

# What Do They Want?: A Study of Changing Employer Expectations of Information Professionals

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*ABSTRACT* This paper reports the findings of an exploratory study of position vacant announcements appropriate for library and information studies (LIS) graduates appearing in the Sydney Morning Herald over a four week period in each of the following years: 2004, 1994, 1984 and 1974. The period studied witnessed change-demanding developments in information technologies as well as changes in workplace conditions and client expectations. The study collected data on the demands of employers as expressed through job advertisements that included data on work status (full-time, part-time, contract, casual), qualifications and the experience required of the information professional during the periods selected. To investigate similarities and differences between periods a content analysis and co-word analysis of the job advertisements was undertaken. The advertisements indicated a movement from simple advertisements in 1974 inviting applications for reference or technical services librarians, to complex and specialised positions being advertised in 2004 where the most called for attributes were interpersonal skills and behavioural characteristics.

The 30 years from 1974 to 2004 have witnessed changes in information technology and information delivery. These years have also seen substantial change in the Australian workplace where industrial relation reforms have led to changed conditions of employment, a major one being a move to a more casualised workforce. The education of LIS personnel has also undergone substantial change; not only did the 1970s see the growth of professional LIS programs in Australian tertiary institutions, but also the beginnings of formal programs for library technicians in Technical and Further Education (TAFE) colleges.<sup>1</sup> All these factors have influenced jobs and the content of job advertisements.

This study looks at job advertisements to see what they can tell us about how jobs for librarians have changed over the last 30 years. Some of the questions addressed are:

- Who employs librarians and information studies (LIS) professionals?
- What requirements do employers have of librarians with regard to work status, experience and qualifications?

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- What LIS knowledge, other competencies, and interpersonal and behavioural characteristics do employers list in job advertisements for professional librarians and has this changed over time?
- What does this mean for the future of LIS professionals?

Few LIS practitioners would deny that the workplace has undergone substantial change over the three decades (1974 to 2004) considered in this investigation. This change has been both in the work undertaken and in the conditions under which people are employed. The study reported here has gathered data on the extent and nature of this change from job advertisements for librarians and information managers during a four-week period in 1974, 1984, 1994 and 2004. Job advertisements provide an insight into the workplace, even though it must be acknowledged that a job advertisement indicates only what an employer explicitly says is required, rather than what is actually wanted or received. Job advertisements serve other purposes. While they are basically designed to attract the best possible staff member for the position, they also provide graduates, school leavers and the world at large with an opportunity to examine the working conditions, salaries, qualifications and career paths for a field or a profession.<sup>2</sup> As this project sought to track change, job advertisements at various periods provided a good vehicle for doing so. Data were gathered from only one newspaper in one city, the *Sydney Morning Herald* (SMH); however, as Sydney is the largest city in Australia and a major commercial centre, it should provide a picture from which general trends may be extrapolated.

The data gathering focussed on positions calling for professional level LIS skills. When advertisements did not specifically mention the word 'librarian', the researchers used a mix of the available information including position titles, required qualifications, work descriptions and salary level to determine in cases of doubt, whether a position was at a professional level. The intention to include any identifiable non-traditional positions in some cases necessitated the use of all of these various guidelines. Broadbanding, a pay strategy that consolidates a large number of relatively narrow pay grades into much fewer bands with relatively wide salary ranges and an industrial relations reform of the 1990s, has led to some positions being advertised as suitable for paraprofessional or professional applicants and these positions have been included.

## **Background**

In Australia the professional LIS association, the Australian Library and Information Association (ALIA), accredits entry-level professional LIS programs. Entry-level programs at universities exist at undergraduate level (almost all of three years full-time duration), postgraduate diploma (one year full-time duration) and masters level (one-and-a-half years full-time duration).

Additionally, ALIA accredits programs equivalent to two years full-time study at technical colleges for paraprofessional staff (library technicians). This is different from other countries such as the United States where the American Library Association (ALA) accredits one qualification, the masters degree.<sup>3</sup>

Most Australian permanent positions are advertised in newspapers and/or their associated web sites (which have only been available for about the past ten years). Previously positions were also advertised in professional newsletters, on e-lists, and via a number of other sources. Newspapers thus provide the one source of advertised positions that has been available consistently over the period studied. Industrial relations legislation encourages public advertising of positions in publicly funded libraries, which includes most academic libraries. Non-permanent positions in all sectors and special library positions in corporations do not have the same requirements; however, special libraries do often advertise directly or use job placement agencies that advertise when necessary. Increasingly the trend is for print advertisements that refer potential applicants to web sites for further information, or indeed for the facility to apply online.

## Literature Review

There is an extensive international literature on LIS jobs and a not insignificant number of Australian-based studies. Some studies have focused on the extent and vitality of the employment market, usually investigating the employment opportunities for new LIS graduates. Other studies have focused on the knowledge and skills mix desired and/or required by employers.

A number of Australian and international LIS schools have surveyed recent graduates, gathering data on their early employment experiences. These studies have usually had multiple functions, collecting data useful for developing curricula as well as information about the LIS graduate employment market. In the United Kingdom, the Department of Information Studies at the University of Sheffield has tracked its masters programs graduates for more than thirty years, maintaining that these ongoing investigations have been valuable in developing curricula relevant to the changing LIS workplace.<sup>4, 5</sup> They found examples of changing demands over a 15 year period, including an increase in the proportion of new graduates whose first positions involved user education (10% for graduates of the period 1979-1985, 68% for those of 1986-1989 and 59% for those of 1990-1993); and a substantial change in the requirement to be involved in management activities (28%, 50% and 50% respectively for the three periods).<sup>5</sup> Perhaps not surprisingly, the report of the findings of the survey of their MSc graduates for 1994-1996 reported that 'use of the Internet, practical computer skills and database design' were the elements of most use in their jobs.<sup>6</sup>

Following the growth of Australian LIS schools in the 1970s, and influenced by Moore<sup>7</sup> and others who wrote of an emerging market of non-

traditional jobs, the 1980s saw a number of papers which sought to assess both the traditional and non-traditional markets for LIS graduates. Job advertisements were the data sources for studies by Schauder<sup>8</sup> and Middleton,<sup>9</sup> while Australian LIS school data was used by Rochester<sup>10</sup> and the data from one school by Willard.<sup>11</sup> The 1990s produced similar Australian investigations with Brittain<sup>12</sup> analysing job advertisements and Genoni, Exon and Farrelly surveying LIS graduates.<sup>13</sup> More recently Willard, Wilson and Cole<sup>14</sup> and Middleton<sup>15</sup> have gathered data on the work performed and the skills required in jobs held by LIS graduates. These Australian studies have taken snapshots rather than gathered longitudinal data. Generally, these studies found that penetration by LIS graduates in emerging, or non-traditional, employment markets was low with modest increases over time. Most also found an increasing requirement for skills in information technologies, and behavioural characteristics and communications skills in both traditional and non-traditional job markets.

In similar studies in the United States, Xu<sup>16</sup> analysed job advertisements in *American Libraries* over the period 1971 to 1990 to assess the effect of automation on job requirements for cataloguers and reference librarians. He found an increasing demand for computer skills in both areas and for bibliographic instruction duties for reference librarians. He noted that the demand for oral and written communication skills first appeared in his data period 1976-1980. Heimer<sup>17</sup> also used job advertisements from *American Libraries* investigating the period January 1989 to December 1998. Her focus was electronic librarianship, a type of job that she believed spanned reference and library systems work. The results supported her contention that jobs were occurring which required skills in reference and technical support as well as roles in collection development and instruction. Liaison was the most cited interpersonal demand, occurring in 53% of cases, and training was specified in 49% of cases. Another American study, using advertisements from *College & Research Libraries News* for the period 1990-2000, also found an increasing number of electronic or digital positions, and that the latter had more administrative and supervisory responsibilities.<sup>18</sup> The duties of instruction/training and collection development liaison occurred to a similar extent in both types of positions. A 2000 investigation of 250 American online academic librarian job advertisements revealed requirements for technical skills, interpersonal and behavioural skills and service delivery competencies.<sup>19</sup>

White<sup>20</sup> used job advertisement data for 1990 to 1998 to research American academic subject specialist positions. He found an increasing demand for technology-related skills; however, reference desk services, bibliographic instruction and collection development were also frequently specified. Most advertisements cited communication as a required skill, and a Masters in LIS was also a requirement for most positions. Lynch and Smith<sup>21</sup> looked at American academic jobs between 1973 and 1998 and found that by 1998

academic library jobs routinely included computer technologies, instruction was now part of reference work, and behavioural skills, most commonly oral and written communication skills, had emerged as job requirements. The authors concluded that jobs in academic librarianship were shifting from definition along traditional functional lines to jobs combining tasks from more than one functional area.

Other international research has produced a picture of the job market that shares similarities with the American results. A study of position advertisements in two major Irish newspapers revealed the importance of communications and information technology skills.<sup>22</sup> The librarian's instructional role was investigated by Clyde,<sup>23</sup> who for three months in 2002 monitored LIBJOBS, the international listserv of the International Federation of Library Associations (IFLA). She found that approximately half the positions (150 of 291) included a component of education and training. The most frequent specification was for bibliographic/library instruction (47%) with the training of library and other staff occurring in 34% of the advertisements. Information literacy/information skills instruction was noted for 15% of the positions. Two-thirds of university and college libraries listed instructional tasks, and 18% of public libraries and 17% of special libraries also did. Myburgh<sup>24</sup> found that attributes quite different to established core knowledge were called for in her study, with technology and technological expertise featuring frequently, as in other research.

Another strand of literature addresses the competencies that LIS professionals should possess. In some cases the impetus for this development has been professional associations, for example ALIA's 'The library and information sector: core knowledge, skills and attributes' (<http://www.alia.org.au/policies/core.knowledge.html>) and the American Special Library Association (SLA) (<http://www.sla.org/content/learn/comp2003/index.cfm>). Library educators have also sought to identify competencies as input into program development.<sup>25, 26, 27</sup> As with other areas of library and information work, the demands of new information technologies has influenced required competencies and associated research. Tennant<sup>28</sup> listed skills he believed were necessary for those managing digital collections and services. In an earlier paper,<sup>29</sup> he acknowledged the speed of knowledge and skill obsolescence and presented a list of personal characteristics (for example flexibility, good interpersonal skills) he believed employers should be seeking.

In summary, the studies reviewed generally found an increase in required computer and IT skills. They also revealed increased requirements for particular behavioural characteristics and interpersonal skills in addition to professional competencies. Bibliographic instruction (in Australia more commonly referred to as information literacy programs) is an important part of many LIS positions. Collection development was also frequently identified as a required area of expertise.

## Research Method

This study collected a snapshot of 135 job advertisements appearing in the *SMH* newspaper during a four-week period over August and September in each of the years 1974, 1984, 1994 and 2004. It is recognised that other resources are used to advertise jobs and recruit librarians, such as professional newsletters, online e-lists and web sites, and specialist and generalist recruitment agencies. However, newspapers were chosen as the data source as they are one readily available source that has existed in all the time periods studied. The *SMH* is a city-based newspaper, and job advertisements appearing in it are generally localised to the city or state, although occasionally job advertisements for positions further afield were encountered. Job advertisements included in the study were those that either specifically asked for a librarian or professional LIS qualifications or, while not specifically asking for an LIS qualification, clearly used professional level LIS skills. Following the approach of an earlier ALIA study<sup>30</sup> duplicate job advertisements were eliminated. The job advertisements from the earlier years had to be sourced from microforms of the newspapers, a particularly onerous task; those for 2004 were gathered during the study period.

Initially the job advertisements were visually scanned and the information from them tabulated to summarise total numbers, location, type of employer, job skills, nature of work contract and experience required.

Advertisements were then either scanned or typed into text (depending on the quality of the microform copy) and input into the content analysis software package Wordstat.<sup>31</sup> A categorisation dictionary (see Table 1) was created from a combination of sources including frequency counts of the most commonly mentioned relevant terms in the advertisements, the literature review and the authors' knowledge of the LIS industry. The subject index of *Library and Information Science Abstracts* (LISA) assisted with the creation of synonyms and the allocation of terms to categories.

The categorisation dictionary of 18 broad categories was then run over a database of the text from the job advertisements for each year to identify the frequency with which specific categories were listed in the advertisements.

While frequency counts are themselves a measure of importance, the Wordstat software also allowed us to perform cluster analysis and multidimensional scaling (MDS), which our investigation led us to believe would expose the underlying structure of the job advertisements and therefore the job market. The desired result from these techniques is a co-occurrence

**Table 1**  
**Content Analysis Categories**

Category Label	Examples of Dictionary Terms
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Archives & records management	Archives, Dataworks, Documentum, EDMS, records management
Behavioural characteristics	Business acumen, charismatic, committed, creative, energetic, independent, integrity, leadership, sense of humour, self-motivated
Client services	Children's, customer, outreach, public service, remote, service delivery, user service
Common workplace requirements	Anti-discrimination, equal opportunity, diversity, equity, ethics, health and safety
E-resources	Bloomberg, CDROM, Datastream, Dialog, Digital, Electronic, Factiva, Online
Environment	Cutting edge, demanding, diverse, fast-paced
Generic IT skills	FTP, MS Office, Word processing, spreadsheet, telnet
Generic skills	Copyright, drivers licence, legislation, lifelong learning
Hardware	Information technology, TCP
Information services	Bibliographic instruction, information literacy, reader education, training program, user education
Integrated library systems	Automated library systems, Automation, DB Textworks, Ex Libris, Innopac, library management system, Unicorn, Voyager
Interpersonal skills	Co-operative, coach, collaborative, negotiation, communication (oral, written, presentation), cooperative, liaison, listen
Knowledge management	KM, knowledge management
Management	Financial management, human resource management, supervision, staff training, marketing, performance review, project management, quality control, strategic planning
Programming languages	HTML, Java, Linux, Perl, SQL, Unix, XHTML, XML
Reference services	Database searching, information searching, information retrieval, information service, internet search, literature search, reference
Technical services	Cataloguing, AACR, Bibliographic utilities, collection management, database management, ILL, metadata, serials
Web design and maintenance	Content management, Internet, intranet, content developer, WCMS

profile for each category term. The cluster analysis is based on the pattern similarity (or correlations) of the 18 categories in the dictionary. One output of a cluster analysis is a dendrogram, which is a graphical display of the clustering process. The hierarchical agglomerative clustering approach used in this research begins by joining two terms with the most similar patterns according to the distance criterion (average linkage). Subsequent terms are joined to the existing clusters, and clusters may be joined until there is one large cluster that encompasses the entire set of terms. There is no best number of clusters, and informative pictures emerge from the data at different points in the different years.

The MDS uses the same similarity (correlation) matrix as the cluster analysis to study the underlying structure of the data. Often used jointly with cluster analysis, MDS produces a two- or three-dimensional graph or ‘map’ in which the co-occurrence patterns are represented as lying close to each other on the map, while terms with dissimilar patterns are placed far from each other. An optimal MDS solution is where the RSQ (the amount of variance explained by the solution) is high and the stress (the amount of distortion of the data required to fit the solution) is low.

## Results

A total of 135 position advertisements were studied, spread over the four snapshot periods. Anecdotal evidence suggested a decline in the number of positions available by 2004 from 1974, a situation that is not supported by the numbers (Table 2). Of course, as data was collected over the same short period (four weeks from mid August to mid September) for each year studied, it is fair to speculate that peak employing periods could have changed over the years.

With regard to the location of the positions (Table 2) reported in the advertisements, 1974 was notable for the proportion of jobs advertised from outside NSW (11, 35.5%). Five (16.1%) of those advertised outside NSW were in the now non-existent College of Advanced Education (CAE) sector, which from the late 1980s became part of the university sector. Some CAEs joined with existing universities and some became universities in their own right.

**Table 2**  
**Total Numbers and Location**

LOCATION	Sydney		NSW Regional		Outside NSW		Totals
	No.	%	No.	%	No.	%	
2004	31	81.6	6	15.8	1	2.6	38
1994	39	97.5	1	2.5	-	-	40
1984	19	73.1	6	23.1	1	3.8	26
1974	16	51.6	4	12.9	11	35.5	31
Totals	105	77.8	17	12.6	13	9.6	135

## Employers

An interesting picture emerges when types of employers are considered (Table 3). The most striking change has been in advertised positions in academic libraries (including CAEs) which in 1974 comprised more than half (17, 54.8%) of the positions. In 2004, there were only three (7.9%) academic library positions over the four weeks studied. The increase in the number of teacher librarian positions is difficult to explain. While the NSW Government gave public schools the option of advertising positions, as opposed to the

previous practice of ‘service transfers’ in 1993/94,<sup>32</sup> the growth in advertised school library positions for the period studied was in the private school or Catholic sector, which have always been able to advertise. Prior to 1994, the Catholic sector did not seem to advertise in the *SMH*. When corporate and government special libraries are considered together, there is a marked increase in positions within the snapshot periods, with 1984 recording the highest incidence.

**Table 3**  
**Employer Type**

	Schools		Local govt		Academic		Special-Government		Special-Corporate		Not stated [i]		Totals
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
2004	10	26.3	9	23.7	3	7.9	6	15.8	8	21.0	2	5.3	38
1994	10	25.0	4	10.0	8	20.0	5	12.5	11	27.5	2	5.0	40
1984	1	3.9	8	30.8	3	11.5	3	11.5	10	38.5	1	3.9	26
1974	1	3.2	8	25.8	17	54.8	1	3.2	4	12.9	-	-	31
Totals	22	16.3	29	21.48	31	23.0	15	11.1	33	24.4	5	3.7	135

[i] Usually positions advertised through employment/recruitment agencies.

## Qualifications

The qualifications required to practice as a librarian have changed over time. In 1974, to work as a librarian one needed to hold either a qualification recognised by the Library Association of Australia (LAA, the previous name of the Australian Library and Information Association) or have the LAA Registration, the Librarianship Certificate Course from Sydney Technical College (pre-1976) or the Associate Diploma in Librarianship from RMIT (commenced in 1970). From January 1994, people joining ALIA or seeking recognition as a librarian with any of these three qualifications were also required to hold at least an undergraduate degree.<sup>33</sup> Accordingly our data refers to a multitude of qualifications that we have categorised as in Table 4. The data clearly show that fewer job advertisements are requiring the professional qualification of the day, with only 32.5% of the advertisements in 2004 requiring ALIA recognition, whereas in 1974 74.2% of advertisements mentioned ALIA recognition as a requirement. Further, more advertisements are not specifying a qualification, and there appears to be the beginning of a tendency to broadband positions – that is to advertise positions for qualified librarians, library technicians, or people with library experience.

## Experience

The number of job advertisements specifying that experience is required has increased and then leveled out over the period studied (Table 5). The very small

**Table 4**  
**Qualifications**

	Professional Library Qualification or Eligible for LAA/ALIA Recognition		No Qualification Specified		Only Specifies Some Sort of Tertiary Qualification		Library Technician (or Assistant) or Librarian or no Qualifications Depending on Years and Experience		In Process of Completing Library Qualifications		Library or Tertiary Qualifications only Desirable not Mandatory		Dual Teacher and Librarian		Total
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
2004	13	32.5	18	47.4	2	5.3	4	10.5	-	0.0	1	2.6	-	0.0	38
1994	16	40.0	15	37.5	4	10.0	1	2.5	2	5.0	1	2.5	1	2.5	40
1984	16	61.5	7	26.9	1	3.8	-	0.0	-	0.0	2	7.7	-	0.0	26
1974	23	74.2	7	22.6	-	0.0	-	0.0	1	3.2	-	0.0	-	0.0	31
Totals	68	50.4	47	34.8	7	5.2	5	3.7	3	2.2	4	3.0	1	0.7	135

number of advertisements explicitly stating that positions are suitable for entry-level staff, and the large number of positions requiring either generalist or management experience for the periods of 1994 (87.5%) and 2004 (84.2%) makes it hard to understand how new graduates would find any work at all. However, while employers may be asking for experience in particular areas, it is recognised that they might not always be able to find it.

**Table 5**  
**Experience**

EXPERIENCE REQUIRED	Yes		No		Management Experience		Not Stated		Desirable		Total No
	No	%	No	%	No	%	No	%	No	%	
2004	28	73.7	2	5.3	4	10.5	4	10.5	-	0.0	38
1994	30	75.0	1	2.5	5	12.5	4	10.0	-	0.0	40
1984	14	53.9	-		3	11.5	8	30.8	1	3.9	26
1974	18	58.1	1	3.2	-	-	9	29.0	3	9.7	31
Totals	90	66.7	4	3.0	12	8.9	25	18.5	4	3.0	135

### Nature of Work

In Australian society in general there has been a significant increase in the extent of part-time, fixed term contract and casual work over recent decades. While for some people work of this nature provides flexibility to balance work, family and study, for others it adversely affects security and financial stability.<sup>34</sup> This study (see Table 6) reflects a decrease then a slight increase in 2004 from 1994, in permanent full-time work but, like an earlier study,<sup>35</sup> shows little or no increase in casualisation in the LIS workforce. This is despite anecdotal evidence to the contrary. A disadvantage of using job advertisements as a source of data is that advertising costs money and takes time, and it is

possible that lower level and casual jobs are often filled through informal networks rather than formal job advertisements.

**Table 6**  
**Nature of Work**

NATURE OF WORK	Permanent Full Time		Permanent Part Time		Temporary/contract Full Time		Temporary/Contract Part Time		Casual		Not Stated or Implied		Total Ads
	No	%	No	%	No	%	No	%	No	%	No	%	
No 2004	25	65.8	7	18.4	3	7.9	-	-	1	2.6	2	5.3	38
No 1994	21	52.5	8	20.0	11	27.5	-	-	-	-	-	-	40
No 1984	19	73.1	1	3.9	3	11.5	2	7.7	-	-	-	-	26
No 1974	31	100	-	-	-	-	-	-	-	-	-	-	31
TOTALS	97		16		17		2		1		2		135

### Job Skills Profile

Job skills are categorised into four profiles (see Table 7). These were loosely based on previous work by Moore<sup>36</sup> and Brittain.<sup>37</sup> While ‘established skills’ refer to skills traditionally used in libraries or by librarians, the positions may not have library or librarian in the job title. In setting this category we have been informed, by changes in the profession. For example, where ‘automation’ may have been included in ‘established skills’ in 1984, equally Internet searching or knowledge of digital or electronic libraries would be included in ‘established skills’ for 2004. ‘Applied information skills’ refers to work that may or may not require formal LIS or information management (IM) qualifications, but does require the skills that would be learned while acquiring those qualifications. The types of positions included in this category include information officers, photo librarians, and indexers. Work ‘requiring some other special skills’ is comprised of positions that may or may not require LIS or IM qualifications but also require additional skills, qualifications or knowledge to that usually perceived to be in the domain of librarians. Work in this category would include information officers and researchers requiring specific subject domain knowledge and skills, and web-based work requiring programming languages or specific hardware or software knowledge. The final category is that of teacher librarian or school librarian. A qualified teacher librarian is a person who holds both recognised teaching and librarianship qualifications.<sup>38</sup>

It is interesting that the percentage of work requiring ‘established skills’ over the period has decreased from 100% (1974) to less than 50% (2004) of the positions advertised. Some of this is represented by the growth in teacher librarian positions, but also there has been an increase in work requiring applied information skills, or some other special skills.

**Table 7**  
**Job Skills Profile**

	Established Skills		Applied Information Skills		Requiring some other Special Skills		Requiring Teaching Qualification		No
	No	%	No	%	No	%	No	%	
2004	17	44.7	7	18.4	4	10.5	10	26.3	38
1994	23	57.5	6	15.0	-	-	11	27.0	40
1984	19	73.1	5	19.2	2	7.6	-	-	26
1974	31	100.0	-	-	-	-	-	-	31
TOTALS	90	66.7	18	13.0	6	4.4	21	15.6	135

### **Categorisation Frequencies**

The number of cases in which a dictionary category occurred were counted (see Table 8: the 18 categories in this table are italicised throughout the text) and then ranked by occurrences for 2004. The number of cases within which each term appears reveals that advertisements in 1974 were simpler, usually stating that a particular type of librarian (for example reference or technical services) was required and giving instructions on how to apply. By 2004, a wider range of categories was required, which may indicate that applicants needed a broader range of skills, characteristics and competencies for particular jobs. It may also point to the increasing requirement for transparency in recruitment and appointment procedures which require that details of the selection criteria are clear.

With regard to particular jobs skill categories, not surprisingly *Web design and maintenance* and (more surprisingly) *E-resources* were not required for any jobs in 1994 and yet were required for 18 (47.4%) and 9 (23.7%) of the jobs respectively in 2004. So with the introduction of the Internet and electronic media, librarians' jobs have undergone rapid change within the space of 10 years. Other interesting trends are the increase in importance of *Interpersonal skills* from being a requirement in 7 (22.6%) jobs in 1974 to 26 (68.4%) jobs in 2004. Similarly, *Behavioural skills* are seen as increasingly important, required in five (16.1%) jobs in 1974 and 24 (63.2%) in 2004. Other rises are seen for *Client services* with five jobs in 1974 (16.1%) rising to 14 jobs (36.8%) in 2004, and *Management* with six jobs (19.4%) in 1974 to 15 (39.5%) in 2004.

Equally interesting is the decline in the number of advertisements seeking *Technical services* skills from 19 (61.3%) jobs in 1974 to 10 (26.3%) in 2004, and the decline and then partial rejuvenation of *Reference services* from 20 (64.5%) jobs in 1974, down to 9 in 1984 (34.6%) and back up to 15 (39.5 %) in 2004.

Also of interest is the low number of positions throughout the years that call for the categories of skills we have labelled *Information services*, which

includes reader education, information literacy, user training and education, areas widely reported in the LIS literature as key and growing areas.

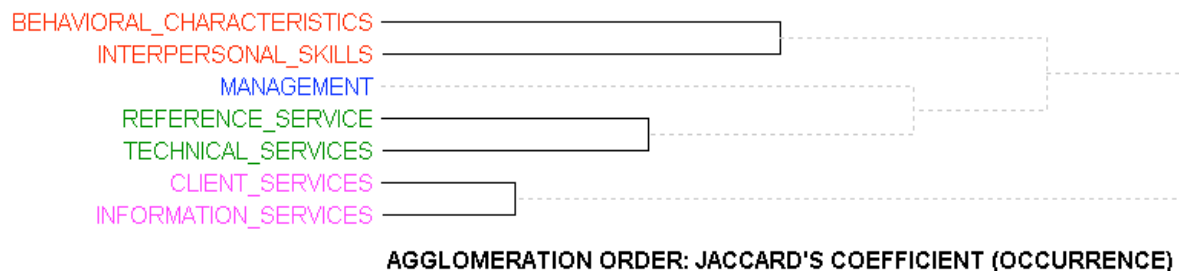
**Table 8**  
**Number of Advertisements in which Dictionary Categories**  
**Appeared (Ranked by the 2004 Frequency)**

	1974		1984		1994		2004	
	No	%	No	%	No	%	No	%
Interpersonal skills	7	22.6	6	23.1	21	52.5	26	68.4
Behavioural characteristics	5	16.1	3	11.5	10	25.0	24	63.2
Web design and maintenance	-	-	-	-	-	-	18	47.4
Environment	-	-	1	03.9	9	22.5	15	39.5
Management	6	19.4	4	15.4	12	30.0	15	39.5
Reference service	20	64.5	9	34.6	13	32.5	15	39.5
Client services	5	16.1	2	07.6	6	15.0	14	36.8
Common workplace requirements	-	-	5	19.2	7	17.5	12	31.6
Technical services	19	61.3	8	30.8	9	22.5	10	26.3
E-resources	-	-	1	03.9	-	-	9	23.7
Generic skills	-	-	1	03.9	6	15.0	8	21.1
Generic IT Skills	-	-	-	-	2	05.0	5	13.2
Archives and records management	-	-	2	07.7	2	05.0	4	10.5
Hardware	-	-	1	03.9	1	02.5	3	07.9
Integrated library systems	-	-	5	19.2	5	12.5	3	7.9
Information services	3	09.7	1	03.9	1	02.5	2	05.3
Programming languages	-	-	-	-	-	-	1	02.6
Knowledge management	-	-	-	-	1	02.5	-	-

### Cluster Analysis and Multidimensional Scaling

Cluster analysis is based on the pattern similarity (correlations) of the 18 categories in the dictionary. One output of a cluster analysis is a dendrogram, which graphically displays the clustering process. The hierarchical agglomerative clustering approach used in this research begins by joining two terms with the most similar patterns according to the distance criterion. Subsequent terms are joined into existing clusters and the clusters are combined until one large cluster encompasses the entire set of terms. For the 1974 data, the most informative picture emerged at the four-cluster level. The dendrogram comprises three clusters of two terms and a single member cluster (*Management* as an isolate) revealing less similarity to the other terms. Interestingly only seven of the 18 categories from the dictionary are represented in the 1974 advertisements (see Figure 1).

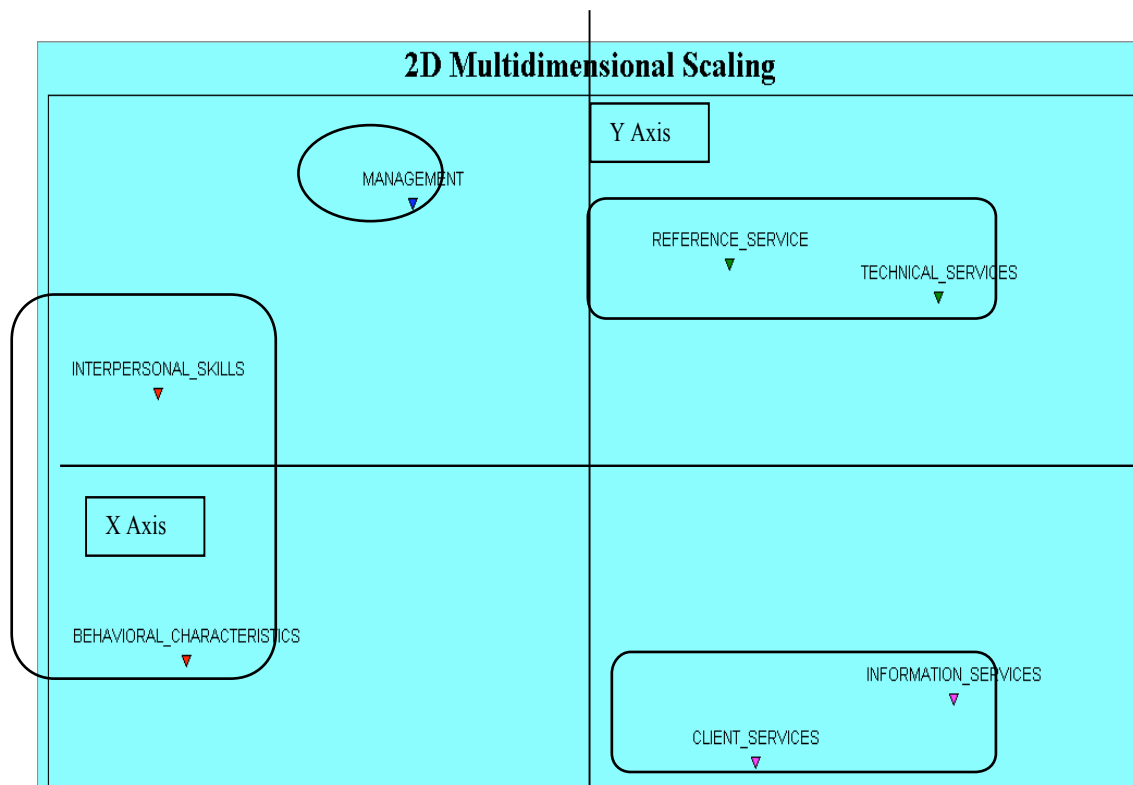
**Figure 1**  
**1974 Cluster Analysis**



MDS uses the same similarity (correlation) matrix as a cluster analysis to study the underlying structure of the data. Often used jointly with cluster analysis, MDS produces a two- or three-dimensional graph or 'map' in which the co-occurrence patterns of the terms are represented visually. Thus, two terms with similar co-occurrence patterns are represented as lying close to each other, while terms with dissimilar patterns are placed far from each other. The optimal MDS solution for the 1974 data is a two-dimensional map (Figure 2) (RSQ=.86, Stress=.19). The horizontal (X) axis represents a continuum from interpersonal skills and behavioural characteristics on the left to technical services and information services on the right, while the vertical (Y) axis shows an interesting continuum from management to client services. There are no centrally located categories, with categories appearing in different quadrants indicating that in 1974 the categories are separate and well defined.

It was difficult to provide a cluster analysis for the 1984 and 1994 data. There was no point where clear and rational clusters emerged. As the number of clusters was increased, the data moved from one clump to isolates, without much pairing and grouping of categories. Where pairing and grouping did occur it was with such categories as *Client services* and *Generic skills*. One interesting cluster that emerged in the 1984 data was *Integrated library systems* with *Technical services*, which while possibly not rational today, may have been rational in 1984 when library systems were most usually automated catalogues. Similarly, in the 1994 data *Technical services* and *Reference services* moved back together to form an early rational cluster, as did *Integrated library systems* and *Hardware*. The MDS for 1984 and 1994 similarly produced a jumbled picture, with related terms appearing across the axes with low RSQ and high stress.

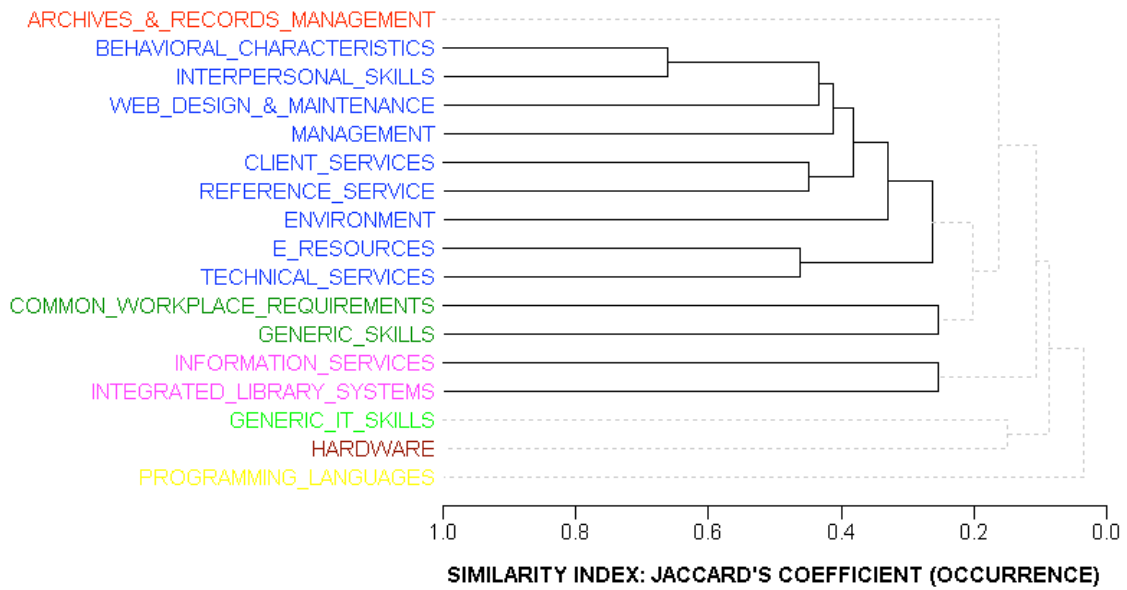
**Figure 2**  
**MDS Map of 1974 Data (RSQ=.86, Stress=.19)**



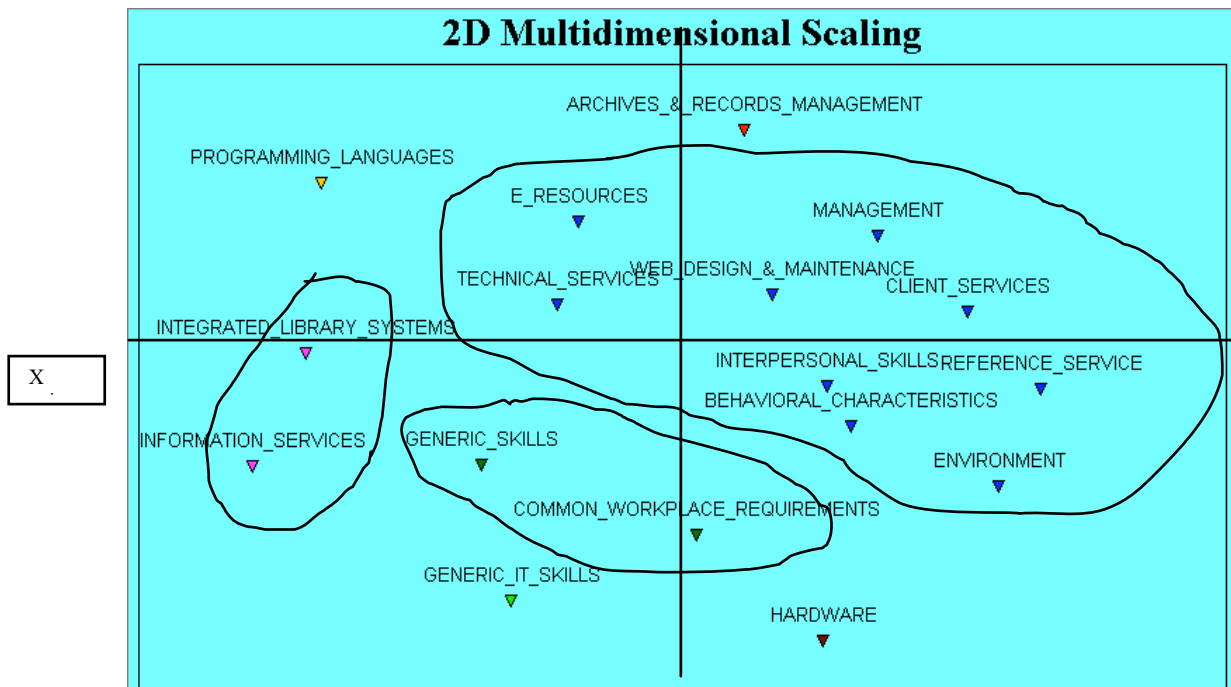
In addition to containing more terms, the 2004 advertisements also contained more words and were more complex overall. By 2004 (Figure 3) at an optimal seven clusters there were two pairs, *Generic Skills* and *Common workplace requirements* and *Integrated library systems* and *Information Services*. *Programming languages*, *Archives and records management*, *Generic IT skills* and *Hardware* were isolates. The remaining terms form a large cluster.

The optimal MDS solution for the 2004 data is a three-dimensional map (RSQ=0.87, stress=0.20), but as three-dimensional maps are difficult to represent adequately on the printed page, Figure 4 displays only the first two axes that also explain the greatest variance. The horizontal axis represents a continuum from *Programming languages* and *Integrated library systems* to *Reference services*, *Clients services* and *Environment*. The vertical axis displays a similar continuum from *Archives and records management* to *Generic IT skills* and *Hardware*. In general, to the left of the map appear categories related to computer skills and technical services (with the interesting exception of *Information Services*) while on the right are the skills and competencies related to public service (with the interesting exception of *Hardware*).

**Figure 3**  
**2004 Cluster Analysis**



**Figure 4**  
**MDS Map of 2004 Data (RSQ=0.87, Stress=0.20)**



**Discussion**

It is recognised that job advertisements cannot express all of the requirements an employer may have of a potential employee. Sometimes they may indeed express more general legislative requirements. Nonetheless, job advertisements are the most available and public expression of those requirements. While the content of advertisements does not identify the actual characteristics of the individuals hired, the content does provide a picture of desired characteristics and also throws light on developments in the field of practice.<sup>39</sup> Thus the advertisements provide only a starting point for research into the current and future roles of librarians.

The job advertisements themselves have changed, from 1974 where brief simple advertisements assumed we knew what it meant to be a librarian, to long, wordy advertisements for often highly specialised information-related jobs in 2004. As mentioned previously this seems to indicate that librarians are required to have a broader range of skills, for example a working knowledge of a range of technologies. It also seems to be an artefact of organisational and legislative requirements for transparency in recruitment and appointment procedures. On the face of it, the more detailed later advertisements contribute to a greater richness for this kind of research. They also provide more information for both job seekers and other employers.

The anecdotal evidence suggesting a decline in the number of positions for librarians and information professionals is not supported by the data. Nor does the data support similar anecdotal evidence of a decline in special library positions (although there appears to be a sharp rise in corporate library positions in 1984 and 1994 followed by a small drop in 2004). What the data does appear to indicate is that employment in public libraries has remained fairly stable over the period studied, unlike advertisements for employment of librarians by schools which has risen, and by academic libraries where there is a sharp decline in positions advertised. While the closures or mergers of CAEs may explain some of the decline in academic library job advertisements in the 1980s, other possibilities should be considered. For example, does this indicate extremely low turnover of staff and the 'greying' phenomenon, or are other explanations more likely? Does the increasing reliance on electronic media mean that academic libraries may be employing staff with qualifications in areas other than librarianship, for example computing, information technology and information systems? Are there indications that we are beginning to see a composite information professional with a wider variety of skills, including those in information management?

The data also reflects a lack of uniformity in LIS qualifications required for those seeking to enter the LIS field at the professional level, and an increasing lack of reference to specific qualifications. Other studies have discussed the increasing invisibility of LIS courses as schools merge with other disciplines. Further, it is difficult to see how new entrants to the profession gain their first job, as the majority of advertisements by 2004 require experience. A

person considering a career in LIS who has been scanning the job advertisements may be encouraged to choose a career where it appears less difficult to gain entry. A quick scan of 2004 and 2005 newspapers reveals job advertisements specifically addressing new graduates in many other fields, for example accounting, engineering and IT. But a potential LIS worker may see no jobs advertised specifically for beginners in the profession. Further, the jobs that are advertised are increasingly advertised for people with professional, technician or no qualifications, so the incentive to study LIS is removed as, from the advertisements, it may appear that professional positions may be obtained without professional qualifications.

However, the data confirms both the studies referred to in the reviewed literature and anecdotal evidence that in the period under investigation, the skills, knowledge and competencies required to work as a librarian have evolved, and in some cases changed dramatically. Further, there is a growing lack of clarity about what comprises the established skill set of LIS workers, with the jobs advertised in 1974 all calling for skills and competencies clearly within the LIS domain, whereas by 2004 only 44.7% of positions advertised asked for established LIS skills. Technological change (for example a high incidence of requirements for *Web design and maintenance*, and E-resources) has profoundly influenced the LIS field of employment, as have the *Behavioural characteristics* and *Interpersonal skills* (such as flexibility, creativity, and negotiation and communication skills) required to operate in an increasingly technological and changing environment. *Management* skills are increasingly called for. It is interesting also to note that our data does not reflect the reported increase in demand for *Information services*, such as information literacy and bibliographic instruction reported in the literature. We are unclear why this is so.

Thus, many of the skills and characteristics reflected in the job advertisements for the LIS profession, have not been explicitly claimed as established LIS skills, nor can they be. Sometimes advertisements look for librarians with these skills; sometimes advertisements look for people with these skills, irrespective of whether they are a librarian or not and whether or not the place of employment is a library.

These factors lead us to speculate about the nature of the LIS profession. An accepted body of knowledge, coupled with a system of certifying that individuals have mastered that body of knowledge before they are able to practice, are two of the key elements comprising a profession.<sup>40</sup> While librarianship is not the only profession grappling with dramatic changes brought about by technology and resultant workplace change, it is one of the few professions suffering the appearance of a decline, with a great deal of questioning from within as well as externally about the ongoing need for, or viability of, the profession. This is despite the fact that in today's information rich society, the LIS skills and competencies of organising and managing

information, and providing people with the information they need when and where they require it, have never more been necessary.

The use of cluster analysis and MDS techniques, not commonly used in investigations of job advertisements, was intended to expose the underlying structure of the job market. However, for 1984 and 1994 it failed to reveal any meaningful co-occurrence profiles for any of the category terms. No clusters or maps emerged that exposed what may have been seen as a core set of categories of skills and competencies for those periods. This may reflect how volatile and fast changing the workplace was during those periods rather than a failure of the approach. The small data set makes it difficult to draw conclusions about the method. Analysis of a larger dataset would enable further testing of the value of this approach in understanding job advertisements.

## Further Research

This research was conducted with a very small data set. At the outset of the study information was received that the period within which most positions in the LIS field were advertised is from July to September,<sup>41</sup> so the 2004 data was gathered over this period for another research project, and then the other years for comparison. However, the time most jobs are advertised during the calendar year could have changed. Anecdotal evidence suggests that in the 1970s, the period most job advertisements appeared was from December to March, as new graduates came onto the market. Should resources be available, it would be very interesting to analyse job advertisements for a longer length of time in each time period.

With regard to the perceived drop in positions in academic libraries, it would be interesting to conduct analyses using other available sets of data, to see whether the overall numbers employed in the sector have fallen. It would also be useful to survey employers and practicing librarians, to see if their experiences confirm the findings of this study and to compare the different visions of our field developing in practice. We will also be seeking to inform our findings from the broader literature defining professions and selection and recruitment.

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