

ICT Infrastructure and Automation in First Grade College Libraries Affiliated to University of Mysore: A Study

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***Abstract** - The present paper provide the ICT infrastructure available for automation and constraints faced by librarians for automation of first grade college libraries affiliated to University of Mysore. A structured questionnaire was used as the tool to collect basic inputs from college libraries to understand the present status. A total of 160 colleges were taken up for the study in which 135(84.37%) colleges responded , 15 colleges did not have librarian and remaining 10 librarians did not respond inspite of repeated request. The findings ofthe study reveal that computers and internet connectivity are entering slowly in the academic library setup that helps in handle day to day routine work. Library functions have been automated on top priority under the pretext of NAAC assessment. Inadequate budget for automating the library facilities and services addition to the lack of trained staff to automate and maintain up-to-date services of libraries aremajor constraint.*

Keywords: ICT, Library automation, College libraries, University of Mysore

Introduction

World is continuously evolving with more advanced devices to perform everyday tasks more efficiently and more easily. With the advancement of information and communication technology, there has been an immense growth of literature. This has led to information explosion with libraries having an increased amount of reading material. Further the increase in the number and diversity of users and the demand for better library services by the users have made the libraries to make use of the technological convergence. There has been revolutionary transformative effect on information and resources management in the libraries by use of computer for day-to-day housekeeping operations. The use of computers in libraries avoids repetitive jobs and save labour and time both for users as well as the library staff.

Review of literature

Computers in libraries have immensely enhanced the effectiveness of library services including efficient organization and retrieval of information activities. Since the application of information technology in libraries, one of the greatest challenges before the library managers is the selection of a good library automation software package which can cater to the needs of a particular library (**Onoriode & Iwighrehweta, 2014 & Husain & Ansari,**

2007). Uwaifo(2007) a survey approach to determine the attitudes of academic librarians in Nigeria. Majority of the librarians registered a high and positive attitude towards library automation. **Dietz (2005)** discussed how libraries and vendors can work together to offer the best information for consumers. Automation vendors and librarians must work together to ensure that the profession is positioned to take advantage of changing culture and technology to assume a rightful place at the table where rich and diverse information resources will serve global users. **Breeding (2009)** explains the overall working of the Integrated Library System, or ILS, provides computer automation for all aspects of the operation of a library. These products are generally organized into modules that address specific functional areas.

Objective of the study

The study has been conducted with the following objectives.

- To identify the infrastructure facilities available for automation in First grade college libraries affiliated to University of Mysore.
- To know the libraries which have undertaken automation function in first grade college libraries affiliated to University of Mysore
- To find out barriers to library automation faced by the staff among first grade college librarians

Methodology

The present study used the structured questionnaire as a tool. The details of affiliated colleges to University of Mysore were taken from the website of University of Mysore. The questionnaires were distributed to all the 160 librarians of first grade colleges affiliated to University of Mysore. Apart from distributing the questionnaires, informal personal interview with selected librarians was conducted and observation in the libraries was also done. The authors had made continuous efforts to collect the data from the librarians of the first grade colleges. A total of 135 duly filled in questionnaires were received with the response rate of 84.37% (135). It was found that 15 first grade college libraries did not have librarians and 10 librarians did not respond. The collected data is tabulated using SPSS statistical package.

Data Analysis

Table 1: Number of Library Staff Working in the Colleges

Designation	No. of Library Staff	Percentage
Professional staff		
Librarians	135	100
Assistant Librarians	20	14.81
Library Assistants	63	46.66
Non-Professional staff		
Computer Assistants	7	5.18
Library Attendants	39	28.88

Above table-1 shows the distribution of library staff working in the colleges libraries affiliated to the University of Mysore. It can be observed that all the 135 colleges have a librarian and 20 (14.81%) college libraries have an assistant librarian. It can also be noted that overall there are a total of 63 (46.66%) library assistants, 39 (28.88%) library attendants

and 7 (5.18%) computer assistants working at these college libraries, which are affiliated to the University of Mysore.

Table-2: Experience of Librarians

Range in Years	Experience in Years	Percentage
1-5	49	39.29
6-10	36	26.66
11-15	25	18.51
16-20	14	10.37
21-25	4	2.96
26 and above	7	5.18
Total	135	100

The experience of librarians working in first grade colleges affiliated to the University of Mysore is shown in table-2. The highest number of librarians (39.29%) had experience of 1 to 5 years, followed by 36 librarians (26.66%) having 6 to 10 years of experience and 25 librarians (18.51%) having 11 to 15 years of experience. It can also be seen from the table that only 4 librarians (2.96%) had 21 to 25 years of experience and 7 librarians (5.18%) had above 26 years of experience. It can be noted that almost 65% of librarians have experience below 10 years.

Table-3: Facilities and Services Offered by Libraries

Services	No	%	Services	No	%
Circulation of books	135	100	Current Awareness Services(CAS)	105	77.77
Reference & Information Services	135	100	Internet search facility	68	50.37
Newspaper Clipping Services	124	91.85	Reprographic service	58	42.96
Inter Library Loan Services	10	7.40	DVD and CD-ROM Searches	43	31.85
OPAC	29	21.48	Others: Question papers	63	46.66

The table-3 depicts the services provided by the libraries affiliated to the University of Mysore. The main functions of libraries are directed at actively exploiting the collection to satisfy the information needs of library users. It is observed that all the 135 (100%) libraries extend borrowing of books and provide reference and information services to the users. This is followed by 91.85% of libraries providing newspaper clipping services and 77.77% providing current awareness services. It is interesting to note that only 29 colleges (21.48%) of libraries provide OPAC terminal facility to users in their libraries.

Table-4: Availability of Computers in Libraries

Range	No. of Colleges	Percentage
1-10	80	85.10
11-20	8	8.51
21-30	6	6.38
Total	94	100

The availability of computers in libraries is indicated in table4. The computers are used by academic library users for browsing the Internet and obtaining necessary information from the Web. Out of 94 college libraries, 80 colleges (85.10%) are having computers in the range of 1-10. A total 8 (8.51%) college libraries are having computers in the range of 11-20 and 6

(6.38%) college libraries are having computers in the range of 21-30. It could be noted here that computers and access to internet browsing facility is provided in library premises.

Table-5: Internet Connectivity in the Libraries

Internet Connectivity	No. of Colleges	Percentage
Yes	94	69.62
No	41	30.38
Total	135	100

The college libraries having internet connectivity is shown in table 5. In the present world, access to Internet has become inevitable for every academic institution. The ICT has transformed the library into a new information unit by facilitating electronic operations of various library functions such as cataloguing, acquisition and serial control, electronic interlibrary loan and electronic circulations(Baro& Oyinnuah Asaba, 2010).Among 135 college libraries, 94 representing 69.62% possess internet connectivity and the remaining 41 college libraries which account for 30.38% do not possess internet connectivity. These libraries have to acquire internet connectivity to meet the expectations of the library users and to extend up-to-date and quality library services.

Table-6: Type of Internet Connectivity in the Libraries

Type of Internet Connectivity	No. of Colleges	Percentage
Broad Band	5	5.32
Leased Line	12	12.76
Wi-Fi	77	81.92
Total	94	100

Internet connection options vary by Internet Service Provider and by region. The following factors are considered before selecting an Internet package: speed or bandwidth, cost, availability, reliability and convenience. Different types of Internet connections are available in the market today. The type of internet connection used in the college libraries is shown in table 6. Out of 94 college libraries having the internet connection, 77 (81.92%) are having Wi-Fi connection, 12 (12.76%) have leased line connection to internet, 5 (5.32%) college libraries have broad band connection. It is seen that majority of colleges are having Wi-Fi internet connectivity.

Table-7: Bandwidth/Speed of Internet Connectivity

Speed of Internet	No. of Colleges	Percentage
64KBPS	06	6.38
128KBPS	08	8.51
1MBPS	42	44.68
2MBPS	38	40.42
Total	94	100

Internet speed is measured by how much data the connection can download (download speed) or upload (upload speed) per second. The speed is shown as bits per second. The speed of internet connectivity is indicated in table 7. Out of 94 college libraries, 42 libraries are having 1mbps of speed,38(40.42%) libraries are having speed of 2mbps, 8 (8.51 %) college libraries are having 128kbpsand 6(6.38%) libraries are having 64 kbps speed of internet connectivity. It is observed that most of college i.e. is 42 libraries representing 44.68% are having 1mbps.

Table-8: Internet Service Providers

Internet Service Providers	No. of Colleges	Percentage
Government	80	85.11
Private	14	14.89
Total	94	100

The internet service providers to the college libraries affiliated to the University of Mysore is shown in table 8. Internet Service Providers (ISP) have emerged as one of the most important and effective ways to improve the efficiency of operation. There are various internet service providers in the market. Out of 94 college libraries, 80 (85.11%) are using government internet service and 14 (14.89%) college libraries are using private internet service in their libraries. A majority of 80 college libraries representing 85.11% are using government internet service.

Table-9: Type of Internet Service Availed

Type of Internet	No. of Colleges	Percentage
ERNET	01	1.06
BSNL	80	85.10
Airtel	04	4.25
JIO	09	9.57
Total	94	100

The type of internet service used in college libraries affiliated to University of Mysore is presented in table 9. An Internet service provider (ISP) is an organization that provides services for accessing, using, or participating in the Internet. Internet service providers can be organized in various forms, such as commercial, community-owned, non-profit, or otherwise privately owned etc. The BSNL internet service is used in 80 (85.10%) libraries, 9 (9.57%) libraries are using Jio Data Network, and 4 (4.25%) libraries are using Airtel Data Network in their libraries. The government owned internet service BSNL is used in majority of college libraries i.e. is 80 (85.10%) than the private internet service.

Table-10: Availing E- Shodhsindhu Service of Inflibnet centre

E-Shodhsindh service	No. of colleges	Percentage
Yes	67	71.27
No	27	28.72
Total	94	100

The table 10 shows the college libraries availing E-Shodhsindhu service of INFLIBNET centre. The E – shodhsindhu service is to access peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its institution at nominal cost. Out of the 94 college libraries, 67 (71.27%) are availing E-Shodhsindhu service and the remaining 27 (28.72%) college libraries are not accessed to E-Shodhsindhu service. It is essential to have computer and internet facilities for providing effective information services to the users.

Table-11: College-Wise Status of Automation

College	NAAC					Total	Chi square		
			Completely Automated	Partially Automated	Not automated		Chi square	P value	Result
Government	Yes	Count	9	30	2	18.9514	0.00	Accepted	
		%	15.0%	50.0%	3.3%				68.3%
	No	Count	1	8	10				19
		%	1.7%	13.3%	16.7%				31.7%
Total	Count	10	38	12	60				
	%	16.7%	63.3%	20.0%	100.0%				
Aided	Yes	Count	4	11	3	NA			
		%	21.1%	57.9%	15.8%				94.7%
	No	Count	0	0	1				1
		%	0.0%	0.0%	5.3%				5.3%
Total	Count	4	11	4	19				
	%	21.1%	57.9%	21.1%	100.0%				
Private	Yes	Count	3	2	1	7.42	0.024	Accepted	
		%	6.4%	4.3%	2.1%				12.8%
	No	Count	4	13	24				41
		%	8.5%	27.7%	51.1%				87.2%
Total	Count	7	15	25	47				
	%	14.9%	31.9%	53.2%	100.0%				
Autonomous	yes	Count	8	1	0				
		%	88.9%	11.1%					100.0%
	Total	Count	8	1	0				9
		%	88.9%	11.1%					100.0%
Total	yes	Count	24	44	6	40.22	0.000	Accepted	
		%	17.8%	32.6%	4.4%				54.8%
	No	Count	5	21	35				61
		%	3.7%	15.6%	25.9%				45.2%
Total	Count	29	65	41	135				
	%	21.5%	48.1%	30.4%	100.0%				

The status of automation in the different college libraries with NAAC accreditation is furnished in table11 which is self explanatory. Among 94 college libraries, it is found that 9(15%) government college libraries are totally automated with NAAC accreditation. Among the government colleges which are NAAC accredited, 30(50%) are partially automated and 2(3.3%) have not automated their functions and services. Among the non NAAC accredited government colleges, just 1(1.7%) library is totally automated and 8(13.3%) are partially automated. It is highlighting to note that 10(16.7%) government colleges are neither NAAC accredited nor they have automated their functions and services.

With regard to the status of private aided colleges which are totally automated with NAAC accreditation, 4(21.1%) college libraries are identified and further 11 (57.9%) aided college libraries are partially automated. However, there are 3(15.8%) aided colleges libraries which have not automated their functions and services but NAAC accredited. The private aided college which is not accredited with NAAC and also not automated their functions and services account for 5.3% involving just 1 library.

While considering automation of unaided private colleges which are accredited with NAAC certification there are altogether 3(6.4%) libraries which are completely automated. 2(4.3%) of the private unaided college libraries are partially automated and just 1(2.1%) of the private unaided college library has not automated its functions and services though it is accredited with NAAC Certification. While considering the unaided private colleges which are non NAAC accredited, 4(8.5%) are totally automated; 13(27.7%) are partially automated

and non-automated libraries, non NAAC accredited account for 24(41.1%) libraries which happens to be a huge segment of libraries.

While referring to the status the autonomous colleges, NAAC accredited and completely automated are 8(88.9%) college libraries representing 88.9% and partially automated is 1library representing 11.1%. It is highlighting that all the autonomous college libraries are NAAC accredited and no single library is without automation status.

The above table also shows that there is a significant association among the libraries of the colleges irrespective of government or private or Aided or autonomous but NAAC assessment plays a vital role in the status of automation either partially or completely. The associations are found to be significant among the status of automation and NAAC affiliation of the colleges. Therefore there is a association among the status of automation and NAAC affiliation of the colleges affiliated to university of Mysore at 95% of level of confidence. There is a significant association among the status of automation and NAAC affiliation of the colleges affiliated to university of Mysore.

Table12: Software Packages Adopted in Different College Libraries

College	NAAC		LMS software Adopted							Total	Chisquare		
			EG	EL	KH	LS	NL	SM	WI		IH	Chi-square	P value
Government	yes	F	22	12	4		1	1			40	5.1	0.079
		%	45.8	25.0	8.3		2.1	2.1			83.3		
	No	F	3	1	4		0	0			8		
		%	6.3	2.1	8.3		0.0	0.0			16.7		
	Total	Ft	25	13	8		1	1			48		
		%	52.1	27.1	16.7		2.1	2.1			100.0		
Aided	yes	F	3	3	5	2		2		2	17	0.00	1
		%	17.6	17.6	29.4	11.8		11.8		11.8	100.0		
	No	F	3	3	5	2		2		2	17		
		%	17.6	17.6	29.4	11.8		11.8		11.8	100.0		
Private	yes	Ft	0	1	1	2	1	0	0	0	5	2.64	0.45
		%	0.0	4.5	4.5	9.1	4.5	0.0	0.0%	0.0	22.7		
	No	F	2	4	7	0	0	0	1	1	17		
		%	9.1	18.2	31.8	0.0	0.0	0.0	4.5%	4.5	77.3		
	Total	F	2	5	8	2	1	0	1	1	20		
		%	9.1	22.7	36.4	9.1	4.5	00%	4.5	4.5	100.0		
Autonomous	yes	Ft		3	1		5				9	NA	
		%		33.3	11.1		55.6				100.0		
	Total	F		3	1		5				9		
		%		33.3	11.1		55.6				100.0		
Total	yes	F	25	19	11	4	7	3	0	2	71	10.95	0.27
		%	26.0	19.8	11.5	4.2	7.3	5.2%	0.0	2.1	74.0		
	No	Ft	5	5	11	0	0	0	1	1	23		
		%	5.2	5.2	11.5	0.0	0.0	0.0%	1.0	1.0	26.0		
	Total	F	30	24	22	4	7	3	1	3	94		
		%	31.3	25.0	22.9	4.2	7.3	5.2%	1.0	3.1	100.0		

The library software package adopted in the college libraries and NAAC status is shown in the table 12. E-granthalaya software is adopted in 22(45.8%) government NAAC accredited colleges and 3(6.3%)non NAAC accredited government colleges; 3(17.6%) private aided NAAC accredited college; further, 2(9.1%) private non NAAC accredited colleges and a total of 30 (31.3%)colleges have adopted E-Granthalaya software.

The Easy Lib Software has been adopted in 12(25.0%) government NAAC accredited colleges and 1 (2.1%) government non NAAC accredited college; 3(17.6%) private aided colleges with NAAC accreditation and 1(4.5%) private unaided college have also adopted Easy Lib; 4(18.2%)private non NAAC accredited colleges and 3(33.3%) autonomous colleges have adopted Easy Lib. Above all, a total of 24(25.0%) college libraries have adopted the Easy Lib software package.

The Koha software has been adopted in 4(8.3%) government NAAC accredited colleges and 4(8.3%) government non NAAC accredited colleges; 5(29.4%) private aided with NAAC accreditation colleges and 1(4.5%) private NAAC accredited college has adopted Koha; private non NAAC accredited 7(31.8%) colleges; autonomous 1(11.1%) college and total of 22(22.9%) college libraries have adopted Koha software.

The Libsoft software is adopted in 2(11.8%) aided NAAC accredited colleges; 2(9.1%) private NAAC accredited colleges and a total of 4(4.2%) college libraries have adopted Libsoft software.

The New gen lib software has been adopted in 1(2.1%)government NAAC accredited college and 1(4.5%) private NAAC accredited college; 5(55.6%) autonomous colleges and a total of 7(7.3%) college libraries have adopted New Gen Lib software.

The SLIM ++ software is adopted in 1(2.1%) government NAAC accredited college and 2(11.8%) aided NAAC accredited college libraries and a total 3 (5.2%) college libraries have adopted SLIM ++ software.

The software WINISIS is adopted in 1(4.5%) private non NAAC accredited college. The in house developed software is being used in 2(11.8%) aided colleges and 1(4.5%) private non NAAC accredited college and a total of 3(3.1) libraries are using the in-house developed software. Among 94 college libraries, 60(63.83%) have adopted the open sources software which shows knowledge and skill of the librarians regarding the software.

The above table-12 shows that there is a significant association among the libraries of the colleges irrespective of government or private or Aided or autonomous but NAAC assessment plays a vital role.It is further observed that the software packages likeEG, EL and KH are preferred among the colleges with NAAC affiliation. The associations are found to be non-significant among the types of the software’s adopted and NAAC affiliation.Therefore there is a non-significant association among the different types of Software packages adopted and NAAC affiliation of the colleges affiliated to university of Mysore with value $p>0.05$.

Abbreviation used: EG = E-Granthalaya, EL= Easylib, KH= Koha, LS= Libsoft, NL=New Gen Lib, SM= SLIM++, WI= WINISIS, IH =In house developedlibrary automation software, NAAC = National AssessmentAnd Accreditation Council.

Table-13: Constraints to the Library Automation

Barriers	No. of College Librarians	Percentage
Lack of trained staff	84	89.36
Lack of training	79	84.04
Lack of IT skill for users	58	61.70
Lack of coordination among the library staff	54	57.44
Lack of manpower`	43	45.74
Inadequate finance	86	91.48
Lack of support from management	76	80.85

The constraints or barriers faced by the library staff during automation is shown in the table 13. The operations in an automated library system are usually more complex and require

more precision in their execution than a manual system. While it can perform at incredible speeds, a computer can do nothing that it is not programmed to do. Unfortunately, they have problems with their chosen areas of computer application and these have prevented them from successfully automating these processes (Amekuedee, 1995). The major constraint was inadequate finance faced by 86(91.48%) college libraries, lack of training happens to be a constraint faced by 79(84.04%) college libraries, lack of trained staff is faced by 84(89.36%) college libraries, lack of support from the management is faced by 76(80.85%) college libraries, lack of IT skill on the part of users is faced by 58(61.70%) college libraries, lack of coordination among the library staff is faced by 54(57.44%) college libraries, lack of manpower is faced by 43(45.74%) college libraries and lack of support from management is faced by 76(80.85%) college libraries. Among all the constraints, inadequacy of budget and apathy on the part of management are the major constraints in automating the library facilities and services.

Findings

- Majority of the librarians comprising 56(41.48%) respondents are in the age group of 31-40 years and further 49(39.29%) librarians possess experience in the range of 1-5 years. Hence, most of the working librarians are appointed quite recently.
- Among 135 college libraries, 94 representing 69.62% possess internet connectivity and 81.92% (77) colleges are having Wi-Fi internet connectivity.
- Out of 94 college libraries, 80 representing 85.10% are having computers in the range of 1-10, BSNL internet service is availed among these colleges and 42 libraries representing 44.68% are extending 1MBPS speed of internet connectivity.
- Out of the 94 college libraries, 67(71.27%) are availing e-shodhsindhu service from UGC INTERNET Centre which facilitates access to e-journals and online databases.
- Out of 94 college libraries which have automated their functions and services, 29(30.85%) have applied all the modules and completely automated their functions and 65(69.15%) college libraries have partially automated their functions.
- It is identified that in the total of 94 colleges libraries, open source software are used in 60(63.82%) college libraries; 31(33.00%) college libraries have adopted commercial software; and 3(2.27%) college libraries have their in house developed software for the library housekeeping work.
- Apart from the open source software used it is observed that 30(31.25%) have adopted E-Granthalaya software which is an open source software; 24 colleges (25%) Easylib software. Easylib software has been implemented in many government colleges due to the effort of the College Development Council to automate the library functions and services as well as meet to NAAC requirements. The Libsoft has been adopted in 4 (4.16%) colleges; New Gen Lib software is adopted in 7(7.29%) colleges; SLIM ++ is adopted in 3(5.20%) colleges; 3(3.12%) of the colleges have their own In-house developed software, 1(1.04%) college library has adopted WINISIS to automate their library functions and services.
- From the study it is found that 9(15%) government college libraries are totally automated with NAAC accreditation. Further, among the government colleges which are NAAC accredited, 30(50%) are partially automated and 2(3.3%) have not automated their functions and services. From among the non NAAC accredited government colleges, just 1(1.7%) library is totally automated and 8(13.3%) are partially automated.
- While referring to the status the autonomous colleges it is found that NAAC accredited and completely automated are 8(88.9%) college libraries representing

88.9% and partially automated are 1 library representing 11.1%. It is highlighting that all the autonomous college libraries are NAAC accredited and no single library is without automation.

- Among all the constraints, inadequacy of budget is the major constraint. In 86(91.48%) libraries budgetary constraint is felt. Further, lack of training happens to be a constraint faced by 79(84.04%) college libraries.

Suggestions

- The colleges should recruit the librarian where it is vacant. The college management should provide required human resources i.e. the vacant posts of librarian, assistant librarians and library assistants need to be filled up on priority and new posts should be created as per requirements.
- The college libraries have a great responsibility to provide the Internet facility that should be open to all users without any interruptions or problems with connectivity. The college management will have to use appropriate technologies and systems so that the staff will get seamless access to the Internet. Campus Wi-Fi facility can also make the online tools and services available to students and staff open throughout the year.
- The adequate finance should be provided from the management to equip with new and emerging technologies for the benefit of the staff. There is scope for the college libraries to increase the number of computers with the latest hardware and other IT infrastructure such as printers, scanners, etc. Hence, the management of colleges have to maintain need based systems.
- The partially automated college libraries should try to fully automate the library functions and services. As all the modules are interlinked in integrated systems and the correct use of the module automatically complements the activities of the subsequent modules in some way or other. The catalogue links or network accessibility to library catalogue should be provided. Hence, integration of OPAC and web OPAC is a must for all the college libraries to serve the user communities. Initiatives should be taken to establish a union catalogue of college libraries which will facilitate the practice of inter library loans.
- The non automated colleges should encourage their libraries to implement open source software, so that considerable amount of budget could be saved. The automation processes need to expand and focus on user services based on need and value-added facilities like electronic bulletin board service, computer-based information services, latest information through Email attachment etc.
- It is suggested that the librarians of the first grade colleges have to become familiar with automation of library functions and services. For this purpose, librarians have to attend intensive training programs on deputation or have to become proficient on their own by taking the assistance of computer professionals of the college. The college librarians have to attend workshops and training programmes from time to time to keep themselves abreast of latest trends and developments.

Conclusion

Of late, libraries have to adopt technology to extend information services and thereby meet the expectations of the user communities at large. Automation of the academic library functions and services in fact is an essentiality upon which the library resource sharing programmes and cooperative ventures rely upon. Computerization or automation not only

helps the college libraries to extend better information services but also found useful in promoting access to online information services which is looked upon as the current trend and the need of the hour. Automation facilitates quicker identification and acquisition of documents. Further, promotes the processing of information, as well as, access to wide range of information products and services across the world. Above all, it is high time that all the libraries in the higher education institutions must automate the functions so that resource sharing programmes in the network environment can be easily augmented.

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