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# An evaluation of library automation in some Ghanaian university libraries

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## Abstract

**Purpose** – The study was undertaken to find out which library processes have been automated in Ghana's three older public university libraries namely, the Balme Library, the Kwame Nkrumah University of Science and Technology (KNUST) Library and the University of Cape Coast (UCC) Library.

**Design/methodology/approach** – Using data obtained through the use of questionnaires, the study examined areas of general automation, automation of specific library processes, networking, internet connectivity, training, and major constraints to library automation.

**Findings** – The study found out that even though the university libraries realize the importance of library automation, they are hampered by lack of funds, lack of support from the university administrations, and lack of skilled staff to embark on automation of all library processes. It was also revealed that none of the libraries have on OPAC (online public access catalogue).

**Originality/value** – The study concludes with recommendations that would enhance the university libraries drive towards automation of their library processes and ensure effective and efficient use of the new technology to raise the image of the libraries and give their library clients more services.

**Keywords** Automation, Ghana, Libraries, Universities, Internet

**Paper type** Research paper

## Introduction

Only a few years ago, librarians were hotly debating whether computers had any place in libraries, just as they discussed at the beginning of the twentieth century in respect of typewriters. Today, the library community as a whole is realizing that apart from the immediate practical advantages, computers and information technology (IT) in general are tools of a new information era which started with Gutenberg and lasted until the middle of the twentieth century (Cotta-Schonberg, 1989).

The emphasis in libraries is shifting from collections to access. Providing access to information has become the principal goal and activity, and coping with technology and change are the major driving forces of the emerging information age library. The explosion in the quantity, cost and communicability of information is a new phenomenon, which calls for new responses. Among these, responses must be a willingness to accept change. Producers of information are making more and more information available electronically and directly to the consumer in a more cost-effective manner. Consumers plug into the network to gain direct access to information in a variety of formats. The implication is that, the library's role as a first-step, one-stop or last resort information centre will change (Dempsey *et al.*, 1996).

The famous line from Thomas Carlyle is that the true university is a collection of books may have been true in his day, but it is not true today. This is an electronic age where universities and the libraries that serve must be more than a collection of books.



Today, there are major shifts in libraries. These shifts have been summarized succinctly as follows, from custodian of books, to service-oriented information provider, from one medium to multi-media, from own collection to library without walls, from in good time to just in time, from in-sourcing to outsourcing, from local reach to global reach, and from we go to the library comes to you (Dempsey *et al.*, 1996).

Library automation assured a great deal of importance in libraries in the mid-1960s. Since then it has become a household word in librarianship. Library automation may be defined as the application of automatic and semi-automatic data processing machines to perform library functions such as acquisition, circulation, cataloguing, reference service, and serials control (Daniel, 1980).

As a result of the recent developments, the public has entered cyberspace and expects its information provider, the library, to provide the launching pad. Accordingly, today's integrated system not only must provide modules automating the traditional library functions but also must be capable of connecting through the local systems into systems of other suppliers, databases – bibliography and full content, online and compact disk read only memory (CD-ROM) databases, and the internet. Library users now expect their library systems to be able to among other things: provide seamless integration between system gateways, remote and local databases through the public catalogue module; allow to access by remote users to library's resources, either by telephone or via the internet connection; and provide access to resources available on internet using a variety of graphical and multimedia-based software interfaces.

With this background, this paper reports on a study undertaken to find out which library processes have been automated in Ghana's three older public university libraries namely, the Balme Library, the Kwame Nkrumah University of Science and Technology (KNUST) Library and the University of Cape Coast (UCC) Library.

### Methodology

Evaluation studies are not distinguished so much by their methods as they are by their purposes; thus many research techniques are used to effectively evaluate library programmes and projects. At times interviews and questionnaires are used to elicit reactions or evaluations. This evaluative study used questionnaires to collect data. The study also relied on a population universe for its sample.

All staff (senior members and senior and junior staff) of the three university libraries involved were surveyed. The population sampled was selected from the Central University libraries only and not from the satellite or departmental libraries on the various campuses. Table I shows the populations from the various libraries from which the samples were taken.

For the questionnaire, questions were framed and written down for respondents to provide answers. Questions were asked in the following areas:

Category of staff	Balme Library	KNUST Library	UCC Library	Total
Senior members	13	7	10	30
Senior staff	28	7	9	44
Junior staff	49	30	41	120
Total	90	44	60	194

**Table I.**  
Populations of the three  
libraries

- general automation;
- automation of specific library processes;
- networking;
- internet connectivity;
- training;
- skills acquired;
- online public access catalogue (OPAC); and
- major constraints, especially funding, sustainability, etc.

**Presentation of results**

Out of the 138 questionnaires distributed 100 were received back giving a response rate of 72.5 percent. Table II gives a breakdown of the response rate from the libraries.

*Qualifications obtained*

Tables III-V give a statistical data about respondents with respect to highest qualification attained. Table III shows the results from UCC Library.

**Table II.**  
Response rate

Libraries	Number distributed	Number received	Percentage of response
Balme Library	59	47	79.6
Kwame Nkrumah University of Science and Technology	35	28	80.0
University of Cape Coast	44	25	56.0
Total	138	100	72.5

**Table III.**  
Highest qualification  
attained – UCC Library

Qualifications	Frequency <i>N</i> = 25	Percentage
Non-response	5	20.0
Diploma in library studies	6	24.0
Graduate diploma in library studies	5	20.0
MA library studies	1	4.0
Others	8	32.0
Total	25	100.0

**Table IV.**  
Highest qualification  
attained – KNUST  
Library

Qualifications	Frequency	Percentage
Non-response	10	35.7
Diploma in library studies	5	17.9
Graduate diploma in library studies	2	7.1
MA library studies	2	7.1
MPhil library	1	3.6
Others	8	28.6
Total	28	100.0

Table III shows that five (20 percent) of the respondents from the UCC Library did not indicate any qualifications, six (24 percent) have non-graduate diploma in library studies, five (20 percent) have graduate diploma in library studies, one (4 percent) has a master of arts in library studies while eight (32 percent) have other qualifications or just G.C.E. "O" Levels. Cumulatively, only 12 (48 percent) of the respondents have some qualification in library studies.

The data in Table IV show that the KNUST Library had ten (35.7 percent) staff with graduate diploma in library studies, two (7.1 percent) with master of arts in library studies, one (3.5 percent) with master of philosophy in library studies, and eight (28.6 percent) have other qualifications or just G.C.E. "O" Levels. Cumulatively only ten (35.7 percent) have library qualifications.

For the Balme Library, the data presented in Table V showed that respondents have the following qualifications, there were three (6.4 percent) non-response, while 11 (23.4 percent) have non-graduate diploma in library studies one has ALA, six (12.8 percent) graduate diploma in library studies, four (8.5 percent) have master of arts in library studies, one (2.1 percent) master of science in information science, two (4.3 percent) master of philosophy in library studies and 19 (40.4 percent) other qualifications or G.C.E. "O" and "A" Levels. Added together 25 (53.2 percent) of the respondents in the Balme Library have some kind of library qualifications. This is significantly higher than the other university libraries.

The qualifications do show that none of the librarians have qualifications in computer science. For library automation to be effective there should be a core of librarians who have gone beyond computer literacy in the knowledge of computing and IT. Some senior librarians should be given study leave to acquire at least a diploma in computer science or IT.

#### *Attitude towards automation*

One question focused on respondents' attitude towards automation. Most of the respondents in the three university libraries surveyed responded positively. This is a good sign that augers well for automation in these libraries. It indicates that most of the staff will be willing to learn new ways of doing things. The majority of the respondents indicated an overwhelmingly positive attitude towards library automation. Their main reason was because automation enhances library operation and gives access to more internal and external sources of information. In the Balme Library, 42 (89.4 percent) felt this way; 15 (53.6 percent) at KNUST Library and 18

Qualifications	Frequency <i>N</i> = 47	Percentage
Non-response	3	6.4
Diploma in Library Studies	11	23.4
ALA	1	2.1
Graduate Diploma in Library Studies	6	12.8
MA Library Studies	4	8.5
MSc Inf. Sci.	1	2.1
MPhil Library	2	4.3
Other	19	40.4

**Table V.**  
Highest qualification  
attained – Balme Library

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(72.0 percent) at the UCC Library also expressed this view. The implication here is that since majority of the respondents are aware of what library automation can do for their libraries they would participate fully in all library automation projects.

#### *Use of the internet*

The respondents were asked what use the internet connectivity in their libraries was being put to. The respondents were to indicate whether the internet was being used for, e-mail, inter-library loan/document delivery (ILL/DD), academic searches, reference work or for other things. At the UCC Library, 18 (72.0 percent) respondents said they were aware that it used for e-mail while 7 (28.9 percent) did not respond. On the other hand, only ten (40.0 percent) were aware that the internet was being used for ILL/DD service. This means that most of the staff do not know that the internet could also be used for ILL/DD services.

On the use of the internet for academic searches, 13 (52.0 percent) said yes while 12 (48.0 percent) did not give any response. For reference service, only 11 (44.0 percent) said the internet was being used for that purpose, while 14 (56.0 percent) did not give any response. Finally, on whether the internet was being used for other things, only four (16.0 percent) said they were aware it was being used for other things. A hefty 84 percent (21) did not give any response.

The results from the survey on the use of the internet at the Balme Library showed higher percentages than the results from the UCC Library. This is probably because there is more awareness of automation at the Balme Library than at the UCC Library. The results of the Balme Library show the following: 41 respondents (87.5 percent) were aware of the use of the internet for e-mail, while eight (12.6 percent) did not give any answer. Forty-four (93.6 percent) were aware of the use of the internet for ILL/DD services. The implication is that more of the respondents are aware that the Balme Library has internet connectivity because of the ILL/DD project. Respondents are also aware that the internet is used for academic searches by posting a high result of 45 (95.7 percent), only two (4.3 percent) gave no answer. For reference service, 35 (74.5 percent) were aware while 12 (25.5 percent) gave no answer.

On the other hand, the result of the use of the internet at the KNUST Library showed that respondents are only aware that the internet was used for e-mail because 20 (71.4 percent) said they were aware of this use while 8 (28.6 percent) did not give any answer. However, only three (10.7 percent) were aware that the internet was used for ILL/DD purposes. Again, only three (10.7 percent) were aware that the internet was used for academic searches and for reference work.

#### *Impact of automation on libraries*

The results obtained on the impact of automation makes interesting reading. While both the KNUST Library and the UCC Library had discouraging results, the Balme Library of the University of Ghana had very positive and encouraging results. The implication of these results is that while most of the staff actually see automation at work in their library, some staff members do not see it that way. One reason could be that all their automation projects are not functioning properly or there is very little in terms of automation in these libraries.

Results from the UCC Library showed that 3 (12.0 percent) of the respondents did not respond, 10 (40.0 percent) felt that automation had very little impact on the library

while 12 (48.0 percent) felt there was some impact. On whether the impact was either negative or positive, only 10 (40.0 percent) felt that impact was positive, while 15 (60.0 percent) did not respond. The respondents who felt that automation had little or no effect at all gave the following reasons for their answer four (15.0 percent) felt that their library was not automated; while two (80.0 percent) attributed it to slow internet and problem with connectivity and finally one (4.0 percent) felt that there was lack of proper management. These results show clearly that automation at this library has a long way to go.

Similarly, at the KNUST Library, 13 (46.4 percent) did not respond to the question whether automation has had any impact on their library; 10 (35.7 percent) said there was no impact at all while only 5 (17.9 percent) said there was some impact. On whether the impact has been negative or positive, 24 (85.7 percent) did not respond while only 4 (14.3 percent) felt the impact was positive.

The large percentages of non-response from both KNUST and UCC Libraries show that there is very little automation going on in these libraries. Those respondents who felt that the impact has not been positive gave the following reasons: three (10.7 percent) felt the library has not been automated, two (7.1 percent) recognized low level of automation while one (3.6 percent) attributed the negative impact to slow and problematic internet connectivity. Again, a large number of respondents 22 (78.6 percent) did not respond.

*Benefits of library automation to library users*

The respondents were asked whether in their opinion library users benefited from library automation in their libraries. Most of the respondents felt that since their library processes were not automated, users did not derive much benefit from automation. However, any time internet access was available respondents felt the benefit derived by users was access to external sources of information. Even in this not all respondents from the libraries surveyed were unanimous in their response. Table VI shows combined cases.

At the Balme Library, seven (14.9 percent) did not respond to the question, but 40 (85.1 percent) answered in the affirmative. On the other hand, at the KNUST Library, the following results were obtained: 21 (75.0 percent) respondents did not respond while 7 (25.0 percent) said yes. Similarly, at the UCC Library 12 (48.0 percent) did not respond while 13 (52.0 percent) said Yes.

*Automated cataloguing*

The libraries surveyed are creating a database of their proposed books using a library cataloguing software called Bibliofile. Again, the question on whether the cataloguing process was automated was to find out two things. First, it was to find out if the cataloguing process was automated since it is usually the first library process to be

Responses	Balme Library N = 47		KNUST Library N = 28		UCC Library N = 25	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Non-response	7	14.9	21	75.0	12	48.0
Yes	40	85.1	7	25.0	13	52.0
Total	47	100	28	100	25	100

**Table VI.**  
Access to external  
sources of information –  
Balme, KNUST, UCC  
Libraries

automated when a library decides to automate. Second, it is intended to find out if staff were aware that this process in the library was automated. Even though all libraries have automated their cataloguing process, not all staff are aware of this. Table VII shows the result of the three university libraries combined.

At the Balme Library 3 respondents (6.4 percent) did not respond, 12 (25.5 percent) said no, while 32 (68.1 percent) said yes. On the other hand, at the KNUST Library, 4 (14.3 percent) did not respond, 20 (71.4 percent) said no and only 4 (14.3 percent) said yes. The UCC Library had the following results: 1 (4.0 percent) did not respond, 10 (40.0 percent) said no, and 14 (56.0 percent) said yes. On whether the staff was trained to use the software for cataloguing, eight (17.0 percent) of the respondents at the Balme Library did not respond, and two (14.3 percent) said staff were not trained. However, majority of the respondents 37 (78.7 percent) answered in the affirmative, that staff had received special training to use the software. The majority of respondents at the UCC Library: 15 (60.0 percent) also said that staff had received special training to use the software, while 4 (16.0 percent) did not respond, and 6 (24.0 percent) said not and at the KNUST Library most of the respondents 13 (46.6 percent) did not respond to this question, 12 (42.9 percent) did not know about this special training to use the software, and only 3 (10.7 percent) said the staff had been trained.

#### *Online public access catalogue*

The question on the online public access catalogues (OPAC) was asked to find out if libraries have this facility. The results revealed that none of the libraries has on OPAC. An OPAC is a database of bibliographic records describing the holdings usually of one particular library. It allows searching by name, title and subject and offers online access through public terminals. Online catalogues were developed in the late 1970s and since then have become widely accepted as the contemporary form of catalogue in the developed world (Feather and Sturges, 1997). The development of OPACs first brought about the notion that libraries could somehow be distributed and that catalogues did not necessarily represent just the stock held within that particular building (Akeroyd, 2001).

It follows that apart from the internet and to some extent, the use of CD-ROM for searches, library users in the libraries under review do not see automation at work. The question was asked to find out how many people know what an OPAC is and whether if they have this knowledge they should be able to tell whether it exists in their library or not.

Results from the UCC Library showed that out of 25 respondents, 9 (36.0 percent) did not respond. However, 16 (64.0 percent) said the library did not have an OPAC. Interestingly, 15 respondents gave one reason or the other why the library does not

**Table VII.**

Is your cataloguing process automated?  
Balme, KNUST, UCC Libraries

Responses	Balme Library <i>N</i> = 47		KNUST Library <i>N</i> = 28		UCC Library <i>N</i> = 25	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Non-response	3	6.4	4	14.3	1	4.0
Yes	32	68.1	4	14.3	14	56.0
No	12	25.5	20	71.4	10	40.0
Total	47	100	28	100	25	100

have an OPAC. Ten (40.0 percent) did not respond to why the library does not have an OPAC. Four (16.0 percent) said that the library did not have an OPAC because the staff did not have the expertise, and five (24.0 percent) felt both lack of funding and expertise were responsible for the absence of an OPAC.

At the Balme Library, 5 (10.9 percent) did not respond while 38 (80.09 percent) said the library did not have an OPAC. Surprisingly, four (8.5 percent) said the library did have an OPAC. These respondents, it is apparent, do not know what an OPAC is. On the question of why they thought the library does not have an OPAC, most of the respondents 35 (74.5 percent) felt that the library did not have an OPAC because there was no money to buy the software for it. Again, 12 (25.5 percent) did not respond.

At the KNUST Library, 8 (28.6 percent) did not respond to the question while 20 (71.4 percent) said that the library does not have an OPAC. On why they thought the library does not have an OPAC, 16 (57.7 percent) did not respond to the question while for 4 (14.3 percent) said that the library lack the expertise, and 8 (28.6 percent) felt that the absence of an OPAC was due to lack of funding.

#### *Adequately trained to use the computer*

The answer to the question whether respondents were adequately trained to handle the computer produced interesting results. In the first place, respondents demonstrated that they understood the question. Second, the respondents also drew a line of distinction between having ever used a computer and being adequately trained to use it.

At the Balme Library, even though 45 (95.7 percent) said they have used the computer before, however, when respondents were asked if they have been adequately trained to handle the computer, only 25 (53.2 percent) said yes, 21 (44.7 percent) answered in the negative, and 1 (2.1 percent) did not respond. At the UCC Library, even though 19 (76.0 percent) said they had used a computer before, only 12 (48.0 percent) said they have been adequately trained to handle the computer, 11 (44.0 percent) did not feel adequately trained to handle the computer, and 2 did not respond. Again, at the KNUST Library, 67.9 percent said they had used a computer before but when they were asked if they were adequately trained to handle the computer, 13 (46.4 percent) answered in the affirmative, 10 (35.7 percent) in the negative, while 5 did not respond.

The results indicate that the libraries have to give more regular and purposeful computer training to their staff. Table VIII is a presentation of the results of combined cases from all three University Libraries.

#### *CD-ROM databases*

CD-ROM is one of the most popular types of computer-based media – holding the equivalent of about 250,000 type written pages or 500,000 catalogue cards or

Responses	Balme Library <i>N</i> = 47		UCC Library <i>N</i> = 25		KNUST Library <i>N</i> = 28	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Non-response	1	2.1	2	8.0	5	17.9
Yes	25	53.2	12	48.0	13	35.7
No	21	44.7	11	44.0	10	46.4
Total	47	100	25	100	28	100

**Table VIII.**  
Do you think you are  
adequately trained to  
handle computer?

500 high-density floppy diskettes. The importance of the CD-ROM – particularly in developing countries – to library automation cannot be over estimated. CD-ROM databases allow unprecedented access to almost any word in the records as opposed to the lead term in the title, author, and exact subject heading in printed publications.

The subjects were requested to state whether they know how to search CD-ROM databases. The answer to this question was to make the researcher aware of two things, first, whether the library has CD-ROM databases and second, how many staff know how to use this facility. The results of the combined cases are shown in Table IX.

It can be seen from the results that CD-ROM use is not prevalent at both the KNUST and UCC Libraries. At KNUST Library 16 (57.1 percent) said they cannot access CD-ROM databases and only 8 (28.6 percent) answered in the affirmative. At the UCC Library, 15 (60.0 percent) answered in the negative while only 7 (28.0 percent) answered in the affirmative. However, at the Balme Library, 31 (66.0 percent) answered the question positively while 15 (31.9 percent) answered the negative. This shows that even though not all respondents at the Balme Library can access the CD-ROM databases a sizeable number of them know how to use it. The other university libraries would do well to put in place CD-ROM databases and encourage their use. KNUST had six CD-ROM discs (1988-1992) of the compendex engineering index as a result of the America Association for the Advancement of Science (AAAS) project. However, this CD-ROM service collapsed when the one in charge of the service left the library.

#### *Some problems of library automation*

Respondents were requested to state in their own words what they thought were some of the problems of automation in their libraries. The following problems were mentioned:

- apathy on the part of university and library management;
- lack of funds;
- lack of expertise;
- lack of training for staff;
- frequent break down of computers and internet link; and
- inadequate computers and lack of maintenance.

#### **Recommendations**

The following recommendations are made based on the findings of this research. The recommendations are made to serve as a guide to all libraries in general and especially university libraries in Ghana which intend to automate their library processes. The recommendations are for university administrations, university librarians, librarians and policy makers.

Responses	Balme Library <i>N</i> = 47		KNUST Library <i>N</i> = 28		UCC Library <i>N</i> = 25	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Non-response	1	2.1	4	14.3	3	12.0
Yes	31	66.0	8	28.6	7	28.0
No	15	31.9	16	57.1	15	60.0
Total	47	100	28	100	25	100

**Table IX.**  
Do you know how to  
access CD-ROM  
databases?

Since there can be no library automation without computers and their accessories, the required number of computers and accessories should be purchased for the university libraries. In fact, the libraries should be allowed to purchase computers of their choice. The situation where libraries have indicated specifications for computers they want but were ignored and some other computers dumped on the libraries is not satisfactory. This attitude by the university administration is creating a lot of problems and frustration for the university libraries in Ghana.

Sufficient funds should be made available by the university administrations to fund automation projects. It should be noted that a library, which has better resources performs better. Resources are the source of organizational capabilities. In addition to that, university libraries should cooperate with the university administration to initiate automation projects. This way, the attitude of the university administrations towards libraries will be more positive and more proactive.

As a matter of urgency all library process should be automated, because university libraries in Ghana are lagging behind in terms of automation of library process compared to libraries in the developed countries. So far, all the university libraries surveyed here have only started creating databases of their stock in the cataloguing departments. None of the libraries has an OPAC. Automation of all library processes can enhance the inter-library loan capacities of the libraries through networking of their library resources online.

Library software is very important in library automation. It is recommended that library software for all library process should be acquired. Librarians should be taught skills, which will enable them identify appropriate software for their library needs. They can also be taught how to write in-house software for their libraries especially in sections where their collections are not so large.

Since computer experts are in high demand all over the world (Ghana is no exception) it is very difficult to engage their services. For automation to be successful in university libraries in Ghana, it is recommended that such libraries encourage their professional staff to study to at least the diploma level in computer science or some equivalent qualification. Alternatively, library and information science degree courses should have an extensive computer science aspect in their curricula. This will make the professional libraries well equipped to handle many automation issues in their libraries instead of the current state of absolute reliance on computer experts, for whom library issues are largely secondary.

Local area networks (LAN) should be set up in all the university libraries. LANs can also be very useful when there libraries have OPACs because library users can then search the library's catalogue anywhere in the library.

Library staff should be made aware of ongoing projects in the library, especially those to do with automation, so as to create the awareness and feeling of belonging. The staff, on the other hand, should be curious about things going on in the library.

More often than not when people talk about automation, they are referring to hardware and software, ignoring the human aspects of automation, especially staff and user training. The study revealed that none of the libraries surveyed has a firm training programme in place. It is, therefore recommended that a training programme should be put in place in all the university libraries. The training should be ongoing because when we automate we are not only learning how to use the automated system; we are in fact, learning new jobs. No operation is better than its personnel.

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The advancement of individuals who operate library automation programmes is a critical element in the success of automation.

### Conclusion

The introduction of computers into libraries is impacting library and users expectations. Automation in libraries, as in any other field, has had far-reaching effects on everyday practices and on librarianship as a profession. While routine tasks have been removed, additional work in running the computer systems is necessary, and many libraries have created a post of systems librarian for this purpose. Processing, implementing and running systems have meant that librarians need to be increasingly computer literate. As more information seeking is carried out by end-users on their own computers, the librarian's role is additionally becoming that of an information advisor.

Librarians need to become missionaries and consider how best they can serve their target audiences in the wake of ongoing developments in library automation. The university libraries in Ghana have to do a lot to be fully automated. The university administrations should be paying more than lip service to the development of the university libraries, especially where automation is concerned. Reliance on donors for funding automation projects should be reduced. The level of networking within and among university libraries is very low because most of the library processes are not automated and above all none of the libraries evaluated has an OPAC. University libraries should get their various university administrations to purchase an OPAC software for them as a matter of urgency and finally more computers should be purchased for the libraries because there can be no library automation without investment in computers. The study showed overwhelmingly that the librarians in the universities can make a difference if their universities give them the necessary support.

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