A content analysis of literature regarding knowledge management opportunities for librarians

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Purpose – The purpose of this paper is to report on the progress of research regarding the opportunities for librarians within the context of knowledge management.

Design/methodology/approach – A content analysis of 28 full-length journal articles indexed by Library Literature in the past ten years was conducted.

Findings – Findings indicate that more researchers than practitioners are aware of knowledge management opportunities, utilised more literature reviews and based their findings on theory. In addition, an unexpected finding was that the majority of researchers communicated their findings in professional rather than scholarly journals. Practitioners should therefore give attention to studies conducted by researchers to become aware of opportunities they could not identify themselves.

Research limitations/implications – Only full-length journal articles indexed by Library Literature were included. Thus the findings may have limitations in their generalisability.

Practical implications – Results of the study may assist in the improvement of teaching and research in library and information science. Additionally, librarians may become aware of the opportunities and acquire guidelines on how to attain the necessary requirements towards enhancing their role and ultimately boosting their image.

Originality/value – The study shows the progress of research regarding the knowledge management opportunities for librarians to researchers and practitioners interested in this field.

Introduction

Many organisations today acknowledge the role of knowledge as a key source for competitive advantage. In order to gain this advantage, it is important that knowledge and the sharing thereof be managed effectively in organisations.

Generally, knowledge management is about creating, capturing, organising, retrieving, disseminating, sharing/transferring and re-using knowledge for the benefit of organisations. The definition of Davenport *et al.* 1998 (cited by **Rowley, 1999**, p. 418) entails all the above-mentioned processes: "Knowledge management is concerned with the exploitation and development of the knowledge assets of an organisation with a view of furthering the organisation's objectives". Knowledge assets include employees' expertise and experience, which need to be captured; information services and sources; and information technology facilities that an organisation owns or requires to achieve its goals. Knowledge management therefore has become important in organisations as it leads to improvement in the use of information and knowledge and contributes to organisational success, creativity, speed of decision-making, and quality of services.

"Knowledge management is perceived to offer a significant enhancement in the role of the librarian" (**Southon and Todd, 2001**, p. 259). Knowledge management therefore is regarded as:

- a means of moving beyond the traditional roles of the librarian, thus improving their image and enhancing their role;
- an opportunity to rejuvenate the profession; and
- a key strategic organisational process (**Todd and Southon, 2001**, p. 314).

A body of literature has emerged that explicitly addresses the opportunities for librarians within the context of knowledge management. Based on the above discussion the following questions arise:

1. Which opportunities exist for librarians within the context of knowledge management?
2. Who identified these opportunities? Practitioners (librarians) or researchers?
3. How is information gathered regarding the opportunities?
4. How theoretically grounded are the results?
5. Where is this information communicated – in scholarly or professional journals?
6. In which format is this information presented – research studies, commentaries on the opportunities that exist, or based on own experience in report of services?

This article intends to answer the above questions.

Responding to these questions is valued given that it shows the progress of research regarding the opportunities for librarians in knowledge management to researchers and practitioners interested in this field. Results of the study may well assist in the improvement of teaching and research in library and information science. Additionally,

librarians may become aware of the opportunities and acquire guidelines on how to attain the necessary requirements towards enhancing their role and ultimately boosting their image.

Research methodology

The method utilised to conduct this study was content analysis, which is defined by **Powell (1997, p. 50)** as "a systematic analysis of the occurrence of words, phrases, concepts etc. in books, films, and other kinds of materials." For example, content analysis has been used in this study to determine how frequently certain phrases appear in journal articles. This method "assigns documents…to classes or categories to quantify one or more of their characteristics" (Allen and Reser, 1990, cited by **Julien, 1996**, p. 55).

Categories were assigned according to the aim of the research and included:

- opportunities for librarians;
- author type of first author (e.g., researcher/practitioner);
- data collection methods;
- theoretical grounding in the identification of the opportunities;
- journal type (e.g., professional/scholarly); and
- article type (e.g., research study/commentary/report of service).

Unit of analyses were journal articles indexed by *Library Literature* under the descriptors "knowledge management" and "librarian*" and "opportunit*" or "challenge*", and published in the past ten years. Twenty-eight full-length journal articles written in English only, in addition to those which were 70-80 per cent relevant (as indicated by the database), were selected. Book reviews, editorials, letters to the editor, personal and conference news, and advertisements were excluded.

Definitions applied to guide this study are those identified by **Julien (1996, pp. 54-6)**, and include the following:

1. *Commentaries*: "articles which offered opinion or argued an issue without reporting research results specifically gathered for publication".
2. *Practitioners*: "librarians or information service workers or managers, either currently employed or retired".
3. *Professional journals*: "journals intended primarily for practitioners and concerned with practical issues".
4. *Researchers*: "faculty members in schools or departments of LIS or other disciplines".
5. *Scholarly journals*: "journals that primarily publish articles addressing theoretical issues and reports on research investigations".
6. *Theoretical grounding*: "articles based on a coherent and explicit framework of assumptions, definitions, and propositions that, taken together, have some explanatory power".

Results

Opportunities for librarians

Opportunities identified by the sample (28 journal articles) are for the purpose of the article divided into the following five broad categories.

Facilitating an environment conducive to knowledge sharing

Facilitating an environment conducive to knowledge sharing was identified by **Abell(2000)**, **Abram (1997)**, **Cates (2001)**, **Choo (2000)**, **Hayes (2004)**, **Marshall (1997)**, **Perez (2002)**, **Rowley (2003)**, **Schwarzwalder (1999)**, **Todd and Southon (2001)** and **Townley, 2001**.

This opportunity aims to establish an environment that ensures that information and knowledge within and about the organisation is identified, captured, shared and used. Such a climate allows easy access to information for everyone in the organisation and encourages the openly sharing of tacit knowledge (experiences and expertise in people's heads) among employees. This type of situation leads to the creation of new knowledge and voluntary contributions to knowledge sharing activities intended for organisational benefits. Various tools and techniques enable the creation of an environment conducive to knowledge sharing. These include *inter alia* communities of practice, best practice databases, expert directories/yellow pages, knowledge maps, the intranet and portals.

Responsibilities acknowledged for librarians are to:

1. create awareness about the benefits of knowledge sharing;
2. encourage teamwork;
3. establish platforms which are conducive to informal discussions and interactions (for example, development of Communities of Practice);
4. build and maintain expert and Best Practice databases;
5. become active in the design and development of the organisational intranet and portals; and
6. to take the lead in developing a knowledge sharing culture in the organisation.

Additionally, librarians should ensure that employees are rewarded for their contributions to knowledge sharing activities. Facilitating this kind of environment involves social interaction and collaboration with different experts, for example, senior management and technology people. It is therefore required from librarians to build close relationships with customers and users to understand and satisfy their information needs. The challenge for librarians lies in obtaining top management's buy-in for support and approval of knowledge management initiatives and changing employees' attitudes and behaviour towards knowledge sharing.

To fulfil these roles librarians need to acquire a combination of new and existing skills such as social interaction, communication, group facilitation, leadership, and technical skills to mention just a few.

Managing the corporate memory

Abram (1997), **Breen** *et al.* **(2002)**, **Butler (2000)**, **Cates (2001)**, **Choo (2000)**, **Dillon (1999)**, **Gulati and Raina (2000)**, **Hayes (2004)**, **Henczel (2000)**, **Holt (2002)**, **Kim (2000)**, **Koina (2003)**, **Marshall (1997)**, **Perez (2002)**, **Todd and Southon (2001)** and **Townley (2001)** identified managing the corporate memory as an opportunity for librarians in the context of knowledge management.

The concept of corporate memory refers to the collective tacit and explicit knowledge (processes and products) within the organisation, which are worth sharing and preserving for later re-use. Above-mentioned authors identified the role of knowledge manager to manage the corporate memory as a key function and opportunity for librarians.

Duties of the librarian as a knowledge manager include:

1. Conducting an information and knowledge audit which includes: identification of information and knowledge needs of the organisation and the resources and services currently provided to meet these needs; mapping of information flows within the organisation and between an organisation and its external environment; analysis of gaps, duplications, inefficiencies and areas of over-provision which enables the identification where changes are needed.
2. Development of information and knowledge databases, for example, expert databases or knowledge repositories.
3. Utilisation of a combination of technologies such as the intranet and groupware for speedy information access and dissemination.

Abram (1997) refers to transformational librarianship that involves creating and enhancing knowledge environments, which are implied in the above-mentioned duties. These are clear indications that librarians need to get engaged with issues that have not been part of their tasks previously, and change and adapt their duties from gatekeepers to gateways of information to fulfil the role of knowledge manager successfully. Rather than performing administrative work or acquiring, organising and providing information on request, they should perform intellectual work such as the management of contributions to knowledge repositories by evaluating and filtering information. Other responsibilities for librarians include taking on the roles of analysers, synthesizers, and interpreters of information. In addition, librarians should ensure that control measures are in place for the use of organisational knowledge and that intelligence strategies are marketed.

As knowledge manager librarians should possess additional qualities such as risk-taking, being ambitious, creativity, flexibility, and acting proactively.

Transfer of information management and related skills to a new context linked to business processes and core operations

Transfer of information management and related skills to a new context, linked to business processes and core operations, was identified by **Abell (2000)**, **Abram (1997)**, **Barron (2000)**, **Butler (2000)**, **Cates (2001)**, **Chapman and Abell (2000)**, **Choo (2000)**, **Gulati and Raina (2000)**, **Hayes (2004)**, **Kim (2000)**, **Marshall (1997)**, **Newton and Dixon (1999)**, **Perez (1999, 2002**), **Rowley (2003)**, **Southon and Todd (2001)**, **Todd and Southon (2001)**, **Townley (2001)**, **Webb (1999)** and **Wittwer (2001)**.

Traditional information management principles include organising, retrieving, repackaging and utilising information, which are important for effective knowledge management applications. Librarians thus have the opportunity to play an important role in knowledge management based on their training and experience, developed and used for many years. However, they need to extend and renew these principles and skills and link it with the processes and core operations of the business in order to be successful in knowledge management activities. For this reason, it becomes imperative for librarians to understand the nature of the organisation, its processes, clients and the role of information and knowledge.

The duties of a librarian is to select and use information that is most critical to achieving organisational goals, and process such information in order to make an impact on the service of the business (for example, process and provide information to managers to make informed and intelligent decisions that will benefit the organisation). Librarians can further demonstrate their relevance in achieving organisational goals through taking on the roles of facilitator, consultant and trainer who supply specialised advice and assistance in evaluating, selecting and improving the use of information resources.

Librarians should therefore understand and express the value of their skills in terms of organisational goals, transfer them to the organisational environment instead of hiding and protecting them. In other words they should have the ability to change and adapt their traditional style of work and move from the background to the centre of the organisation. Additionally, they need to become guides and navigators for the exploration of the masses of information available (i.e. develop new services and products to improve information services and achieve organisational objectives). All of the above-mentioned examples indicate that librarians should ensure their own professional development to meet a continuous changing working environment.

The challenge for librarians is to think more broadly, contextually and strategically, in terms that are more likely to advance their roles, image and status in the organisation, rather than delivering a support service. They need to gain management skills and business knowledge because a lack thereof is amongst the main reasons discussed in literature for the librarian's low status and image by employers. This perception will change if librarians equip themselves with professional competencies (i.e. lateral thinking skills, strategic planning abilities, marketing capacity, etc.) and obtain a deeper and more

complete understanding of how the organisation creates, shares and uses knowledge. They should align the goals of the library with those of the organisation and focus on adding value to services to ensure more time is spent turning information into knowledge and less on seeking information.

Development of corporate information literacy

Abell (2000), **Abram (1997)**, **Angeles (2003)**, **Barron (2000)**, **Chapman and Abell (2000)**, **Choo (2000)**, **Gulati and Raina (2000)**, **Hayes (2004)**, **Newton and Dixon (1999)** and **Wittwer (2001)** identified the development of corporate information literacy as an opportunity for librarians in knowledge management.

The concept "corporate information literacy" includes computer literacy but also refers to the ability of all employees within an organisation to create, access, organise, store, share, use and understand information. Employees should be able to understand and use the systems and tools that are available to create and evaluate information in order to build knowledge that will lead to the enhancement of organisational performance.

Librarians have the potential to make a significant impact on developing corporate information literacy by assisting employees and users to:

1. access and gather data in order to organise and communicate information;
2. navigate and integrate information sources, including electronic resources, more meaningfully;
3. assess and evaluate information found or knowledge shared;
4. create, record, store and archive information;
5. identify the potential value that relevant information can add to business processes;
6. properly use information technology facilities;
7. filter and discard irrelevant information;
8. make decisions based on validated information; and
9. define an organisation's information needs and provide suggestions on how to satisfy these needs.

Librarians should be involved in the provision of information literacy training, educate users to become computer literate and how to make effective use of networked resources. This opportunity requires that librarians have enough technical skills to train others and aim to provide quality, filter information to the right user at the right time and at the right cost. Additionally, they should be aware of the enabling technologies (knowledge management tools) and how to apply them to promote knowledge creation and sharing in the organisation.

Management of information in a digital/electronic environment

Management of information in a digital/electronic environment was identified by **Adams (2000)**, **Angeles (2003)**, **Breen *et al.* (2002)**, **Chapman and Abell (2000)**, **Choo (2000)**, **Dillon (1999)**, **Hayes (2004)**, **Marshall (1997)**, **Newton and Dixon (1999)**, **Perez (1999)**, **Rowley (2003)** and **Wittwer (2001)**.

Librarians can demonstrate their potential to distinguish themselves as experts in the organisation of information mediated by technology through this opportunity. Their training, skills, knowledge and experience of cataloguing, classification and indexing make them the most skilled people for managing information in a digital environment. Additionally, librarians understand the information seeking behaviour of users, which give them an advantage over those people who deal exclusively with the technology of information because they add human value to information. All of the above mentioned conditions are beneficial in organising and managing online information such as creating intranet and Internet sites or assisting in database design.

Information technology is acknowledged as an important enabler for effective knowledge management initiatives. The focus of this opportunity therefore is on adopting the enabling technologies and facilities and applying them to promote improvements to knowledge creation and sharing activities in the organisation. This generates the need for librarians to develop skills in handling Internet hardware and software to facilitate end-user access to online information. Responsibilities for librarians to manage information in an electronic environment include:

1. set standards for the overall information architecture;
2. selecting and packaging information in a way that maximizes its usefulness (e.g., add index terms or cross-references);
3. inform users about free, full-text online journals;
4. provide training on how to conduct online research (best practices in Internet searching);
5. construct thesauri to classify and structure information;
6. train staff to efficiently and cost-effectively use online databases; and
7. publish knowledge through the various available channels.

The effective management of information in an electronic environment requires librarians to change their traditional role of librarianship to cybrarianship and take on new roles such as Web Content Manager, Web Page Designer, and Information Architect.

Author type

In acknowledging the author type, only the first author was considered in cases where more than one author wrote the article. Practitioners comprised 68 per cent (19) and researchers 32 per cent (9) of the sample. **Table I** displays results found regarding opportunities identified and the author type.

Both researchers and practitioners identified opportunities for librarians in the five broad categories. However, except for the category *Management of information in a digital/electronic environment*, researchers are pro rata more aware of opportunities than practitioners.

Data collection methods

Different research methods were used to identify the opportunities for librarians in the context of knowledge management. **Table II** illustrates the results.

The results show that literature review was used most frequently 50 per cent (14) as a data collection method in the studies conducted by both practitioners and researchers. Of the authors who utilised literature reviews, 42 per cent (8) were practitioners and 67 per cent (6) researchers. Five practitioners (26 per cent) utilised case studies as a data collection method. This correlates with the findings that they are likely to base studies on experience in the work environment. In one study, conducted by a practitioner, interviews were utilised. In two of the articles written by practitioners it was not possible to determine the methods used for data collection.

Theoretical grounding

The number of references cited by authors was used to determine the level of theoretical grounding of articles. Ten or more references in an article were accepted as theoretical grounding (TG), less than ten references as limited theoretical grounding (LTG) and where there were no references in an article, it was accepted that no theoretical grounding (NTG) was utilised. Overall, the majority of articles 46 per cent (13) were based on LTG, 36 per cent (10) on TG and 18 per cent (5) on NTG. **Figure 1** shows the relationship between author type and theoretical grounding found in the study.

Results shown in **Figure 1** indicate that the majority of researchers (67 per cent) based their findings on the opportunities of librarians in knowledge management on theory (TG). The rest (33 per cent) of the researchers based their findings on LTG. In contrast 21 per cent of practitioners based their findings on TG, 53 per cent on LTG and 26 per cent on own experiences (NTG). Consequently, it was accepted that researchers were more likely to theoretically ground their publications than practitioners. These findings correlate with the fact that pro rata researchers are more likely to conduct literature reviews than practitioners.

Journal and article type

Thomson's Institute for Scientific Information (ISI) list of accredited journals was used to determine whether a journal is classified as scholarly or professional. Accredited journals should conform to certain publishing standards, which amongst others are to publish articles addressing theoretical issues and reporting results of the world's most important and influential research. When a journal was listed it was accepted as a scholarly type, when not listed, it was accepted as a professional type. Articles were published in both

scholarly and professional journals but were different in nature, i.e. either commentaries or reports of service or research studies. **Table III** illustrates the results regarding journal and author type.

Of the journals, 82 per cent (23) are classified as professional while only 18 per cent (5) fall under the scholarly type. In total, 79 per cent (15) of practitioners and 89 per cent (8) of researchers used professional journals as a communication medium for findings, while only 21 per cent (4) of practitioners and one researcher published articles in scholarly journals. It was anticipated that researchers would mostly utilise scholarly journals for communicating findings, but the opposite was determined.

In the sample, the majority of articles 61 per cent (17) were commentaries, 25 per cent (7) research studies and 14 per cent (4) reports of service. **Figure 2** presents the relationship between article types and author types found.

Most of the practitioners 68 per cent (13) and 44 per cent (4) researchers published commentaries on the opportunities that exist. As expected more researchers than practitioners 56 per cent versus 11 per cent (5 versus 2) preferred to publish research studies. Only 22 per cent (4) practitioners published reports of service, which is another indication that they strongly focus on experiences that occur in their work environment.

Conclusion

Both practitioners and researchers identified opportunities for librarians. However, researchers are pro rata more aware of these opportunities. This can be based on the fact that they mostly utilised literature reviews and publish theoretically grounded articles. This is how they obtain a broader perspective of the opportunities that exist compared to practitioners who are trapped in their work situation and, as a result, based findings on their own or what they experience in the work environment.

Both author types regarded the Transfer of information management and related skills to a new context linked to business processes and core operations as an important opportunity. This is an indication that everybody is aware of the value of knowledge as an asset to provide a competitive advantage to the organisation.

It was expected that researchers would prefer publishing findings in scholarly journals and research reports, but results confirm the opposite. A possibility could be that researchers would like to publish findings in the type of journals and format of articles that practitioners prefer to use. However, it is important for practitioners to consider the findings of researchers to alert them about opportunities they are unaware of.

The Development of corporate information literacy is also of equal importance to both author types. However, the rating of this opportunity by both groups of authors is very low, which is disappointing since information literacy is regarded as one of the most basic and traditional principles of library and information science.

Practitioners regarded the Management of information in a digital/electronic environment more important than researchers. This demonstrates librarians' potential to be important contributors to knowledge management activities. However, they should not only focus on what is known to them. They should obtain a broader perspective of the knowledge management opportunities and how they can contribute in order to get noticed and recognised in organisations.

Knowledge management is about the basic processes of the traditional role of librarianship, which gives them a valuable and autonomous role to become key players in knowledge management activities in the organisation. However, enhancing the role and employers expectations of the profession depends on the efforts of individual librarians.

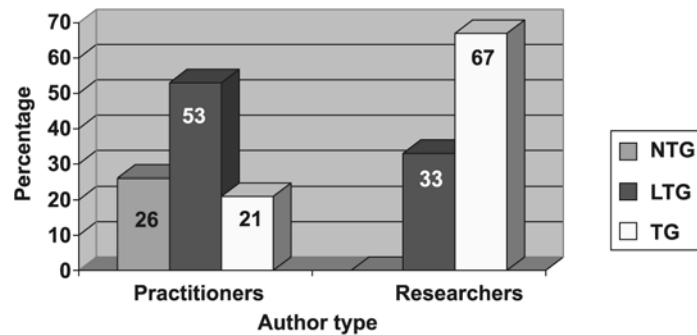**Figure 1** Relationship between author type and theoretical grounding (N=28)

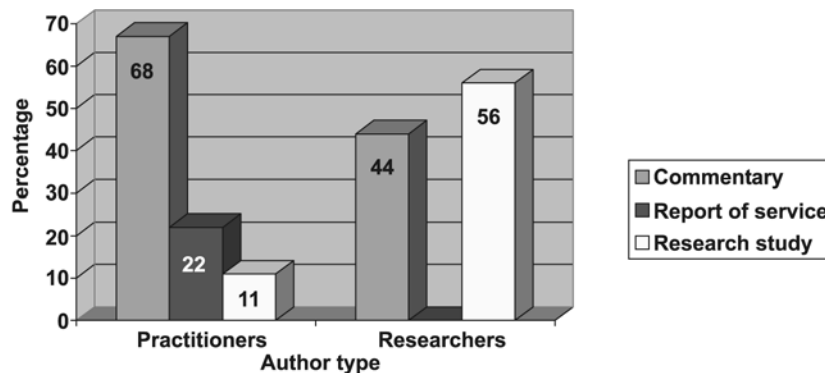**Figure 2** Relationship between article type and author type (*n*=28)

Table I Opportunities for librarians (*n=28*)

| | Author type | | | |
| | Practitioner (n = 19) | | Researcher (n = 9) | |
Opportunities for librarians	%	N	%	N
Facilitating an environment conducive to knowledge sharing	37	7	44	4
Managing the corporate memory	53	10	67	6
Transfer of information management and related skills to a new context linked to business processes and core operations	63	12	78	7
Development of corporate information literacy	32	6	33	3
Management of information in a digital/electronic environment	47	9	33	3

Table I.
Opportunities for librarians (*n* = 28)

Table II Data collection methods (*n=28*)

| Author type | Literature review | | Case study | | Interviews | | Mixture of methods | | Undetermined | |
	%	N	%	N	%	N	%	N	%	N
Practitioner (n = 19)	42	8	26	5	5	1	16	3	11	2
Researcher (n = 9)	67	6					33	3		

Table II.
Data collection methods
(*n* = 28)

Table III

| | Author type | | | | | |
| | | | Practitioners (n = 19) | | Researchers (n = 9) | |
Journal type	%	N	%	N	%	N
Professional	82	23	79	15	89	8
Scholarly	18	5	21	4	11	1

Note: *n* = 28

Table III.

References

Abell, A. (2000), "Skills for knowledge environments", *Information Management Journal*, Vol. 34 No.3, pp.10-12.

Abram, S. (1997), "Post information age positioning for special librarians: is knowledge management the answer?", *Information Outlook*, Vol. 1 No.6, pp.18-23.

Adams, K.C. (2000), "My secret life as an ontologist", *American Libraries*, Vol. 31 No.9, pp.40.

Angeles, M. (2003), "K-logging: supporting KM with web logs: Michael Angeles explains how K-loggers can advance knowledge management with the support of librarians", *Library Journal*, Vol. 128 No.7, pp.20-2.

Barron, D.D. (2000), "Knowledge management for the next millennium: the next step for school library media specialists", *School Library Media Activities Monthly*, Vol. 16 No.5, pp.48-51.

Breen, C., Farragher, A., McQuaid, M., Callanan, M., Burke, M.A. (2002), "New information management opportunities in a changing world", *Library Review*, Vol. 51 No.3/4, pp.127-38.

Butler, Y. (2000), "Knowledge management: if only you knew what you knew", *Australian Library Journal*, Vol. 49 No.1, pp.31-42.

Cates, J. (2001), "CKO wanted", *Business & Finance Division Bulletin*, No.118, pp.25-8.

Chapman, D., Abell, A. (2000), Raising Expectations: Information Professionals in the Knowledge Economy, available at: http://www.tfpl.com/assets/applets/LAR_Oct_2000.pdf (accessed 13 June 2003).

Choo, C.W. (2000), "Working with knowledge: how information professionals help organisations manage what they know", *Library Management*, Vol. 21 No.8, pp.395-403.

Dillon, M. (1999), "Knowledge management opportunities for libraries and universities", *Library and Information Science Annual*, Vol. 7 pp.3-11.

Gulati, A., Raina, R.L. (2000), "Professional competencies among librarians and information professionals in the knowledge era", *World Libraries*, Vol. 10 No.1/2, pp.11-18.

Hayes, H. (2004), "The role of libraries in the knowledge economy", *Serials*, Vol. 17 No.3, pp.231-8.

Henczel, S. (2000), "The information audit as a first step towards effective knowledge management: an opportunity for the special librarian", *Inspel*, Vol. 34 No.3/4, pp.210-26.

Holt, G.A. (2002), "A way to the future: reorganizing library work (so librarians become knowledge managers)", *The Bottom Line*, Vol. 15 No.1, pp.29-31.

Julien, H. (1996), "A content analysis of the recent information needs and uses literature", *Library and Information Science Research*, Vol. 18 pp.53-65.

Kim, S. (2000), "The roles of knowledge professionals for knowledge management", *Inspel*, Vol. 34 No.1, pp.1-8.

Koina, C. (2003), "Librarians are the ultimate knowledge managers?", *The Australian Library Journal*, Vol. 52 No.3, pp.269-72.

Marshall, L. (1997), "Facilitating knowledge management and knowledge sharing: new opportunities for information professionals", *Online*, Vol. 21 No.5, pp.92-8.

Newton, R., Dixon, D. (1999), "New roles for information professionals: user education as a core professional competency within the new information environment", *Journal of Education for Library and Information Science*, Vol. 40 No.3, pp.151-60.

Perez, E. (2002), "A second shot at the knowledge management challenge", *Online*, Vol. 26 No.6, pp.25-9.

Perez, E. (1999), "Knowledge management in the library – not", *Database Magazine*, Vol. 22 No.2, pp.75-8.

Powell, R. (1997), *Basic Research Methods for Librarians*, 3rd ed., Ablex Publishing Corporation, London.

Rowley, J. (1999), "What is knowledge management?", *Library Management*, Vol. 20 No.8, pp.416-20.

Rowley, J. (2003), "Knowledge management – the new librarianship? From custodians of history to gatekeepers to the future", *Library Management*, Vol. 24 No.8, pp.433-40.

Schwarzwalder, R. (1999), "Librarians as knowledge management agents", *EContent*, Vol. 22 No.4, pp.63-6.

Southon, G., Todd, R. (2001), "Library and information professionals and knowledge management: conceptions, challenges and conflicts", *The Australian Library Journal.*, Vol. 50 No.3, pp.259-82.

Todd, R.J., Southon, G. (2001), "Educating for a knowledge management future: perceptions of library and information professionals", *The Australian Library Journal*, Vol. 50 No.4, pp.313-27.

Townley, C.T. (2001), "Knowledge management and academic libraries", *College and Research Libraries*, Vol. 62 No.1, pp.44-54.

Webb, S.P. (1999), "Knowledge management opportunities in a climate of change", *The Law Librarian*, Vol. 30 No.3, pp.180-2.

Wittwer, R. (2001), "Special libraries: how to survive in the twenty-first century", *The Electronic Library*, Vol. 19 No.4, pp.221-4.

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