

**Comparative analysis of selected Personal Bibliographic
Management Software (PBMS) with special reference to
the requirements of researchers at a University of
Technology**

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Philosophy (Information and Knowledge Management) at the University of Stellenbosch

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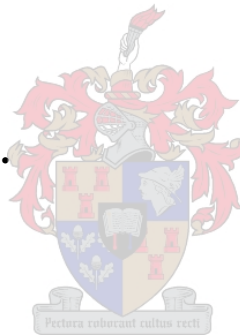
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Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature:

Date:



Abstract

The incidence of referencing errors in research is difficult to manage due to the many types of bibliographic sources that have to be referenced. Preventing referencing errors is an essential part of bibliographic management and PBMS (Personal Bibliographic Management Systems) have been designed to manage this. To design appropriate strategies for preventing the errors, the prevalence of PBMS usage in higher education needs to be investigated. The aim of the research was to determine whether available PBMS used at institutions would address the referencing errors at a UoT (University of Technology), and to recommend a suitable PBMS for the institution.

The main research instruments used to gather data consisted of questionnaires, interviews and a head-to-head comparison of five PBMS programs EndNote, ReferenceManager, ProCite, Bibloscape and B3. Researchers in the Faculty of Business were selected because they highlighted the difficulties with referencing errors. Questionnaires were sent to 10 researchers to investigate their awareness of PBMS, the kinds of bibliographic sources they use and the frequency that they reference the sources. A questionnaire, sent to eight libraries in the country ascertained their use of PBMS and whether PBMS reduced referencing errors. These libraries provided a representative sample of the use of PBMS at both historically “White” and “Black” institutions. A questionnaire to editors of journals and an online database investigated the incidence of referencing errors in academic publications and measures to prevent the errors. An interview with a vendor of PBMS revealed the extent of PBMS sales to higher education institutions and the capabilities of the PBMS. A head-to-head comparison, using selected criteria relevant to the study, was done of the five PBMS.

The response rate on the questionnaires was 100%. Researchers indicated that they were not aware of PBMS, and were therefore not using any. In higher education, the majority of the libraries used PBMS, and these libraries reported that PBMS had reduced referencing errors. Editors responded that papers submitted for publication do contain referencing errors, but that adherence measures such as peer reviews, referencing guidelines and academic accreditation prevented referencing errors in published research. Data from all the research instruments led to the recommendation of using a combination of two PBMS programs at the UoT.

The study has shown that there are software programs available to reduce referencing errors in research at the UoT, through the use of PBMS.

Opsomming

Die voorkoms van verwysingsfoute is moeilik om te beheer as gevolg van die groot getalle en tipes bibliografiese bronne waarna gewoonlik verwys word. Voorkoming van verwysingsfoute is 'n fundamentele aspek van bibliografiese beheer en PBMS is ontwerp om dit te beheer. Ten einde geskikte strategieë te ontwerp en foute te voorkom, behoort die gebruik van PBMS ondersoek te word. Die doel van die navorsing was om vas te stel of beskikbare PBMS stelsels by instansies verwysingsfoute by 'n UvT (Universiteit van Tegnologie) sou aanspreek en om geskikte PBMS stelsels aan te beveel.

Die primêre navorsingsinstrumente wat gebruik is om data te versamel was vraelyste, onderhoud en 'n vergelyking tussen vyf PBMS programme, naamlik EndNote, ReferenceManager, ProCite, Biblioscape en B3. Navorsers in die Bestuursfakulteit is gekies omdat hulle die probleme met verwysingsfoute uitgewys het. Vraelyste is gestuur aan 10 navorsers ten einde hulle bewustheid van PBMS, die tipes bibliografiese bronne wat hulle gebruik en hoe dikwels hulle verwys na bronne te bepaal. 'n Vraelys is uitgestuur aan agt biblioteke in die land om vas te stel of hulle PBMS gebruik en of die gebruik van PBMS verwysingsfoute verminder. Hierdie biblioteke voorsien 'n verteenwoordigende steekproef van die gebruik van PBMS by beide historiese "Wit" en "Swart" instansies. 'n Vraelys is uitgestuur aan redakteurs van tydskrifte en 'n intydse databasis om die voorkoms van verwysingsfoute in akademiese publikasies, en maatreëls om sulke foute te voorkom, te ondersoek. 'n Onderhoud met 'n verskaffer van PBMS het verkope van die produk en die moontlikhede daarvan geopenbaar.

Vyf PBMS produkte is met mekaar vergelyk volgens geselekteerde kriteria. Die respons op die vraelyste was 100%. Navorsers het aangedui dat hulle nie bewus was van PBMS stelsels nie en dit dus nie gebruik nie. In tersiêre inrigtings gebruik die meeste biblioteke PBMS en terugvoer van hierdie biblioteke toon aan dat PBMS verwysingsfoute reduseer. Redakteurs het aangedui dat artikels wat ingedien is vir publikasie wel verwysingsfoute bevat, maar dat prosesse soos eweknie-evaluering, verwysingsmaatreëls en akademiese akkreditasie foute in navorsingspublikasies voorkom. Data van die navorsingsinstrumente het gelei tot die aanbeveling van die gebruik van 'n kombinasie van twee PBMS programme by 'n UvT.

Die studie het aangedui dat daar rekenaarprogrammatuur beskikbaar is om verwysingsfoute in navorsing by 'n Universiteit van Tegnologie te verminder deur die gebruik van PBMS.

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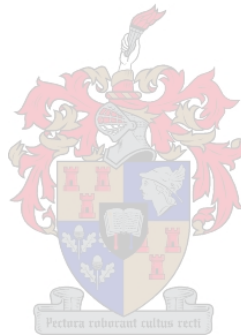
Who has been instrumental to the success of this research.
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My Colleagues

To those few colleagues for the constant support, for caring, for
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Chapter 1

Introduction

As a University of Technology (UoT), the institution offers technology-focused education in a variety of multidisciplinary subjects, from undergraduate to doctorate levels, with particular emphasis on increasing its research capability, research output activities and scholarship. Research, applied to experiential learning methods (the method of learning at the UoT), can act as a catalyst to producing new skills, competencies and knowledge. The new skills and competencies would aid informed decision-making, develop problem-solving abilities, and together with tacit knowledge can produce new knowledge.

New knowledge would enable higher cognitive capabilities such as creative & critical thinking, initiative, leadership, innovation and excellence in technology-related activities. At any university, it is the role of active researchers to ensure that good quality scholarship and research are produced continuously, and accuracy in citations and referencing are essential components of research. This has prompted an investigation into the role that Personal Bibliographic Management Systems (PBMS) can play in achieving that accuracy and produce quality research and scholarship.

1.1 Statement of the Problem and Focus

The literature makes reference to the extent of inaccuracies and errors in citing and referencing in research papers. In particular, Taylor (2002:169) indicates that up to 60% of research papers have some citing errors, while Browne et al (2004:170) claim that there is at least one error in over half of all references. Inaccurate referencing leads to misrepresenting what authors imply (DeBehnke et al, 2001:848), and is not in adherence with citation standards and styles (Sahu, 2000:7).

At the UoT, the problem can be outlined as follows : increasing research activity is taking place; there is no PBMS in place; researchers are experiencing difficulties with citing and referencing; increased demand is being placed on the time and expertise of library staff to assist researchers with citing, referencing and compiling bibliographies accurately; researchers are faced with changing technology and software solutions; researchers may have specific bibliographic needs; selection criteria are required to recommend a PBMS suitable to the needs of researchers.

At a broader level, preliminary enquiries from libraries at higher education institutions nationally indicate a lack of PBMS. The motivation to investigate PBMS solutions is to address the problem at the UoT.

Various PBMS can be purchased commercially. These products have been developed to manage information sources and to prevent errors in citing and referencing during research.

This paper seeks to investigate the need for PBMS, its capabilities, and its suitability to researchers' requirements, would researchers use the software if available, and to recommend a suitable product for research that could address the problems those researchers at the UoT experience when citing, when referencing and when compiling bibliographies.

1.2 Specific research objectives

1. To investigate if there is a need for PBMS at the UoT.
2. To investigate what the bibliographic needs of researchers are at the UoT.
3. To investigate whether any PBMS are in use at higher education institutions in the South African research environment.
4. To investigate whether editors of journals encounter referencing errors in papers submitted for publication.
5. To compare selected PBMS to assess its suitability for the UoT.
6. To recommend an appropriate PBMS, as there is no locally produced software.

1.3 Research methodology

- Literature surveys - to gather information on selected PBMS, evidence of errors in referencing, and to extract selected criteria to compare PBMS.
- Questionnaires - to gather data from respondents.
- Interview - with a local vendor to gather data on PBMS used in South Africa.
- PBMS demonstration - to illustrate how PBMS work and their benefits.
- Telephone calls – to check the availability of PBMS at software outlets.
- Electronic mail – to correspond with respondents and gather data.

1.4 Delimitations of the Research

This research has been delimited to the following:

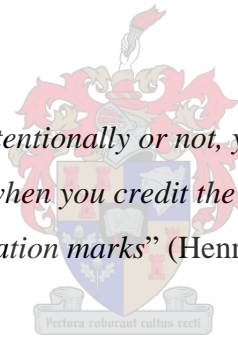
- The research focused on selected PBMS only. These refer to the most popular and widely used PBMS in use in higher education institutions.
- The citing and referencing needs of researchers in only the faculty of business studies at the UoT were investigated.
- PBMS used by researchers at similar higher education institutions internationally were investigated, which may provide guidelines in matching researcher needs to software products.
- The PBMS were assessed for their suitability for implementation in the research environment in the South African higher education context.
- Only selected features of the PBMS were considered to recommend a suitable product for the UoT.

1.5 Definition of terms

- i. Personal Bibliographic Management Software (PBMS) is also referred to by many other names such as Bibliographic Reference Management Software (Alligood & Skidmore, 2003:2; Beverley et al, 2000:1); Personal Bibliographic Software and / or Bibliographic Software (Hanson (ed.), 1995:13); Reference Management Software (Kent, 2004:1); Reference Management System (RMS) (Beverley et al, 2001:2).
- ii. Personal Bibliographic Management Software (PBMS) *“is any systematic means of organizing your references... electronic (i.e. involving the use of specialist software, often referred to as Personal Bibliographic Management Software, PBMS)”* (Beverley et al, 2001:2).
- iii. Reference Management Software *“is an essential tool designed to help researchers input, organize, retrieve and format lists of references”* (Kent, 2004:1).
- iv. *“PBMS are designed to handle a wide range of reference types, including not only the more traditional types such as books, articles, journals, book chapters, etc, but also less common types such as music scores and maps, in the same database...over 30 different formats. Each reference type has record definitions that include only those fields*

appropriate to that type...PBMS software typically employs a variable-length record structure and permits repeating values, eg multiple authors. The structure of the database is often predefined...” (Beverley et al, 2000:2)

- v. Bibliography : is an alphabetical list of sources “*consulted in addition to works to which specific reference is made in the main text*” (Anderson, 2001:97).
- vi. “*A bibliography contains details of all, or a selection of, the books, articles, reports and other works of relevance you have consulted during your research, not all of which may be directly referred to in your text*” (Blaxter et al, 2001:244).
- vii. Citing / citation : refers to “*when paraphrasing or quoting an author directly, you must credit the source... For a direct quotation in the text, give the author, year and page number in parentheses*” (Mouton, 2001:231). Also, it is the opposite of plagiarism (below).
- viii. Plagiarism : refers to “*when, intentionally or not, you use someone else’s words or ideas but fail to credit that person... when you credit the author but use his exact words without so indicating with quotation marks*” (Henning et al, 2002:27-28).
- ix. Referencing / references : refers to creating an alphabetically arranged list that “*contains details of all the books, articles, reports and other works you have directly referred to in your thesis or report*” (Blaxter et al, 2001:244).
- x. “*A reference may also be a text (not necessarily a reference text) that has been used in the creation of a piece of work such as an essay, report, or oration. Its primary purpose is to allow people who receive such work to examine the author's sources, either for validity, or simply to learn more about the subject. Such items are often listed at the end of an article or book in a reference list*” (<http://www.answers.com/references>).
- xi. Researchers : refers to any postgraduate student, academic, or other person engaging in research at a level higher than at undergraduate level.



- xii. Selection criteria : refers to the most essential operational capabilities and desired features that a personal bibliographic management system should possess to be evaluated for selection.
- xiii. Software / programs / systems : refers specifically to *“the operating system and all the utilities that enable the computer to function... programs that do real work for users. For example, word processors, and database management systems”* (<http://www.webopedia.com/TERM/s/software.html>).
- xiv. University of Technology : refers to *“an university with a focus on technology”* (<http://www.answers.com/university%20of%20technology>). It is also known as a Polytechnic and was formerly known as a Technikon in South Africa.
- xv. *“Becoming a university of technology is contingent upon us creating space for debate and reflection – within and across departments – on experiential learning, work-integrated learning, and work-related projects in terms of their pedagogic function and usefulness, in and across a variety of learning contexts. It is only by subjecting our own practices to intense and scholarly scrutiny that we will be able to achieve excellence... Universities of technology are learning organizations; they create protected spaces for experimentation, for different ways of thinking and doing, and for learning from the mistakes that are inevitable when innovation and excellence are pursued”* (Winberg, 2004:5,6)

1.6 Impact

As mentioned previously, Taylor and Browne et al’s findings of the high percentage of inaccuracies in citing is alarmingly high. Other sources reveal that the error rate in citing and referencing uncovered in submitted research is as high as 35% (DeBehnke et al, 2001:848), highlighting the major problems being : inaccurate referencing thereby misrepresenting what authors imply (ibid.); citing references inaccurately and not in adherence with citation standards and styles (Sahu, 2000:7).

Inaccurate citing and referencing has become a concern for the library because the librarians at the UoT do encounter demands for correcting referencing errors, but no statistics have been recorded that could indicate the extent of the problem at the university. Beverley et al

(2000:1) cite Strube et al (1989): “for over ten years librarians have been encouraged to extend their information management skills to PBMS ... as a natural extension of the advice traditionally given to ...professionals wishing to organize personal reference collections”. Although developed for personal use by the individual academic researcher, libraries have benefited most from PBMS due to their nature of compiling bibliographies and citations for (and by) researchers and students (Dell’Orso, Sep 1999:1).

Error rates in citing references will continue to be a problem in the research environment until viable solutions are instituted to eliminate the occurrences of errors. Proposing PBMS as a solution can be seen as an essential action to remedy the situation. It shows “the organization’s ability to recognize opportunities and act quickly ... and to turn technical know-how into results” (Ulrich & Smallwood, June 2004:120). The focus of the present research is to assess appropriate PBMS that could serve as a solution to citing problems and difficulties experienced by researchers when doing research, especially in the absence of such PBMS at the university. This information could provide insight into why the use of selected PBMS could contribute toward proper and accurate citing of references for researchers at the UoT in the future.

The impact of the research would be to provide researchers with a PBMS solution that would automate the process of citing references and compilation of bibliographic references, thereby eliminating the tedium and errors of repeatedly and physically citing references while doing research.

Chapter 2

Literature review

A review of the literature has revealed that comparative studies on PBMS have been done during the 1980s to 1990s in the works of Nieuwenhuysen in 1988 and Sieverts in 1987, 1991, 1992 (Hanson, 1995:117-118). The new trend (after 2000) has been for upgrades to individual products to be published by vendors on their websites (for example by ISI ResearchSoft, and by Biblioscape). The evaluation of the upgraded features of these products also features on listservs such as the BibSoft Archives. A few of the later comparative studies of the most commonly used PBMS, their results and their recommendations are reviewed below. The few were chosen for their abilities of handling the new requirements of rapidly evolving information and communication technologies.

Brommer (2004:1-4) relates that a diploma thesis by Diening, completed in 1993 in German, compared four often-used PBMS namely EndNote Plus, ReferenceManager, ProCite and VCH-Biblio. Two products, EndNote and ReferenceManager, were preferred over the other two products – EndNote for versions that are compatible with Windows and Macintosh operating systems and an intuitive user interface; ReferenceManager for its ability to be networked and to be used by multi-databases simultaneously.

Choosing and purchasing appropriate PBMS can be difficult as there are several off-the-shelf commercial products available, each with its own capabilities and limitations, technical specifications and complexities. It is prudent then to rely on the criteria applied, the opinions and tests conducted by experts and practitioners before deciding which PBMS to purchase. One source on evaluating PBMS that regularly appeared during the literature review is an evaluation template compiled by Dell'Orso. The template has been cited by many university library websites, by vendors (Biblioscape, Adept Scientific Plc), is compatible with databases (PubMed), and it is regarded as the “best evaluation” on PBMS by Wilson (2000:4).

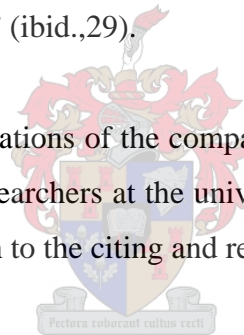
Dell'Orso's template contains a comprehensive list of the technical and functional capabilities by which any PBMS should be evaluated. Dell'Orso has applied the criteria in the template by evaluating five PBMS, namely EndNote, ReferenceManager, ProCite, LibraryMaster and Papyrus. It is noteworthy (strange) that, although EndNote and ReferenceManager have the best capabilities, he makes no recommendation as to the best PBMS, but merely recommends

that the PBMS that meets the specific needs of the users the best, should be chosen (Dell'Orso, September 1999:1-5).

Hanson has also compiled a list of criteria by which to evaluate PBMS. It is a combined list of criteria where authors mention the basic criteria (by Nieuwenhuysen) and advanced criteria (by VOGIN, and Thornton) that PBMS should be able to perform. The coverage from basic to advanced features indicates how rapidly technology has been evolving (Hanson, 1995:117-118). These criteria overlap with those covered in the Dell'Orso template (see Dell'Orso, 2004; 2005).

A review of eleven (11) PBMS lists the advantages and disadvantages of each (Shapland, 2001:1-32). Shapland concludes that EndNote and Biblioscape were the best PBMS as they “provide the best intuitive interface, flexible facilities and good access to the web but Biblioscape has far better search facilities, is cheaper and is rapidly being enhanced with new features in response to user requests” (ibid.,29).

Selected criteria and the recommendations of the comparison studies mentioned above would be used to ascertain the needs of researchers at the university, and to investigate whether any of these PBMS could offer a solution to the citing and referencing needs of the researchers.



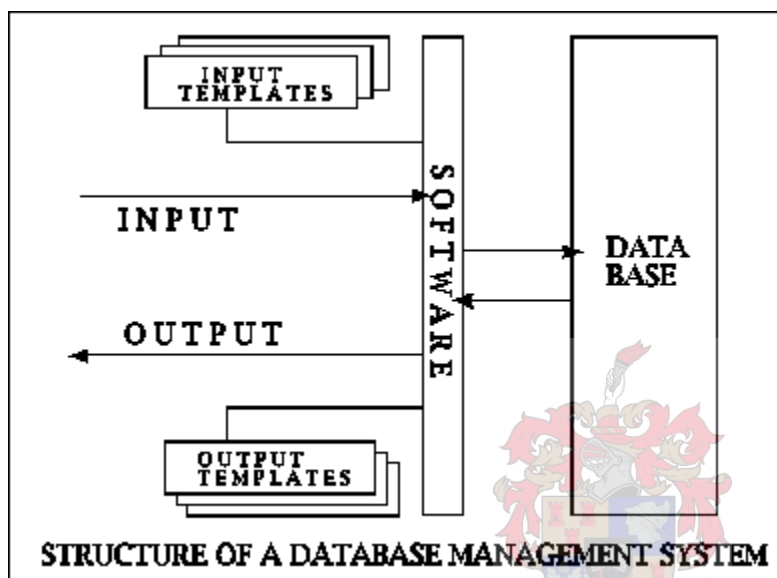
2.1 Diagram models of PBMS in relation to research

Four diagrammatic models show the mutual integration of the two separate processes of research and PBMS. The models are being used to provide a clearer understanding of the relationship between research and PBMS, and the author and adapted criteria that will be discussed in chapter 6.

The first model is from Princeton University (2004?:2) and illustrates the basic structure and operation of any database management system. The second model is from ISI ResearchSoft (manufacturers of EndNote, ReferenceManager and ProCite) (Matus, 2001:2) and illustrates the role of PBMS in the research life cycle. The third model is by the Trent Focus Group (2001:3) and illustrates how to manage references using PBMS in the research process. The fourth model is an OpenOffice (Open Source) model (Job-Sluder, Hanek & Zhang, 2003:10) that approaches the bibliographic process from a knowledge management perspective and looks at the bibliographic process that users incorporate when writing academic papers.

The order of the models illustrates the expanding nature of the research and PBMS processes. Model 1 serves as the foundation for the succeeding models. Models 2, 3 and 4 then build onto each preceding model. As the models build on one another, the processes in each become more detailed and expansive, and more specifically task-orientated. The order of the models illustrates the progression, from broad to specific, that occurs during the research process.

2.1.1 Model 1 – Structure of a database management system

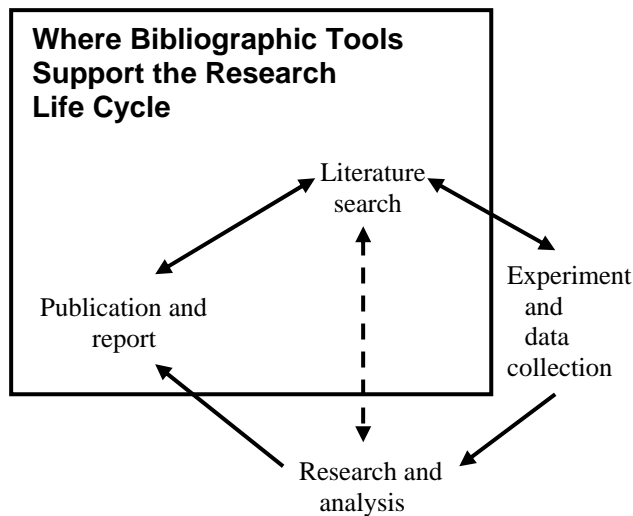


Model 1 refers to a PBMS being “a specialized type of database management system (DBMS) for keeping a database of structured bibliographic records” (Princeton University Bibliographical Management and Note-taking, 2004?:2). It is described as a “layer-cake model...with its most important feature the layer of software between the user and the database, since this allows for flexibility in what the user sees and receives from the database and for more efficient operations” (ibid.,2).

This layer is what distinguishes a PBMS from a normal database. This layer allows a user to customize bibliographic entries to suit the user’s requirements, and allows the user to choose from several formatting styles before the output. “The “input templates” specify what kind of an entity is to be recorded (e.g., book by one or more authors, ... article, interview), and the “output templates” the format in which the bibliographic records are to be presented (e.g. MLA, Chicago)” (ibid.,2). This model shows the specialized manner in which a PBMS works and that it is geared particularly towards bibliographic management.

2.1.2 Model 2 – Where bibliographic tools support the research life cycle

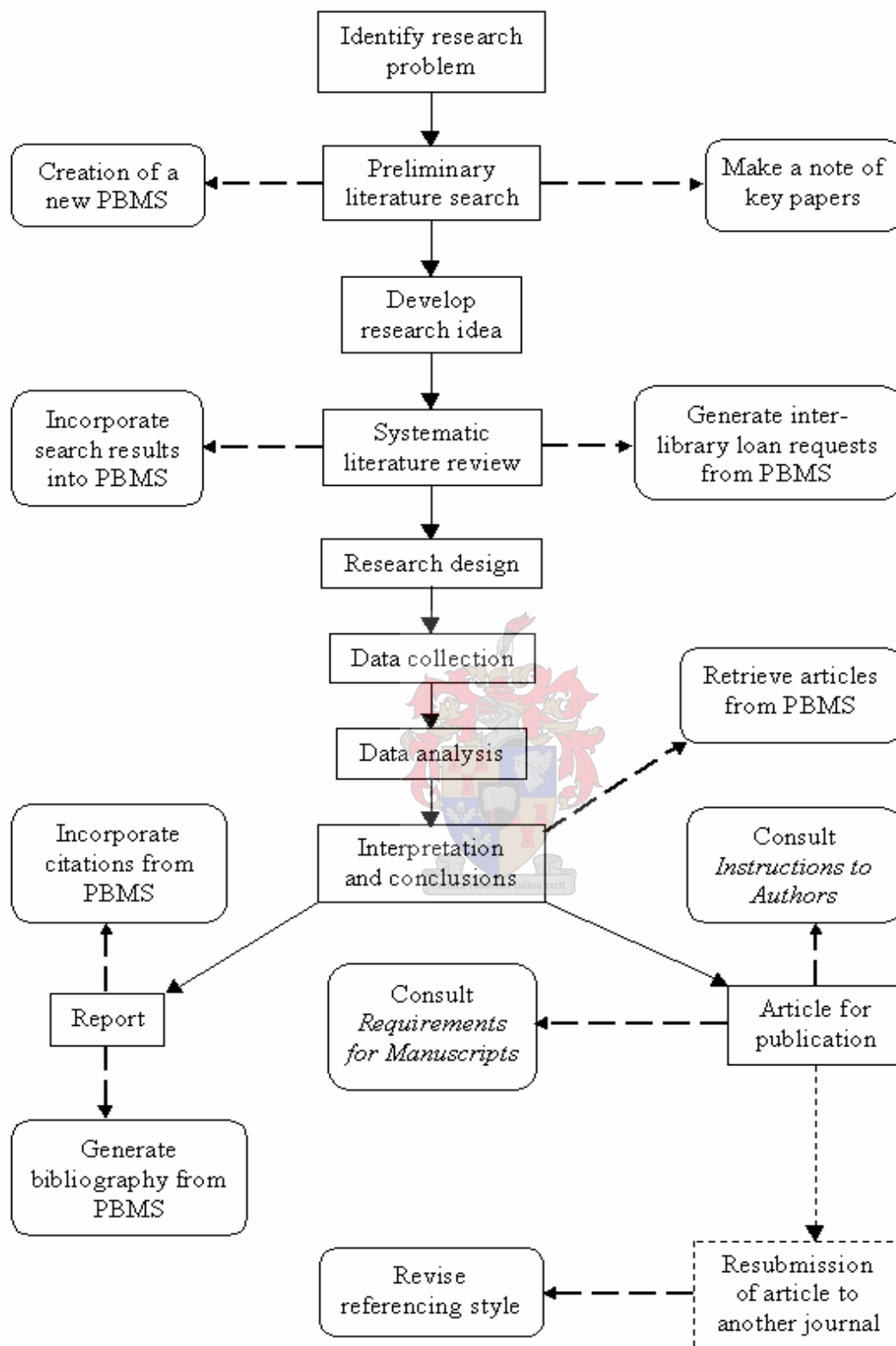
The model has been re-drawn from Matus (2001:2).



Bibliographic software represents an efficient method to collect data from off-line or Web-based sources. Everything associated with a reference can be easily and quickly retrieved.

ISI ResearchSoft describes PBMS for their model as “one or more electronic search, storage, and retrieval programs that organize reference material, citations, bibliographies, footnotes, and related information within intercommunicating databases for rapid search and retrieval” (Matus, 2001:1). The process from the literature search to the final product is simplified by using PBMS, because with the PBMS the user can search and retrieve bibliographic sources from the Web or CD-Rom. The advantages of using PBMS is that this tool saves time, stores sources on the PBMS permanently, enables a user to create bibliographies in several output styles and in-text citations at the click of a button (Matus, 2001:1-2). The diagram shows how easily PBMS assists the user in the broader aspects of the research process.

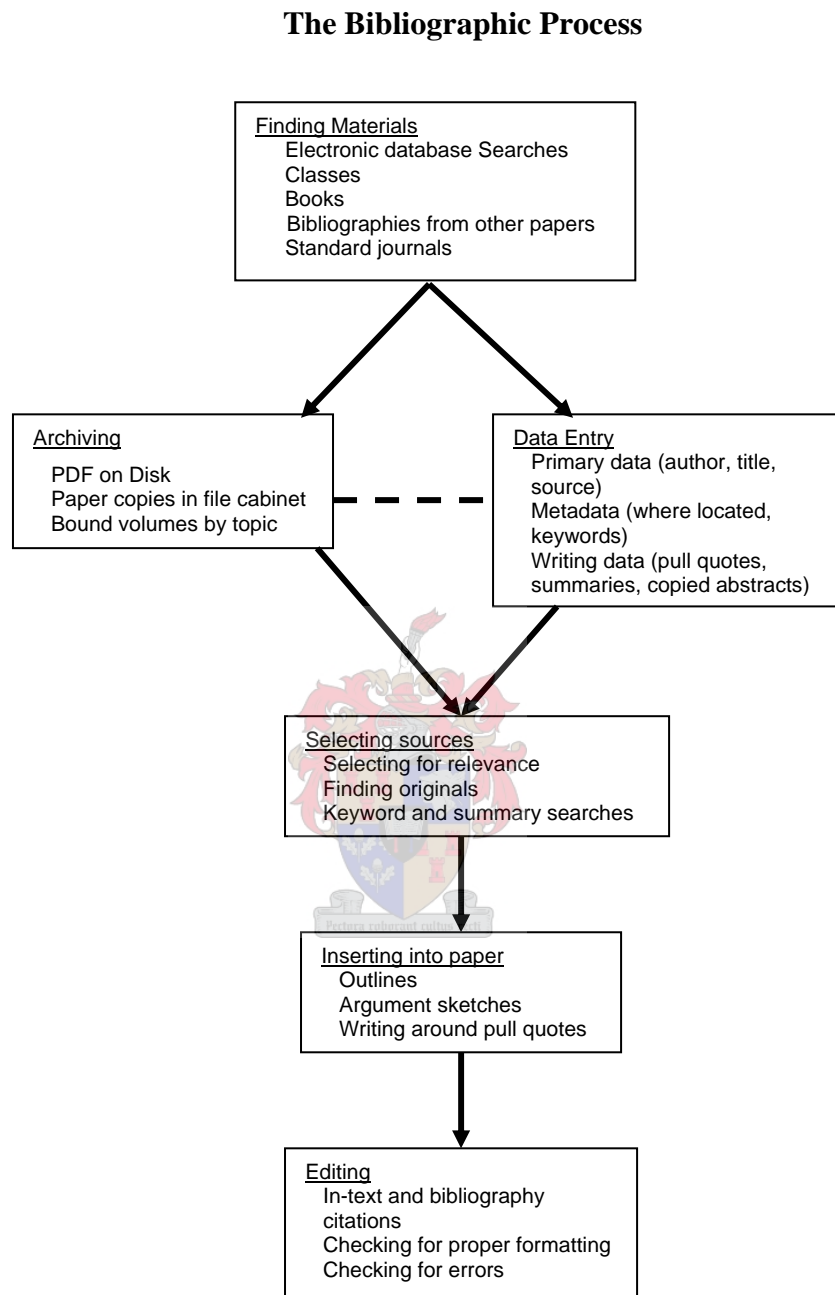
2.1.3 Model 3 – Managing References in the Research Process



Model 3 illustrates the break down of each stage of the research life cycle of Model 2 into its constituent components. The flow process shows how the components interact with the PBMS.

2.1.4 Model 4 – The Bibliographic Process

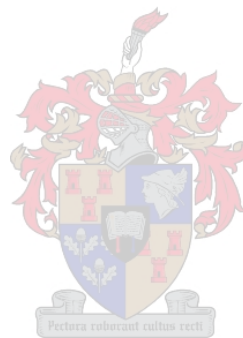
The model has been re-drawn from Job-Sluder, Hanek & Zhang (2003:10).



It is interesting to note that the authors (Job-Sluder, Hanek & Zhang, 2003:3) approach bibliography management from a knowledge management perspective. The authors put forward two approaches of knowledge management. The first is “knowledge as object” (ibid.,3), and is seen as the creation of methods for the easy storage and use of information for decision-making. The object is to see how the pre-programmed capabilities of PBMS are used (by users) to produce accurate “in-text citations and reference lists” (ibid.,3).

The second approach looks at knowledge management as a tacit knowledge activity. The model investigated whether individuals do research in more creative ways, or in ways other than in the first approach (ibid.,3). This is a new way of looking at how research is being done and points to the tacit knowledge aspect of the bibliographic process. The model does not show any differences to the way that research is traditionally performed. It indicates the bibliographic process that takes place within the aspects of the research process of Model 3.

The four models illustrate the different levels at which PBMS operate. The models have shown how each model after the first one involves more detailed interaction between the research process and the PBMS. The interaction is of a seamless nature, so the user is not aware of the complex processes that the PBMS performs in the background. The message that each model reflects is that the user must use PBMS to his advantage, as PBMS offers numerous benefits when doing research.



Chapter 3

Methodology

The plan is to resolve the key question of the research and the associated questions using a mixed research design. Both qualitative and quantitative research data will be gathered. Quantitative or empirical data will be collected using three survey questionnaires. The data will be captured onto the Statistical Package for the Social Sciences (SPSS) for statistical analysis and interpretation. Criteria tests will be used to evaluate selected PBMS. Print and electronic literature on PBMS will be searched for on subscription databases and the Internet. Trial evaluation PBMS software will be downloaded for demonstration. Qualitative research instruments that will be used to collect data include personal and telephonic interviews; visits to software stores; and a PBMS demonstration.

3.1 Empirical data

3.1.1 Questionnaire 1

Researchers in the faculty of Business of the UoT in Bellville were selected because they have requested the library's assistance to address referencing issues when doing research. To investigate the need for PBMS, a three-part survey questionnaire was sent to the ten researchers that make up the research committee of the faculty. The primary responsibilities of the researchers are to produce and supervise research output by themselves, and by masters and doctoral students.

The first part of the questionnaire aims at ascertaining whether the researchers have citing and referencing problems; are they aware of PBMS; and would they use a PBMS to address their problems. The second part of the questionnaire is to establish what the bibliographic needs of researchers are. Researchers are requested to list their specific bibliographic needs (and those of their research students) for example – preferred citation styles; capturing financial statistics in tables; referencing specific types of bibliographic sources; using online sources; capturing image files; and saving attachments with the references used. The third part of the questionnaire elicits responses of the types and frequency of the bibliographic sources that researchers reference.

The survey questionnaires were distributed and collected personally. The results were captured onto the SPSS package for statistical analysis. The findings are reported in chapter 4,

and the discussion of the findings takes place directly after each finding. The data gathered were used to make recommendations for selecting PBMS for the UoT.

3.1.2 Questionnaire 2

A second questionnaire was used to investigate whether any PBMS are used at libraries at higher education institutions in the South African research environment. The questionnaire was sent to library staff to establish whether PBMS is used; the names of the PBMS that is used; whether the PBMS address the needs of researchers at their institutions; have the use of PBMS reduced referencing errors; how the PBMS is accessed (network or stand-alone); and to enquire about this from relevant personnel who may have this information.

This questionnaire was distributed and the responses collected via electronic mail due to the respondents being outside of Cape Town. The higher education libraries selected would be used to provide a broad overview of PBMS usage at libraries on a national level, and to ascertain whether the PBMS under review would be suitable for the UoT.

3.1.3 Questionnaire 3

During the course of conducting the research instruments and gathering the data of the first two questionnaires, it became evident that a component related to research had been overlooked in the initial stages of the research design. Research has a direct bearing on researchers publishing their research in accredited journals and online databases, hence the rationale for including in the survey the editors of journals and online database in which researchers publish their research. Investigating PBMS usage and occurrence of referencing errors at the UoT and at higher education institutions was focusing the research only to the internal environment in which PBMS is used. The external environment also needed to be examined.

The reason for examining the external environment is that evidence of previous research is sought from sources such as journals and databases. In addition, researchers publish their groundbreaking work in journals and databases, so the consequences of referencing errors in published research would have serious consequences for further research. Editors peruse the references listed in papers to gauge the overall quality of the papers, and weaknesses in the references may point to weaknesses in the quality of the paper itself (Buchsel, 2001:7).

Therefore, a third survey questionnaire was used to elicit responses from editors of journals and an online database whether they encounter referencing errors when researchers submit papers for publication in their journals; whether research papers undergo peer review; and whether the journals and database have obtained academic accreditation recognition. The journals and database selected are mainly in business-related areas of research and teaching of the researchers. The responses would indicate how widespread referencing errors are outside the domain of higher education institutions.

3.1.4 Demonstration

Another research instrument used is that trial versions of the selected PBMS were downloaded and set up in a computer laboratory for the researchers for practical use. After the demonstration, researchers were interviewed to elicit their preferred PBMS and the reasons for their choice.

Free trial access to the various PBMS was downloaded from the vendors' websites on the 8th September 2005. The trial access was valid for 30 days. A demonstration of the PBMS to the research committee was arranged on the same day, with the head of the research committee for the 27th September 2005. The period between the downloading and the demonstration allowed me more than two weeks to become sufficiently competent to demonstrate the PBMS to the research committee. The downloading of the free trial access to the PBMS was intended to serve several issues.

The PBMS was loaded onto three portable computers in the library. This allowed three persons to work on the PBMS at three computers at the same time. Researchers had the option to use the computers in the library or to use the computers in their offices. Both options afforded the researchers the opportunity to have hands-on exploration of the PBMS after the demonstration, and at times that suited them. The options also meant that the PBMS would always be available to the research committee. Researchers were able to gain first-hand information as to the capabilities of the PBMS, and whether the PBMS could be a solution to their citing and referencing problems. Ten days would then still be available for practice after the demonstration, until the trial access would expire.

3.1.5 Interview

An interview was conducted with the vendor of PBMS in South Africa. A literature search on the World Wide Web uncovered that the only company in South Africa dealing with some of the selected PBMS reviewed in this paper, was situated in Mowbray (Cape Town). The owner was contacted by telephone on the 14th September 2005. After explaining the reasons for contacting him, the owner agreed to my request for an interview.

The purpose of the interview was to discover the number of higher education libraries that use PBMS; contactable names of users; whether network licences had been purchased for the PBMS; the most popular PBMS; the suitability of the various PBMS for different audiences; and his recommendations of PBMS for the UoT after outlining the needs at the UoT. The intention was to use some of the vendor's information in Questionnaire 2 that was sent to higher education libraries. The owner also supplied trial access to EndNote, ReferenceManager and ProCite on CD-Rom, stating that the trial access would be valid for 30 days only.

3.1.6 Software outlets

Various software outlets were telephoned and visited in person to enquire about the availability of PBMS. With PBMS being a type of software, several of the well-known outlets in Cape Town had been contacted by telephone to enquire whether PBMS are available on sale. Needing to confirm that the vendor was the only outlet in South Africa selling PBMS, further research was undertaken during the (following) week of the 26th September - 1st October 2005.

This consisted of telephonic enquiries on the availability of PBMS at popular software outlets such as Incredible Connection (Tygervalley), Computer Warehouse (Rondebosch), VEFA International (Wynberg), Computer Mania (Canal Walk), Computerworld (Parow), Computer Software Solutions (Milnerton) and Computer Specialists (Bergvliet). The software outlets mentioned were visited in person during the week of the 3rd – 8th October 2005 to confirm the data from telephonic enquiries.

3.2 Non-empirical data

3.2.1 Literature surveys

Print as well as electronic sources were surveyed to gather data about five selective PBMS programs, namely EndNote, ProCite, ReferenceManager, Biblioscape and B3, an emerging Open Source PBMS product. The literature search included searching for locally produced PBMS. The PBMS were compared against one another and to see which PBMS best suits the bibliographic needs of the researchers at the UoT. These PBMS have been chosen as they are the PBMS used most widely internationally; they have been tested and recommended by experts and practitioners; and are used to capture and import citations by electronic databases.

3.2.2 Theoretical models

The literature was also searched to investigate whether any theoretical models or diagrams are available which could portray a visual picture of PBMS and its inter-relationship with research. Theoretical models ably support the textual descriptions of PBMS. The diagrams or models will make it easier to understand the relationship between PBMS and research as they would show how each aspect of the research process works in conjunction with various functions of a PBMS.

3.2.3 Selected criteria

A comparative review of selected PBMS against a few salient criteria selected from the many criteria listed by Dell'Orso (2004; 2005) and Hanson (1995) was done. These specific criteria have been extracted and applied to situational circumstances at the UoT. This can be seen as the criteria having undergone a process of 'localization'. Some of the selected criteria are cost; networkability; compatibility with other software programs, platforms and network protocols (Z39.50); ability to handle references in different formats (images, sound, pdf); ease of use; user friendliness; if special system requirements are necessary; upgrades; number of concurrent users; user customizability; and storage capacity.

The data gathered through the empirical investigations and literature surveys were used to recommend appropriate PBMS for the UoT. In the absence of any locally produced software, the PBMS that most adequately addresses the needs of the researchers; together with the recommendations of experts and practitioners; the preferred choice of the researchers; the availability of the PBMS; and its affordability, will be recommended for the UoT.

Chapter 4

Results and Discussion

The findings of the research will be presented in three chapters. The discussion of the findings will follow immediately after each of the findings (and not as a separate section), in order to provide a more logical flow to the paper. Chapter 4 will present the findings and discussions of the questionnaires. Chapter 5 will report on the findings and discussions of the interview and PBMS demonstration. Chapter 6 will deal with the application of selected author and adapted criteria from the templates of Dell’Orso (2004; 2005) and in Hanson (1995), to the situational requirements at the UoT.

4.1 Questionnaire 1 – Bibliographic Needs of Researchers at the UoT

The questionnaire had two key focus areas. Focus area one dealt with the academics’ research activities and research teaching (including supervision). Focus area two collected data on their bibliographic practices. The questionnaire elicited responses on the types and frequency of bibliographic sources used by the researchers. A one hundred percent response was achieved. Three split tables have been used to present the findings of this questionnaire.

Table 1a – Publishing in Accredited Journals

3. Do you publish in accredited journals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	3	30.0	30.0	30.0
	no	7	70.0	70.0	100.0
	Total	10	100.0	100.0	

Table 1a indicates that only 30% of the respondents publish in accredited journals.

Table 1b – Supervision of Masters and Doctoral Students

4.. Do you supervise Masters or Doctorate level students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	50.0	50.0	50.0
	no	5	50.0	50.0	100.0
	Total	10	100.0	100.0	

Table 1b indicates that half (50%) of the respondents supervise masters and doctoral students.

Table 1c – Knowledge of PBMS

6. Knowledge of PBMS/electronic referencing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	10	100.0	100.0	100.0

According to Table 1c, none (100%) of the respondents are aware of PBMS.



Table 1d – Types and Frequency of Bibliographic Sources

		1. Faculty	
		Business - BL campus	
		Count	Col %
Frequency- Books	always	7	77.8%
	often	2	22.2%
Frequency- Print Journals	always	6	66.7%
	often	3	33.3%
Frequency- Newspapers	always	5	55.6%
	often	4	44.4%
Frequency- Video	always	1	50.0%
	often	1	50.0%
Frequency- Online journal articles	always	5	62.5%
	often	2	25.0%
	rarely	1	12.5%
Frequency- Online encyclopedias	always	2	33.3%
	often	2	33.3%
	rarely	2	33.3%
Frequency- Online dictionaries	always	1	33.3%
	often	1	33.3%
	rarely	1	33.3%
Frequency- Conference proceedings	always	1	33.3%
	often	1	33.3%
	rarely	1	33.3%
Frequency- Acts	always	3	42.9%
	often	3	42.9%
	rarely	1	14.3%
Frequency- Court judgments	always	3	75.0%
	rarely	1	25.0%
Frequency- Web Blogs	rarely	2	100.0%
Frequency- Peer review	always	1	100.0%
Frequency- Electronic mail	always	2	100.0%
Frequency- Mobile phone	often	1	100.0%
Frequency- Images / pictures	.		
Frequency- Law reports	always	2	40.0%
	often	2	40.0%
	rarely	1	20.0%
Frequency- Audio media (e.g.	rarely	2	100.0%
Frequency- Visual media (e.g.	rarely	2	100.0%
Frequency- Unpublished literature	always	2	40.0%
	rarely	3	60.0%
Frequency- CD-Rom	rarely	2	100.0%
Frequency- Telephone	.		
Frequency- Personal accounts	always	4	57.1%
	often	2	28.6%
	rarely	1	14.3%
Frequency - Other	.		

Table 1d indicates the usage statistics of the types and frequency of bibliographic sources used by the researchers. Traditional print bibliographic sources, namely books

(78%), journals (67%), newspapers (56%); and another traditional bibliographic source, personal accounts/interviews (58%) still enjoy the highest usage.

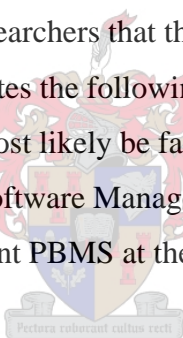
The high percentage of court judgements (75%) as a bibliographic source is significant as it indicates the particular type of research being done in the faculty.

The use of online journals (63%) , indicates that researchers are starting to include online bibliographic sources in their research.

4.2 Discussion of Questionnaire 1

The first part of the questionnaire tested the awareness of PBMS amongst the researchers. The evidence that none of the researchers are aware of PBMS, leads one to the conclusion that the researchers are not using any PBMS.

There was a positive response from researchers that they would use PBMS if such programs were available. This reaction corroborates the following finding that “those who would respond most enthusiastically would most likely be faculty members with active research and publishing activities” (Bibliographic Software Management Group, 2003:1). These responses indicate that there is a need to implement PBMS at the UoT, as the PBMS would be a useful research tool for the researchers.



The second part of the questionnaire investigated the type of bibliographic sources that the researchers reference most often, and their frequency during the course of research. Relatively similar percentages, that is up to two-thirds of respondents, reference both traditional print sources and online journals. These responses indicate that researchers still have a strong reliance and preference for print sources, even though there is an abundance of electronic sources at the disposal of the researchers (as indicated in Table 1d). As with the PBMS, perhaps a lack of awareness of the multitude of electronic sources available is a reason that researchers are not using more electronic sources.

A significant finding has been the high percentage (75%) of court judgments that respondents reference. The significance is that court judgements are an unusual type of source, and shows that the researchers are involved in a specialized area of research. A correlation can possibly be made between the high percentage of court judgments and a heavy reliance on print

sources. From personal experience of working in a corporate law library, working with court judgments invariably involves cross-referencing of numerous different materials. Often, the material that has to be cross-referenced has not been captured in electronic format.

The four commercial PBMS reviewed, have the capability to reference traditional print and online sources, and court judgments, but no evidence of this could be found for the latter on B3.

4.3 Questionnaire 2 – PBMS usage at higher education libraries in South Africa

Four split tables have been used to present the findings of this section.

Table 2a – HAI & HDI Libraries, and a Distance Learning Library

		Insitution			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UWC	1	12.5	12.5	12.5
	SUN	1	12.5	12.5	25.0
	UCT	1	12.5	12.5	37.5
	Rhodes U	1	12.5	12.5	50.0
	Pretoria U	1	12.5	12.5	62.5
	Fort Hare U	1	12.5	12.5	75.0
	UKZN	1	12.5	12.5	87.5
	UNISA	1	12.5	12.5	100.0
	Total	8	100.0	100.0	

The eight libraries chosen provide a national perspective of the use of PBMS at libraries at both historically advantaged institutions (HAI) and historically disadvantaged institutions (HDI); and at a library at a distance learning institution.

Table 2b – Usage of PBMS at HE Libraries

1. Are any PBMS used by researchers at your institution / library?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	7	87.5	87.5	87.5
	no	1	12.5	12.5	100.0
	Total	8	100.0	100.0	

The table shows that the majority (88%) of the libraries use PBMS, and that the library not using PBMS is an HDI library.

Table 2c – PBMS addressing researchers’ needs

5. Does the program address the bibliographic needs of researchers at your institution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	5	62.5	71.4	71.4
	no	1	12.5	14.3	85.7
	unsure	1	12.5	14.3	100.0
	Total	7	87.5	100.0	
Missing	System	1	12.5		
Total		8	100.0		

(72%) of the respondents indicated that PBMS do address the bibliographic needs of researchers at their respective institutions.

Table 2d – PBMS reducing referencing errors

6.7 The program has vastly reduced errors in bibliographic references

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	agree	5	62.5	71.4	71.4
	not relevant	2	25.0	28.6	100.0
	Total	7	87.5	100.0	
Missing	System	1	12.5		
Total		8	100.0		

In the table above the responses (72%) reveal that using PBMS have reduced referencing errors.

4.4 Discussion of Questionnaire 2

This questionnaire was sent to libraries at higher education institutions in South Africa to determine how widespread the use of PBMS is at these libraries. The assumption that could be made is that if many libraries in the country use PBMS, the usage could serve as merit to consider it for the UoT. The responses to the questionnaire were sought to confirm this assumption.

The assumption seems to have been confirmed by the data gathered. Seven out of eight libraries indicated that they use PBMS; the majority responded that PBMS do indeed address the bibliographic needs of researchers at their institutions; and lastly that the use of PBMS has significantly reduced the margin of error in referencing. These responses are critical revelations for the UoT, seen in the context that the first questionnaire showed a total lack of

knowledge and use of PBMS at the UoT. These revelations could also be used as evidence for a strong motivation to implement even a limited number of PBMS licences at the UoT, as the researchers have indicated their willingness to use PBMS.

4.5 Questionnaire 3 – Editors of journals, and an online database

The questionnaire investigated guidelines on referencing; referencing errors in papers submitted for publication; accreditation; and peer review in business related journals and databases. The key findings of this section are presented in four split tables.

Table 3a – Guidelines on referencing

1. Our journal stresses that research papers submitted for publication should comply fully with our preferred guidelines on referencing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	5	71.4	83.3	83.3
	not relevant	1	14.3	16.7	100.0
	Total	6	85.7	100.0	
Missing	System	1	14.3		
Total		7	100.0		

In Table 3a, (83%) of respondents indicated that their journals have guidelines for referencing.

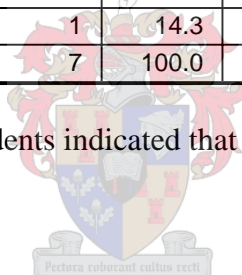


Table 3b – Referencing errors found in papers submitted for publication

3. Referencing errors in research papers are encountered for each monthly publication.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	1	14.3	16.7	16.7
	agree	3	42.9	50.0	66.7
	disagree	1	14.3	16.7	83.3
	not relevant	1	14.3	16.7	100.0
	Total	6	85.7	100.0	
Missing	System	1	14.3		
Total		7	100.0		

(67%) of the respondents in the table have encountered referencing errors in papers submitted for publication.

Table 3c – Fully accredited academic journals

6. Our journal is a fully accredited academic journal.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	4	57.1	66.7	66.7
	disagree	1	14.3	16.7	83.3
	strongly disagree	1	14.3	16.7	100.0
	Total	6	85.7	100.0	
Missing	System	1	14.3		
Total		7	100.0		

The majority (67%) of the respondents in Table 3c indicate that their journals have attained academic accreditation status.

Table 3d – Peer reviewed journals

7. Papers published in our journal are peer-reviewed.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly agree	5	71.4	83.3	83.3
	disagree	1	14.3	16.7	100.0
	Total	6	85.7	100.0	
Missing	System	1	14.3		
Total		7	100.0		

Responses show that (83%) of journals are peer reviewed.

The online database scored 100% for each of the four aspects in the split tables investigated by the survey. The data of the database has been calculated with that of the journals in the tables above.

4.6 Discussion of Questionnaire 3

For researchers to be able to follow up on the bibliographic sources used by the original research found in journals and databases, accurate referencing is compulsory. After all, research is the lifeblood that contributes to the body of knowledge that leads to the advancement of humankind. Carroll-Johnson (2004:1035) has found that because referencing is tedious, inaccuracies creep in. Often, the primary source is not cited. Secondary sources, which regularly contain inconsistencies with the original research, are cited instead. Spelling and incorrect parts of citation entries are common errors found in research papers.

Two thirds of the editors responded that referencing errors have been encountered in papers that have been submitted for publication and recommend that PBMS should be used to combat the errors. An editor (not part of the survey), who edits a nursing journal, supports the above. Carroll-Johnson (2004:1035), found that reference errors are found in papers from diploma to PhD levels; and the problem is so widespread, that one manuscript contained 100% referencing errors. However, she says that these are errors that can be avoided if PBMS are used.

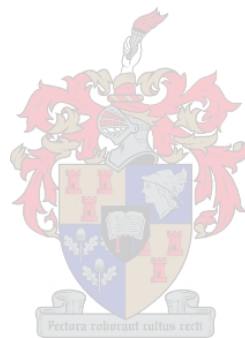
Measures to eliminate referencing errors have been put into place by the majority of the journals and the database. These measures consist of strict guidelines that researchers must adhere to before submitting papers for publication. The majority of the editors send all papers to undergo a peer review. A peer review is a meticulous scrutinizing procedure undertaken by subject experts into the accuracy of references in all research papers. The data gathered also uncovered that two thirds of the journals and database have accredited academic status.

Accreditation refers to the recognized status that journals and databases have attained for publishing research of high quality, by specialists nationally or internationally in a specialized subject area. Accreditation is usually received from high-level researchers and professional bodies. These measures ensure that the referencing in research papers is correct and accurate. Harzing (2001:21) strongly feels “that academics have a responsibility to themselves, their colleagues, their field, science itself and the general public to be careful and accurate in their representations...as violating the guidelines for good academic referencing is simply bad science and may seriously undermine the field and hinder its progress”.

About one third of the researchers at the UoT publish in accredited journals. Referring to the 71% of the respondents (in Questionnaire 2) that PBMS vastly reduced referencing errors, researchers at the UoT should realize the value of using PBMS before submitting papers for publication in journals and databases.

The questionnaires used in this research have uncovered several sets of data that highlight both the internal and external environments in which referencing occurs. The data ranges from referencing problems and a need for PBMS at the UoT (Questionnaire 1), to the value that researchers derive from PBMS at libraries at higher education institutions nationally (Questionnaire 2), and the lengths to which respectable publications go to ensure research of a

high calibre (Questionnaire 3). The discussions after each of the questionnaires have revealed the value of PBMS to research. This evidence can be used in the decision-making process of acquiring PBMS at the UoT.



Chapter 5

Interview with PBMS vendor and PBMS demonstration

5.1 Interview with vendor

The interview was held at the vendor's premises in Mowbray (Cape Town), on the 23rd September 2005. The duration of the interview was fifty minutes (16:30 – 17:20). The key findings of the interview were that the vendor claims that his company is the sole agency in South Africa authorized to sell the respective PBMS EndNote, ReferenceManager and ProCite. Biblioscape and B3 were not part of his licenced products. The vendor further contended that no South African produced PBMS is available. This contention is based on the owner being in the educational software industry for more than fifteen years.

The interview further revealed that the majority of higher education and research institutions such as the Human Sciences Research Council and the Medical Research Council in South Africa used PBMS. PBMS were used mostly by individuals and by a few departments, and the owner was certain that no institution had a site wide licence. One reason that the vendor offered for PBMS not being used by more institutions is that PBMS are expensive programs. Another reason given by the vendor is that PBMS are expensive because they are imported products, and because there is no locally produced PBMS.

The identification of the users of PBMS could not be divulged because it is confidential company information and it would be unethical of the vendor to reveal the names. No names, only a list of institutions that purchased PBMS from the vendor was forwarded to the interviewer via electronic mail on the 31st October 2005. Asked whether any special computer system requirements were necessary to run the PBMS, the vendor replied that the most basic specifications that accompanied a Pentium 1 computer was sufficient system resources to run PBMS. The full transcript of the interview is attached - kindly refer to Appendix 4.

After the interview, the vendor supplied the interviewer with CDs that could be used for demonstration purposes and were to be returned one month later.

5.2 Discussion of interview

The interview confirmed the widespread use of PBMS in higher education research in South Africa. The costs have been fully elaborated on in chapter 6 under the headings 'Cost and

Affordability' for each PBMS reviewed (please refer to chapter 6). Having indicated above that PBMS are costly items, the cost factor may have some bearing on the fact that the vendor has not been successful at selling a site-wide licence to any institution, and that only individuals or departments can afford the PBMS. The cost factor further indicates that imported products dominate the market for PBMS, especially in the absence of a South African equivalent.

The owner also related that to run PBMS requires minimum computer resources, those equivalent to a Pentium 1, but by today's computer standards, these specifications are outdated. The low specifications required are confirmed by the criteria in the template by Dell'Orso (2004; 2005) in chapter 6. The computer systems at the UoT have by far surpassed these specifications, so should be easily able to run any PBMS.

The cost of PBMS is the overriding factor that could stand in the way of the UoT acquiring commercial PBMS. As a compromise, the UoT must consider using only a limited amount of PBMS, and possibly looking to free software to fortify the commercial ones.

5.3 Enquiries about PBMS at popular software outlets in Cape Town

Table 4 – Software outlets visited

Outlet	Area	Date telephoned	Date visited	PBMS
Incredible Connection	Tygervalley	26 th September	4 th October	None
Computer Warehouse	Rondebosch	27 th September	8 th October	None
VEFA International	Wynberg	27 th September	8 th October	None
Computer Mania	Canal Walk	29 th September	6 th October	None
Computerworld	Parow	30 th September	6 th October	None
Computer Software Solutions	Milnerton	1 st October	6 th October	None
Computer Specialists	Bergvliet	1 st October	6 th October	None

Needing to confirm that the vendor was the only outlet selling PBMS, telephone enquiries and personal visits to the outlets in the table above confirmed that PBMS

were not available. A startling finding was that personnel at some of the outlets were not even aware of the existence of PBMS.

5.4 Discussion of enquiries at software outlets

This further research, namely visiting the outlets in the broader Cape Town city region in person confirmed two issues – one, that the telephonic enquiries to the outlets had been accurate and two, the claim made by the vendor in Mowbray being the only company to sell PBMS could be true at least for the Cape Town region.

5.5 Downloading PBMS for Demonstration to the Research Committee

The offer of hands-on exploration of the trial versions of PBMS that were offered to the researchers had not been accepted. By the 8th October, the expiry date of the trial access of the PBMS, none of the committee members had made use of the opportunity to explore the PBMS. On enquiry from an elected spokesperson of the research committee, the person responded verbally, that the reason for non-use was that time constraints prevented their exploration of the PBMS.

5.6 Feedback from the PBMS demonstration

The demonstration did not take place because the researchers had more pressing academic commitments to attend to, and due to a confusion of dates that were communicated to the researchers.

5.7 Discussion of demonstration of PBMS

The findings of the demonstration (non-demonstration?) point to the conclusion that the researchers were not seriously considering the merits of PBMS. What the researchers are failing to see is that “bibliographic software packages are dynamic information managing tools that can be a valuable asset to scientists and researchers in the personal organization of their documents” (Myburgh, 1994:23).

Chapter 6

Author and adapted Criteria applied to PBMS

This chapter will report on only eight author criteria selected as most relevant to the needs at the UoT. These criteria have been adapted and applied to each of the five PBMS and are presented in five sections. The criteria carry the sequence author criteria / adapted criteria. Data gathered during the interview have been incorporated here, as it is a more logical place to report on the findings.

6.1 EndNote

Cost / Affordability - The vendor in Mowbray had calculated the following costs during the interview. EndNote costs \$299 (R2 000,00) per single licence (the discounted price), including a printed manual. The more affordable option would be to purchase concurrent user licences. The concurrent option allows up to five users per licence at a reduced cost. For the population of 10 000 users at the UoT in Bellville, a site-wide licence for 2000 concurrent user licences would cost \$165 000 (R1.1 million). This amount is at a very generous discount to the institution. For purposes of comparison, this amount is more than two thirds of the total library budget.

Neither the library, nor the UoT would be able to afford these costs, and because it would be the first time that this type of software would be used, the vendor recommended that it would be prudent for the institution to consider substantially fewer concurrent user licences, which would be more affordable. The licence would be valid for only one year from the date that the software was purchased. The cost of EndNote usually increases as newer versions are released, due to enhancements added to the software. Single licence software is accessed from CD-ROMs and can be installed on one computer only, while the concurrent licence is accessed from a network. Training support is not included in the purchasing cost of EndNote.

This investigation concentrated on IBM computers, which is the overwhelming majority type of computers used at the UoT. In comparison, the number of Macintosh based computers used by one department only, is insignificant. The vendor also revealed that there is no difference in the price of EndNote for Macintosh computers, however the Macintosh version of EndNote has less word processing capabilities than its IBM counterpart.

Networkability / Multi-site delivery - The UoT in Bellville consists of three sites at different locations. Investigation was made whether the three sites could share one concurrent licence. Technically, a concurrent user licence can be shared across the three sites on the same network, for example an intranet. However, the manufacturer and the vendor strongly discourage this practice because configuration problems often occur, and neither the manufacturer nor the company provides technical support for such occurrences. It is recommended that each location have its own number of concurrent licences, as they are affordable enough, and therefore do not need to be shared across different locations.

Despite the concurrent licence being shared on a network, it was discovered that only one user is allowed the privileges to edit information that needs to be made available to the rest of the users. A typical example of making information available to others is the sharing of common data sources. The other four users will be restricted to read-only access to the information. Information has to be passed on to the main user for editing and re-loading. This is a built-in security feature of this particular type of licence, so as to protect the integrity of the information.

Other than the cost implications, staff from the information technology administration services will also be affected (Bibliographic Software Management Group, 2003:3-4). The network administrator will have the additional responsibility of loading EndNote onto the network and allocating privileges to the main user. The administrator would also need to ensure that EndNote is always accessible on the network, from the various sites, and that it performs to its full capacity.

Endnote on its own requires large memory capacity to operate, especially when data is added to the databases that are stored in EndNote's database libraries, so additional memory space would be needed. This could mean that a separate or an additional server has to be acquired.

So far, the findings show that both the licensing and the setting-up & running of EndNote have their own financial, human and material resources implications.

Compatibility / Configuration - Windows is the main operating system used on the computers at the UoT. Certain academic departments, such as Information Technology, use other operating systems, such as Linux and Unix, while other academic departments use Open

Source operating systems. Endnote has been found to be fully compatible with all the operating systems mentioned above. No adjustments need to be made when using EndNote with these operating systems.

The ability to import references from databases into word processing documents is one of the major advantages of a PBMS. To import references, Z39.50, a hypertext protocol is required for programs such as databases, to communicate with other programs (East, 2003:2). Endnote is fully compliant with Z39.50, and is therefore able to communicate with the subscription databases at the UoT.

The point above referred to EndNote's ability to import references. Z39.50 also enables the remote searching of multiple databases at the same time and the transfer of bibliographic information between libraries (ibid.,2). This allows that any remote database on the World Wide Web can be searched **from within** EndNote. For the researcher, the Z39.50 capability in EndNote is be a very useful and timesaving tool.

Various Open Source programs are in use at the UoT. One of the main aims of Open Source programs is that they are able to communicate with any protocol, be it web-based or DOS-based. With EndNote's Z39.50 ability and Open Source programs' built-in ability to communicate with any protocol, no configuration of either program would be required at the UoT.

Endnote's versatility includes its usage across different platforms used by databases. A few platforms are used for research at the UoT, for example Ovid and Silver Platter. A platform is a product's own operating system or application program that it uses to run. A platform can be web-based or on CD-Rom. Platforms can often be problematic, as they have been configured for direct access only, rather than for remote access, or by another program.

Multiple formats / Localized formats - Researchers at the UoT are still staid in their use of traditional print sources, but are moving towards online journals and the Internet. For their purposes, EndNote adequately addresses their bibliographic needs. In addition, EndNote can capture images and organize them. This feature would be useful to researchers for capturing diagrams & models. Charts and mathematical equations are also within the capturing capability of EndNote. These capabilities would be relevant for researchers in finance and

economics, who work with financial data (calculations), and economic or mathematical modeling.

Many documents that are loaded onto databases and on the Internet are documents that have been scanned and saved onto computers in pdf format (Portable Document Format).

Academics at the UoT already scan documents in pdf format and place them on the intranet for access by others. A lot of free scholarly research and Open Source research are available in pdf format. This format is becoming more popular due to its portability and appearance in original format.

EndNote has the ability to capture pdf documents, so an entire document can be stored on EndNote. It was found that documents in pdf format require a lot more memory space than documents produced on a word processor or in html (hypertext markup language) format. As EndNote can capture images, including theoretical models, this feature would also be useful in other subject areas at the UoT, such as the medical sciences, engineering, design and architectural sciences.

Ease of use / Learning requirements - EndNote is suitable for all levels of academia, as it has basic as well as advanced capabilities. In a test of various PBMS at Yale University among faculty, students and librarians, it declared “EndNote as the most easy to use and versatile product for general applications in managing bibliographic citations” (Shimp & Stern, 1998:4). It is orientated towards the novice user, occasional users, and users not familiar with computers and online searching. This description pegs EndNote at the level of the undergraduates. The simple and descriptive layout and language of the help manual also indicate that it is geared to the undergraduate level.

At a very slow pace, a tutorial on using EndNote’s most basic features would take approximately one and a half hours of uninterrupted learning time for undergraduates. After an informal demonstration to a few enthusiastic staff members in the library, they were able to capture five references into EndNote libraries, and create bibliographies in four different styles within thirty-five minutes. For the purposes of the researchers surveyed, double the time should be sufficient to learn both the basic and the advanced features they would most likely use.

User friendliness / Training requirements - EndNote is easy enough to be self-taught. At the UoT, however, the majority of the under-graduates come from disadvantaged educational backgrounds, so it would be best if persons experienced in EndNote would do the training of the undergraduates. The same recommendation would be made to train the researchers as well. Staff implications become a concern regarding persons who would be doing the training (Bibliographic Software Management Group, 2003:3-4).

The training would be an additional duty or responsibility to the trainer / s. In the light of staff shortages in the library, appropriate staff, whether inside or outside of the library, who possess training / teaching abilities, will need to be identified and approached. From experience, training is usually outsourced to professionals. The trainers will have to undergo training and be assessed for their competency in using EndNote. Only on attainment of competency, would the trainers be allowed to conduct training of others. This would ensure that the trainers deliver a quality service to the trainees.

System requirements / System capabilities - The UoT operates by standards for all its information technology related equipment. The system capabilities that EndNote requires to operate are very basic, equivalent to the specifications of the first Pentium processor computer. Currently, the UoT has by far surpassed this basic level. The minimum standards of systems at the UoT are Pentium 4 computers; sufficient network bandwidth for more than one thousand simultaneous Internet users; 1.7 Gigahertz processors; 40 Gigabytes of memory; and 256 Megabytes of RAM (random access memory).

The UoT uses the latest Internet browsers, which makes it easy to use EndNote's advanced features. Windows 2003 is used as the licenced operating system on the computers at the UoT, and it has had no compatibility problems with EndNote. This was tested earlier during the download phase of the research. The Microsoft Office Suite 2003 is the licenced office software used at the UoT. Microsoft Word is the licenced word processing program used at the UoT, and most of the research is processed on this word processing program. EndNote is fully compatible with Microsoft Word, so importing references and bibliographies from EndNote to Word documents poses no problems.

From the above, it shows that the UoT more than adequately meets the system capabilities to use EndNote.

Upgrades / Additional costs - Technology is a rapidly changing commodity, and PBMS is no exception. Enhancements or upgrades are constantly being added to existing software and this comes at a cost to end-users. With EndNote, most upgrades carry additional costs. A miniscule percentage of upgrades, also known as patches or fixes, are available for download at no charge to end-users on the vendor's website, but these are rare occurrences.

The costs for minor upgrades are based on a proportion of the price of a single user licence. It has been difficult to find a range of costs of upgrades. Major upgrades (and even some of the minor upgrades) are usually included in newer versions of EndNote that are released. Barring the costs of moving to a new version of EndNote, there is no essential necessity to acquire upgrades, therefore no additional costs.

6.2 ReferenceManager

Cost / Affordability - The costs of ReferenceManager are the same as those of EndNote. Therefore, the concerns of the cost for the UoT around ReferenceManager would be the same as they are for EndNote.

Networkability / Multi-site delivery - Please see corresponding notes about EndNote above. A few critical differences between EndNote and ReferenceManager are listed below. The network administrator will still have to load ReferenceManager onto the network, but does not have to allocate privileges to any users. In ReferenceManager, all users per concurrent licence have equal editing privileges. The administrator would need to create a live link on the World Wide Web, because ReferenceManager is a web-based access program. Each site of the UoT (situated at different locations) must have an Internet connection if it wants to access ReferenceManager.

ReferenceManager is specifically suited to the sharing of resources with others over the Internet, where all users can make changes or additions to the shared resources, and has “unique capabilities such as visualization software...to look at trends in text or data from references, this program helps pick out patterns” (May, 2003:4).

Compatibility / Configuration - Please see corresponding notes about EndNote above.

Multiple formats / Localized formats - Please see corresponding notes about EndNote above.

Ease of use / Learning requirements - Please see corresponding notes about EndNote above. An additional learning requirement would be to learn how to use ReferenceManager in a web-based format. This should take the same time as in EndNote.

User friendliness / Training requirements - Please see corresponding notes about EndNote above. Additional training may be required for users who are not conversant with using the Internet.

System requirements / System capabilities - Please see corresponding notes about EndNote above.

Upgrades / Additional costs - Please see corresponding notes about EndNote above.

6.3 Biblioscape

Costs / Affordability - The costs of Biblioscape Professional Edition are the same as those of EndNote and ReferenceManager. There is however a discount of \$100 to educational institutions, so Biblioscape would cost \$200 per single user licence. The concerns of the UoT around Biblioscape would be the same as they are for EndNote and ReferenceManager. Please see corresponding notes about EndNote and ReferenceManager above.

Biblioscape has add-on programs that are sold with its Professional Edition. These are a module on Web Publishing and a Library Module. The three modules together cost \$700 (\$500 dollars to educational institutions). The Library Module is used to operate a library and it includes issuing, serials and acquisitions functions. The Web Publishing program simplifies publishing onto the World Wide Web, including research. These two add-ons will not be evaluated in this paper. It merely serves to highlight the difference to EndNote and ReferenceManager.

Biblioscape Professional also has the unique capabilities of drawing flow charts to present ideas, building knowledge maps with search queries, organize charts into tree structures, and linking charts to personal annotations (Biblioscape Feature Matrix, 2003:5).

Networkability / Multi-site delivery - Please see corresponding notes about ReferenceManager above. Biblioscape's partial similarity with EndNote is that it is an uncomplicated package and it is easier to use than EndNote. Biblioscape's similarity with ReferenceManager is that both are web-based packages. The difference between the two though is that, to search the World Wide Web, ReferenceManager uses the Z39.50 client software, while Biblioscape has an "integrated web browser (which requires Internet Explorer)" (Biblioscape Frequently Asked Questions, 2003:6).

Compatibility / Configuration - Please see corresponding notes about ReferenceManager above.

Multiple formats / Localized formats - Please see corresponding notes about ReferenceManager above.

Ease of use / Learning requirements - Please see corresponding notes about ReferenceManager above.

User friendliness / Training requirements - Please see corresponding notes about ReferenceManager above.



System requirements / System capabilities - Please see corresponding notes about ReferenceManager above. "A Biblioscape database takes as much as 10 times more disk space compared to an EndNote database" (Biblioscape Frequently Asked Questions, 2003:5)

Upgrades / Additional costs - Please see corresponding notes about ReferenceManager above. Upgrades for Biblioscape occur at much longer intervals than they do in the case of EndNote and ReferenceManager. This is a stabilizing factor in terms of costs of upgrades. This cost saving, together with the discount price to educational institutions, could be a determining factor if the UoT is going to consider purchasing any PBMS.

6.4 ProCite

Cost / Affordability - Please see corresponding notes about ReferenceManager above.

ProCite is more expensive than EndNote, ReferenceManager and Biblioscape. ProCite costs \$400 per single user licence, (with a volume discount to educational institutions).

Networkability / Multi-site delivery - Please see corresponding notes about EndNote and ReferenceManager above.

Compatibility / Configuration – Please see corresponding notes about EndNote and ReferenceManager above.

Multiple formats / Localized formats - Please see corresponding notes about ReferenceManager above.

Ease of use / Learning requirements - Please see corresponding notes about ReferenceManager above. ProCite differs from the three packages above in that its added strength lies in its advanced searching capabilities and being able to create subject bibliographies (Matus in Grant, 2002:8). The World Wide Web, CD-ROMs, and the libraries saved within ProCite can be searched using Boolean operators, relational operators, word operators, or combinations of operators. Searching sources using advanced operators are more complex than simple keyword searches and one operator Boolean searches. The advanced operators mean that ProCite has to perform more complex processes to retrieve results. It is this advanced searching feature that makes ProCite more expensive than the other packages.

User friendliness / Training requirements - Please see corresponding notes about ReferenceManager above.

System requirements / System capabilities - Please see corresponding notes about ReferenceManager above.

Upgrades / Additional costs - Please see corresponding notes about ReferenceManager above.

6.5 B3

Cost / Affordability - B3 is the acronym for Bibliography Base for Biologists. It was created as a free alternative to commercial programs like EndNote (Dutheil, 2005:2). The overwhelming difference between B3 and the four packages above is that B3 is free. There is no affordability factor for the UoT to consider for B3 (as there were in the other four

packages). No licencing is required to be purchased for B3. Of all the packages reviewed so far, B3 offers the best in terms of affordability for the UoT.

Networkability / Multi-site delivery - Please see corresponding notes about ReferenceManager above. B3's strength is that it is an Open Source program. It exists to share data with others, so anyone who has access to the shared data, regardless of location or distance, is able to make changes to the data. A negative factor of this openness of B3 is that it poses a severe security risk to the shared data. Persons familiar with Open Source know that it is standard practice that when any changes have been made to Open Source data, it is usually backed up on to the computers of selected persons who safeguard the data. But the time lag to get access to the data again is the most frustrating issue when data has been lost. This negative factor poses an interesting challenge if the UoT would consider using B3.

Compatibility / Configuration - Please see corresponding notes about ReferenceManager above. B3 is compatible with all operating systems and networks, so it needs no configuration

Multiple formats / Localized formats - B3 handles various text formats, but no evidence has been found about the handling of other types of files such as images.

Ease of use / Learning requirements - By Dutheil's own admission (email correspondence, dated 17th June 2005), B3 is still in its development phase. It is slowly being developed into a more comprehensive PBMS, but is not anywhere close to this capability as yet, and cannot therefore be compared to the other commercial PBMS. (Please refer to Appendix 5). Precisely because B3 is so basic, it is the easiest, costs the least and is the quickest to learn of all of the packages reviewed so far. Fifteen minutes is all the time that was required to learn to use B3.

User friendliness / Training requirements - B3 is so straightforward that no special training is required by anyone to use B3. If the UoT feels that users need to be trained on B3, this too would have staff implications, as was the case in the other packages.

System requirements / System capabilities - Please see corresponding notes about ReferenceManager above.

Upgrades / Additional costs - With B3, there are no additional costs involved. Any subsequent upgrades for B3 will also be at no cost to the UoT. Upgrades of B3 would also be at much longer intervals than they do in the case of the other four packages. EndNote, ReferenceManager, ProCite and Bibloscope are commercial products and companies depend on sales of their products for their livelihood. B3 is not a commercial product, but a free product. The owner develops B3 in his own time. The fulltime profession of the owner of B3 is that of a biologist. The fact that there would be no costs for upgrades to B3, and that B3 is free, makes this is a very favorable option compared to the other packages that the UoT needs to consider. However, the UoT would be advised to explore this option in greater detail since it has limited capabilities in comparison to other PBMS.

6.6 Discussion of adapted criteria

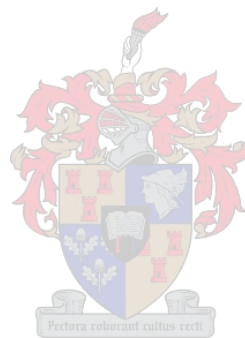
Each PBMS reviewed above offers its own advantages and disadvantages. Advantages are regarded as strengths, and these will be the determining factors in deciding to use certain PBMS over others.

EndNote's strengths are "ease of use" (May, 2003:4; Alligood, 2003:3; Grant, 2002:7), and remote searching using the Z39.50 protocol (East, 2003:2). ReferenceManager's strengths are sharing and editing resources on the World Wide Web, it has the largest database capacity (Alligood, 2003:3) and is "the most feature-rich program" (Kirking in Grant, 2002:8).

ProCite's advantage over other PBMS is its advanced searching capabilities. Bibloscope is similar in scope, but is even easier to use than EndNote. All these PBMS can format various types of bibliographic sources in multiple referencing styles, search multiple databases simultaneously, create bibliographies, and capture text and images. B3's strength lies in its simplicity of use and being available at no cost.

The adapted criteria were chosen from a managerial perspective, rather than a user perspective. Managers inevitably hold the power of deciding whether to purchase PBMS or not. Costs have already been discussed at length above, but the point needs to be emphasized that costs have financial implications for managers' budgets, and would arguably be the first issues that managers would consider before committing to acquiring PBMS. The rest of the criteria were chosen as they would have further implications, human and material, which the managers would have to be accountable for.

The findings presented for each PBMS show that acquiring PBMS at the UoT would require only minor adjustments. Additional personnel may not be required. PBMS are stable products and need very little maintenance by information technology services staff. Structured training sessions can be worked out for the teaching of PBMS. These sessions could be worked into the planning schedules of appropriate existing staff members at the beginning of the year. Seen this way, the acquisition of PBMS would be adding to the duties of existing staff at minimal or no cost, rather than as recruiting additional staff that would incur additional costs.



Chapter 7

Conclusions and recommendations

7.1 Conclusions

The research has established that there is a need for PBMS at the UoT, and that researchers would welcome its availability. The motivation for acquiring PBMS at the UoT is further strengthened by the satisfied users of PBMS at the majority of higher education institutions in South Africa. The exorbitant cost of PBMS for all users can be overcome by the combination of PBMS suggested under the recommendations in 7.2 below (please see 7.2).

The combination will cost a fraction of the cost for all users at the UoT. Moreover, the re-adjustment of staff duties that will be needed to train users to use PBMS requires only minor restructuring, and very little disruption of staff duties. Acquiring the PBMS would add value to research, and therefore be a worthwhile investment in the future of users at the UoT.

7.2 Recommendations

Recommendations for a suitable PBMS for the UoT need to be based on the strengths of the adapted criteria that were applied to each PBMS reviewed in the previous chapter.

The UoT should implement B3 immediately. ReferenceManager should be acquired to make up for the shortcomings of B3. ReferenceManager has networking capabilities that the other PBMS do not have, despite it requiring an Internet connection. Connectivity is sufficiently reliable at the UoT.

B3 should be used for basic bibliographic needs, while ReferenceManager should be used for more complex bibliographic needs and by those involved in high-level research. As ReferenceManager is expensive, licences for a limited number of users should be acquired. Two licences of 5 concurrent users (that is, for 10 users), at approximately \$3 000, should be purchased, and used as a pilot project to ascertain the suitability for further licences.

According to (Grant, 2002:7), using a combination two PBMS is good practice. One PBMS can be used for complex functions such as to retrieve sources from multiple databases via the Web. These sources can then be imported into the basic PBMS for easy manipulation and output.

List of Sources

Adept Scientific Plc. 2005. Adept Scientific [Online]. Available from :

<http://www.adeptscience.co.uk> [Accessed 13 February 2005].

Alligood, E. & Skidmore, B. 2003. “Bibliographic management software – how it can manage the HTA process” [Online]. In : Etext on health technology assessment (HTA) information resources, Chapter 17. [Last updated 13 June 2003]. Available from :

<http://www.nlm.nih.gov/nichsr/ehta/chapter17.html> [Accessed 12 July 2005].

Anderson, J & Poole, M. 2001. *Assignment and thesis writing*. 4th edition. Australia : John Wiley & Sons.

Answers.com. 2005. Dictionary [Online]. Available from :

<http://www.answers.com/references> [Accessed 27 June 2005].

Answers.com. 2005. Wikipedia [Online]. Available from :

<http://www.answers.com/university%20of%20technology> [Accessed 27 June 2005].

Beverley C et al. 2001. “Trent Focus : managing references” [Online]. In : Trent focus for research and development in primary health care. Trent Focus, 2001, pp. 1-32 .

Available from : <http://www.trentfocus.org.uk/Resources/Managing%20References.pdf> [Accessed 2 April 2005].

Bibliographic Software Management Group. 2003. “Report to Dee Holisky recommending the use of such software in the college of Arts and Sciences”. In : Technology across the curriculum. George Mason University [Online]. Available from :

<http://cas.gmu.edu/tac/highlights/2003.html> [Accessed 17 June 2005].

Biblioscape. 2005. Biblioscape [Online]. Available from : <http://www.Biblioscape.com>

[Accessed 5 February 2005].

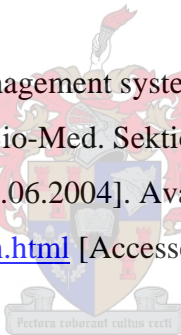
Biblioscape. 2003. "Biblioscape Feature Matrix". In : Research Information Manager : Biblioscape [Online]. Available from : <http://www.biblioscpae.com/features.htm> [Accessed 18 January 2005].

Biblioscape. 2003. "Frequently asked questions". In : Research Information Manager : Biblioscape [Online]. Available from : <http://www.biblioscpae.com/faq.htm> [Accessed 18 January 2005].

Bibsoft Listserv Archive. 2005. Bibsoft listserv archive [Online]. Available from : <https://listserv.iupui.edu/cgi-bin/WaUPUI.exe?A2=ind0104&L=bibsoft&T=0&F=&S=&P=800>. [Accessed 23 March 2005].

Blaxter, L. et al. 2001. *How to research*. 2nd edition. Buckingham, UK : Open University Press .

Brommer, C. 2004. "Bibliographic management systems". In : Informationsvermittlungsstelle für die Bio-Med. Sektion der Max-Planck-Gesellschaft (IVS-BM), pp. 1-4 [Online]. [Last revised 09.06.2004]. Available from : http://www.biochem.mpg.de/iv/lvsh_en.html [Accessed 4 June 2005].



Browne, R.F.J. et al. 2004. "The accuracy of references in manuscripts submitted for publication". In : *Canadian Association of Radiologists Journal*, June, 55(3), pp. 170-173. Canada : Canadian Medical Association .

Buchsel, P. C. 2001. "Researching and referencing". In : *Clinical Journal of Oncology Nursing*, 5(3), May/June, 2001 [Online]. Available from : EBSCOhost database. [Accessed 4 May 2005].

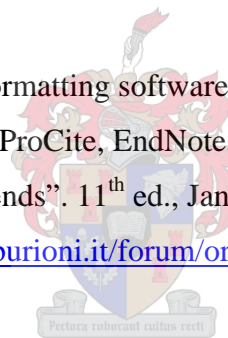
Carroll-Johnson, R. M. 2004. "Form and function". Editorial. In : *Oncology Nursing Forum*. 31(6), p. 1035 [Online]. Available from : <http://www.ons.org/publications/journals/ONF/Volume31/Issue6/pdf/1035.pdf> [Accessed 25 July 2005].

DeBehnke, D.J. et al. 2001. "Research fundamentals : choosing an appropriate journal, manuscript preparation, and interaction with editors" [Online]. In : *Academic Emergency Medicine*, 2001(8), pp. 844-850. Available from : http://www.saem.org/download/844_1.pdf. [Accessed 11 March 2005].

Dell'Orso, F. 1999. Bibliography Formatting Software: An Evaluation Template [Online]. [Last Update: August, 18, 1999]. Available from : <http://www.burioni.it/forum/ors-bfs2/ors-bfs.htm>

Dell'Orso, F. 2004. "Bibliography formatting software : an evaluation template. Head to head comparison between LibraryMaster, ProCite, EndNote, ReferenceManager, Papyrus, and shorter analysis : Bibloscape, Bookends". 10th ed., June 2004 [Online]. [Last version July 2004]. Available from : <http://www.burioni.it/forum/ors-bfs/grid/index.html> [Accessed 4 June 2005].

Dell'Orso, F. 2005. "Bibliography formatting software : an evaluation template. Head to head comparison between LibraryMaster, ProCite, EndNote, ReferenceManager, Papyrus, and shorter analysis : Bibloscape, Bookends". 11th ed., Jan 2005 [Online]. [Last version Jan 2005]. Available from : <http://www.burioni.it/forum/ors-bfs/grid/index.html> [Accessed 8 November 2005].



Dutheil, J. 2005. The B3 project [Online]. Available from : <http://kimura.univ-montp2.fr/~jdutheil/B3/B3.html> [Accessed 8 November 2005].

Dutheil, J. (Julien.Dutheil@univ-montp2.fr), 6/17/2005. Re: B3. Email to Y. Omar (omary@cput.ac.za).

East, J. W. 2003. "Z39.50 and personal bibliographic software". In : *Library Hi Tech*. 21(1), pp. 34-43 [Online]. Available from : Emerald Fulltext database. http://www.library.uq.edu.au/papers/z3950_and_personal_bibliographic_software.pdf [Accessed 22 July 2005].

Grant, F. 2002. "We all need a good reference". In : Electronic referencing. Research Information, April 2003 [Online]. Available from : <http://www.researchinformation.info/feature3a.html> [Accessed 19 April 2005].

Hanson, T. (ed.). 1995. *Bibliographic software and the electronic library*. Great Britain : University of Hertfordshire Press.

Harzing, Anne-Wil. 2001. "Are our referencing errors undermining our scholarship and credibility? The case of expatriate failure rates". In : *Journal of Organizational Behavior*. Version May 2001 [Online]. Available from : <http://www.harzing.com/download/acref.pdf> [Accessed 17 March 2005].

Henning, E. et al. 2002. *Finding your way in academic writing*. Hatfield, Pretoria : Van Schaik.

ISIResearchSoft. 2005 [Online]. Available from : <http://www.isiresearchsoft.com> [Accessed 18 January 2005].

Job-Sluder, K., Hanek, G. & Zhang, H. 2003. "R685 Final Project Report : user needs for bibliographic software" [Online]. Available from : http://www.jobsluder.net/~kirk/OpenSource/OpenOffice_User_Needs030509.pdf [Accessed 21 September 2005].

Kent, T. 2004. "Reference management links" [Online]. In : UK eInformation Group. [Last updated 21 November 2004]. Available from : <http://www.ukolug.org.uk/content/public/links/refmanlinks.html#compare> [Accessed 3 March 2005].

Matus, N. 2001. "How to organize data". In : *R & D*, 43(6), June 2001 [Online]. Available from : InfoTrac OneFile Plus database. http://web3.infotrac.galegroup.com/itw/infomark/539/477/101785618w3/purl=rc1_ITOF_0_A76697861&dyn=3!xrn_1_0_A76697861?sw_aep=capetech [Accessed 25 January 2005].

May, M. 2003. "Sorting out citation management software: ...retire their index cards"
[Online]. In : *The Scientist*, 17(20), Oct 20, pp. 37(3). Available from : InfoTrac OneFile Plus
database.http://web1.infotrac.galegroup.com/itw/infomark/142/814/70908533w1/purl=rc1_ITOF_0_A110359807&dyn=3!xrn_1_0_A110359807?sw_aep=capetech
[Accessed 25 January 2005].

Mouton, J. 2001. *How to succeed in your Master's and Doctoral Studies: a South African guide and resource book*. Hatfield, Pretoria: Van Schaik.

Myburgh, F. 1994. "Easy-to-use tools for organizing your literature". In : *SA Waterbulletin*,
September/October 1994. Hatfield, Pretoria : SAWIC.

Princeton University. 2004?. "Bibliographical management and note-taking".
In : Bibliographical Management [Online]. Available from :
<http://www.princeton.edu/~aiteachs/nttr/capturing.html> [Accessed 7 September 2005].

Sahu DR, A.P. 2000. "Authorship : rules, rights, responsibilities and recommendations".
In : *Journal of Postgraduate Medicine*, 46(3), pp. 205-210 [Online]. Available from :
<http://www.jpgmonline.com/article.asp?issn=00223859;year=2000;volume=46;issue=3;spage=205;epage=10;aulast=Sahu> [Accessed 21 July 2004].

Shapland, M. 2001. "Evaluation of reference management software on NT (comparing Papyrus with ProCite, Reference Manager, Endnote, Citation, GetARef, Biblioscape, Library Master, Bibliographica, Scribe, Refs)" [Online]. [Last modified April 2001 with details about Biblioscape upgrade]. Available from : <http://eis.bris.ac.uk/~ccmjs/rmeval99.htm>
[Accessed 21 July 2004].

Shimp, A. & Stern, D. 1998. "Personal bibliographic database software demonstration and consultation software". In : SCOPA Grant1998, Final Report [Online]. Available from :
<http://www.library.yale.edu/scilib/bibsoftreview.html> [Accessed 12 July 2005].

Taylor, D.M. 2002. "The appropriate use of references in a scientific research paper".
In : *Emergency Medicine Australia*, 14(2), pp. 166-170(5) [Online]. Available from :
IngentaConnect Database

<http://www.ingentaconnect.com/searching/Expand?pub=infobike://bsc/emm/2002/000>

[Accessed 24 May 2005]

Ulrich, D. & Smallwood, N. 2004. "Capitalizing on capabilities". In : *Harvard Business Review*, June, pp. 119-127. Boston, Massachusetts : Harvard Business Publishing.

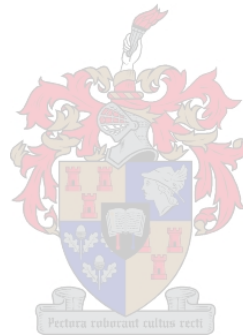
Webopedia. 2005. Webopedia : the #1online encyclopedia dedicated to computer technology

[Online]. Available from : <http://www.webopedia.com/TERM/s/software.html>

[Accessed 27 June 2005].

Winberg, C. 2004. Becoming a university of technology. Inaugural lecture, 10 March.

Bellville : Peninsula Technikon.



Appendix A

Survey on bibliographic needs of researchers

This questionnaire is part of an investigation into the Bibliographic needs and requirements of researchers at the Cape Peninsula University of Technology.

A. Information about the researcher

Please tick (X) on the appropriate response about your details as a researcher?

1. I am a researcher in the Faculty of	Engineering	Applied Sciences	Business
	Education & Social Sciences	Informatics & Design	Health & Wellness Sciences

2. Describe your research area	<div style="text-align: center;">  </div> <p style="text-align: center;">..... (e.g. Entrepreneurship)</p>
--------------------------------	--

3. Do you publish in accredited journals?	Yes	No
---	-----	----

4. Do you supervise Masters or Doctorate level students?	Yes	No
--	-----	----

5. The method of referencing that I use in research papers is?	Vancouver	Harvard	Other
--	-----------	---------	-----------------------

6. Have you heard of Personal Bibliographic Management Systems (PBMS) / electronic referencing programs?	Yes	No
--	-----	----

7. Have you used any PBMS before?	Yes	No
-----------------------------------	-----	----

7.1 Did the PBMS assist you with your referencing problems?	Very Adequately	Adequately	Not Adequately
---	-----------------	------------	----------------

7.2 Would you recommend that the UoT purchase PBMS?	Strongly Recommend	Recommend	Not Recommend
---	--------------------	-----------	---------------

B. Information on bibliographic practices

This section is in 2 parts.

Firstly, which sources do you reference (tick [X] Yes or No) and

Secondly, how often do you reference them (*tick [X] Always or Often or Rarely*)?

1. Books	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
2. Print Journals	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
3. Newspapers	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
4. Video	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
5. Online journal articles	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
6. Online encyclopedias	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
7. Online dictionaries	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
8. Conference proceedings	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
9. Acts	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
10. Court judgments	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
11. Web Blogs	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
12. Peer review reports	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
13. Electronic mail	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
14. Cellphone applications (e.g. SMS)	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
15. Images / pictures	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
16. Law reports	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
17. Audio media (e.g. Radio)	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
18. Visual media (e.g. Television)	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
19. Unpublished literature	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
20. CD-Rom	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
21. Telephone conversations	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
22. Interviews	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>
23. Other	Yes	No	<i>Always</i>	<i>Often</i>	<i>Rarely</i>

C. Information on bibliographic needs

Please tick (X) the appropriate response to the following statements regarding your bibliographic needs:

1. I would use software that helped with bibliographic punctuation and formatting	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
2. I have problems with in-text referencing	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
3. My students have problems with in-text referencing	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
4. I find it difficult to remember the different bibliographic formats for sources	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
5. I often need to check how to reference uncommon sources	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
6. Journals have returned my submissions with bibliographic queries	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
7. I have sent work back to students with bibliographic queries	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
8. I store reference details for future use	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
9. I would use software that imports citations from electronic databases to my bibliography	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
10. My in-text referencing sources are at times not reflected in my bibliography	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
11. When making notes, I forget to capture the bibliographic details of my sources	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
12. I misplace / lose notes and sources	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant
13. I would use software that formats	Strongly Agree	Agree	Disagree	Strongly Disagree	Not relevant

citations from electronic databases to the style of referencing that I use	Agree			Disagree	relevant
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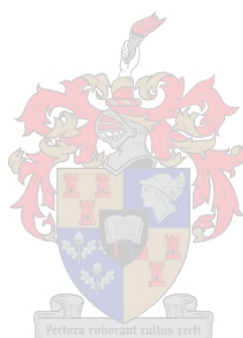
Do you have any other specific bibliographic needs? Please specify below.

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Many Thanks and Appreciation for your participation



Appendix B

PBMS at higher education institutions in South Africa

Dear Colleague:

The aim of this questionnaire is to investigate whether any **PBMS – Personal Bibliographic Management Systems (citing and referencing programs / software)** are used by Researchers at your institution / library.

(The findings will assist me in my Master's in Information & Knowledge Management).

NB : If **you** are unable to answer these questions, **please** enquire from personnel who may be able to answer the questions and forward your reply to me?

Kindly indicate your answer with an **(X)** on the appropriate block.

1. Are any PBMS (such as EndNote, ReferenceManager, Procite, Bibloscape, Open Source programs, or any other programs) used by researchers at your institution / library?	Yes	No
1.1 If Yes, please specify the name/s of the program/s		

2. How often do researchers use the program?	Several times a day	Seldom per day
	Several times a week	Seldom per week
	Several times a month	Seldom per month

3. Is the program accessed on a network, or on stand-alone computers?	Network	Stand-alone computers
---	---------	-----------------------

4. Does the institution have a campus-wide licence?	Yes	No
---	-----	----

5. Does the program address the bibliographic needs of researchers at your institution?	Yes	No
---	-----	----

6. Please tick (X) on the appropriate response about the performance of the program

6.1 The program helps with formatting and punctuation of references	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant
6.2 Information from the internet is easily referenced using the program	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant
6.3 The program allows the researcher to choose from a variety of referencing styles to format references	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant
6.4 The program imports citations from electronic databases into a bibliography	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant
6.5 Any type of information source can be referenced by the program	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant
6.6 References are stored in the program for future use	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant
6.7 The program has vastly reduced errors in bibliographic references	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Relevant

7. Can you suggest areas in which the program needs improvements?

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8. Please add any further comments about the PBMS

programs:.....

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Thank you very much for your participation.

Appendix C

Investigation into referencing errors in research papers submitted for publication

The Honorable Editor

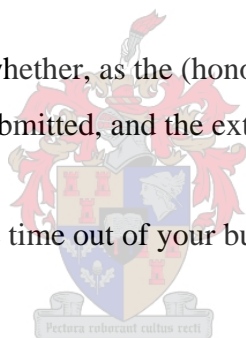
Subject: Investigation into Referencing Errors in Research Papers
Submitted for Publication

Dear Sir/Madam

Increased demand is being placed on the time and expertise of library staff at a University of Technology to assist researchers with citing, referencing and compiling bibliographies accurately. This is most prevalent when researchers prepare to submit their research papers for publication in accredited journals.

This investigation seeks to find out whether, as the (honorable) editor, you have perceived this problem when research papers are submitted, and the extent of this problem.

I would be grateful if you would take time out of your busy schedule to answer the following questions.



Please tick the appropriate response for each question in the table below:

Our journal stresses that research papers submitted for publication should comply fully with our preferred guidelines on referencing.	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant
Papers submitted for publication are returned to correct referencing errors.	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant
Referencing errors in research papers are encountered for each monthly publication.	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant
Authors should use referencing software to help to eliminate referencing errors.	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant

I am aware that other journals also have referencing problems	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant
Our journal is a fully accredited academic journal.	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant
Papers published in our journal are peer-reviewed.	Strongly agree	Agree	Disagree	Strongly disagree	Not relevant

Additional comments related to referencing:

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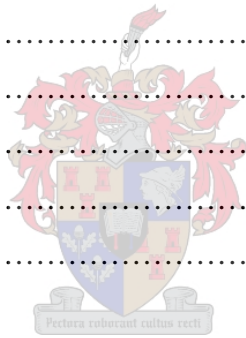
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Many Thanks and Appreciation for your Assistance.

Appendix D

Transcript of an interview with the vendor of educational computer software (in Mowbray, Cape Town)

The questions and answers (in bold print) below, relate the exchange during a 50-minute interview that took place with the owner of a software company, at the company's premises in Mowbray (Cape Town), between 16:30 – 17:20 on the 23rd September 2005.

Question 1. "How many higher education institutions in South Africa are using PBMS"?

Answer. "Most major institutions in South Africa are using PBMS. Research institutions such as the HSRC and the MRC also use PBMS. We also have several corporate clients such as law firms, human resource management companies and architectural businesses that use PBMS".

Question 2. "Can you provide me with the names of these institutions?"

Answer. "Yes, I can supply you with institutions that have purchased PBMS".

Question 3. "Can you provide the names of contact persons at these institutions to whom I can send a questionnaire"?

Answer. "No! That information is strictly confidential. My clients and I have a business relationship. I will at all times protect the identity of my clients. This is the client's legal right. No! The names will not be given to you".

Question 4. Which PBMS does your company sell?

Answer. "EndNote, ReferenceManager and ProCite. The same company, Thomson ISI or ISI ResearchSoft, produces all these products".

Question 5. Which is the most popular PBMS?

Answer. "The most popular PBMS is EndNote. But I must add that most institutions use EndNote together with ReferenceManager"

Question 6. What makes these PBMS so popular?

Answer. "EndNote has been in use overseas for a long time, and EndNote is one of the first PBMS that has been used by clients in South Africa for a long time. EndNote is

popular because it is very easy to use and has lots of good features. ReferenceManager is not so easy to use, but MRC and HSRC use it because they have to share important data. It works on the Internet. Data is input in Pretoria, but the data can be added to from places such as Cape Town, Bloemfontein and other cities around the country. In that way, everyone has access to the whole country's information, such as statistics on AIDS. On the other hand, ProCite is not popular because it is used mainly for running small company libraries or resource centers”.

Question 7. Is there any South African produced PBMS?

Answer. “No! I have been in this business for more than fifteen years, and I am still looking out, and wishing for a local product”.

Question 8. What are the reasons that no local version of a PBMS is available?

Answer. “You will notice that South Africa uses mostly overseas programs, such as Windows, Microsoft and other business software. Therefore it is natural for us to use overseas PBMS too. South African programs have only started to develop recently, and why re-invent the wheel”?

Question 9. What do the PBMS cost?

Answer. “Endnote and ReferenceManager each cost \$299 for 1 licence. This means that it can be loaded onto 1 computer only and be used only by 1 person at a time. ProCite costs \$399, but it is not suitable for you because universities have very sophisticated library systems”.

Question 10. Why are the PBMS that you sell so expensive?

Answer. “They are very sophisticated programs. They perform complex processes. They are able to carry out many specialized functions. No other software can perform these functions. If you think of what PBMS can do, it is not a lot of money”.

Question 11. What would it cost the UoT if it purchases PBMS for 10 000 users?

Answer. “I will work this out. In American dollars the amount comes to ± \$165 000. In South Africa Rands it will cost R1.1 million. This is with a special discount”.

Question 12. Do you offer any other licence options?

Answer. “Yes. You can buy 1 user licence for 5 concurrent users. That means that 5 people can use 1 licence. If you want licences for more people, you must buy many

concurrent user licences. In this way you can buy as many or as little licences that you require or can afford”.

Question 13. For how long are the licences valid?

Answer. “Any licence is valid for only 1 year from the date of purchase. So you have to renew your licence every year”.

Question 14. Does the cost of purchasing PBMS include training and support?

Answer. “Training costs are not included when buying the PBMS. Training is an additional cost. Limited technical support is provided at no charge. Support is for things such as the setup, loading and troubleshooting of the programs, or in extreme cases program failure due to manufacturer fault”.

Question 15. Have any of your client institutions purchased a site-wide licence?

Answer. “No! I would definitely know if this was the case because it would bring in a lot of money for the company”.

Question 16. The PBMS are very expensive - what are your recommendations if PBMS were to be purchased by the UoT?

Answer. “For general users, I would recommend buying a small amount of licences of EndNote. For serious users who need to share data, buy enough licences of ReferenceManager for them only. You only need to buy a few licences of both programs, because everybody is not going to use them, and they won’t be using it at the same time.”

Question 17. Are you aware of any other PBMS available that may be sold at computer software stores in South Africa?

Answer. “No! We are the sole agency in South Africa with a licence to sell PBMS. You can check other software stores, but you will not find any stores selling PBMS”.

Question 18. Is the ‘sole agency’ that you stated a claim, or can you say this with authority?

Answer. “I can say this with certainty! We are the only company that is registered to legally sell PBMS. You can check this with the Registrar of Companies Offices”.

Question 19. How good are the PBMS products of your competitors?

Answer. “Our products are the best. It is used all over the world. It has been translated into many languages. It is the most widely used PBMS in the world. No other product has been so successful. I think that proves that our products are better than our competitors’ products. I am not saying that our competitors’ products are not good. Some people are using their products and they are satisfied with them. In the end, it comes down to one’s personal choice which PBMS is most suitable for your needs”.

Question 20. Are you aware of any free PBMS available on the Internet?

Answer. “Yes. I am aware of this. But these programs are far below the capabilities of our products. I am running a business, so I won’t promote it too much. But, it would be a good idea to investigate it further, because it might be of benefit to you or someone. Otherwise, people won’t put it out there for others to use.”

I wish to express my sincere Thanks and Appreciation for your time and your frankness for the valuable information that you have provided.



Appendix E

Email Re : B3 from J. Dutheil to Y. Omar

From: Julien Dutheil Julien.Dutheil@univ-montp2.fr 6/17/2005 1:08 PM

To: YUNUS OMAR OMARY@cput.ac.za

Subject: Re: B3

Hi Yunus,

I'm glad you're interested in B3 for your thesis :)

I haven't done any comparison of B3 with other commercial software. I wrote B3 for my own needs (at least in the beginning!), because I could not afford the price for EndNote, and because I'm a Linux and Latex user (EndNote is best with the Microsoft Office tool suite, which I do not like very much!).

Of course, there are less functionalities in B3 and in any other Free Software of the kind than in any commercial software, although sometime you'll find some good and original ideas in them! To help you, I can mention you two other free softwares of interest:

- JabRef: written in Java (like B3), is very powerful. It's weakness, I think, is to be centered on BibTex, the Latex format for bibliography. Other formats are available for import/export.
- Bibus, written in Python, has the best integration with OpenOffice. It's weakness is (to my mind) to be very difficult to install and configure (try it yourself, I could not managed to have it working, either on Linux or Windows).

You'll find some material on the OpenOffice Bibliographic page. There's also a mailing list for bibliographic development in OpenOffice with very interesting and hot discussion on the subject. OpenOffice also has its bibliography management tool, but for now, it is very bad :(They are working at improving it, the new version was scheduled for OOo 2.00, but I think they won't hold the deadline since OOo 2.00 is about to be released. There is also a bibliographic software page on SourceForge.

Best regards,

Julien

YUNUS OMAR wrote:

> Dear Julien Dutheil

>

> I am exploring a topic for a Master's Theses on Bibliographic Management Software.

> My preliminary literature survey has been of packages such as EndNote,

> ReferenceManager and some other programs. I've come across B3 of yours and wish to

> include it in my research.

> Have you done any comparisons of B3 against proprietary/commercial products (Endnote
> etc.)?

> At the outcome of my research, I would like to recommend a product to higher education

> institutions in South Africa. The cost and capabilities of a product will play a major

> deciding factor in accepting my recommendation.

> As Open Source would involve no cost, it may be a viable option to consider.

>

> Any assistance would be appreciated.

>

> Thank you.

>

> Regards

>

> Mr Y Omar

>

>

>