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MAKING MALAYSIAN SCHOLARLY JOURNALS MORE VISIBLE: THE CASE OF MJCS AND MJLIS ONLINE

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SCHOLARLY COMMUNICATION AND THE E-JOURNAL

Journals are often associated with scholarly communication. The highlight of research is in the communication of the research findings. Researchers use a number of channels in the communication process. The studies by Garvey, Griffiths and friends (1967, 1970, 1971, 1972) for the American Psychological Association in the 1960s and 70s have increased our understanding on how researchers communicate their research results and subsequently have given rise to a large body of literature that studied and described the research communication process. The studies have basically indicated that all researchers adopted a similar pattern of dissemination behaviour, even though in some disciplines the process takes a longer time. The process began with preliminary communication to a closed audience within one's own institution, progressed to a wider national, regional or international audience and proceeded to the submission of an article to a journal for publication. The length of time taken to reach the journal publication stage varies between disciplines.

The print journal system has received a number of criticisms (Harter and Kim, 1996). Noted criticisms included (a) the possible bias of the peer review process which may suppress new ideas, the preference given to authors from prestigious institutions and delays in the publication process; and (b) the increasing cost of publishing as well as subscribing. The opportunities offered by new technological advancements in information technology and telecommunication networks have opened up opportunities to communicate, disseminate and access journals electronically. This has invariably changed the roles of the various participants in the process.

Any journal produced, published, distributed and received via an electronic medium is considered an e-journal. The main differences between scholarly e-journal with other e-journals are that articles published are peer-reviewed or refereed, include references and allow access to full-text version of articles. The situation pictures an environment where, the authors prepare their manuscript electronically and submit online. Publishers handle electronic manuscripts, edits, format, standardized presentation styles and deliver the articles to users online. The reader access and retrieve article information via the Internet and the libraries deliver or allow access

to journal articles through the library terminals (Boyce and Dalterio, 1996). At a glance it emulates the print counterpart but in actuality offers much more. The offering of e-journals on an experimental basis began in 1976 (Turoff and Hitlz, 1982). The first peer-reviewed e-journal, which gave full-text plus graphics was *Online Journal of Current Clinical Trials* (1993) (Keyhani, A, 1993). There have been attempts to quantify the total number of e-journals available over the Internet. McEldowney (1995) collated figures collected from the *Directory of Electronic Journals, Newsletters and Academic Discussion Lists* (published in 1991 to 1996) and the 1997 figures were obtained from a study by Ooi (2000) (Table 1).

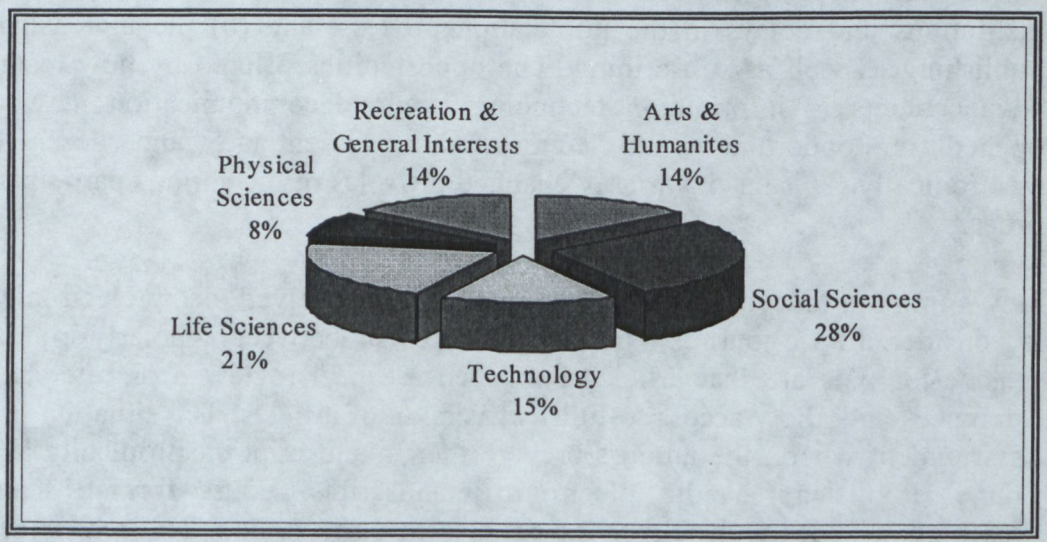
Table 1: E-Journals and Communications (1991-1997)

	1991	1992	1993	1994	1995	1996	1997
Journals	27	36	45	181	306	1093	2459
Newsletters	110	97	195	262	369	596	955
Total	110	133	240	443	675	1689	3414

The figures in Table 1 indicate a steady increase with no signs of leveling off. The figures in 1995 indicate an increase of about seven times more then the figures stated in 1991. Other studies have attempted to focus on just scholarly journals in the disciplines of science, technology and medicine (STM).

Mogge (1999), the editor of the *Directory of Electronic Journals, Newsletters and Academic discussions Lists* indicated the subject distribution of e-journals listed in the directory (Figure 1).

Figure 1: E-Journals by Subject Distribution



Hitchcock and Hall (1996) surveyed the number of STM e-journals and identified 115 scholarly, peer-reviewed e-journals in the disciplines of science and technology. Harter and Kim (1996) attempted to sample all STM scholarly e-journals listed in *Directory of Electronic Journals, Newsletters and Academic Discussion Lists* (1995) published by Association of Research Libraries and identified 131 e-journals and the subject distribution of the journals are indicated below (Table 2). Out of the 131 STM journals, 77 titles were considered scholarly and peer reviewed.

Table 2: Scholarly STM E-Journals and Communications (1991-1997)

Broad Subject Category	**No. of STM e-journals**
Sciences	28
Social Sciences	34
Humanities	31
Professional	31
Cannot be determined	7
Total	**131**

Source:Harter and Kim (1996)

Various attempts have been made to categorized the types of e-journals. Harter and Kim (1996) proposed seven models of e-journal; (a) e-journals that replaces the print version; (b) e-journal that co-exists with their print counterpart with the same or different pricing arrangements; (c) e-journal version only but a print copy of individual articles can be supplied on demand; (d) e-journal is published immediately after its print version; (e) e-journal is published several months after the print version; (f) the print version is published several months after the electronic version; and (g) full-text version of the journal is not available electronically.

The form of delivering e-journals can either be on CD-ROM, floppy disk, on computer network or on the Internet. Three-quarter of the e-journals initially exists in parallel forms, that is, in print and electronic. In others the electronic version replaced the print form. Some journals developed on a different mode where, the publishers will provide individual article in print form although the journal itself is not published in print form (eg *Chicago Journal of Theoretical Computer Science).* Some publishers deliver only an electronic version after the print version (eg *Slavic review*). For most journals the print and electronic version appear simultaneously but is differently processed. Today this situation is changing again, where the electronic version is often made available to subscribers much earlier than the print version.

The delivery format is an important factor for an e-journal. The appropriate delivery format chosen should be the format adopted by most current e-journals, that would provide advantages to both publishers and subscribers. Hitchcock, Carr and Hall (1997) indicated the format used by e-journals in the United Kingdom. Table 3 indicates that PDF is the most common format of delivery.

Table 3: Format Used by E-journals in the United Kingdom

Format	**No of publishers**	**No of Journals**
PDF	19	1,050
RealPage	14 via Catchword	131
SGML	5 via BioMedNet, 1 via Elsevier	72
HTML	5	50
Others (Postscripts, Printedleaf	2	

THE JOURNALS PUBLISHED BY FSKTM

The Faculty of Computer Science and Information Technology began publishing the first issue of the *Malaysian Journal of Computer Science* in 1985, beginning with volume 1. Subsequently, one issue per year was published till 1989 (volume 5). Between the years 1990 to 1992, *MJCS* "hibernated" until its revival in 1993 with volume 6. From volume 8, 1995 onwards, the Faculty published two issues of *MJCS,* in June and December each year till its current issue (June 2000). *MJCS* first offered its journal online in 1996 and can truly be regarded as the first full-fledged electronic journal in Malaysia (Ling, Mashkuri and Phang, 1996). The *Malaysian Journal of Library & Information Science* began its publication in 1996. Two issues were published each year (July and December) and its latest issue is volume 5, number 1, 2000.The online version was offered in 1999.

From 1997 onwards, the editorial boards of both journals worked aggressively to improve the quality of publication. This involved improving and strengthening the refereeing process and soliciting professionals and academics from foreign institutions to be members of the reviewing board. Priority was given to personalities who can be easily contacted via e-mail, in order to speed up the refereeing process. The format of both journals was standardized in accordance to international journal editorial practice. An editorial style sheet was included with each issue. Other standard requirements were author's affiliation status, their e-mail address, suggested keywords, an informative abstract, the text formatted in double columns, the adoption of a standard referencing style, and the provision of running titles and authors' names.

Besides this "print lift" (as oppose to a "face lift"), the faculty became aware of the need to make the journal more visible. In other words, the journals also needed an "image lift". Three steps were taken. Firstly, issues from two years (1996-1997) were sent to *Ulrich's Periodical Directory* to be listed in its directory. *Ulrich's* specializes in listing current periodicals published throughout the world. It is one of the basic tools used by institutions or serial's vendor to locate a journal title and its publisher to place orders. *Ulrich's* is available in print, CD-ROM and online via *Ulrich's Plus*. Bowker also publishes this directory. The *Malaysian Journal of Library & Information Science* successfully gained entry into this directory in 1997.

Gaining entry into this directory has helped to boost the subscription of MJLIS. For a journal that did not undergo any marketing strategy, this was of great help. The journal now has a small number of subscribers (totaling 60) worldwide that includes the Library of Congress, the British Lending Library and libraries in the United Kingdom, Netherlands, South Africa, Australia, Japan, Singapore and Brunei.

Secondly, the editorials felt that the journals' contents need to be made known to a more universal audience. As a result issues from two years were sent to international indexing and abstracting agencies in the relevant disciplines. Copies of the *Malaysian Journal of Computer Science* were sent to *Inspec* (Information Services for the Physics and Engineering Communities). *Inspec* is a database which covers three main indexes: *Physics Abstracts*, *Electrical and Electronic Abstracts* and *Computer and Control Abstracts*. Subject areas covered by this database are physics, electronics, electrical engineering, computers and control and information technology. It covers more than 4,200 journals, conference papers, technical reports and dissertations. This database is a reference database and is available online or on CD-ROM. *Inspec* began indexing *MJCS* in 1997.

The Malaysian Journal of Library & Information Science also sent out four issues published in 1996 and 1997 to *LISAPlus* (*Library and Information Science Abstracts Plus*) and *Library Literature. LISAPlus* is published by the UK based publisher Bowker, which indexes and abstracts more than 350 periodicals published from more than 60 countries. The database includes conference papers, books and reports. This service can be subscribed to online or through its CD-ROM services. *LISA* began indexing *MJLIS* in 1997. *Library Literature* is published by the USA-base Wilson, which indexes more than 229 library and information science (LIS) periodicals, Like *LISA* it also indexes collected works, conference proceedings and theses but focus more on LIS periodicals published in the United States and Canada. Wilson provides the delivery of articles on demand by those who access their index. *Library literature* began indexing *MJLIS* in 1998 after being assured for two years that *MJLIS* is current and aims to remain in publication!

The success in getting both journals indexed by international indexing and abstracting agencies helped the faculty in a number of ways. Works by authors published in the journal are accessible by anyone who searched these indexing services anywhere in the world. As such, when a foreign researcher searched these databases for articles relevant to their research area, works published in these journals can be retrieved. In other words, the articles published by *MJCS* and *MJLIS* becomes more "visible" and "accessible" world-wide. This editorial strategy helps to indicate to the world the Malaysian contribution to the discipline of computer science and information technology as well as library and information science. Thirdly, this effort has helped to increase the "impact" or "usability" of Malaysian research works. How can this be known? Other researchers will start to cite works published in *MJCS* and *MJLIS.* The executive editors of both journals have begun to receive requests for reprint of articles. So far, *MJLIS* have received a number of requests for reprints from researchers in the USA, the UK, Australia, Singapore, Taiwan and Japan.

Finally, the editorials felt that the faculty has the capacity (on its own) to make the journals more "visible". This capacity as well as the increasing cost of printing both journals has initiated the editorials to think of an electronic format. It costs the university RM24,000 to print both journals (RM15,000-*MJCS*, RM9,000 – *MJLIS).* There were also delays on the printing side. Besides this, the faculty has to bear additional costs in terms of total man-hours spent in mailing the issues as well on postage costs. As a result, the planning for an electronic version was seriously considered. Even though *MJCS* is already electronic, it is felt that a more user-friendly system needs to be implemented. The result is a prototype Internet based journal management system that manages both journals and, which came to fruition in 1999.

MJCS AND MJLIS ONLINE

The FSKTM journal online system uses the n-tier client/server architecture, where each client is required to establish a connection to the remote host by using the TCP/IP protocol. The system runs on the Windows NT Server 4.0 using Internet Information Server 4.0 (IIS) as the web server. ASP (Active Server Pages) is used on the server side to combine the HTML pages, scripts and its Active X components allow for the creation and running of an interactive Web-based application. VBScript is the main scripting language used to create templates for the system. On the client side, the ASP script is decoded by Microsoft IIS. The database component of ASP provides ActiveX Data objects which allows connection to the relational database implemented on the SQL server 7.0. The client side requires the use of Microsoft Internet Explorer 4 or any browser that supports ActiveX and VBScript. Adobe Acrobat Reader is required to view and print articles retrieved online as articles are delivered in the PDF format.

The journal management system contains five main modules. The functions of all modules are given in Figures 2 and 3. The main aim of the administrator's module is to ease the publisher's task in uploading the accepted article contributions. Similarly, the client module concentrates on supporting the "browsing" and 'retrieving" behaviour of researchers.

Figure 2: The Journal Management System for MJCS and MJLIS – Administrator Side

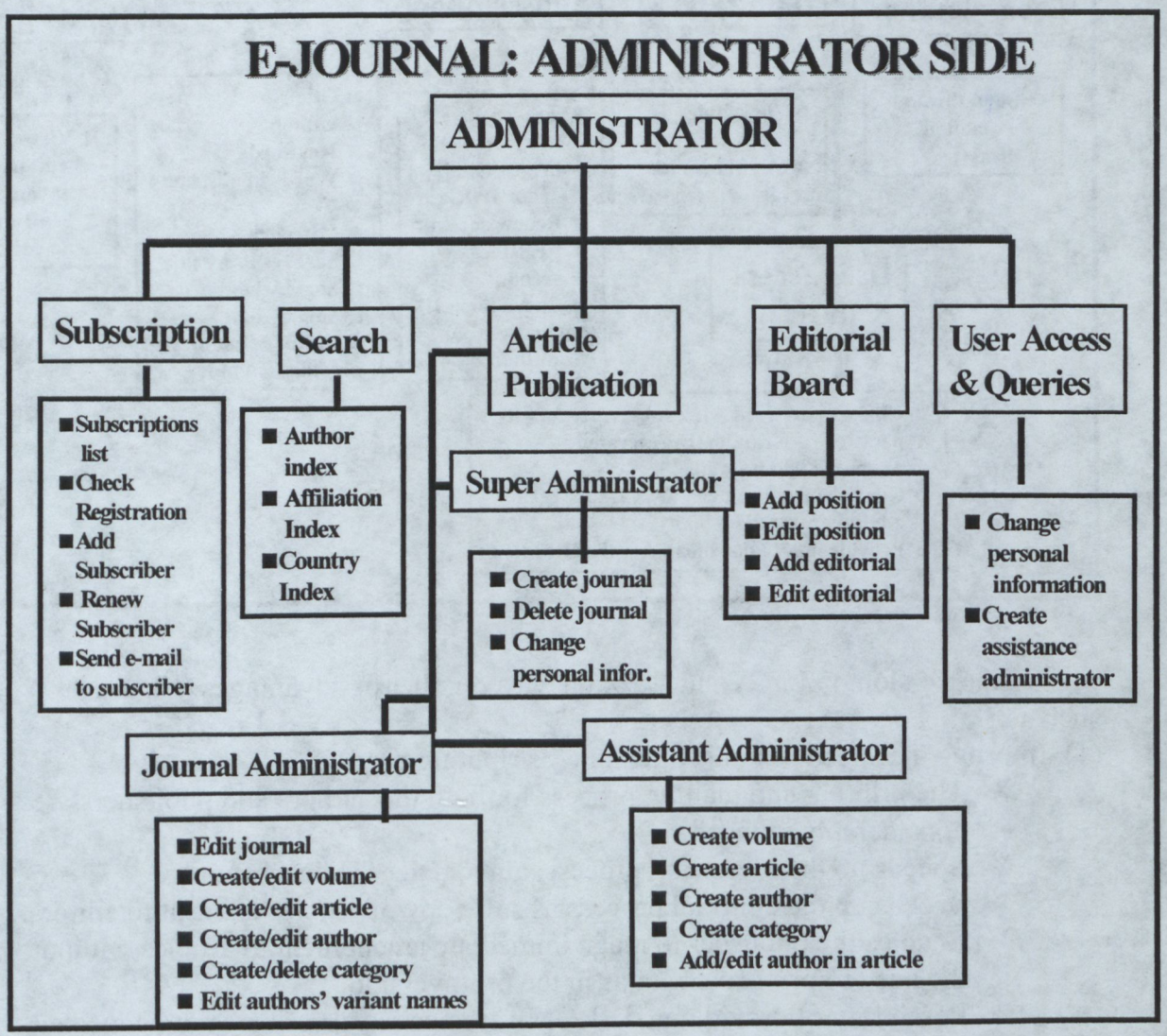
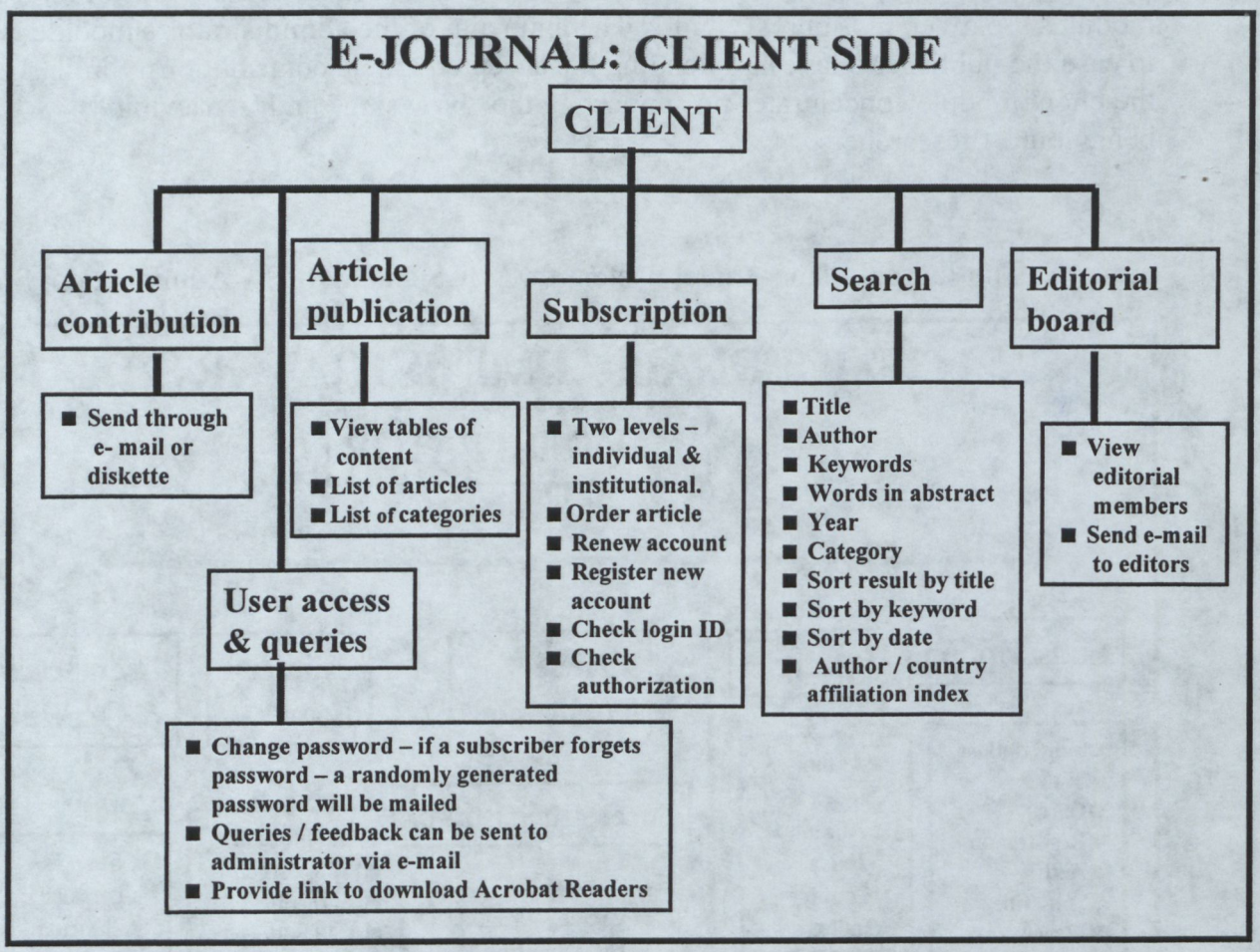


Figure 3: The Journal Management System for MJCS and MJLIS – Client Side



The online version of *MJCS* and *MJLIS* have a number of advantages (Chan 1999) such as:

(1). Improve the speed of publishing and distributing process.

- The printing and mailing process for both the authors and publishers are considerably reduced.
- Speeds up the reviewing process, authors get feedback sooner.
- Speeds up the editorial process as soft copy of articles are sent to editors.
- Enables the publisher to make immediate amendment to articles without the need to print an errata as in the print version.
- Possibility of providing CD-ROM versions to subscribers not connected to the Internet.
- Possibility of providing CD-ROM version as a backup or archival service for subscribers.
- The high cost of sending issues through the post, especially abroad will undoubtedly be eliminated.

- Allow prompt feedback from the community of scholars who gain access to the journal.

(2). Greater accessibility is provided to users:

- Users can view the tables of contents of new issues instantly after it has been uploaded, anywhere and at any time.
- Larger body of volumes can be searched at the same time – the keyword, broad subject or country search will retrieve all related articles from the various volumes in *MJLIS* but also all volumes from both *MJLIS* and *MJCS*. This means that the content of the journal system will be richer as more new scholarly journals are added to the system.
- Both journals are easily accessed by anyone who has Internet connection. As such the contents are more "visible" universally then ever before.

(3). Enhancement of illustrations within text:

- Tables and graphics within text can be greatly enhanced. This is especially so for contributors who have included coloured graphs and tables. There is also the possibility of providing three-dimensional models, motion videos and sounds within the text.

(4). Variation in subscriptions can be implemented:

- It is now possible to impose two levels of subscriptions – lower for the individual subscriber and slightly higher for the institutional member.
- For those who do not want to subscribe, the system provides the possibility of ordering articles only – soft copy of an article can be sent to the user who orders it.
- Pricing structure will have to be changed as clients can have access to both current and archived volumes.

(5). Possibility of hosting other journals:

- At the moment this system is hosting two journals. So far the editorials have found no problem in uploading volumes and foresee no problems for other journals within the UM campus to be included in the system.
- The editorials do not need to know about the technical details of the system and the editors themselves or, an experienced technical staff could carry out the process of uploading.
- FSKTM therefore hopes to niche itself as an e-journal provider – true to the spirit of the 7th Malaysian plan where faculties were encouraged to market their research product.

There is however a number of factors which need to be thought of when the online version of *MJCS* and *MJLIS* is offered nationally. Firstly, there is the question of

acceptance or support. It cannot be ascertained that the journals would receive the same amount of support from contributors if they go only electronic. In 1994, Collins and Berge, indicated that the use of online journals was low. Harter and Kim (1996) examined the references listed in the last four articles from 74 scholarly peer reviewed e-journals and found that citation to articles in e-journals was low. Only 83 online sources were cited in the total of 279 articles studied. Most online articles still prefer to cite articles in printed serials. The situation is changing. Rusch-Feja (1999) reported high acceptance from academics for e-journals, where most of those in academics studied refer to electronic journals each day. It is expected that in years to come, more academics will be submitting to e-journals because of it capability of speedier publication and delivery time. In this respect the marketing strategy for both *MJCS* and *MJLIS* need to be oriented towards establishing as much strategic links to search or information hosts to increase their "visibility" and to create more confidence among contributors.

Secondly, the editorial members of both journals have to reconsider the question of subscription. Should the online subscription rates be imposed immediately to all intended subscribers? Should free access be provided for a specified length of time before subscriptions are imposed? Should subscriptions be imposed on the current three years' issues only and allow free access to older issues? Giving access does not automatically mean use. Marketing and alerting efforts should co-exist with giving access. The study of the SuperJournal Project (Eason, Yu and Harker, 2000) indicated high number of users who access the service. The SuperJournal Project consisted of 49 scholarly journals and the study indicated that users prefer to "browse". Users like to browse through the content of issues rather then start to search by keywords. In other words, users like to adopt the same behaviour they use when browsing the current periodicals shelves – flipping through the contents of current issues of journals in their subject area before deciding on the articles they want to read. In an online environment, users would look at the abstracts of articles first before deciding to view the full-text. Hence, allowing access to tables of content and abstracts of all volumes of the journals in the system is important. The electronic version must also ensure that its electronic version will continue to be indexed by *INSPEC, LISAPlus* and *Library Literature*.

Thirdly, the editorial members would have to consider offering the service through well established publishers either within Malaysia or abroad. Commercial publishers such as Blackwells do offer services to online journals. Local publisher should be bold enough to take up this challenge. A one-stop centre for all electronic journals available locally should be the way of the future. *MCJS* and *MJLIS* have been in operation for the part one year and found no problems as far as uploading articles into the system. However, editorial members of both journals are "volunteers" and are usually busy lecturers who have to teach, undertake administrative work as well

as be involved in research. Allocation of time to administer the journals are done on a part-time basis. Even though in principle, FSKTM can host other scholarly journals, in practice, the business plan and logistics must be thought out seriously. On the other side of the coin is the possibility of reengineering the process of scholarly e-journal provision within the University environment. It is possible (with a lot of hard work) that FSKTM or UM can be more involved in providing part of the content needed for the knowledge–based society. Academia has less to lose as they often gave their rights away to commercial publishers (especially when publishing abroad). "Rather than allowing commercial publishers to transform this information into a commodity and then sell it back to academia at exorbitant prices, why not keep it within the realm of academia where it can be shared with colleagues far and wide at a nominal price? This would also allow the smaller and less resourceful libraries to have the same access to scholarly communication as the more wealthy libraries...." (Sasse and Winkler, 1999).

CONCLUSION

The move from print to electronic version of local scholarly journals is in line with the government's aspiration to promote a paperless and content-rich knowledge-based society. Academia has a role to play in contributing to the "content" of this society, even though it is only for the selected few who use scholarly literature. Academia educates the next generation of professionals and has the responsibility to make formal knowledge available to society at large, informing the public on new researches that will ultimately serve the activities of teaching, service and research (Getz, 1997).

The web-based journal system promotes a more active style of disseminating information about institutional research activities. It should encourage online feedback from fellow and budding researchers from within and outside the walls of academia, making the service more interactive. Integrating academic information into the wider web of national information would undoubtedly benefit the national scholarly society. This scenario is not new in the western context but certainly is in Malaysia. For example papers in physics are rapidly and widely accessible from the automated posting service at Los Alamos. In biology, the Human Genome Project is made feasible through the sharing of databases and online tools. Surely it is time to change the academic information dissemination and communication process in Malaysia. The editorial members of both journals regard making the journals online a serious business. It inevitably simplifies a great deal of editorial work. Presently, the online version precedes the print version. The future sees the demise of the print version with the possibility of archival copies available online as well as on CD-ROM. The subscription structure of both journals would be different, since subscribers would have access to both the current and back issues. Individual articles

can be supplied on demand. At the moment FSKTM has the capacity to maintain both journals online. However, a more integrated approach needs to be planned if this project is to evolve into an institutional or national level.

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Figure 2: Print Screen of MJLIS

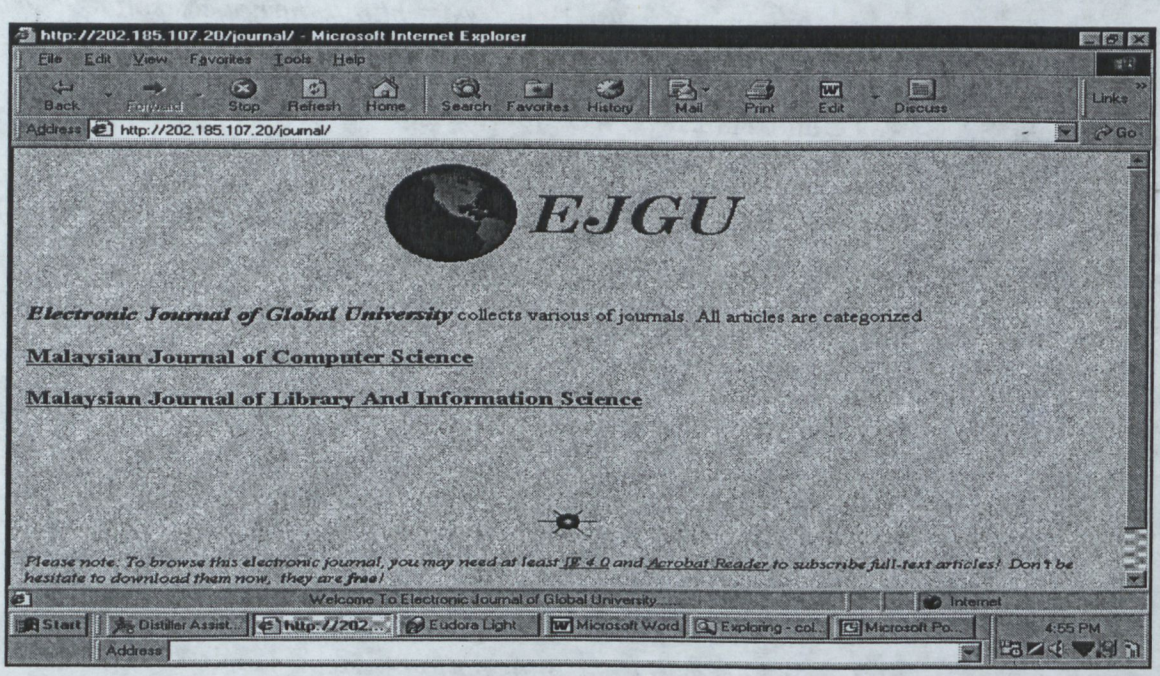

Figure 3: Content Listing of Volumes 1996-2000

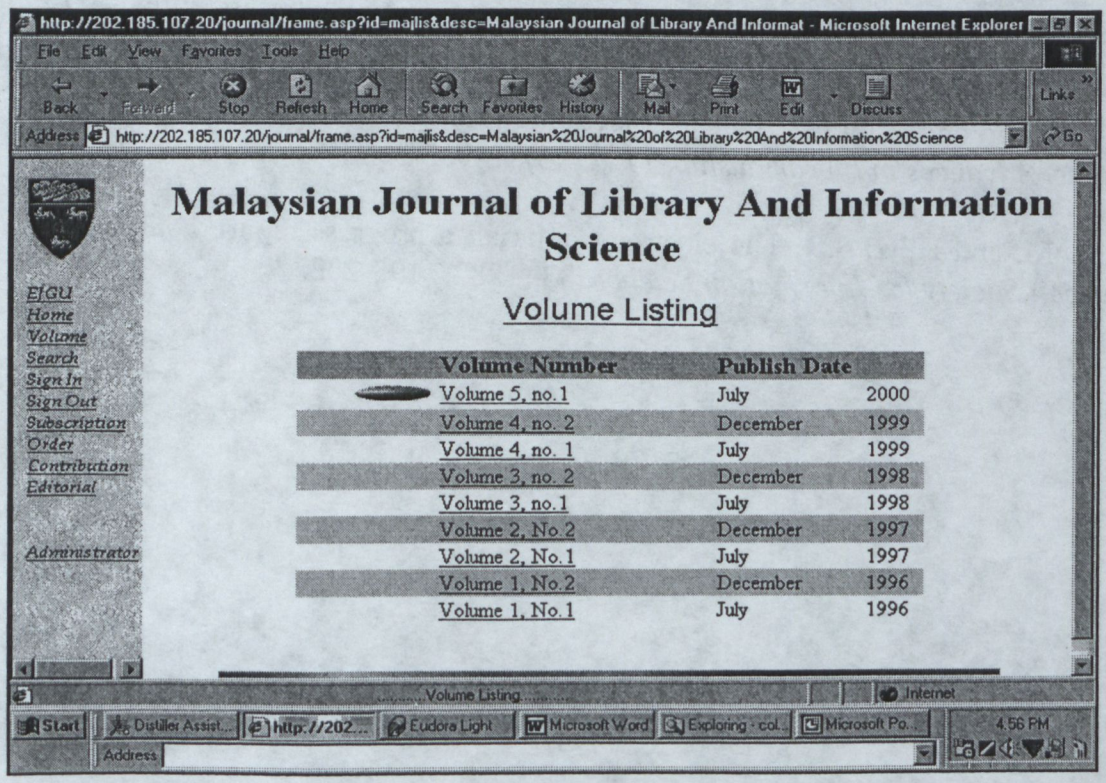

Figure 4: Content Listing of Vol,5, no.1, 20000

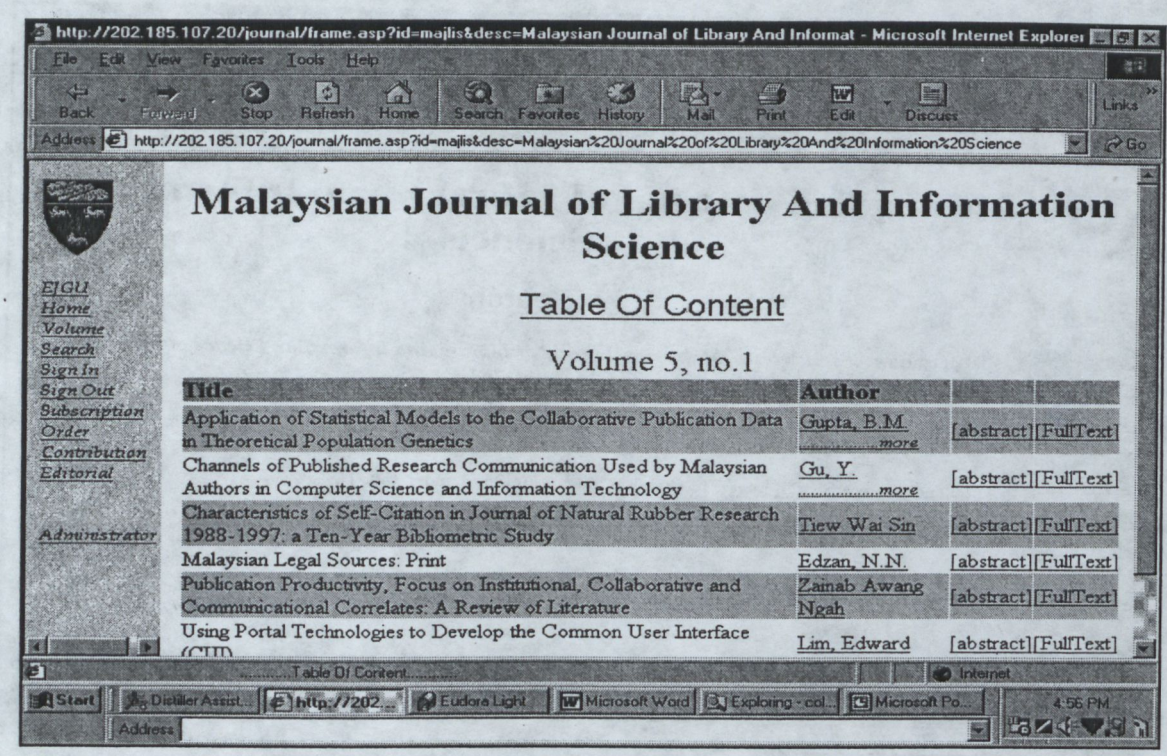

Figure 5: Content display of Abstaracts

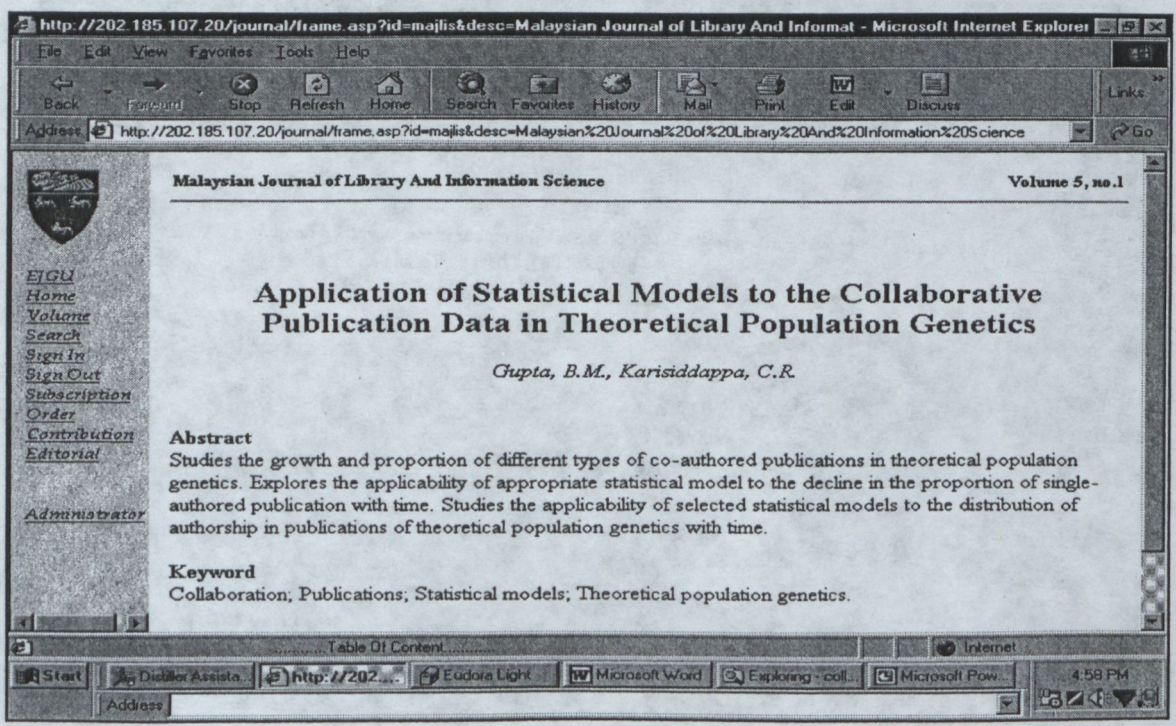

Figure 6: Search Module

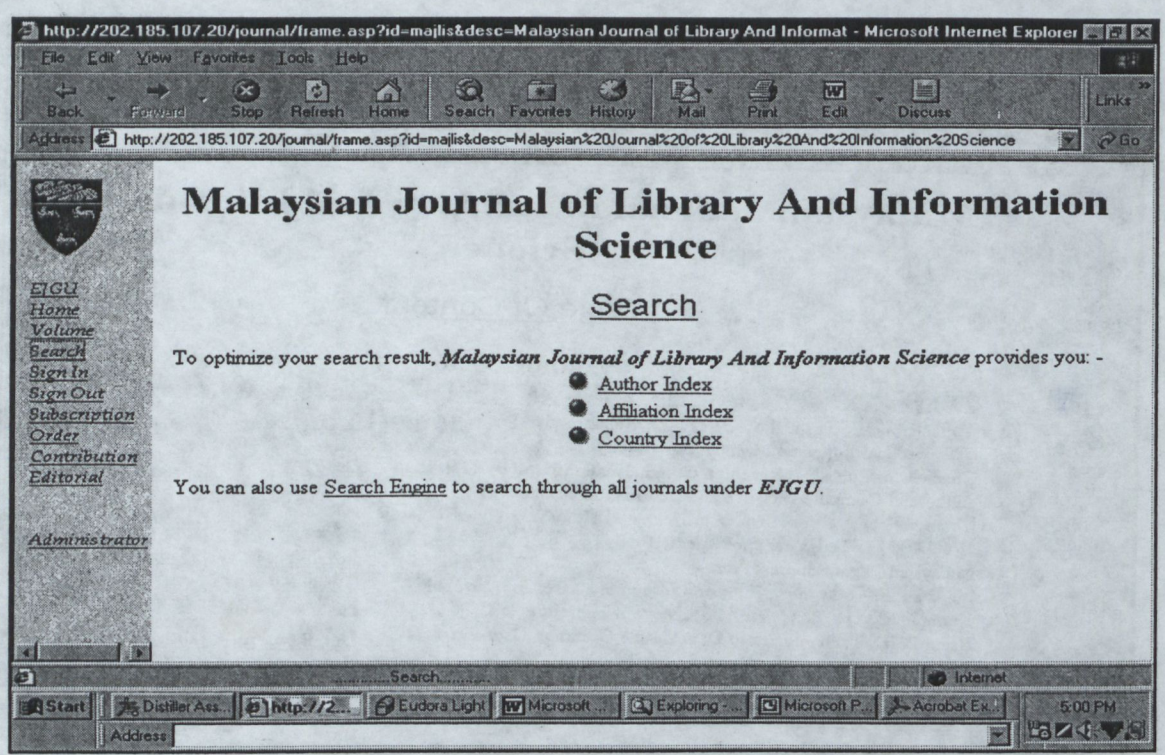

Figure 7: Searching Through the Author Index