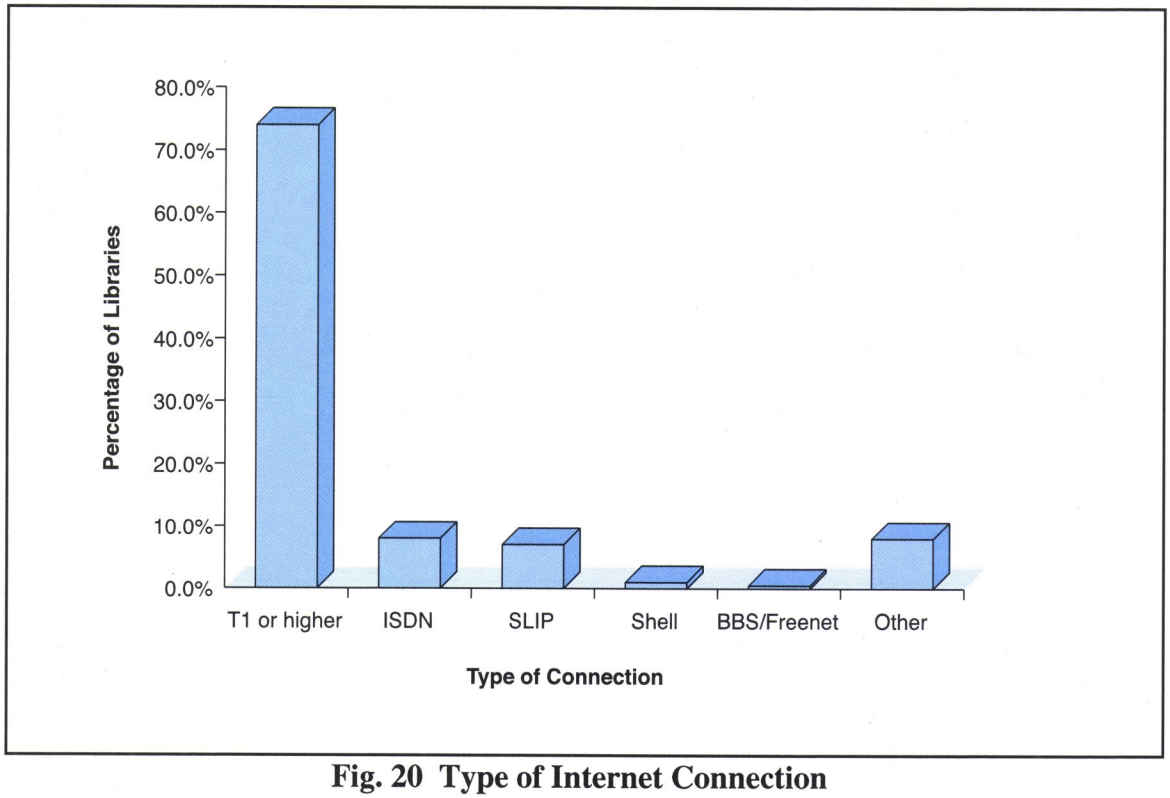

Fig. 20 Type of Internet Connection

At first glance it appears that high bandwidth (i.e. fast) T1 and higher connections are quite common compared to the lower bandwidth (i.e. slower) ISDN (digital phone lines) and SLIP (modem over ordinary phone lines) connections, with 74% of computers having access to the faster type of connection. To look at this more closely the data were broken down by type of library and the distributions for each type of library were compared. The following graph (Figure 21) shows the results.

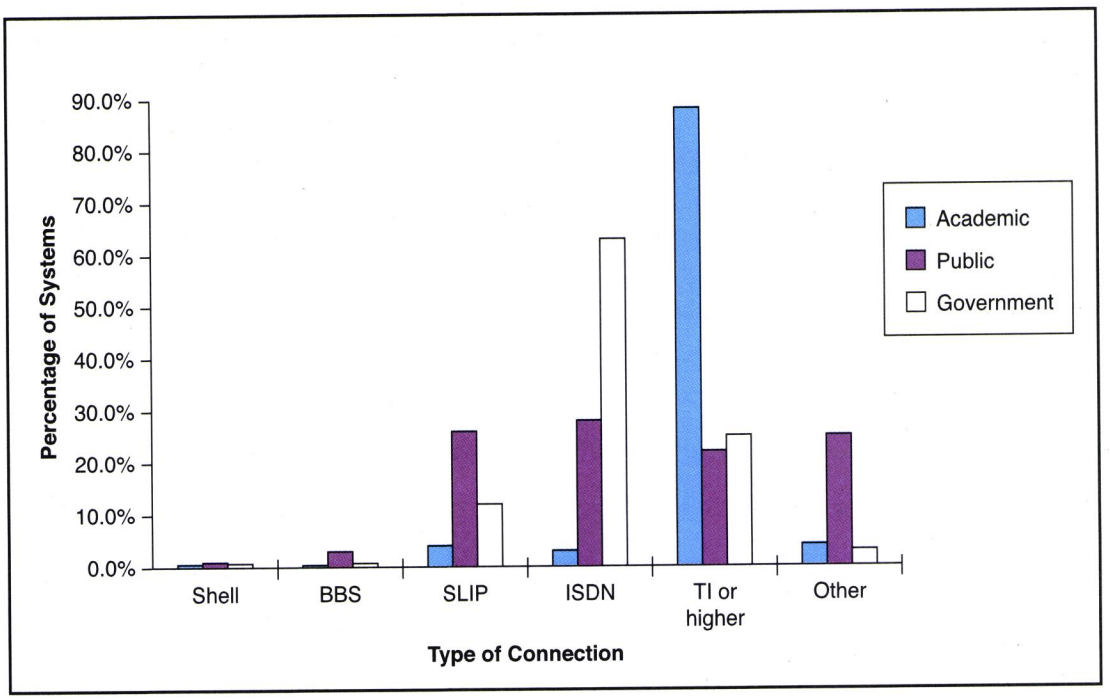

Fig. 21 Type of Internet Connection by Type of Library

When the figures for PCs with T1 or higher connections are examined it is obvious that the largest number of PCs with access to such connections are found in academic libraries. A chi-square test was conducted to determine the statistical significance of this contrast. The result showed that there is a highly significant relationship ($p<.001$) between the type of library and the type of Internet connection. Public libraries are more likely to be using lower bandwidth connections such as ISDN or SLIP than academic libraries. The primary reason for this is that T1, T3, and other high bandwidth connections are expensive, putting them beyond the reach of all but the largest and wealthiest public libraries. By contrast, most universities now use the high bandwidth connections because of research needs and the availability of funding for universities to act as regional nodes on the Internet.

Public libraries make up the largest single sector of libraries among depositories (50.8% as opposed to 38.1% of academic libraries) and they serve larger populations (a median of 28,913) than academic libraries do (a median of 5596). Public libraries, however, generally have lower bandwidth connections to the Internet. In order to reach this important user community government information on the Internet will need to be

manageable over these lower bandwidth connections. Academic libraries, while they do have access to the higher bandwidth connections of their institutions, must share this bandwidth with hundreds or even thousands of other users across campus, so that the available bandwidth at any given moment may not be more than what is available to public libraries. Therefore, managing the content to be accessible to lower bandwidth will benefit them as well.

There are a number of measures that can be taken in formatting content that will benefit users with low bandwidth connections. Text and still graphics should be preferred over audio and full motion video data which require a large amount of bandwidth and perform poorly even on low bandwidth ISDN connections. Active content (i.e. programs which run on the Internet) should be avoided or use server-based approaches (CGI scripts, Microsoft's Active Server Pages technology) instead of browser-based approaches (ActiveX and Java programs).

Web Browsers

Table 4 displays collected data about Web browsers, while Figure 22 breaks this data down by type of library.

Table 4 Web Browsers

Browser	No. of Installations	Percentage
Netscape	5455	84.80%
Internet Explorer	338	5.25%
Text Browser	637	9.90%
Other	3	0.05%
TOTAL	6433	100.0%

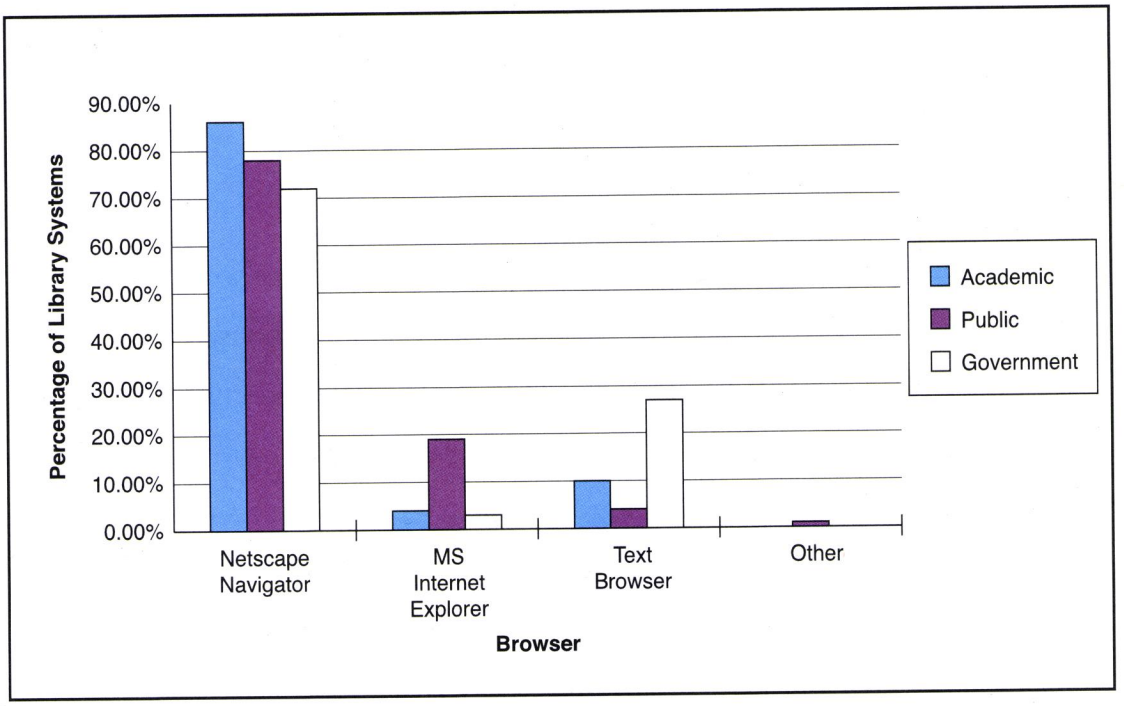

Fig. 22 Web Browsers in Different Types of Library

Findings show that the dominant Web browser among all depositories regardless of type is Netscape Navigator (84.8%), a fact which reflects the computer industry as a whole where Netscape Navigator is the dominant browser. Netscape's dominance does carry some implications for publishing on the Internet. Netscape and Microsoft's Internet Explorer both have their own proprietary modifications to basic HTML. Avoidance of such proprietary extensions where possible will allow access to the maximum number of users. Where use of proprietary extensions is necessary, Netscape's are more suitable since Navigator is most widespread in depository libraries.

When active content is incorporated into government information Java, which is common to both Netscape and Microsoft, is a likely preference rather than ActiveX which is unique to Microsoft. Where possible, server side approaches to active content (such as CGI) may be employed as they are browser independent. Finally, since almost 10% of depository browsers are text based, government information on the Internet should be tested in both text and graphical browsers to ensure that these users are not denied access to vital information. Change is rapid in this area and developments need to be watched closely;

the balance between Microsoft's Internet Explorer and the older, more popular Netscape Navigator may shift over the next year or so.

Fees For Service

In the matter of fees for service, a crucial factor in providing citizens with full access to information about their federal government's activities and publications, the study found that the vast majority of depositories equipped with an Internet connection (89.2%) do *not* charge their patrons for access. Printing services, however, which patrons are likely to want in combination with Internet use, are another matter. As table 5 shows, a substantial proportion (67.2%) impose charges on their patrons for printing. As reflected in Figure 23 it is clear that public and academic libraries are much more likely to charge for printing, a fact that will no doubt result in higher costs for patrons who wish to access information through the Internet.

Table 5 Fees for Service

Do you charge the public for:	**YES**	**NO**
Printing	67.2%	32.8%
Internet Access	10.8%	89.2%

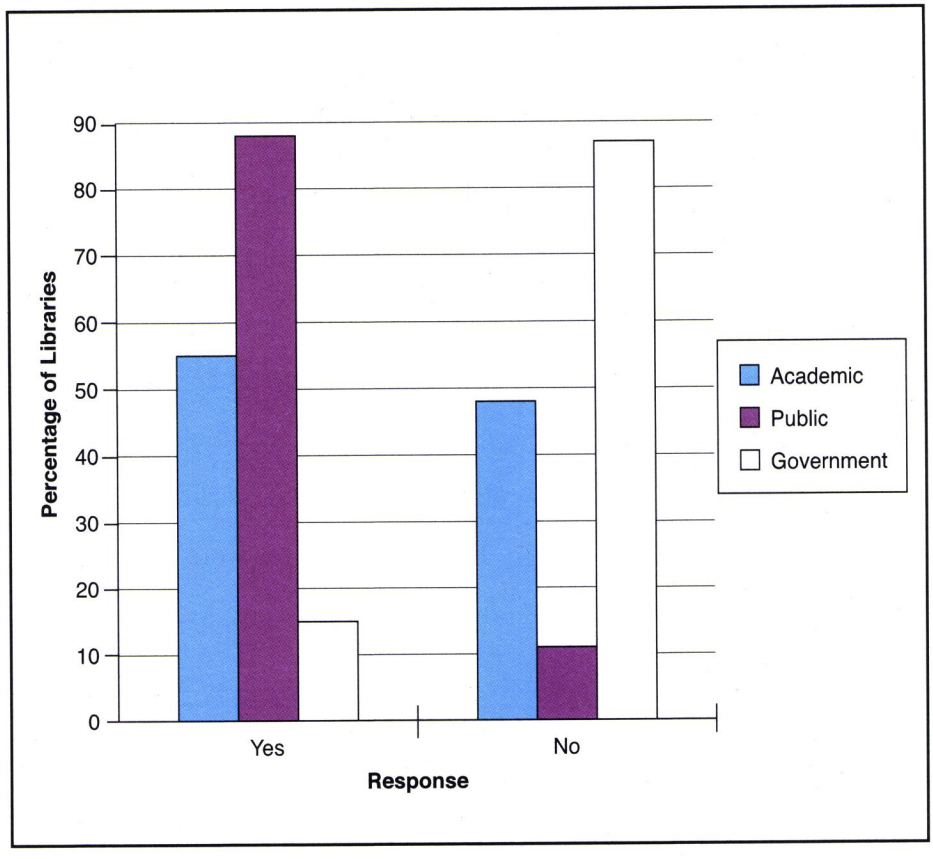

Fig. 23 Charges for Printing in Different Types of Libraries

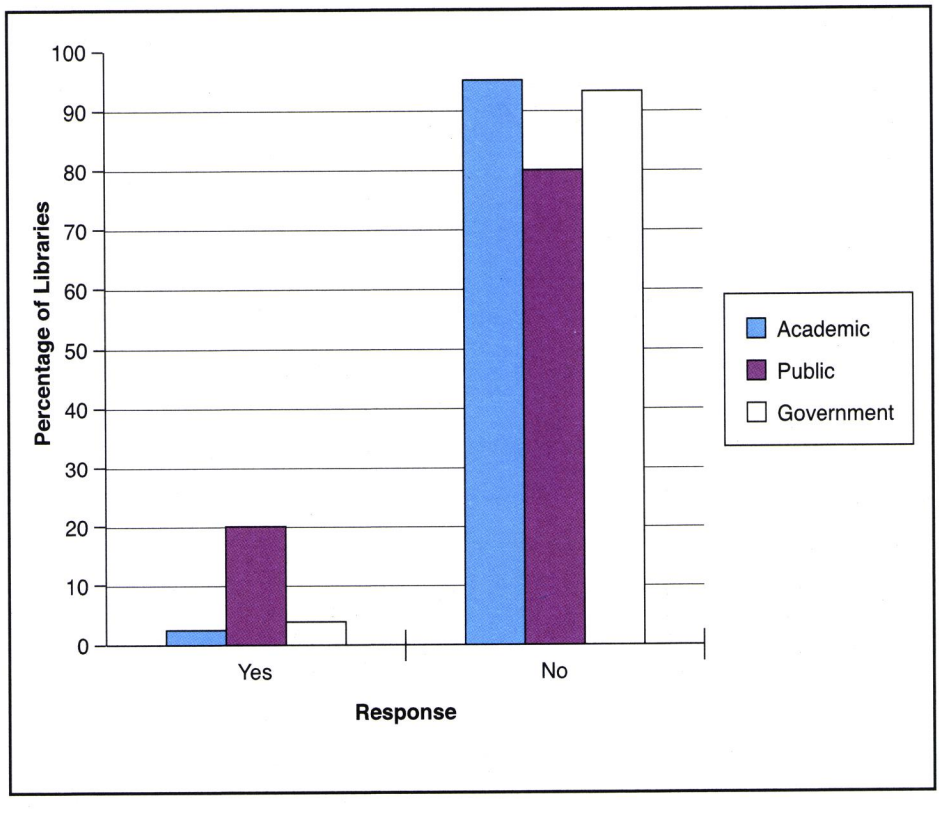

Fig. 24 Charges for Internet Access In Different Types of Libraries

4.3 Support and Preparedness for Electronic Access

4.3.1 Current Use

Use of Canadian federal government documents in electronic vs. printed form is investigated by the following two questions: "What is the frequency of use of **printed** government publications in your library/resource centre?", and "What is the frequency of use of **electronic** government publications in your library/resource centre?" Five categories of answers were provided: very low, low, moderate, high, and very high. The words "printed" and "electronic" were bolded in the original questionnaire to highlight the difference between the two questions. The response rates were 98.2% to the first question and 82% to the second. The results are summarized in Figure 25.

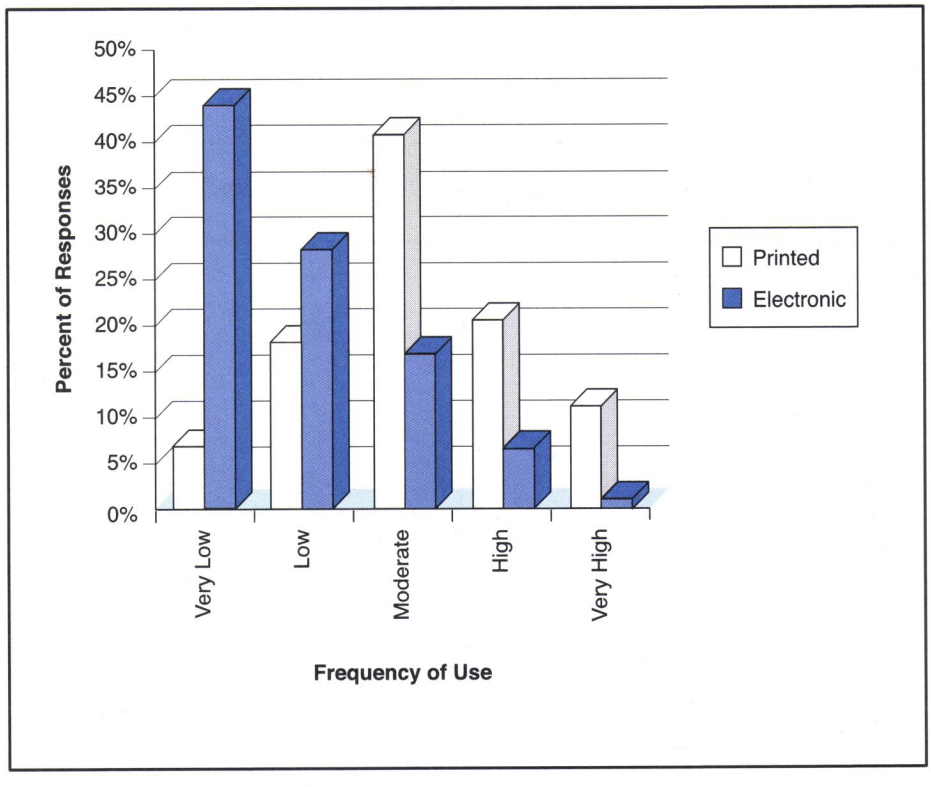

Fig. 25 Frequency of Use, Electronic vs. Printed Format

A clear pattern of use of the two formats of government publication emerges in Figure 25. Overall, electronic formats are used much less frequently compared with print. A total of 45.3% of libraries reported very low use of electronic government information while only

7% libraries reported very low use of printed publications. The typical frequency of printed format use is "moderate" while the typical frequency of electronic format use is "very low". Remarks were solicited at the end of both questions by asking "Any comments on your response?" Many respondents provided observations; some were so eager to express their opinions that they extended their answers to the next page of the questionnaire. An examination of the comments helped us understand the reasons for the relative low use of electronic documents. A recurrent theme is the lack of computer equipment and staff time to assist users. Absence of public awareness of electronic sources and lack of staff time to promote them were also cited as reasons for their low use. Some respondents expect an increase in the use of digital materials as staff and patrons becomes more computer literate. Many also note that they have just begun to acquire government information in electronic form or that current collections are limited resulting in very low use compared to the use of traditional print materials.

4.3.2 Types of help sought

To investigate the difficulties library users have in using electronic formats of government information, questions were asked about the type of help sought by patrons. Three types are listed: help with hardware operation, help with software, and help with understanding the content of government publications. Respondents were asked to rank these from the least frequent to the most frequent. Just under 50% of respondents answered this question. The ranking results are presented in Figure 26.

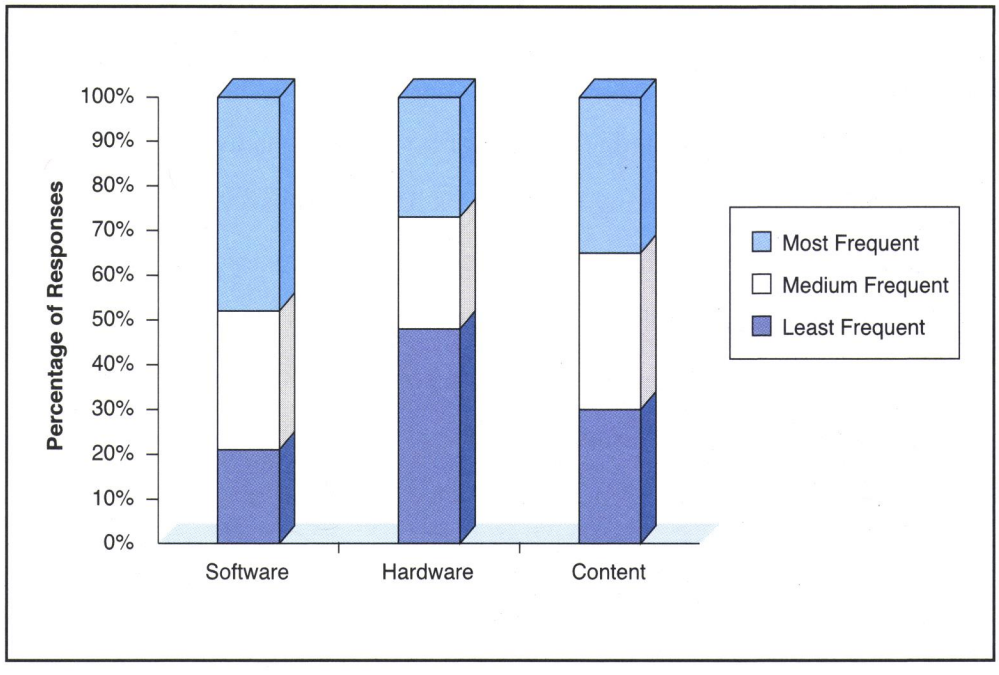

Fig. 26. Types of Help Sought and Their Relative Frequency

The figure shows the overall pattern of assistance sought: help with software is most frequently requested, followed by help with understanding the content of the documents themselves. Help with hardware is least frequently asked for. The written comments received corroborate the conclusion that software help is most needed. Many respondents complained about the variety of different search engines available and difficulties in using them, the lack of user friendly interfaces, the unfamiliarity of users with the software, or the general lack of computer literacy among users. It is understandable that help with hardware is relatively infrequently sought because many libraries have designated workstations for searching government information and users generally need not deal with hardware problems.

4.3.3 Staff Preparedness

The pattern of staff preparedness is reflected in Figure 27 and shows, first of all, that depositories seem to be better able to assist patrons in using CD-ROMs than they are in providing help with Internet. This is not surprising given the fact that the Internet is a relative newcomer, especially in public libraries; it does indicate that more work in training

and documentation is needed in this area. Libraries will be helped considerably if Internet and CD-ROM products are designed to provide a common "look and feel" so that staff and patrons can move easily from one to the other.

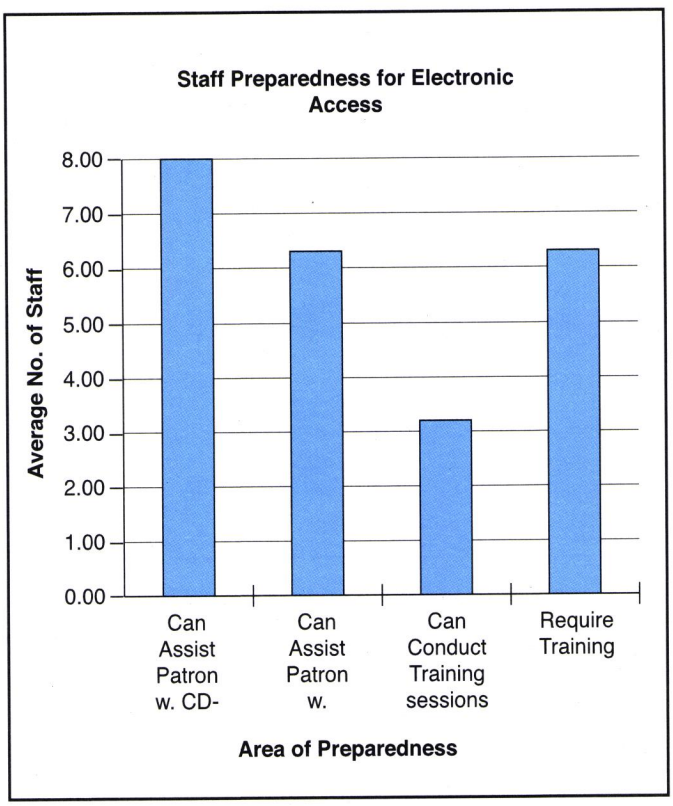

Fig. 27 Staff Preparedness for Electronic Access

It is also worth noting, as Figure 27 shows that the mean number of staff able to conduct training sessions is much smaller than the mean number who can provide direct assistance to patrons. This will have a significant impact on the ability of depositories to offer in-house training for both staff and patrons. Finally, the numbers show that the mean number of staff requiring training is about the same as the mean number of staff currently able to assist patrons with electronic resources. This means that many depositories are short of the trained personnel needed to assist with electronic access and competent delivery of electronic government publications will only be possible with increased training assistance. Figure 28 shows that public libraries require more staff training, a finding that is confirmed by comments made by respondents. Many lament the absence of funding, the

dearth of training programs, and the lack of time available for acquiring and passing on expertise in dealing with electronic sources of government information.

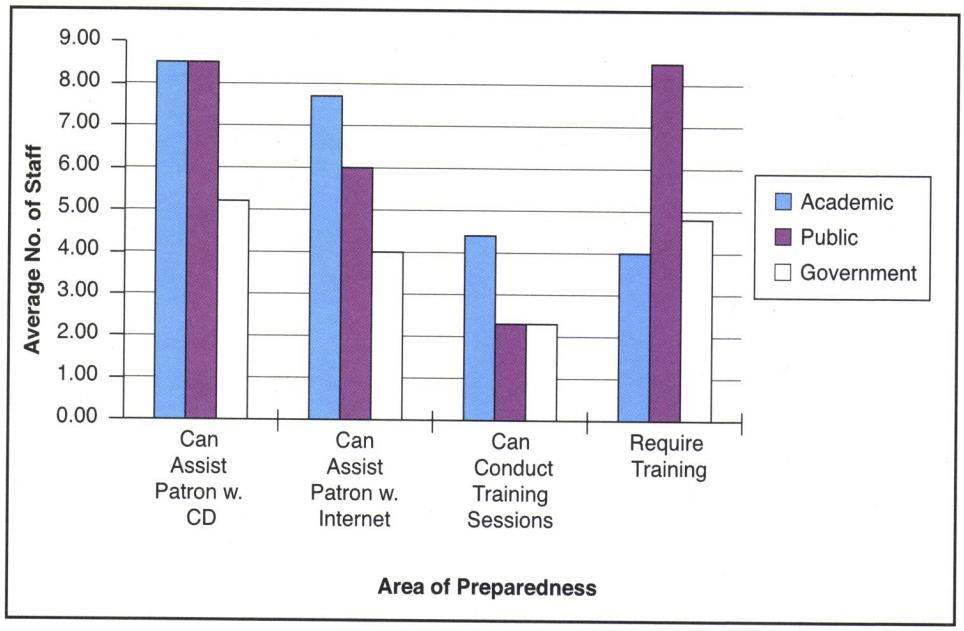

Fig. 28 Staff Preparedness in Different Types of Library

As for the availability of suitable training in electronic resources (including financial means, number and quality of available courses, time for training, etc.) it was rated by a majority of respondents (51.7%) as "poor" or "very poor" and confirmed in the written comments. Available services were rated "satisfactory," "very good," or "excellent" by 34.8%, 11.8% and 1.6% respectively. See Figure 29.

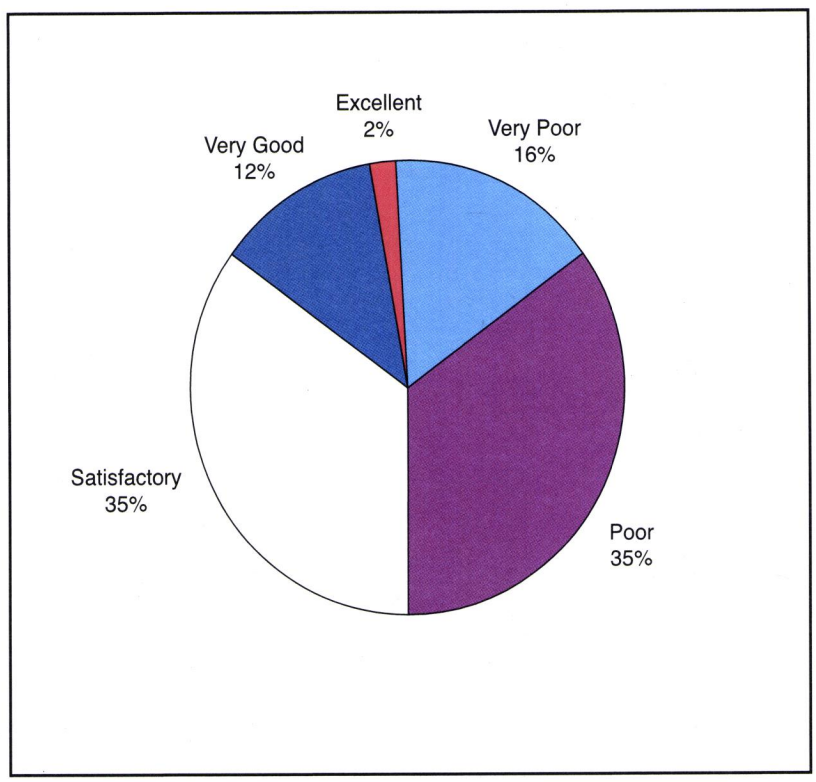

Fig. 29 Rating of Availability of Training for All Libraries

When these data were broken down by type of library, a chi-square test showed a significant difference between public, academic, and government libraries (>0.05), as the graph in Figure 30 illustrates. About 62% of public libraries rated availability of training as "poor" or "very poor," as opposed to around 41% of academic libraries and 35% of government libraries. Probable reasons for these discrepancies are the facts that academic libraries may have access to training opportunities on campus and governments may tend to have better resources available for employee education and training in a field which, after all, is their own. Since academic and government libraries were earlier in adopting electronic access technologies it is reasonable to expect them to have better training available; they will have had more time to develop in-house resources and partnerships with training agencies.

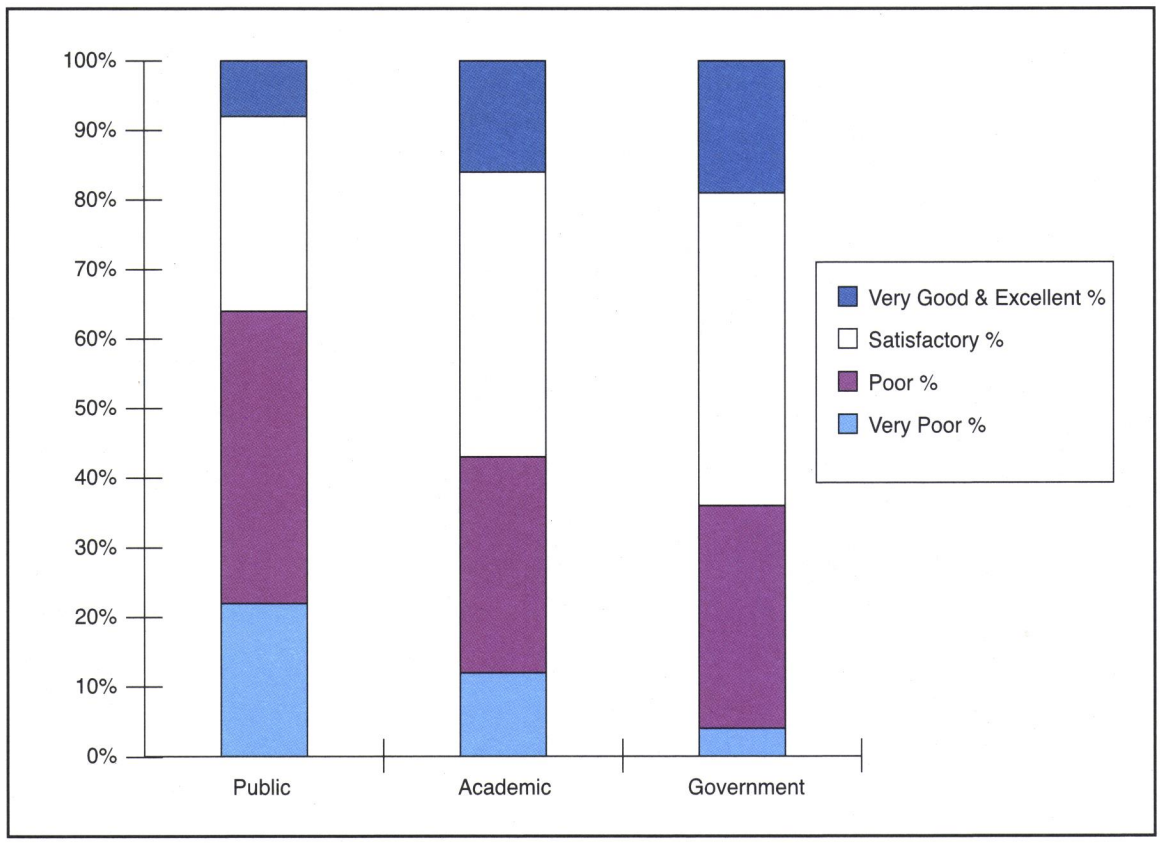

Fig. 30 Rating of Availability of Training by Type of Library

4.3.4 Goals and Policies for Electronic Access

When asked if their governing bodies had set goals for the introduction of electronic resources, 60% of respondents answered "no." See Figure 31. Thus, a majority of depository libraries are introducing services in this area without a clear set of goals. In some cases this may mean that goals simply have not been formalized by the governing body (e.g. public library board), while in others it may mean that projects in electronic access are proceeding on an ad hoc basis.

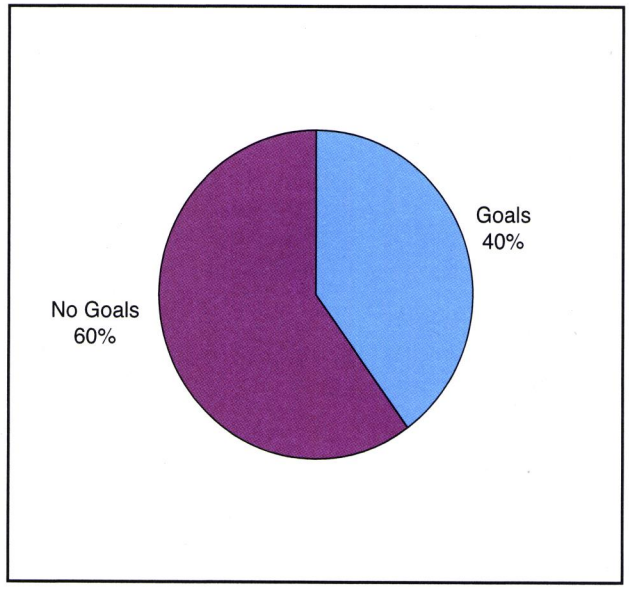

Fig. 31 Percentage of Libraries with Goals for Introduction of Electronic Materials

A significant difference in the establishment of goals by governing bodies among library types is revealed when data are broken down and a chi-square test performed ($p<0.05$). Upwards of 50% of public libraries have established goals - the highest percentage, as can be seen in Figure 32 . This may be due to the fact that they are most directly accountable to taxpayers through formal boards that include elected public officials. Academic libraries, while they are accountable to their university or college administrations, are not necessarily directly accountable to the institutions' funding agencies. Similarly, government libraries are normally part of a larger department and are accountable to senior management rather than the department's governing body.

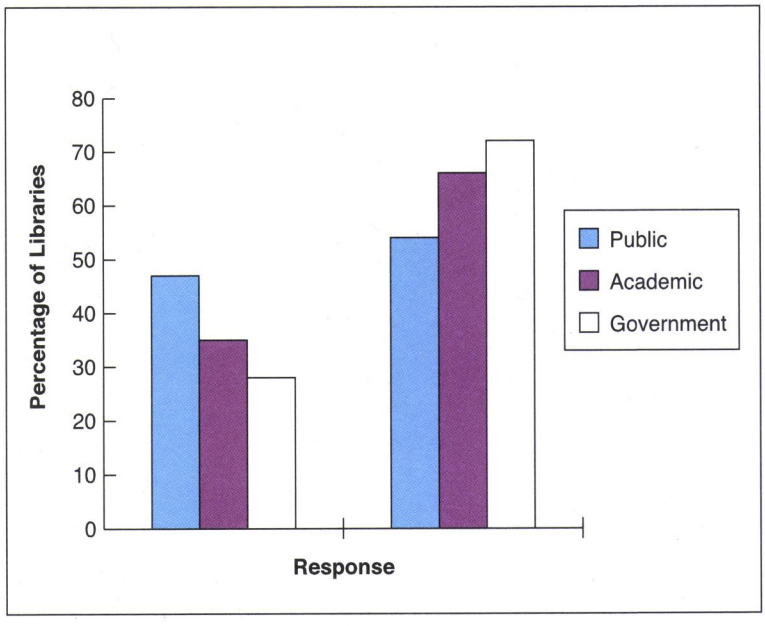

Fig. 32 Goals for Introduction of Electronic Access by Type of Library

A striking absence of formal policies for the management of electronic materials is evident from the results displayed in Table 6. Libraries were asked about the existence of such guidelines in a range of areas including collection development, children's access, acquisition/receiving, reference service, cataloguing, archiving, and mirroring.

Table 6 Policies

Area	*Policy*	*No Policy*
Collection Development	22.00%	78.00%
Children's Access	10.20%	89.80%
Acquisitions	16.40%	83.60%
Reference	16.40%	83.60%
Cataloguing	19.10%	80.90%
Archiving	2.40%	97.60%
Mirroring	0.90%	99.10%

This shortcoming may be due to some extent to the relative novelty of such materials and a lack of defined professional standards to which policy makers can refer (for example,

MARC cataloguing standards for data files have been developed and are still evolving). Collection development fares best in this area with 22% of libraries having a written policy. Archiving and mirroring are the weakest at 2.4% and 0.9% respectively. This is probably because most libraries do not yet see these activities as important for them in the electronic age. Should electronic access to government information via the Internet become the norm libraries will need to be engaged in locally mirroring commonly accessed materials on their own networks. It is likely, however, that DSP will need to be involved in any broader mirroring of government information as this will have to be arranged with universities or other providers with sufficient disk space and bandwidth. Local partnerships such as the Halinet project in Halton Region, Ontario, could also provide mirroring and archiving of government materials for their members. In any case, the lack of formal written policies in these matters will certainly retard development of local archiving and mirroring facilities by leaving development of such facilities on a purely ad hoc basis.

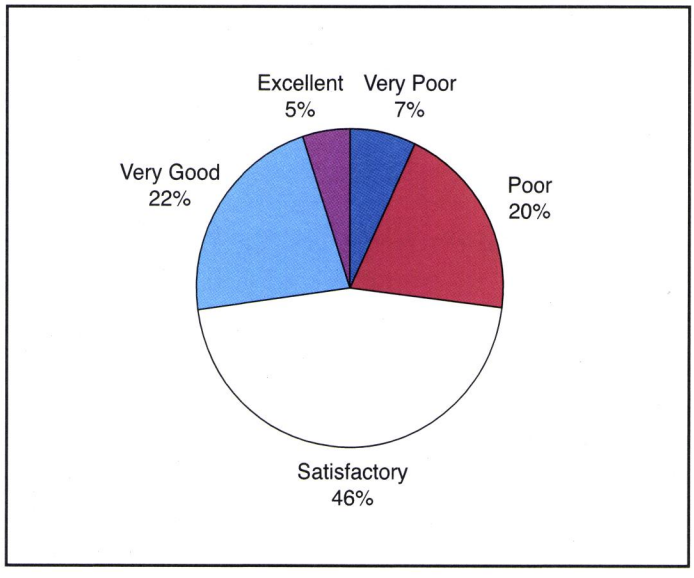

Fig. 33 Rating of Physical Facilities - All Libraries

Where the availability of physical facilities (space, lighting, ease of use, etc.) for the operation of computers is concerned, Figure 33 shows that most respondents (about 75%) rate them as "satisfactory" or better. But again, a chi-square test done to compare

different library types showed a highly significant difference ($p<0.001$) between public libraries' rating of physical facilities and those of academic and government libraries, Figure 34. Public libraries were more likely to rate facilities as being "poor" or worse (about 36%), while in academic and government libraries the percentage of ratings below "satisfactory," (i.e., "poor" or "very poor") is below 20%. The percentage of public libraries reporting "very good" facilities is around 15%, about half of either of the other categories.

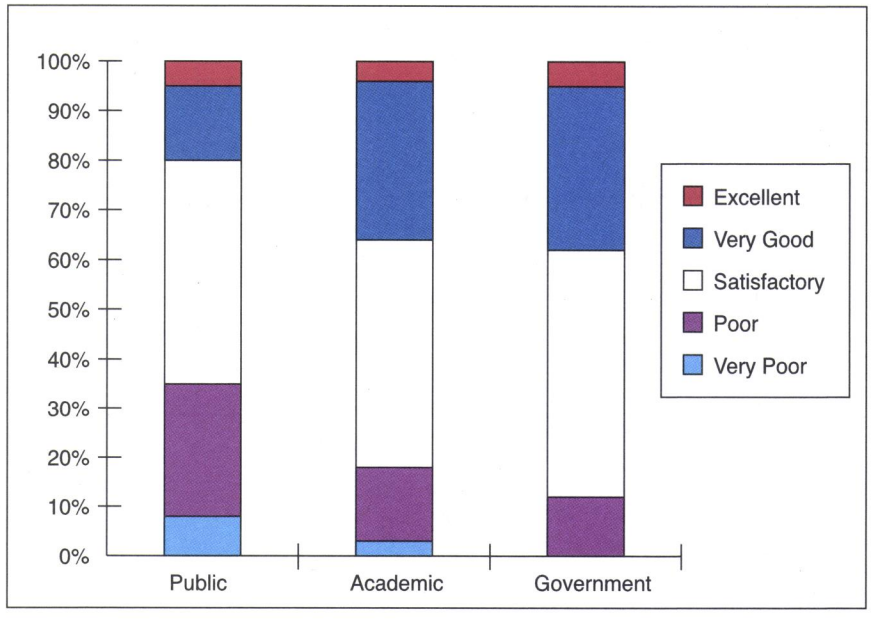

Fig. 34 Rating of Physical Facilities by Type of Library

This contrast is no doubt due to funding discrepancies and the nature of the institutions. Academic libraries are important to the functioning of colleges and universities and are therefore better supported and may also benefit from private beneficiaries and foundation grants. Government libraries are usually not stand alone facilities but are part of larger civil service office facilities and benefit from general improvements to the larger facilities and government buying plans for capital items such as furnishings. Unionized and regulated government offices may also tend to have standards in place for ergonomics, access for the disabled, etc. Public libraries, by contrast, have to rely primarily on municipal and provincial tax bases for funding, putting them in competition for funds with

such essential services as policing, fire fighting, and various kinds of infrastructure. This is a competition that is difficult for public libraries to win since they are often viewed more as recreational facilities rather than essential services. Lack of funds will inevitably lead to inferior facilities needed to support the new technologies.

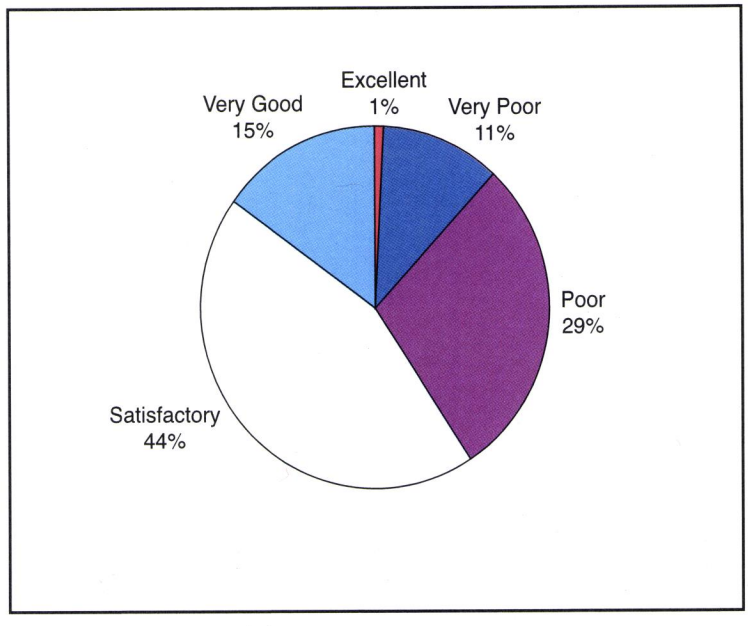

Fig. 35 Adequacy of Financial Support for Electronic Access

These findings and conclusions were confirmed by the answers to the question "How would you rate the adequacy of financial support for electronic access available to your library/resource centre?" Results are displayed in Figures 35 and 36. Most depositories (about 60%) rated their funding "satisfactory" or better. As with adequacy of physical facilities, however, there were important differences among types of libraries. A chi-square test showed a highly significant result ($p<0.001$) - public libraries (50% in fact) are more likely to rate their funding "poor" or "very poor." The graph in Figure 36 shows almost a sliding scale with about 36% of academic libraries rating funding as "poor" or "very poor" and about 17% of government libraries providing these ratings. Because of the clientele served by academic and government libraries, and the need to provide up-to-date information to researchers, there has been a stronger incentive for these libraries to pursue electronic access, hence the greater availability of funding. In addition, these

libraries can frequently capitalize on broader institutional developments such as campus and government resources to reduce their own funding requirements.

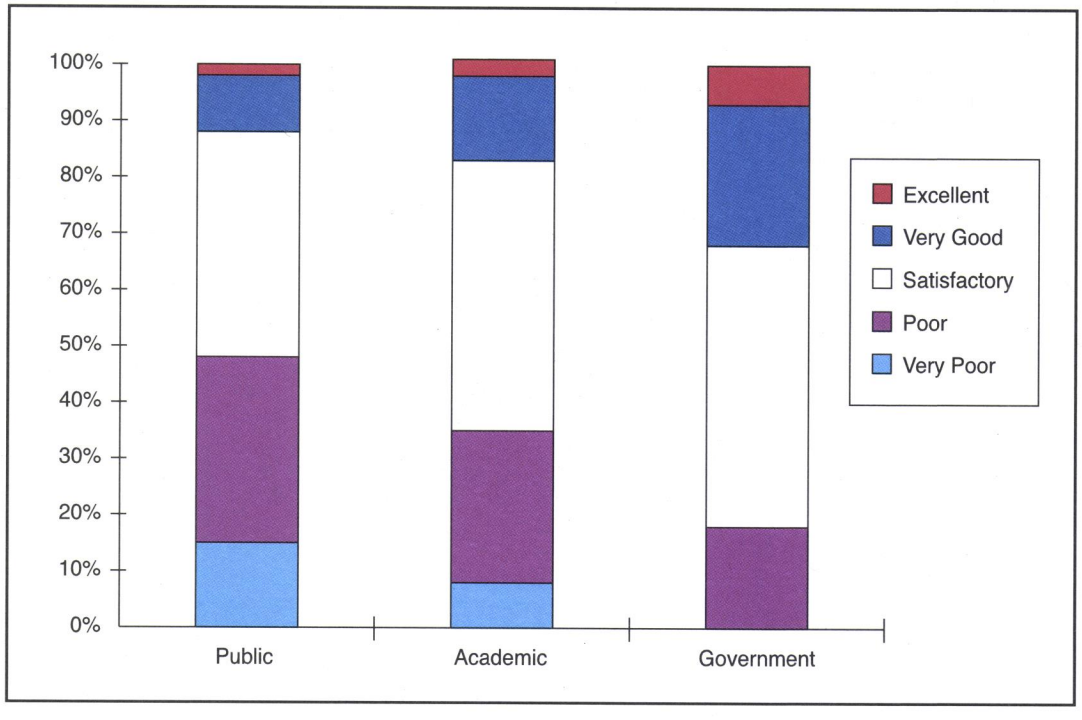

Fig. 36 Adequacy of Funding by Type of Library

Despite these discouraging findings, at least in regard to public libraries, it is heartening to note that depositories report an interest on the part of their governing bodies in increasing access to electronic information. Figure 37 shows that 90% of respondents recorded an interest level of at least "moderate" and at least 61% indicated an interest level of at least "high." In this case a chi-square test found no significant difference in interest levels among the various library types. While this news does not automatically translate into support for the necessary capital and operating budgets, it does show that there is a base of interest which can be built upon.

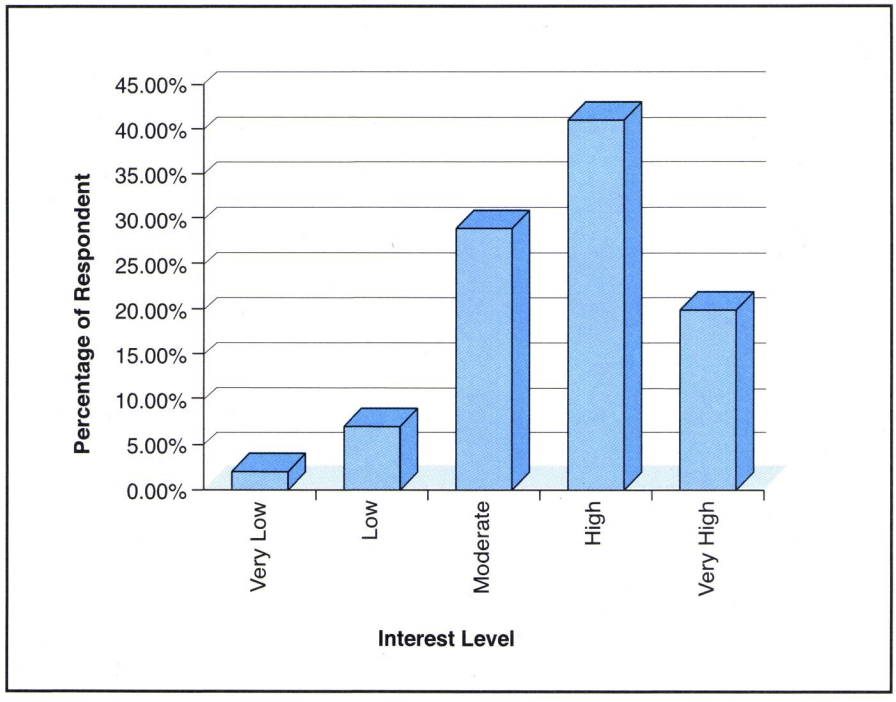

Fig. 37 Interest Level of Governing Agency

Depositories that have not developed detailed plans for future acquisitions and installation of the new technologies were asked what they perceived as the reasons for this. The graph in Figure 38 makes clear that the two main reasons are the cost of hardware and lack of staff time to develop in-house expertise, both of which rated over 20%. Since a good basic business computer generally costs about $2,000.00 to $2,500.00 at any time, in addition to the costs of network hardware such as interface cards, hubs, and routers, the former is a significant issue. In a large public or university library system with multiple branches or departments costs can multiply rapidly. New technologies such as network computers may help stabilize or even slightly reduce these costs, but in many cases the savings on desktop computers will have to be sunk into better servers and higher bandwidth networks to make systems function effectively. It should also be noted that libraries can ill afford the cost of network administrators. And some respondents report reductions in their materials budgets to support the purchase of hardware and software.

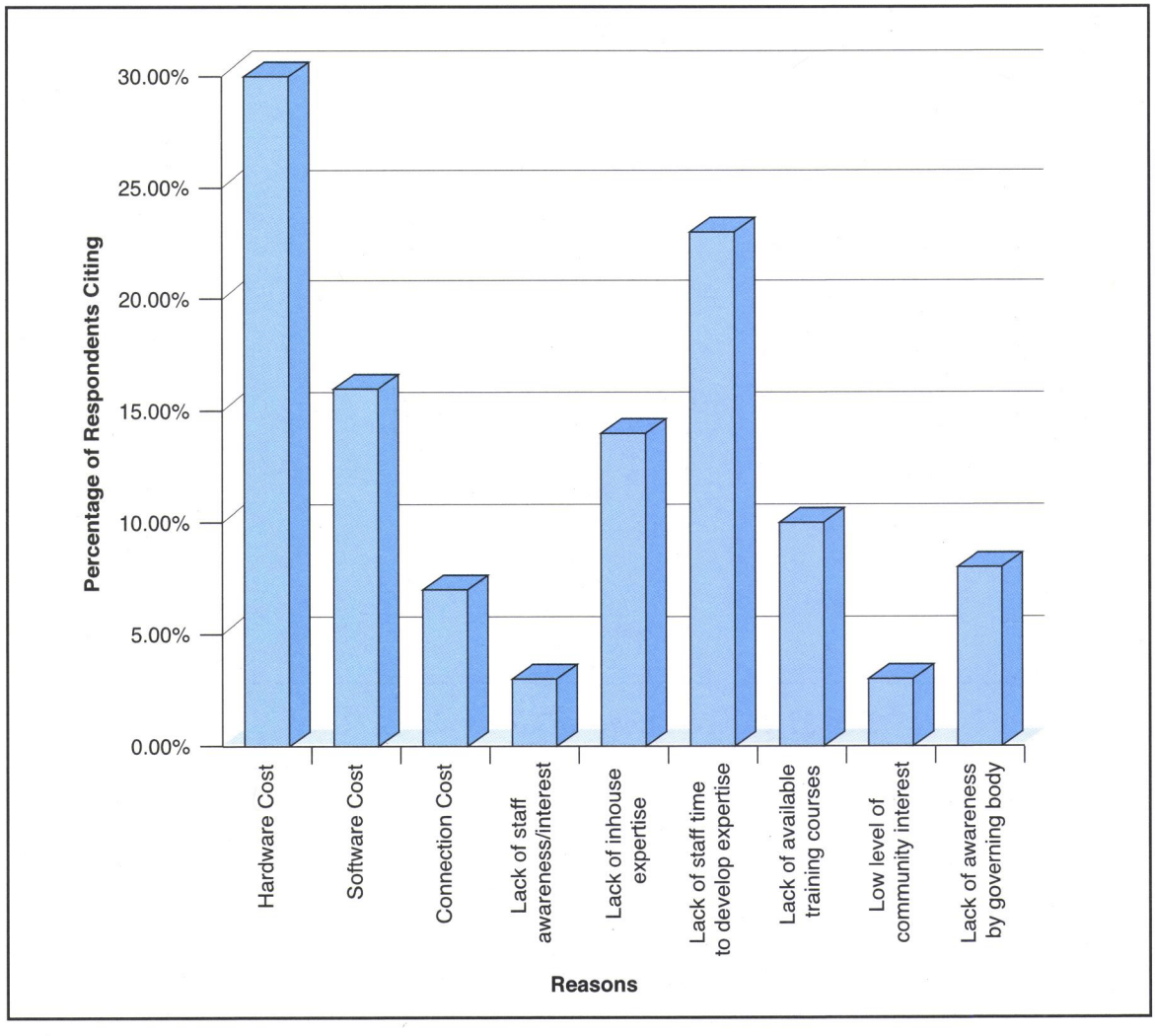

Fig. 38 Reasons for Not Developing a Plan

In regard to staff time available for development, libraries of all types have been subjected to restructuring (and not always efficient restructuring) over the past decade or so. In some cases staff members have had to take on duties that were formerly assigned to two or more persons. Until library staff are able to find time to better cope with new and more demanding tasks it will continue to be difficult to allow for attendance at courses, workshops, etc. Even organizations that enjoy the luxury of dedicated systems personnel may find their staff members spending much of their time maintaining and supporting existing systems with little time left for learning how to deal with new developments and working up plans for inevitable technological change.

4.3.5 Perceived Change in Use

As noted above, the Canadian federal government is moving ahead in the provision of its publications in electronic form. What will the impact of this intended shift be on citizens' access to government information? Will the change promote or impede accessibility? To investigate this issue, respondents were asked whether use would increase, decrease, or remain unchanged if federal documents were available *primarily* in electronic form. This question calls for some speculation; there is really no objective way to predict the future on this issue. To reach a better understanding of the respondents' answers comments were again solicited at the end of the question "What are your reasons for the perceived change?".

About eighty-nine percent of the depositories answered this question. Interestingly, among those who responded, answers were evenly divided among the three categories: 34.3% respondents think the use would increase, 34.3% said it would decrease, and 31.3% believed that it would remain unchanged. The main reasons for the perceived change can be summarized as follows:

Group 1-- Use will Increase

The main reasons provided are: users will be able to access more documents than they have been able to in the past; electronic information is more current than printed materials; increased off site use (e.g. in branch libraries); availability of 24 hours access; easy keyword searching; increased access without the necessity of having more shelf space (this would alleviate the current lack of space for printed documents). Some respondents also pointed out that "increase" is contingent upon the availability of computers.

Group 2 -- Use will Decrease

The main reasons provided are: insufficient computer hardware and software; increased reliance by users on staff for assistance; no staff available evenings and weekends; patron preferences for printed format (especially older users); alienation of those who do not have the time or inclination to learn how to use the software before accessing the content of electronic sources; difficulty in printing and/or downloading ; difficulty in browsing.

Group 3 -- Use will remain unchanged

The main reasons provided are: different types of media are suitable for different types of material; use may go up as users become more computer literate; users will accept whatever format is made available to them; change depends on budget and cost of electronic service.

Because public, academic, and government libraries serve very different populations representing a large segment of society, comparisons among them were made to determine if they differ in this perceived change. Table 7 provides the cross tabulation of the two variables with each cell showing the number of respondents and the percentage in that category. Although the three types of library have a somewhat different split in the perceived changes, a chi-square test revealed no significant difference (p=0.09) among the three types of library on this issue.

Table 7 Perceived Change by Types of Library

Library Type	Increase	Decrease	Unchanged
Public library	81 (39.5%)	63 (30.7%)	61 (29.8%)
Academic library	42 (28.2%)	62 (41.6%)	45 (30.2%)
Government library	13 (34.2%)	10 (26.3%)	15 (39.5%)

At present printed documents are much more frequently used in the depository libraries than are their electronic counterparts. Print materials are seen to be user friendly and are used for research purposes and popular reading alike; improved bibliographic control would further increase their use.

Relatively low use of electronic sources is attributed to insufficient and/or outdated computer equipment and inadequate staff support in providing assistance to patrons and in promoting the new technologies. Librarians themselves recognize the necessity of raising

the levels of staff expertise if users are to be assured continued access to official publications as the transition to a more electronic DSP proceeds.

The most frequent requests for help in using electronic formats of government information are those dealing with software. Electronic formats present formidable barriers to patrons who are unfamiliar with computers; a plethora of formats and access protocols contributes to user confusion and reluctance to access digital sources. Library staff must spend more time in coaching, training and encouraging their patrons. Respondents to the study are divided (with an almost even split among the three categories) on their estimate of use of government information should it be provided primarily in electronic form, a direction in which the Canadian federal government seems certain to move. There is no relationship between the type of library and the perceived change.

Public libraries and academic libraries are proportionally represented in all the three groups of perceived change. Some believe that electronic use will increase because electronic searching is easier and faster and allows more access points, better content coverage, and off site searching. Others predict a decrease mainly because of lack of equipment, shortage of staff time, and patrons' preference for printed formats. Those who perceive use to remain unchanged express uncertainty on the issue and point to the complexities of the matter; many factors are involved such as availability of funding, cost of service etc.

Respondents were asked about their expectations regarding electronic resources. "By the year 2000 what do you expect will be your library/resource centre's most common medium for access to government information?" They were requested to rank four possible formats: CD-ROM/Disk, Internet, Microform, and Paper. Results are displayed in Figure 39. The Internet had the highest percentage of first rankings, perhaps because of extensive media coverage and its growing popularity. Librarians are generally aware of the advantages of the Internet as a publishing medium and are interesting in using it.

Paper was a strong second in percentage of number one and number three rankings and third in number two rankings. Some libraries, especially the smaller ones, are moving slowly in developing electronic services and may not anticipate completion of their automation and networking projects by the turn of the century which, after all, is less than three years away. CD-ROM and disk had a relatively low percentage of number one rankings but had the highest percentage of second and third rankings showing that these formats are still expected to have a place, though not as significant a place as the Internet in the delivery of documents. Microform fared poorly, having the highest percentage of number four rankings and the lowest percentage of number one, two, and three rankings.

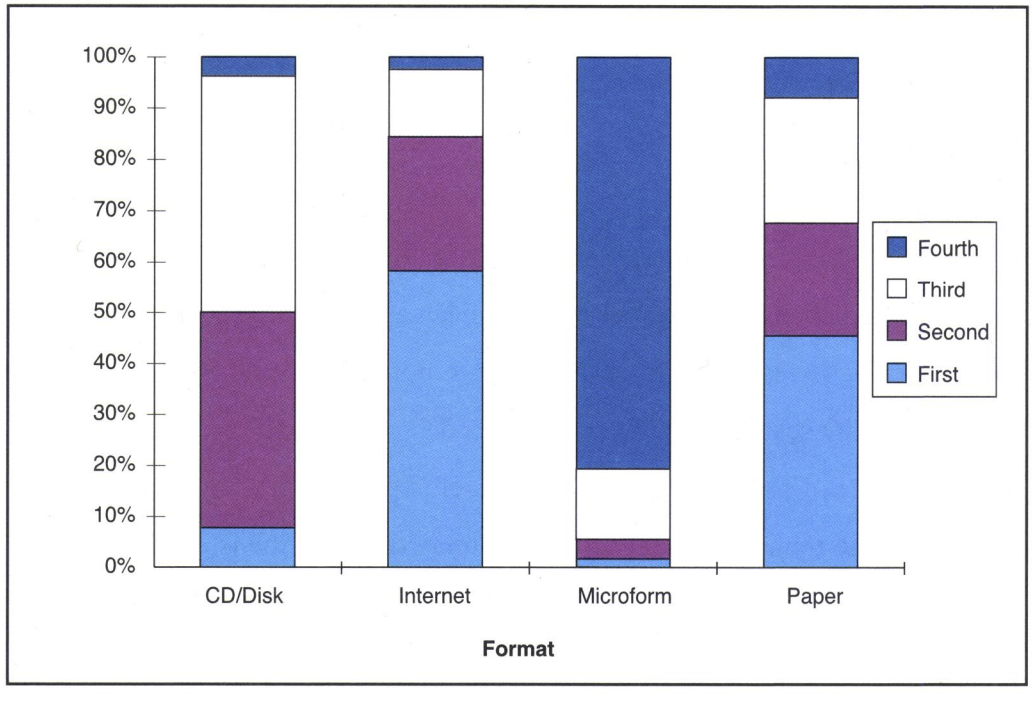

Fig. 39 Ranking of Formats for Government Documents

The division on these issues represents a significant degree of uncertainty among depositories on the future of government information use when it is primarily in electronic form. These findings are similar to the argument made by Bernadine Hoduski that government information in multiple formats will best serve the needs of diverse users and provide equal opportunity for access. (Abbott-Hoduski, p. 252) It is therefore recommended that the government proceed with caution on the intended move into the

electronic format of its publications. Both positive and negative effects of such a major move should be fully investigated before full implementation takes place.

5. Conclusions

A large amount of data were gathered and analyzed for this study. Findings show that the typical depository library serves a population of 15,000 (median figure); has a collection of 85,474 items; has three full-time equivalent staff members providing reference service, two of whom are reference librarians; and employs one systems librarian or specialist. Canadian federal publications fill a prominent place in collections of official documents maintained by the depositories and government publications themselves are considered to be "very important" or "essential" by a majority of libraries (68%). A significantly larger percentage of academic libraries rated these materials as "essential" (40.48% as compared to 20.26% for public libraries) reflecting no doubt the research needs of academic institutions and the fact that academic libraries often serve patrons who are referred to them by public libraries.

In organizing their collections of official publications the majority of depositories provide a mixed arrangement, some materials are shelved with the main collection, some are housed in separate areas. Over the past ten years there has been a move by 16.1% of libraries to integrate their documents with the main collections. Depositories employ a wide range of shelf arrangements for their documents.

Where hardware facilities are concerned, a large majority of depositories (87.1%) are equipped with online catalogues and of these just over half provide dial in access. The majority (62%) list their documents in the library's main OPAC. An attempt was made to discover how many personal computers are available for public use in the depositories compared to the number reserved for staff. This was a difficult question to answer. Results show a wide variability among respondents. There is a strikingly uneven distribution of computers throughout the depositories; the majority have very few computers while a few have a large number. The typical library provides seven PCs for exclusive staff use and six for use by library patrons. More significantly, the typical library has .4 public service PCs per 1000 people served. Academic libraries have more, with 2 PCs per 1000 population, government libraries have 1.7 and public libraries have only .15 PCs for every 1000 people they are mandated to serve. These figures do *not* show how many PCs are needed per 1000 people served but it is reasonable to predict that at this

rate public libraries at least, will not be adequately equipped to accommodate patrons who will wish to access an increasing amount of electronically available government information. On the positive side findings show that the majority of computers available for public access in the depositories are equipped with 486 and Pentium CPUs which are ideal for Internet access. Results also show that academic libraries operate a higher percentage of public access PCs with RAM in excess of eight megabytes.

There is also wide variability in the number of public service CD-ROM drives available; the typical library reports two CD-ROMs mounted on stand alone PCs and only one accessible through a network. The most common CD-ROM drive in the responding libraries is 4x, standard at the time of the study.

The most common type of public service printer is the dot matrix and its slow speed needs to be kept in mind when decisions regarding electronic access to government information are being made. The majority of public service PCs are equipped with Windows 3.1 and Windows95 operating systems. The 20% equipped with MS-DOS only will have problems accessing information on the World Wide Web via a graphical interface which means that sites using images, frames, and multimedia active content will be inaccessible or difficult for them.

A large majority of depositories are networked and of those who are not, almost 60% have plans to install one. Again, a large majority (89%) have access to the Internet (for the most part provided by a commercial ISP or by a college/university) and all of the rest save 2.2% have plans for an Internet connection. Public libraries generally have lower bandwidth connections to the Internet. The dominant Web browser among all depositories regardless of type is Netscape Navigator which reflects the computer industry as a whole.

In the matter of fees for service, a crucial factor in providing citizens with full access to government information, the study found that the vast majority of depositories (89%) do not charge their patrons for access. But when it comes to printing a substantial proportion (65%) impose charges on their patrons, a fact that will no doubt result in higher costs for those who wish to access information through the Internet.

Overall, electronic formats are used much less frequently compared with print. Many respondents provided observations - a recurrent theme is the lack of computer equipment

and staff time to assist users, along with absence of public awareness, the lack of staff time to promote the use of electronic sources, and limited collections in these areas. Most frequently, patrons who use electronic sources ask for help with software. Depositories appear to be short of trained personnel needed to assist with electronic access. Many respondents complain about the absence of funding, the dearth of training programs, and the lack of time available for increasing expertise.

A majority of libraries seem to be introducing electronic services without a clear set of goals; goals may not have been formalized by governing bodies, or projects may be proceeding on an ad hoc basis.
Most respondents rated the adequacy of physical facilities as satisfactory or better although analysis shows that public libraries were more likely to rate facilities as being poor or worse. The same is true for adequacy of financial support; most respondents rated their funding as "satisfactory" or better but public libraries were more likely to rate their funding "poor" or "very poor."

Depositories that have not developed detailed plans for future acquisitions and installation of the new technologies made clear that the two main reasons are the costs of hardware and lack of staff time to develop in-house expertise. Respondents were evenly divided in speculating whether or not the shift to electronic government information would lead to increased use, decreased use, or unchanged use of their resources. In regard to their expectations over the next few years respondents ranked the Internet first as the most likely source for government information; paper was a strong second.

In their written comments respondents acknowledged the potential of the Internet for timely access but expressed reservations in the following areas: inadequate bibliographic control and archiving; the threat of inequitable access if fees for service are imposed; the transfer of publishing costs from the government to libraries if they are expected to download and print government information available only on the Internet; and the demands of staff training and maintenance costs of equipment.

There is a significant degree of uncertainty among depositories on the future of government information use when it is primarily in electronic form. Further study of such issues as bibliographic access, the nature of adequate reference service, and the necessary levels of funding for electronic equipment to serve library patrons should help in easing the transition to a more electronic DSP.

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7. Acknowledgments

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DEPOSITORY SERVICES PROGRAM
PROGRAMME DES SERVICES DE DÉPÔT

Le 21 novembre 1996

Cher collègue,

Je vous écris pour vous demander votre collaboration et votre aide afin de mettre à jour les données concernant votre bibliothèque qui figurent au Programme des services de dépôt (PSD). Vous recevrez sous peu un questionnaire détaillé (accès électronique à l'information sur le gouvernement fédéral du Canada) sur la situation actuelle des fonds documentaires au sein de votre institution, les ressources affectées au soutien de ces fonds et votre capacité de recevoir, de traiter et d'exploiter le nombre croissant de titres que le gouvernement fédéral met à la disposition par voie électronique (virtuelle). Vous mettrez environ une heure pour répondre au questionnaire.

Les institutions de dépôt sont tenues depuis toujours de fournir cette information. Bon nombre des profils qui figurent actuellement dans nos dossiers ne témoignent plus des réalités ou de la situation de nos institutions de dépôt. Bien que les responsables du PSD aient parfois mis à jour ces profils sur une base empirique, il est impératif en cette période de changement et de transition que nous ayons une image plus complète de la situation de chaque bibliothèque de dépôt faisant partie du réseau. Ce sondage nous permettra de dresser le tableau en question.

November 21, 1996

Dear Colleague:

This is to ask for your cooperation and assistance in updating the Depository Services Program's information on your library. Very shortly, you will be receiving a detailed questionnaire (Electronic Access to Canadian Federal Government Information) on the status of depository holdings within your institution, the resources assigned to support these holdings, and your ability to receive, process, and service the growing number of virtual and electronic titles the federal government is making available. The survey will require about 1 hour of your time to complete.

Providing this information is one of the longstanding requirements associated with depository status. Many of the profiles we currently have on file no longer reflect the realities or situation of our depository institutions. Although the Program has updated these profiles from time to time on an ad hoc basis, it is critical in this time of change and transition that we have a more complete picture of the state of each depository library within the network. The survey will permit us to achieve this.

.../2

Canada

À cette fin, les responsables du PSD ont retenu les services des Mmes Elizabeth Dolan et Liwen Vaughan de l'école des études supérieures en bibliothéconomie et en sciences de l'information de l'université de l'Ouest de l'Ontario (University of Western Ontario). Elles diffuseront le questionnaire et compileront, traiteront et analyseront les données pour le compte des responsables du PSD. Elles prendront également les mesures de suivi qui s'avéreront nécessaires.

In order to conduct the survey, the Program has retained the services of Drs. Elizabeth Dolan and Liwen Vaughan of the Graduate School of Library and Information Science of the University of Western Ontario. They will be issuing the questionnaire, and compiling, processing, and analysing the information on the DSP's behalf. They will also undertake any follow ups required.

Votre collaboration pour que le sondage se fasse comme il se doit et dans les délais prescrits est essentielle. Les responsables du PSD se servent de l'information qu'ils recueillent par le truchement des profils pour modeler leurs politiques et pratiques de fonctionnement. Sans ces données, les responsables du PSD ne peuvent espérer bien comprendre et refléter vos besoins et vos limites ou ceux de la clientèle que vous desservez en notre nom.

Your help in ensuring that the survey is properly completed in a timely manner is essential. The DSP uses the information it collects through the profiles to shape its operating policies and practices. Without this information, the Depository Services Program can not hope to adequately understand and reflect your needs and limitations, or those of the clientele you serve on our behalf.

Nous vous remercions sincèrement de votre collaboration.

We greatly appreciate your cooperation.

Veuillez agréer, Madame, Monsieur, mes salutations distinguées.

Sincerely yours,

Le directeur-adjoint
Groupe Communication Canada - Édition

Bruno Gnassi
Assistant Director
Canada Communication Group - Publishing

The UNIVERSITY of WESTERN ONTARIO
Graduate School of Library and Information Science

December 1996

ELECTRONIC ACCESS TO CANADIAN FEDERAL GOVERNMENT INFORMATION
HOW PREPARED ARE THE DEPOSITORY LIBRARIES?

Dear Colleagues,

While the recent rapid expansion of electronic publication and dissemination of Canadian federal government information offers the potential for improved public access to official documents it also means that libraries and resource centres are facing major challenges in adopting the new technologies.

In regard to the full and selective depository libraries that make up the network of the Canadian Depository Services Program (DSP) many questions remain unanswered. For example, do depository collections have the necessary technological capabilities to provide effective access to official information products in electronic form? What is the actual state and nature of their physical resources? Are the libraries adequately equipped with computers? Are they networked? Do they have sufficient (and adequately trained) staff to meet perceived increases in demands for government information in electronic form? Have the depositories policies in place for the management of electronic services? Are plans for future services being developed? What are the most pressing difficulties facing depository libraries in their efforts to meet these new demands? And what can the DSP do to assist in all this?

We are undertaking a study funded by the Canadian Federal Depository Services Program to discover the answers to these and other questions related to electronic access to Canadian federal government information and we need your help in assuring that the data we collect is accurate and complete. So we are asking that you complete the enclosed questionnaire which is being sent to all full and selective federal depository libraries in Canada and abroad and return it to us in the enclosed envelope by **20 December 1996.** The results of our project will be made available to all depositories in the DSP.

We hope you agree that this is an important study, one which can provide us all with valuable and badly needed information on the state of our depository libraries and their readiness to adapt to the inevitable changes that the new electronic technologies will bring. **Any results published from this study will be in aggregate form and your name will not be included to protect your anonymity.** If you have any questions about this study or about the questionnaire, please call 679-2111 ext. 8498 and leave your name and telephone number; a member of the research team will return your call. Or you may send us an e-mail message at dolan@julian.uwo.ca or lvaughan@julian.uwo.ca. We are most grateful for your coöperation.

Yours sincerely,

Elizabeth Dolan, D.L.S.

Liwen Vaughan, Ph.D.

Elborn College • London, Ontario • Canada • N6G 1H1 • Telephone: (519) 661-3542 • Fax: (519) 661-3506

ELECTRONIC ACCESS TO CANADIAN FEDERAL GOVERNMENT INFORMATION

HOW PREPARED ARE THE DEPOSITORY LIBRARIES?

A QUESTIONNAIRE

A study conducted by the

Graduate School Of Library And Information Science
Elborn College
University of Western Ontario
London, Ontario, CANADA N6G 1H1
Phone: (519) 661-2111, x8470
Fax: (519) 661-3506

Please ensure that the following information is correct:

I. LIBRARY PROFILE

1. What is the population of your library/resource centre service area (i.e. the number of people that the library has a mandate to serve)?

   _____

2. (A) Currently, how many people does your library/resource centre employ (including full time, part time, contract workers)?

   _____

   (B) Of the total number of employees, how many are:

   full-time equivalent (FTE) reference staff

   _____,

   FTE reference librarians

   _____,

   FTE systems librarians or specialists

   _____,

   FTE data librarians or specialists

   _____

   Note: see definition of "full-time equivalent" at end of questionnaire.

3. Is there a designated person in charge of your government publications collection?

   O Yes
   O No

4. Indicate the total number of items in your collection. (Be sure to include CD-ROMs, microforms, etc.)

   _____ items

5. Approximately what percent of your total library collection is made up of government publications (from all jurisdictions)?

   O Less than 10 %
   O 11% to 20%
   O 21% to 30%
   O over 30%

6. Approximately what percent of your **government publications** collection is made up of Canadian federal government publications?

   O Less than 40 %
   O 41% to 60%
   O 61% to 80%
   O over 80%

7. Which of the following best describes how your depository materials are organized:

   O In a separate government documents collection
   O Integrated with the main collection
   O Integrated with reference collection
   O In a mixed arrangement (i.e. some with the main collection, some in a separate collection)
   O Other (please specify)

   _____

   _____

8. If some or all of your government documents are housed separately, what shelf arrangement do you use?

   O CODOC
   O Canadian Classification Scheme for government documents
   O Alphabetical order by agency
   O Statistics Canada's number
   O Other (please specify)

   _____

   _____

9. Are your government documents listed in any of the following catalogues? (Check all that apply)

   O In the library's main online catalogue.
   O In a separate online catalogue.
   O In the library's main card catalogue.
   O In a separate card catalogue.
   O In microfiche
   O Other (please specify)

   _____

   _____

10. Since 1986, has your library/resource centre moved from a separate collection of government publications to an integrated collection?

    O Yes
    O No

11. Does your library (or institution) provide specialized products, equipment and/or services for visually-disabled patrons? (Check all that apply)

    O Braille
    O Electronic voice readers
    O Large print materials
    O Sound cassettes
    O Large print screens on PCs
    O Other equipment (please specify)

    _____

    _____

II. FACILITIES FOR ELECTRONIC ACCESS

If necessary, please consult your systems or technical services staff for assistance with the following questions.

12. Do you have an online catalogue?

    O Yes
    O No → GO TO QUESTION 14.

13. Is your online catalogue: (Check all that apply)

    O equipped with dial in access?
    O accessible from other libraries?
    O accessible from the Internet?

14. How many PCs (personal computers) are there in your library resource/centre? (system wide)

    _____ Number of PCs used by **staff only**

    _____ Number of PCs available for **public access**

15. Please indicate the number of **public service** PCs you have in each of the following categories:

____ 286
____ 386
____ 486
____ Pentium
____ Macintosh

16. Please indicate the number of **public service** PCs with each of the following operating systems:

____ MS-DOS only or compatible only
____ Windows 3.1
____ Windows NT
____ Windows 95
____ Other (please specify)

_____

_____

17. Please indicate the number of **public service** PCs with each of the following memory size: (RAM)

____ Less than 4MB
____ 4MB to 8MB
____ 9MB to 16MB
____ More than 16MB

18. How many of your **public service** CD-ROM drives are on stand alone PCs?

_____

19. How many of your **public service** CD-ROM drives are attached to a network (including both CD-ROM drives in networked PCs and in CD-ROM servers)?

_____

20. Please indicate the number of **public service** CD-ROM drives with each of the following speeds:

____ 1x
____ 2x
____ 4x
____ 6x
____ 8x
____ More than 8x

21. Please indicate the number of **public service** printers of the following types:

____ Dot matrix
____ Ink jet
____ Laser
____ Colour

22. Does your library charge the public for printing?

O Yes
O No

23. (A) Does your library have a local area network (LAN) or wide area network (WAN)?

O Yes
O No → GO TO QUESTION 26.

(B) Is your LAN/WAN for

O Staff use only
O Public access

24. How many of your **public service** PCs are connected to a local area network (LAN)?

_____

25. How many of your **public service** PCs are connected to a wide area network (WAN)?

_____

26. If the library **does not** have a network, do you plan to install one?

O Yes, within 1 year
O Yes, within 2 years
O Yes, later than 2 years
O No plan

27. Does your library/resource centre have access to the Internet?

O Yes → GO TO QUESTION 28
O No

If no, do you plan to have Internet access?

O Yes, within 1 year
O Yes, within 2 years
O Yes, later than 2 years
O No plan

If your library/resource centre does not have Internet access, please go to question 34.

28. Who supplies your Internet connection?

O Commercial Internet Service Provider
O College/University
O Freenet
O Other (please specify)

_____

_____

29. Please indicate the number of **public service** PCs and terminals with each of the following types of Internet connection:

____ T1 or higher

____ ISDN

____ Dial up via SLIP or PPP (Modem speed _____)

____ Dial up to a shell account (Modem speed _____)

____ Dial up to a BBS or Freenet (Modem speed _____)

____ Other (please specify)

_____

_____

30. In your library/resource centre, is the Internet available to:

O staff only
O population you have a mandate to serve

31. How many **public service** PCs or terminals provide Internet access?

_____

32. Do you charge the public for Internet access?

O Yes
O No

33. Please indicate the number of **public service** PCs that have access to the following web browser programs

___ Text based (e.g., Lynx)

___ Netscape (Version _____)

___ Internet Explorer (Version _____)

___ Other (Please specify browser and version _____)

III. SUPPORT AND PREPAREDNESS FOR ELECTRONIC ACCESS

34. Approximately how many of your **public service** staff are able to:

Assist patrons in the use of CD-ROM's?

_____

Assist patrons in the use of the Internet?

_____

Conduct training sessions in the use of the new technologies?

_____

35. Approximately how many of your **public service staff would require additional training if Canadian federal documents were available in electronic form instead of printed form?**

_____

Any comments on your response?

_____

_____

_____

_____

36. How would you rate the availability of training in electronic resources for your staff (including financial means, number and quality of available courses, time for training etc.)?

O Very poor
O Poor
O Satisfactory
O Very Good
O Excellent

Any comments on your response?

_____

_____

_____

_____

37. Has the governing body to whom you report (public library board, college/university administration) established goals for the introduction of electronic materials in your library/resource centre?

O Yes
O No

38. For any of the following areas, has your library/resource centre developed **formal written** policies for managing electronic materials? (Check all that apply)

O Collection development
O Children's access
O Acquisition/receiving
O Reference service
O Cataloguing
O Archiving
O Mirroring
O Other (please specify)

_____

_____

39. What is your overall rating of the physical facilities provided in your library/resource centre for the use of computers (including space, lighting, ease of use etc.)?

O Very poor
O Poor
O Satisfactory
O Very Good
O Excellent

Any comments on your response?

_____

_____

_____

_____

40. How would you rate the adequacy of financial support for electronic access available to your library/resource centre?

O Very poor
O Poor
O Satisfactory
O Very Good
O Excellent

Any comments on your response?

_____

_____

_____

_____

41. How would you rate the degree of interest on the part of your governing body in increasing access to electronic information?

O Very low
O Low
O Moderate
O High
O Very high

Any comments on your response?

_____

_____

_____

_____

42. If your library has **NOT** developed detailed plans for future acquisition and installation of the new technologies what do you perceive are the reasons for this? (Check all that apply)

O Cost of hardware (computer workstations, printers, etc.) too high
O Cost of software too high
O Cost of getting connected to Internet too high
O Lack of staff awareness or interest of the new technologies
O Lack of in-house computer expertise
O Lack of staff time to develop in-house expertise
O Lack of available training courses, programs, etc.
O Low level of community interest
O Lack of awareness of governing body
O Other (please specify)

_____

_____

IV. USER NEEDS AND SERVICES

43. What is the frequency of use of **printed** government publications used in your library/resource centre?

O Very low
O Low
O Moderate
O High
O Very high

Any comments on your response?

_____

_____

_____

_____

44. What is the frequency of use of **electronic** government publications used in your library/resource centre?

O Very low
O Low
O Moderate
O High
O Very high

Any comments on your response?

_____

_____

_____

_____

45. How do you rate the importance of your government publications to your library/resource centre?

O Not important
O Somewhat important
O Very important
O Essential

Any comments on your response?

_____

_____

_____

_____

46. How often do patrons ask for help in using electronic sources of government information?

____ times per month

47. What type of help is most frequently sought? (please rank the following types. Score 1 for least frequent; 3 for most frequent.)

___ Help with hardware operation

___ Help with software

___ Help with understanding content of the government information

48. If federal documents were available primarily in electronic form their use would:

O Increase
O Decrease
O Remain unchanged in your library/resource centre.

What are your reasons for the perceived change?

_____

_____

_____

_____

49. By the year 2000 what do you expect will be your library/resource centre's most common medium for access to government information? (Please rank the following media. Assign 1 to the most common and 4 to the least common.)

___ CD-ROM and/or diskette

___ Internet

___ Microform

___ Paper

50. Please comment on the possible impact (both positive and negative) of electronic access to Canadian federal public publications in your library or resource centre.

_____

_____

_____

_____

_____

_____

DEFINITION OF "FULL-TIME EQUIVALENT"

A suggested method to compute full-time equivalents (FTE) is to divide the number of hours worked per week by a part-time employee by the number of hours considered by the reporting library to be a full-time work week. (e.g. 3 part-time employees work a total of 3120 person-hours in the year. If there is a normal working week of 40 hours over the 52 weeks of the year (equaling 2080 hours) for the category to which these employees belong, divide the 3120 person hours by 2080. Thus the part-time positions filled in full-time equivalents are 1.5).