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# **Study of Library Automation and Computing Skills of Library Professionals in Goa**

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## **Abstract**

Computers have become an essential part of our daily lives. With computers' help, one can perform various tasks related to analysing, computing, and publishing tasks more efficiently. Software and computing software programs support library services in dealing with the users' needs and demands for knowledge. With the advent of advanced library software for automation and digital preservation of knowledge, libraries worldwide have transformed the services from manual to automated. There are various software and solutions available for reading and reference. This research work tries to various collect data and insights on automation, library professionals' skills in handling the computer technologies, educational background of the library profession and their contribution, tools, and technologies used and implemented by libraries, important factors for change, hindrance, and other stagnating factors playing a critical role in the automation and skill development in the state of Goa of India.

**Keywords:** Library and Information Science, Automation, Computer Software, Library Automation, Digital Library, Computing Skills, Literacy, Goa.

## **Introduction:**

Information and Communication Technology (ICT) is defined as a diverse set of technological tools and resources used to communicate, and to create, organize, store and disseminate information (Mahanta, 2016). It provides access to information through telecommunications (Seema & Pillai, 2014). ICT has drastically changed the entire human activities including library and information science field (Bansode & Viswe, 2015). In the rapid computing technology growth it has become essential to handle these technologies efficiently. It is a challenge for library professionals to provide precise and authentic information on time to its users. With the proliferation of information, selection of quality content is become a major issue in the world (Bansode & Viswe, 2015). The Internet and ICT has helped users to get access to huge information and has completely changed the philosophy of serving the user (Okon & Ogbodo, 2014)

Advancement of computer and Internet has enabled libraries to provide both various electronic and ICT based information services (Bajpai & Madhusudhan, 2019). It has changed the way information is acquired, processed, organized, stored, retrieved, and disseminated. ICTs have become essential or indispensable tools in library operations (Chiemeka, 2015). Productivity and efficiency of library services has been improved and ICT has helped in providing quality information to users like sharing of resources among institutes through consortium formation (Mahanta, 2016). Librarians are the link between information resources and user's need, therefore librarians must be well-familiarized with Information and Communications Technologies, and possess computing skills (Chiemeka, 2015). It is mandatory for the librarians to have knowledge of computer and various software required in the library functioning. Along with academic and professional qualifications, librarians are expected to have software and computing skills. (Sankari & Chinnasamy, 2014). Library Professionals should continuously update their knowledge and acquire more skills, learn new software so that they never become outdated. (C & Kumar, 2016). Librarian can undertake additional training to augment the traditional skills so as to develop competency in ICT use and to provide advanced library services (Thanuskodi, 2013). In a nut shell there is a need for creative, technology friendly and flexible librarians who can adapt to ever changing technology and has good skills to manage libraries (Adeyoyin, 2005). As the technology grow challenges to manage them in library functions increases parallelly. Library Science subject comprises of two major area, teaching and managing libraries. Teaching of library science subject is pillar and base of all motivation and innovation. Learning is key in the professional development. Implementing technologies in libraries become easy and friendly once it is learned and well understood about the concept and fundamentals. This article comprises a survey

and study which aimed to figure out the grey area where to efforts are to put up for both development of libraries and library professional

### **Literature Review:**

Computing and information technology has significantly modified the living of human being by enhancing knowledge and traditional practices. Despite the ample evidence of software adoption in the local libraries, none of the studies found measuring software adoption and development. Hence, there is a lack of literature on this theme. In other words, there are no exact research publications found on the Goa region for software adaptability and software learning trends. Periphery, the work and development scope in this area, is tried to study and analyse the existing research publication and literature. A general observation is that all the study mostly recommends the list of software and set of skills and knowledge to be acquired by the library professionals to deliver benchmark services to the user community. In a general study (Usman & V., 2018) found that the professional development depends on skill development and upgradation of technological knowledge. This way library professional can serve their responsibilities in more efficient ways. A study done by (Haneefa, K, 2016) reveals the psychological attitude towards the adoption of OSS technology. majority are found in positive attitude many are found negative attitude because of the technical difficulties faced during the implementation and use of OSS. This study recommends to acquire the knowledge of appropriate technology depending upon the organizations needs. Apart from the Indian region studies, we found the similar studies done across the globe. A Nigerian study done by (Ajala & Ayankola, 2012) revels the evidence challenges and frustration of software adoption in Nigerian libraries. The result shows, libraries in Nigeria passed through the various stages of automation and they failed in the proper execution so most of the libraries in Nigeria is practicing the study of software, and most of the libraries are trying to build the application of their requirement. Study of the (Chigwada, 2018) shows the picture of trends and factor behind the adoption of open source software in developing countries on how these libraries migrated from manual work to an automated work, selection and implementation of software. This study talks about the problems in implementation of open source software and recommends skill enhancement and learn coding. An interesting research done on encouraging continuous learning by (Decker, 2017) which talks about various innovating set of skills required to run the business. This paper talks about the various issues surrounding professionals and ways of disappearance of conventional roles of librarians and impact on users.

## **Statement of the Problem**

With the knowledge obtained from literature reviews and idea accumulated by reference of the similar literature the problem can be formulated like there is a continuous need to growth the personal and professional knowledge to remain a brighter star in the subject area. Continuous learning is the key to the effective library services. Librarians should always explore the new development in the existing knowledge, tools, technology and process.

## **Objectives**

The main aim of the research problem is to ascertain the ICT skills among LIS professionals in Goa. Following are the objectives of the present study:

1. To know the use of computer software in the libraries of the State of Goa
2. To know the development of libraries in the ICT area
3. To know the ICT-based knowledge and computer literacy of various library professionals working in the different libraries at different positions.
4. To identify the skills for managing the needs for automation in library services
5. To find out constrains in acquiring ICT Skills among the LIS professionals in Goa.
6. To find the scope of learning and acquiring computer technology related knowledge by the library professionals.

## **Scope and Limitation of the Study:**

Since this study aims to study the software adaptability and ICT based knowledge of library professionals in the state of Goa hence it was tried to get the samples from across the colleges, institutions, university and the department. The study covers the LIS professionals in state of Goa. The LIS Professional includes the Librarians at various levels and all other library staffs of the colleges in Goa, and also teachers from Department of Library and Information Science, Goa University. Data are collected from the institutes of national importance established in the state.

## **Research Methods**

This study has carried out by using online questionnaire designed on Google forms to collect the Primary Data from the LIS professionals. The study has covered LIS professionals from all the colleges, institutions and university in the State of Goa.

### Sample, Size and Collection of Data

Goa is the smallest state of India and has only one state university, Goa University apart from Goa University, two autonomous public technical and research universities – NIT (National Institute of Technology since 2010) and IIT (Indian Institute of Technology since 2015) temporarily functioning from the campus of Goa Engineering College. Goa also has Birla Institute of Technology and Science, Pilani – Goa Campus which is a private deemed university. There are 32 general education colleges and 30 professional colleges affiliated to the Goa University. These affiliated colleges include five engineering colleges, one medical college and other professional colleges offering pharmacy, architecture, dentistry, fine arts, nursing, law, etc along with numerous general education colleges offering arts, commerce, and science. Sample of this study include library professionals form all the 68 educational institutions in the state. A survey questionnaire was designed on Google Form and was emailed to all professionals of colleges under study. Data collection was carried out from October 2020 to February 2021. Out of 68 institutions, professionals from 57 institutions replied to the questionnaire. These professionals include, Professors, Librarian, College Librarians(at the Grades), Institute Librarians, Library Assistants and Attendants. Detailed analysis of collected data is explained in following section.

### Interpretation and Analysis of Data

In this study simple statistical method and techniques has applied to analyse the collected data.

### Gender and Age wise Distribution of Respondents

Table 1: Gender and Age wise distribution (N= 71)

Age Group	Male	Female	Total no. of Respondents	Percentage (%)
20-30	11	24	35	49.29
31-40	5	9	14	19.71
41-50	11	4	15	21.12
51-60	3	4	7	9.85
Total	<b>30</b>	<b>41</b>	<b>71</b>	<b>100</b>

**Observations:** It is clear from the table 1, out of total respondents 57.74 % were males, and remaining were females (42.25 %). Age wise distribution shows that majority, 35 (49.29%) were in the age group

of 23-30. We have very few 7 (9.85%) in the age group of 51-60. This shows that most library professionals working in colleges are young.

### Designation of the Professionals

Researcher wanted to know about the different designations given to library professionals in colleges. Designations data provided by professionals is given in the table no 2

**Table 2:** Designation

Designation	Total no of Respondents	Percentage (%)
Assistant Professor	3	4.22
Library Officer	1	1.40
Librarian	41	57.74
Assistant Librarian	2	2.81
Librarian Grade I	7	9.85
Librarian Grade II	1	1.40
Librarian Grade III	5	7.04
Library Assistant	6	8.45
Junior Library Assistant	1	1.40
Library Attendant	4	5.63

**Observations:** It is clear from Table 2 that we can find 10 designations for library professional in colleges under study. Majority of the respondents (57.74%) are librarians. Remaining 42.26% consist of Assistant professor (4.22%), Library officer (1.40%), Assistant Librarian (2.81%), Librarian Grade I (9.85%), Librarian Grade II (1.40%), Librarian Grade III (7.04%), Library Assistant (8.45%), Junior Library Assistant (1.40%) and Library Attendant (5.63%).

### Basic Academic Qualification:

Respondents were inquired about their basic academic qualification before joining the library. It is clearly shown in Table 3, 76.6% of LIS professionals hold the Graduation, and while 14.8% hold the Post Graduation degree and 8.6% have other qualification before joining the library.

Table 3: Basic Academic Qualification:

Basic Academic Qualification	No of Respondents	Percentage (%)
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BA	26	32.1
BSc	11	13.6
BCom	25	30.9
MA	5	6.2
MSc	1	1.2
MCom	6	7.4
Other	7	8.6

### Professional qualification

The related data of the professional qualification is given in Table 4.

Table 4: Professional Qualification

Professional Qualification	No of Respondents	Percentage (%)
BLISc.	69	97.18
MLIS	67	94.36
M.PHIL	6	8.45
PHD	9	12.67
None	2	2.81

**Observations:** It is clear from Table 4 that the majority of the LIS professionals 97.18% in the colleges had B.L.I.Sc degree, while 94.36 % had Master in Library and Information Science (M.L.I.S.) degree. The higher qualification degrees of Ph.D. were acquired by 12.67% and M. Phil. in Library and Information Science were acquired by 8.45%. Remaining 2.81% of LIS professionals have not done any Library and information science course.

### Qualifying Exam passed by the LIS Professionals

Table 5: Qualifying Exam passed by the LIS Professionals

Qualifying Exam passed	No of Respondents	Percentage (%)
NET	13	18.30
SET	6	8.45
NET and SET	10	14.08
None	42	59.15

**Observations:** Table 5 shows that 59.15% of the respondents were unable to clear any sort of qualifying exam. Only 18.30% of respondents had cleared National Eligibility Test (NET) exam, 8.45% have cleared State Eligibility Test (SET) exam and 14.08% have cleared both NET and SET exam. So in total, 40.85% of LIS professionals were able to clear qualifying exams.

### Total Working Experience

The professional working experience of the respondent was asked in the questionnaire. From the response received, it is apparent that the total working experience of LIS professionals ranges from 1-5 years to more than twenty six years. In order to tabulate all the related data, the total working years have been represented into four groups as shown in the Table No 6.

**Table 6:** Total Working Experience

Working Experience (Years)	No of Respondents	Percentage (%)
1-5	38	53.52
6-15	14	19.71
16-25	11	15.49
Above 26	8	11.26

**Observations:** Table 6 shows that 53.52% LIS professionals have an experience of 1-5 years. It is followed by 19.71% respondents who have 6-15 years of experience. There are 15.49% respondents who fall in the category of 16 years to 25 years of experience and 11.26% respondents have the experience of more than 26 years.

### Awareness of ICT based applications

**Table 7:** Awareness of ICT based applications

ICT based Applications	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
Operating System Windows	23 (32.39%)	25 (35.21%)	19 (26.76%)	1 (1.40%)	3 (4.22%)
Operating System Linux	1 (1.40%)	12 (16.90%)	31 (43.66%)	16 (22.53%)	11 (15.49%)
MS office package	24 (33.80%)	31 (43.66%)	14 (19.71%)	0	2 (2.81%)
Graphic Designing	6 (8.45%)	9 (12.67%)	29 (40.84%)	17 (23.94%)	10 (14.08%)

Web page Designing	6 (8.45%)	16 (22.53%)	32 (45.07%)	11 (15.49%)	6 (8.45%)
Installation and Customization of Software	5 (7.04%)	19 (26.76%)	29 (40.84%)	13 (18.30%)	5 (7.04%)
Database management System	10 (14.08%)	16 (22.53%)	36 (25.56%)	5 (7.04%)	4 (5.63%)
RFID Technology	5 (7.04%)	9 (12.67%)	36 (50.70%)	9 (12.67%)	12 (16.90%)
Barcode Technology	19 (26.76%)	24 (33.80%)	23 (32.39%)	3 (4.22%)	2 (281%)

**Observations:** Table 7 presents the respondents' level of knowledge in ICT based applications. It is found from the table that the respondents possess excellent level of awareness in using MS Office package (33.80%), Windows (32.39%) and barcode technology (26.76%) respectively. Overall awareness of ICT based applications in professional is average.

### Awareness of Library Automation Software

Table 8 shows the level of awareness of library automation software among the library professionals. Out of 71 respondents, (28.16 %) respondents seem to have excellent knowledge of NewGenLib. Awareness of LIBSYS software is (52.94%) followed by SOUL (45.10%). Results shows that most professionals are aware of library automation software NewGenLib followed by KOHA. The professionals expressed their skills as extremely poor in EVERGREEN (22%), SOUL (15%), LIBSYS (14 %) respectively. It is clearly visible that professionals have average knowledge about library automation software.

**Table 8:** Awareness of Library Automation Software

Library Automation Software	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
LIBSYS	7 (9.85%)	9 (12.67%)	26 (36.6%)	15 (21.12%)	14 (19.71%)
SOUL	4 (5.63%)	5 (7.04%)	28 (39.43%)	19 (26.76%)	15 (21.12%)
KOHA	14 (19.71%)	24 (33.80%)	21 (29.57%)	8 (11.26%)	4 (5.63%)
NewGenLib	20 (28.16%)	18 (25.35%)	24 (33.80%)	7 (9.85%)	2 (2.81%)
Evergreen	1 (1.40%)	8 (11.26%)	19 (26.76%)	21 (29.57%)	22 (30.98%)
E- Granthalaya	23 (32.39%)	18 (25.35%)	14 (19.71%)	8 (11.26%)	8 (11.26%)

## Awareness of Digital Library Software

Table 9: Awareness of Digital Library Software

Digital Library Software	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
DSpace	14 (19.71%)	21 (29.57%)	20 (28.16%)	12 (16.90%)	4 (5.63%)
Fedora	1 (1.40%)	2 (2.81%)	20 (28.16%)	31 (43.66%)	17 (23.94%)
E- Print	2 (2.81%)	6 (8.45%)	23 (32.39%)	25 (35.21%)	15 (21.12%)
Greenstone	10 (14.08%)	15 (21.12%)	16 (22.53%)	19 (26.76%)	11 (15.49%)

**Observations:** The level of knowledge of digital library software among the library professionals is illustrated in Table 9. It is clear from the table that most of the library professionals have more skill in D-Space software. The skills are below average level in the use of other digital library software such as Greenstone (26.76%), E-Print (35.21%) and Fedora (43.66%). About 23.94 % professionals expressed that they are extremely poor in the use of Fedora digital library software. Table 9 shows that the overall level of awareness of digital library software is below average.

## Skills for Managing Electronic Resources

Table10: Skills for Managing Electronic Resources

Skills for Managing Electronic resources	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
Use of OPAC	36 (50.70%)	22 (30.98%)	11 (15.49%)	2 (2.81%)	0
Library Website	31 (43.66%)	22 (30.98%)	16 (22.53%)	2 (2.81%)	0
E- Books	26 (36.61%)	25 (35.21%)	18 (25.35%)	0	2 (2.81%)
Online Journals	28 (39.43%)	21 (29.57%)	19 (26.76%)	1 (1.40%)	2 (2.81%)
Online databases	25 (35.21%)	22 (30.98%)	16 (22.53%)	5 (7.04%)	3 (4.22%)

Electronic Theses and Dissertations	21 (29.57%)	24 (33.80%)	18 (25.35%)	6 (8.45%)	2 (2.81%)
Subject Gateways	14 (19.71%)	21 (29.57%)	25 (35.21%)	6 (8.45%)	5 (7.04%)
Open Access Journals	26 (36.61%)	18 (25.35%)	25 (35.21%)	0	2 (2.81%)
Library Networks	20 (28.16%)	21 (29.57%)	24 (33.80%)	3 (4.22%)	3 (4.22%)
Library Consortium	17 (23.94%)	17 (23.94%)	29 (40.84%)	6 (8.45%)	2 (2.81%)

**Observations:** Table 10 depicts the respondent's skill of managing e-resources. From the table it is evident that the most respondents possess a higher level of skills in managing e-resources. The analysis of data shows that the library most professionals have excellent level of skills in use of OPAC (50.70%), Library website (43.66%), E- Books (36.61%), Online journals (39.43%), online databases (35.21%) and open access journals (36.61%) respectively. Respondents have above average skills in the use of electronic theses and dissertations (33.80%). Overall skills for managing electronic resources are excellent.

### Knowledge of Content Management System

Table 11: Knowledge of Content Management System

Knowledge of Content Management System	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
WordPress	10 (14.08%)	12 (16.90%)	25 (35.21%)	16 (22.53%)	8 (11.26%)
Drupal	2 (2.81%)	5 (7.04%)	24 (33.80%)	24 (33.80%)	16 (22.53%)
Zoomla	0	5 (7.04%)	25 (35.21%)	24 (33.80%)	17 (23.94%)

**Observations:** As shown in Table 11, it is observed that LIS professional have average knowledge of Content Management System. Most respondents are familiar with WordPress but still improvement is required in the knowledge of content management system.

## Knowledge of Citation Creation and Reference Tools

Table 12: Knowledge of Citation Creation and Reference Tools

Citation creation and reference Tools	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
Ref Work	5 (7.04%)	10 (14.08%)	30 (42.25%)	9 (12.67%)	17 (23.94%)
End note	9 (12.67%)	17 (23.94%)	27 (38.07%)	10 (14.08%)	8 (11.26%)
Mendeley	15 (21.12%)	14 (19.71%)	29 (40.84%)	7 (9.85%)	6 (8.45%)
Zotero	6 (8.45%)	12 (16.90%)	25 (35.21%)	15 (21.12%)	13 (18.30%)

**Observations:** It is observed from Table 12 that LIS professional's skill in citation management tools is average. It is clear that knowledge of Zotero (35.21%), Mendeley (29%), End Note (10 %), and Refwork (9%) each is average to LIS professionals. Hence LIS professionals should acquire skills in Citation management tools.

## Knowledge of Statistical Packages

Table 13: Knowledge of Statistical Packages

Statistical Package	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
SPSS	7 (9.85%)	12 (16.90%)	28 (39.43%)	15 (21.12%)	9 (12.67%)
Excel	24 (33.80%)	24 (33.80%)	3 (4.22%)	20 (28.16%)	3 (4.22%)
R Software	0	7 (9.85%)	21 (29.57%)	24 (33.80%)	19 (26.76%)

**Observations:** As clearly visible in Table 13, LIS professionals have skills and competence in Excel with 24% Excellent category, followed by SPSS with 7 %. However, more than 55 per cent of professionals rated R Software in an unknown category. It is inferred that LIS professionals must learn statistical skills.

## Skill for Managing ICT Cased Library Services

Table 14: Skill for Managing ICT Cased Library Services

ICT based Library Services	Number of Respondents				
	Excellent	Above average	Average	Below Average	Extremely Poor
Accessing , searching and use of electronic resources	26 (36.61%)	26 (36.61%)	17 (23.94%)	2 (2.81%)	0
Electronic document delivery system	20 (28.16%)	17 (23.94%)	31 (43.66%)	1 (1.40%)	2 (2.81%)
Online indexing and abstracting services	12 (16.90%)	19 (26.76%)	29 (40.84%)	9 (12.67%)	2 (2.81%)
Inter Library Loan	17 (23.94%)	21 (29.57%)	21 (29.57%)	6 (8.45%)	4 (5.63%)
Online Bibliographic services	14 (19.71%)	22 (30.98%)	25 (35.21%)	8 (11.26%)	2 (2.81%)
Development of Institutional Repository	10 (14.08%)	25 (35.21%)	22 (30.98%)	10 (14.08%)	4 (5.63%)
Current Awareness Service	21 (29.57%)	18 (25.35%)	25 (35.21%)	5 (7.04%)	2 (2.81%)
Selective Dissemination of Information Service	15 (21.12%)	20 (28.16%)	26 (36.61%)	8 (11.26%)	2 (2.81%)

**Observations:** Table 14 gives the result of analysis of professionals' skills for managing various ICT related library services. Most professionals have excellent skills in accessing, searching and use of e-documents. Respondents have above average skills (35.21%) in development of institutional repository and average skills are shown for Electronic document delivery system (43.66%), online indexing and abstracting services (40.84%), inter library loan (29.57%), and online bibliographic services (35.21%).

## Constraints in Acquiring Computing Skills

Table 15: Constraints in Acquiring Computing Skills

Constraints	Number of Respondents	Percentage (%)
Inadequate training in ICT applications	26	<b>36.61</b>
Lack of infrastructure & network facility	15	<b>21.12</b>
Lack of support from authorities for implementing ICT applications in library	8	<b>11.26</b>
Lack of budget for ICT	11	<b>15.49</b>

Lack of co-ordination among library staff	2	<b>2.81</b>
Fear of ICT applications	0	<b>0</b>
Lack of interest in learning ICT applications	1	<b>1.40</b>
Work overload	8	<b>11.26</b>
Total	<b>71</b>	<b>100</b>

**Observations:** Table 15 shows that the majority (36.61%) of the professionals responded that they faced problem due to inadequate training in ICT applications and this followed by 21.12% professionals due to lack of infrastructure and network facility and 15.49% professionals due to lack of budget for ICT. 11.26% of the professionals responded that they feel lack of support from authorities and other 11.26% professionals due to overload of working hours. A very few number 2.81% professionals responded that they faced problem due to lack of Co-ordination among Library Staff. The least 1.40% professionals faced problem due to lack of interest for learning ICT application.

### **Conclusion and Discussion**

Idea of investigating the library staffs working in the various colleges, institutions, schools and departments of the university of Goa come from the our previous study(Matonkar & Kumar, 2021) which was carried out by taking the students of PES Rajaram and Tarabai's College of Pharmacy at Ponda Goa as a sample. With result of this research, we have gone through this study and results are mesmerising that professionals are having lots of knowledge of computing things and doing significant work in their libraries and library domain. The results show various diversified pictures about library profession and the status of the library professionals in the state. A summary of the observations and results are as Grade Pay, Salary, Designation and Promotion, personal development, training and programme are the major concerns in the profession. Librarians are enthusiastic and passionate learner the result shows. Lots of computing skills professionals have acquired and various services are started by the library professionals without any help of any technology experts. To conclude the this research, there is need of support in the continuous education and training to Library professionals with latest technical knowledge which are required to run the library system efficiently. The derived knowledge shows a picture of required improvements in motivating factors like job status, salary, promotion, designations etc. to be taken with extra care. Libraries are heart of the educational institutions this requires continuous growth in collection, technology, machines and tools and training of the staffs. Along with these required changes library professional must get a computer lab to test and run the required software before starting any service. It found that there is need of a such freedom to check a

software before run. Open Source software requires lots of time, good internet speed, and computers to be tested before implementation either for first time check or while at the updates and upgrades. Open Source software are not a single software that can run smoothly but it depends on lots of dependencies, small packages and software built and hosted at various servers. So, this way to run a library with less subscribed or purchased software, library team should be strong to understand the requirement and availability of software in free-ware and follow the timely updates and upgrades. Self-paced learning can be made stronger with curricula based learning in the universities. Professional motivation behind the learning can be more effective if employee get the rewards on the implementation and saving the money of the organisation. This area of requires more research activities and investigation of the problem and area of improvement.

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