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CHAPTER 2: REVIEW OF LITERATURE

The purpose of this chapter is to present review of the literature published relating to application of computers to house-keeping operations in libraries. From the perusal of the literature it is clearly discerned that the leadership of Western nations in application of modern technology continues to be strengthened.

On the other hand, the response to the challenge of application of modern technology in India is rather slow. Nevertheless, with the advent of powerful and economically viable microcomputers in 1980s, libraries in India are also increasingly adopting computers for their work and as a direct consequence of this there is a steady increase in the literature on the subject.

2.1 Literature Published in India

As the domain of the present study pertains only to study of automated house-keeping Systems, only the literature related to computerized acquisitions computerized serials Control and computerized circulation control is reviewed. For the sake of convenience, the literature has been reviewed under the following four heads.

- General aspects
- Computerized Acquisitions
- Computerized Serials Control
- Computerized circulation control

2.1.1. General Aspects


They, in general, discuss about various aspects such as historical developments, advantages of computerized systems, files & data structures required, etc., in relation to automation as well as automated house-keeping operations. Singh, K.J (1985) has tried to identify the trend towards automation in libraries in India. However a more comprehensive survey, has been reported by Kumar, P.S.G (1987) and Satyanarayana (1991) Ingra, T.K.S (1986) and Ravi Chandra Rao, I.K (1983,1986, 1990) have explained in detail the application of computers to house-keeping operations. They
discuss about various aspects such as hardware, software, and database & file structure, data dictionary, programming language etc.

A few books also have been published in India on library automation. Important among them are those published by Singh, S.P (1975), Mahapatra, P.K (1985); Kumar, P.S.G. (1987); Madan, Som Nath (1987); Devarajan G & Rahelamma, A.V (1990); Ravic Rao, I.K (1990); and Raman Nair, R handra (1992).

2.1.2. COMPUTERISED ACQUISITIONS

Very few articles have been published before 1985 on automated acquisitions. Kulkarn D.R and others (1983) have described a detailed sys analysis tem of computerized Book procurement systems. Rajagopalan, N (1981) describes in his article, a for computerized Book acquisitions using IBM 370 system. Ravichandra Rao, I. K (1983) has described about the issues involved in automated acquisitions in his paper 'Library automation'

After the mid 1980s, one finds an increase in the number of Articles published on this specific area. A detailed account of what an automated acquisitions system should cater to has been discussed by some author (BAL Subramanian) (1986);

Bhattacharyyya, Swathi and others 1986; Kumar, P.S.G (1988) and Ravichandra Rao, I. K (1989 & 1990). All these authors have touched the important aspects like function needs, Software characteristics, file structures of automated acquisitions system, etc.

From experiments Reported in the literature one gets the description of various systems used in different libraries. Haravu, L.J and others (1987) have described the microcomputer based book acquisition System (A revised version of which is evaluated in this thesis) used in ICRISAT library,

Hyderabad. Similarly, Satyanarayana, V. V and Savable, V.T (1986) have described the working of the book acquisitions system used at Technical Information Centre of BHEL Hyderabad. Kumar, P.S.G (1987) has surveyed and thesis various acquisition systems used at libraries of reported in his thesis various acquisition systems used at libraries of IIT, Madras; BHEL, Hyderabad; NAL, Bangalore; IDL Chemicals Ltd., Hyder RRC, Kalpakkam; PRL, Ahmedabad and ICRISAT, Hyderabad. Deshmukh, Subhash (1993) has reported a unique experiment of using CDS/ISIS software for some of the acquisitions work. Two papers presented in DRTC Annual Seminar (1989) by Chandrasekhar, G & others; and Chudamani, K.S and Subhan V.A which describe the automated acquisition systems at SHAR Centre, Sriharikota; And IISC, Bangalore respectively Murthy S.G.K and others (paper the 1989) have described in their Document Acquisition System (the present study includes this system its study)
2.1.3. COMPUTERISED SERIALS CONTROL

From the reported literature one can safely infer that very few projects were undertaken to design serials control systems in India. One of the earliest attempts to design serials acquisition systems was taken up by IIT library, Delhi by Haravu, L.J (1969). Later, Bajaj R.P (1984) has described the revised version of the same system. Patel, D.R (1987) reports the computer based periodical holdings in Space.

Application Centre Library, Ahmedabad. Raina, Roshan & Upendra Kumar (1987) have discussed about automated periodical acquisition system at IIMI library, Lucknow. Shalini R and Harinarayana N.S (1989) have reported an experiment to develop a Serials Management System. Vyasamoorthy, P (1987) gives briefly the various issues involved in the automation of serials control.Kumar, P.S.G (1987)in his book reports twelve indigenous serials control systems. In his survey he has studied and reported systems used in the following libraries:

1. Indian National Scientific Documentation (INSDOC), NEW DELHI
2. Indian Statistical Centre (ISI), NEW DELHI
3. Indian Institute of Technology (IIT), KANPUR
4. Reactor Research Centre (RRC), KALPAKKAM (NPOL),
5. Regional Research Laboratory (RRL), AHMEDABAD
6. Bharat Heavy Electrical Limited (BHEL), HYDERABAD
7. Tata Institute of Fundamental Research (TIFR), BOMBAY
8. National Physical & Oceanographic Laboratory CHOCHIN
9. Physical Research Laboratory (PRL), AHMEDABAD
10. IDL Chemicals, HYDERABAD
11. National Aerospace Laboratory (NAL), BANGALORE

Thulasi,K and Dharmaraj,K (1989) have reported their experience of developing and using the automated serials control system at NCSI,Bangalore. Lalitha and Ravichandra Rao, I.K. (1989) describes the program package for automated serial control developed in DRTC by them.

2.1.4. COMPUTERIZED CIRCULATION CONTROL

Mongo the house-keeping activities, circulation is a very specific, definable and easily amenable one for computerization. So, experiments for application of computers for circulation control started quite early. From the reported literature it seems that first attempt in this regard was done by Garudadwajan and others (1970). They have explored the capabilities of punched cards for controlling library loans and returns.
This experiment was conducted at the library of Indian Institute of Petroleum, Dehradun.

Another early effort in automation of circulation was reported by Keshav Kumar, S.S (1982) of HAL library, Bangalore. In this experiment, a computer program in COBOL was developed to perform various functions such as maintenance of files, printing and other transactions. Kumar, P.S.G (1989) has reported automated circulation systems used at IIP, Dehra Dun, TIFR, Bombay, RRC, Kalpakkam; NAL, Bangalore; HAL, Bangalore; and IDL Chemicals Ltd, Hyderabad. Many efforts made at various institutional level have been reported in the literature. Bajaj, Rajendra Prasad and Bhooshan Lal (1986) have discussed about efforts made at IIT, Delhi library. Gowri, R & Yadumani (1986) discuss about the automation of library circulation at IISc library, Bangalore. Subramanian, K.R and others, (1987) have described the advantages of using dbase III for developing a circulation system. Satyanarayana, N and Hugar, N.C (1988) report their experience of using an automated circulation system at IIT, Bombay. At the DRTC Annual Seminar (1989) Vaithilingam and other have described the system at HAL library, Bangalore.

At the same seminar, Shalimar and Harinarayana N.S (1989) have described the system developed by them in COBOL. Annapoorna, T.S (1989) has discussed the circulation system used at MECON, Bangalore (The present study includes this system). Jambekar, Ashok and Mehta, Neelam (1991) explain their experience at VSL library, Ahmedabad. Palanivandy, M.V and Ravichandra Rao, I.K (1992) have described the importance of on-line circulation control systems in libraries and describe in full detail the software written by them to drive an on-line circulation control system based on dbase IV.

2.2. Literature Published Abroad

The leadership of Western Nations in technology development has hastened the adoption of modern technology for library activities in the Western countries. Experiments and research on library automation started there much earlier than in case of developing countries. As a consequence, already a great deal of literature is available on library automation including automated house-keeping systems. It is, however, not intended here to review them all.

On the other hand, only those studies which formed basic literature for the present study and those which have a direct bearing on the present study are highlighted. Further only those which are related to evaluation of automated house-keeping systems have been considered. Thus, comprehensiveness of the literature review on the subject has not been claimed in this study. Plenty of literature continues to be published on library automation. Quite a few specialized journals have emerged to publish only the studies related to library automation and information technology.

A perusal of the available literature shows that scores of articles on automated house keeping systems have already been published. Though, it is not possible to enlist them.
all, it is suffice to say that following are the important journals which carry articles regularly on the subject:

- Computers in libraries
- Information retrieval and library automation
- Information technology and libraries
- Library computer systems and equipment review
- Library Hi Tech journal
- Microcomputers for libraries
- On-line
- Program
- Library technology reports

Perusal of the literature reveals that many of the articles on automated house-keeping systems are more descriptive than evaluative in nature. In this connection, Chaudhury and Ashoor (1990) have rightly observed that "while a great deal of literature is available on automated systems, no comparative studies on the functions, performance, or user satisfaction of particular automated systems could be traced". Even in those studies which are evaluative in nature, one finds it difficult to find out the criteria on which the systems have been evaluated. Thus, the majority of them fall under the category of subjective evaluation of the person who evaluates the system.

A some recent studies have provided useful guidelines on the methodology of evaluation of automated systems. McQueen and Boss (1984) provided a comprehensive discussion on the selection and evaluation of serial control systems. Details of functional requirements and a checklist of required data elements mentioned in these surveys, provide useful suggestions for system evaluation.

Another detailed study related to evaluation of automated acquisition sub-systems was reported by Boss & others (1986) which provides an extensive checklist of functional capabilities of available acquisition systems. On the basis of a study undertaken by Information Consultants Inc., Boss, Espo and Harrison summarized information collected from vendor responses, relating to automated acquisition systems. The criteria used to describe acquisition features provide useful guidelines for evaluation of automated systems. Some other studies of different library automation sub-systems also provide Information useful for evaluation studies Matthews (1985)].

The purpose of this chapter is to present a brief review of the literature published relating to application of computers to house-keeping operations in libraries. From the perusal of the literature it is clearly discerned that the leadership of Western nations in application of modern technology continues to be strengthened. On the other hand, the response to the challenge of application of modern technology in India is rather slow. Nevertheless, with the advent of powerful and economically viable microcomputers in 1980s, libraries
in India are also increasingly adopting computers for their work and as a direct consequence of this there is a steady increase in the literature on the subject.

He most comprehensive and systematic work on the evaluation of automated systems, however, is the series by James E Rush Associates (1984-1988) that presents, in a concise and easily usable format, basic information on the requirement of the techniques for evaluating automated applications in libraries. The eight volumes of the James Rush series cover serial control, circulation, public service acquisition, management services, Interlibrary loans, cataloguing, and system integration.

In addition to the methodology for system evaluation, detailed information on system features and a checklist of data elements required, functional requirements of the systems for each major functions (e.g. Acquisitions, Circulation,...etc.) I provided. The investigator, however, could not trace from the reported literature any study which has adopted the methodology as suggested in these volumes for evaluation. Incidentally, it may be noted here that this study adopts the methodology suggested by Rush Associates in their eight volumes series.

Apart from the above literature, many basic books on library library automation provide few tips on evaluation of automated systems (Herring (1986); Lovecy (1986);

Rowley (1993); Lane (1990); Clayton (1992) and so on). The above-mentioned studies provide useful guidelines to develop an appropriate evaluation tool. However, as far as the actual evaluation of the automated systems themselves are concerned, the journal’ Library Technology Reports’ published by American Library Association has reported a few studies. Each issue of this journal is devoted to evaluation of a particular library system or equipment. As early as 1977, the journal has published a study "Computer-based circulation systems-A current review and evaluation” by Scholz (1977).

The author has evaluated five systems available at that time. Later, various studies on evaluation of circulation systems have been reported in the same journal. Boss (1979) has given a detailed discussion on selection and evaluation of automated circulation control systems in his article 'Circulation Control: the options’. A revised version of the same article was published by Boss and McQueen (1982). In 1986, Matthews (1986) evaluated sixteen commercially available microcomputer-based circulation control systems. Emily (1986) again reports in the same year the evaluation of 18 automated circulation control systems of large libraries. After four years of this study, again Matthews (1990,See Part I & II) updates and amplifies his earlier study by evaluating 24 integrated library systems Which contained circulation module also?

Similarly, studies on evaluation of automated acquisition systems and automated serials control systems have appeared in Library Technology Reports journal (See Boss (1981), Boss (1986), Boss (1992) for Acquisitions; and McQueen & Boss (1984), Boss (1992)
The important journals on library automation listed earlier do carry studies on individual automated systems. A simple search on LISA CD-ROM (Updated up to Fall 1993) Retrieved more than 810 records on the subject. This magnitude of the literature published on the subject restricts the investigator even to enlist them all here. As already stated, many of them are not really evaluative in nature as they just describe the system's functioning.

2.3 Concluding Observations

Computer application to library and information sector has been one of the major factors attracting the attention of the information professionals throughout the world. This process is hastened by the fact that the prices of computer hardware are fast decreasing and are increasingly coming within the reach of purchase by libraries and information centers. This has a clear impact on the libraries of the developing countries like India. This is vividly visible by the fact that there is an upsurge in number of experiments reported after microcomputers became popular and affordable.

In the last two decades, several attempts were made in India at institutional level for computerization of library and information services. Most of these efforts seem to have piecemeal approach and are not backed up by proper planning. Hence, there is no integrated system of library automation reported in the literature which can be considered as a model. However, a number of R&D organizations, Information Centers and Commercial Establishments are making efforts in this direction.

Another aspect which is very clear from the review of the literature is that no serious efforts have been reported so far in evaluating the existing systems in India. Considering this, the present study forms the first of its kind in India.

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