Emerging Trends in School Library Products and Services: A Paradigm Shifting in 21st Century

Tapas Pal[1]
Dr. Ashfaque Alam[2]

Abstract

In the digital environment, we always use smart technologies. Digital technology and its application are more essential and important part for better services in our daily life. With the help of ICT (Information Communication Technology), the scenario of social structure has fully changed and a large number of electronic documents have been developed to create and to disseminate information in our society. Now-a-days, mobile takes an important place in our daily life. It is a challenge towards ICT that shows a paradigm shifting from traditional society to modernised society. By the way, school library should shift its products and services into modernised way and accept smart technologies i.e. RFID technology; online technologies; mobile apps and other such allied technologies. Thus, various opportunities are extend in the field of school library product and services through ICT. Implication of smart technology is highlighted a pivotal role and indicated a changing scenario toward emerging trends in the field of school library products and services. Thus, it is a great challenge in our digital era. This article discusses an overview concept regarding emerging trends towards school library product and services. Why smart technologies like ICT; RFID; Mobile Apps etc. are used in school library, are also highlighted.

Keywords: School Library; ICT; Mobile Apps; RFID; Application; Challenges

1. Introduction:

We are living in digital era. All information may be available through internet around the world. Modern technology has changed our daily life. In the present situation, the advent of computer and information communication technology, the organisation process of knowledge has been more time consuming. The school libraries played pivotal roles in such a situation. Hence the school library has been transformed into electronic library viz. digital library, virtual library and such other types. The objectives of such libraries have given a modern labour-saving one. Digital forms and electronic forms (online and offline) are the main challenges. As a result the information seeking behaviour of the user has also changed drastically. In the prevailing circumstances the school libraries are providing right information in right place at right time. The ebb and flow of between information and knowledge is tackled by the various members of the information profession.

Information Communication Technology (ICT) is a process that shows the different technologies i.e. on-line and off-line mode, electronic system, e-communication system, digitisation process, virtual system; cloud computing, internet and networking system. Due to advancement of computer technology, a revolutionary change is revealed in functioning of the school library and its products

[1] **Research Scholar, Jharkhand Rai University, Ranchi**

[2] **Associate Professor, Faculty of Commerce and Management, Jharkhand Rai University, Ranchi**

and services. It is very much important factor for school library automation that shows computerised acquisition, storing, processing and dissemination of information.

Now-a-days, Mobile phone takes an important place in our daily life. Mostly library users are using their mobile phones and other devices like computer, laptop etc. for searching the library catalogue, resources, user's account or various databases. It is a wireless communication technology that helps to provide effective services to the library users. Thus various opportunities extend in the field of school library products and services through mobile technology as well as mobile apps.

One of the best powerful smart technologies is RFID (Radio Frequency Identification) Technology that has been used in libraries as well as in other areas. RFID is a wireless smart technology, non-contract mode, uses the radio waves for transferring data from a tag attachment to an object, for the automatic identification and tracking. There are many prospects that have been extended in implementation of RFID Technology especially in school libraries that shows how school libraries can perform with physical as well as smart technology to offer better services to its valuable users.

The school library is a heart of school education system. The school library plays a vital role in the cultural and social life that provides information, inculcates ideas, and develops knowledge that is so essential to functioning successfully in today's information and knowledge based society. It is fundamental to school library to equip students with lifelong learning skills and develop in them creative thinking and imagination, and enabling them to live as ideal and responsible citizens. Due to technological development, a high take change is achieved in functioning of the school libraries and its products and services that shows computerised acquisition, storing, processing and dissemination of information. Thus, technological advancement in the field of school libraries products and services has major influence in our digital era that indicates a paradigm shifting in 21st century.

2. Objectives of the study:

a) To discusses the conceptual and contextual understanding of ICT

b) To understand the several reasons and benefits of use of modern technologies in the field of school library products and services.

c) To highlights the paradigm shifting of school library products and services with the help of technologies like ICT; RFID; Mobile Apps.

3. Information Communication Technology used in school libraries:

3.1 Information Communication Technology (TCT):

Two parts are included in ICT viz. i) Information Technology (IT) and ii) Information Communication Technology (ICT) and both interrelated to each other.

A) Information Technology (IT):

The American Library Association (ALA) defined Information Technology as "The application of computers and other technologies to the acquisition, organisation, storage, retrieval and dissemination of information. The computer is used to process and store data, while telecommunications technology provides information tools, which make it possible for users to access databases and link them to each other computer networking at different locations."

Cohn and Lefolii identified information technology as "The equipments or tools or methods used to handle information. Technology is the scientific, technological, engineering and managerial techniques used in information handling and processing. Their applications in computers and their interactions with man and machines are associated with social economic and cultural matters."

B) Information Communication Technology (ICT):

UNESCO defines ICT as "The hardware and software that enable society to create, consolidate and communicate information in multimedia formats and for various purposes. It means ICTs include both networks (fixed, wireless, satellite and broadcasting) and applications (internet, database management system and multimedia tools)."

ICT is defined as a "diverse set of technological tools and reasons used to communicate and to create dissemination, store and manage information."

a) **Information**–it means the processed data to make meaningful, knowledgeable and scientific nature to its recipients.
b) **Communication**– it means the exchange or transfer of information from one corner to destination corner by an action.
c) **Technology**– it means of consciously transforming inputs into outputs

Thus, over all definition shows that ICT is a combination of communication technology and information technology that have thin line between them but cannot do away without each other.

3.2 Application of ICT:

Reasons for ICT technique used in school libraries. These are-

- To improve the library services and increase productivity, efficiency and accuracy in performing a variety of library operations.
- To enhance the facilities of inter library loan.
- To develop library science professionals.
- To maximise the job satisfaction level.
- To evaluate the virtual information.
- To reduce the manual works.
- To provide the electronic environment where the users are used the library resources very shortly.

4. Application of Mobile Apps in school libraries:

A mobile phone or mobile that is also called cell phone and hand phone can be defined as "an electronic device used for mobile telecommunications (mobile telephone, text messaging or data transmission) over a cellular network of specialized base stations known as cell sites"

Although "mobile devices have been in popular use for some time, but today's mobile devices boast large colour displays, high resolution, multi-touch capabilities, significant computational horsepower, and high-speed connectivity. In combination, these features dramatically alter the possibilities and experience of mobile information access today in comparison to even just a few years ago. The rich developer tools available for today's mobile devices also make it easier than ever to build and deploy mobile applications" (Broussard et al., 2010).

Now-a-days, we have used smart phones which are similar to mobile phones that capabilities just like computer functioning. In other words, it may be called as miniature computers which are standardised operating system that included in the smart phones. These are blue-tooth, accelerometers, and multi-touch screens, as well as text messaging, smart phone software applications, mobile websites, global positioning systems (GPS), wi-fi, and media creation and capture tools. Most of the smart phones are offering to view every website, page zoom system facilities and keyboard shortcuts for searching and browsing the information easily. We have in 4th generation (4G) mobile phones that display the content of website very fast.

4.1 Mobile devices use in school library products and services:

a) **E-Text book:** This device is the new feature in e-reader and tablet computer. It helps to the user for use of text as just like printed version.
b) **E-reader:** It helps to the users for searching and browsing the content, purchasing and delivery of the content smoothly.

c) **Smart Phones:** Smart phone is an update version of mobile phone. It offers all facilities which are required for LIS users i.e. browsing, searching, zooming, retrieving or downloading and saving the content.

d) **MP3 Player:** An iPod, iPhone and other MP3 Player mobile devices can be used in library for multimedia i.e. audio-video option.

e) **Tablets:** Tablets or Tablet PCs is mini version of computer. It is used in library for various activities like searching catalogue, downloading content, viewing library account, check user status and other activities.

4.2 Services of school library via Mobile Apps:

a) **Webpage Services:** It includes name, address, phone number, collection and holding status etc. Those are available in mobile apps.

b) **Location-based Services:** GPS (Global Positioning System) is available in mobile apps that help the library user for knowing the location of specific document in the library.

c) **OPAS service:** User can use the OPAC (Online Public Access Catalogue) facilities for searching catalogue online through mobile apps.

d) Message Service:

i) MMS Service: It is used for share photos, videos and audios.

ii) SMS Services:

- SMS if requested book is available (collect messages)
- SMS reminder if a book is due
- requesting a list of loans via SMS
- renewing books via SMS
- requesting an overview of outstanding fines via SMS
- checking the availability of books via SMS
- requesting the opening hours of the library via SMS

d) **Database Services:** Library should serve full text databases as word, pdf or other format which are needed to users.

e) **Other Services:** Other services are-

i) Library tour;

ii) Library orientation and training programme;

iii) New arrival of books,

iv) Library cultural programme.

4.3Services of school library via Mobile Devices:

a) **E-content Services:** It includes e-books, e-journals, e-theses and dissertations etc.

b) **Academic affairs:** Latest news and notification, admission notice, examination result etc. are available through mobile apps in library services.

c) **Mobile based lending services:** It includes lending extension, return information, inter library loan request, SDI service application, e-mail service of journal etc. Users can read alerts, check records, renew resources, request items, track interlibrary loans and document delivery requests, set up future application and work in mobile library services.

d) **News and events:** It includes job opening i.e. vacancy notification, library events such as orientation and training programme, seminar/conference programme, lecture on special topic and others- book fair, blood donation camp, literacy programme etc.

e) **Notice:** SMS and MMS forms are used only for some cases i.e. alerts on overdue books, outstanding fines, reminder to return library books, library information etc.

f) **In-house Search:** It helps in OPAC (Online Public Access Catalogue), integrated search and original document search.

g) **Suggestion for Purchasing:** User can send easily the suggestion for book purchase via mobile apps. There is no need to visit the library physically.

h) Reference services: Any query regarding library, reference service have to be ready to provide feedback through SMS to the users immediately.

i) OR-Code Service: It stands for **'quick response'** and basically two-dimensional bar code that can contain any alphanumeric text and offer used to store urls, text etc., known as 'mobile tagging'. Mobile apps help for searching and traces out the required materials in the rack very easily through OR-Code system.

j) Wi-fi Connection Service: Library can provide Wi-Fi connectivity for speedy and easily access to the required information.

5. Application of RFID in school library:

5.1 Conceptual Aspect:

According to Wikipedia, **"Radio-Frequency Identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID"**.

Technovelgy.com has defined **"RFID as a small electronic device that consist of a small chip and an antenna".** The chip typically is capable of carrying 2,000 bytes of data or less.

According to the Harrod's Librarian's Glossary and Reference Book, **"RFID is an alternative to Bar code that uses tiny microchip in tags to hold and transmit detailed data about the tagged item"**.

Dictionary for Library and Information Science defines **"RFID as the use of microchips to tag library materials and library card, enabling users to check out items by walking through a self service station equipped with an antenna that emits low frequency radio waves"**.

It is a technology where data are gathering without need of touching or viewing the data carrier with the help of radio waves. The data are stored in a microchip attached to an antenna (called as transponder or tag), the latter enabling the chip to transmit information to a reader (or transceiver) with in a specific range, which can forward the information to a host computer. Thus, RFID is a wireless technology that performs in radio waves platform for transferring data from a tag attached to an object.

5.2 Design and Component of RFID Technology:

5.2.1Essential Component:

A) Tag: RFID tag is a heart of this system. It is not required electronic power to function. It can be fixed inside a book's back cover or directly on to CDs and DVDs. It is prepared with a programmable chip (with the capacity of at least 64 bits) and an antenna. Three types of tag are available i.e.

i) Read Only Tags: It is encoded at the time of manufacturing and the information cannot be rewritable.

ii) WORM (write once read more) Tags: This tags are programmed by using organisation, but without the ability to rewrite them later.

iii) Read / write Tags: It is facilitated in which the stored data can be changed / alter or rewrite as required.

B) Reader: It acts as both transmitter and receiver that are used to detect and read information which is stored in the tags. When a tag passes through the radio waves, the information which is stored in the tag, is decoded by the reader and sent to server. It is portable in size and easy to handle to read the tags with in a library which is attached with interrogation zone. It may be used in circulation section for check-in or check-out of library materials, in the self-charging section, in the book drop section, in the exits of the library and self-rectification and stock verification purpose.

C) Antenna: It is a device that works as a transmitter and receiver through signalling system. It produces radio signals to active the tag and read write data to it. It is a communicative channel

between a tag and the reader which control the system data acquisition and communication. The basic antenna is designed at 2.4GHs.

D) Server: Server is the heart of this system. It is a device to join the reader and the library automation system. It receives the signal from various readers through antenna and transfer into the circulation database. An application programming interface is included which required with the automation system. A transaction database is attached herewith for report generation.

5.2.2 Optional Component:

a) RFID Label Printer

b) Handheld Reader

c) External Book Return / Book Drop Section

d)Self-check-out section

e)Anti-theft Detection Gate

5.3 Workstation of RFID Technology in School Libraries:

a) Circulation Section: With the help of RFID Technology, the circulation section can done various works like check-in; check-out; overdue; reserve etc. The circulation section can perform to identify the items which are active or deactivate with its RFID tags. Simultaneously, it is an antitheft function.

b) Self-check-out Section: it is a section just like a bank ATM counter in the libraries where users can issue books from self-check-out counter without any help of library staff.

c) Self-check-in Section: As usually it is a counter where a book drop box is setup. The users can easily return his / her books into this section with the facilities of 24 hours. It gives more benefits to users as well as library staff in order to save time and flexible in nature.

d) Book Storing Section: After completed the process of check-in system, books are storing in classified order at the designated bin automatically. Thus, it helps to reduce the staff time required to re-shelving materials.

e) Inventory: With the help of RFID Technology, it is useful for scanning the books on the shelves and easily identifies the location of books which are demanded by the users. It also helps to the library to check-out information as well the information regarding books put on the wrong shelf.

f) Sensor Gate: It is a security gate in the library door for the detection and reading of information from RFID tags. It is an antitheft system. If any tag is not deactivate and passed through this gate, the gate will sound an alarm immediately.

6. Challenges in school library products and services:

There are some major challenges towards school library products and services in implementation of smart technologies. These are:

a) Development of digital preservation is needed

b) Web based services is required.

c) Development of information infrastructure.

d) Marketing of school library products and services is to be followed.

e) High quality and effective services are needed.

f) Long term strong security in digital management system is required.

g) Timely and adequate information are to be served.

h) Always up-gradation of the service is required for the users.

i) Knowledge in processing of the information is highly required.

j) Very skill and knowledgeable personnel, who are operating this system, are needed.

k) Knowledge in hardware and software which are capable in smart technology.

l) Familiarities with internet for e-mail, SMS services.

m) Skills regarding searching and retrieving as well as downloading the specific content through mobile

6. Conclusions:

In the present context, it is very much difficult to point out which is the most appropriate technology to be applicable towards school library products and services. Because, technology is growing fast. Due to information explosion, variety of demands of the users, explosion of different types of literature and other allied issues, the product and services of traditional school library is shifting to modernise E-based library. A large number of E-resource materials are used in collection development for the benefits of users' satisfaction and a good number of smart technologies are also applied in its management system. With the help of ICT as well as smart technologies i.e. mobile apps, RFID etc., school library can provide update information to its users according to his / her requirement quickly and easily. It is an approach that highlights an emerging trend in the field of school library products and services where adequate information are stored, processed and disseminated smoothly and enhancement of the better services to its valuable users. A good number of library science professionals who have adequate IT knowledge and skills, sound technical knowledge and good academic qualifications, are highly needed. It is needless to suggest that school libraries should introduce staff training programme so that effective service to manage the E-resource materials is possible for a paradigm shifting of school library products and services.

References:

1. Anasane, Milind B. and Gorde, Dipak P. Applications of Radio Frequency Identification (RFID) Technology's In Libraries. International Journal of Computer Science and Applications. Vol. 6, No. 2, Apr 2013. (Retrieve from httpresearchpublications.orgIJCSANCAICN-13110.pdf on 20-11-2019)
2. Dhiman, Anil Kumar. Mobile Phone Based library services. Proceedings of National Conference Library Information Science and Information Technology for Education (NCITE-2015). p. 365-369New Delhi: Modern Rohini Education Society, 2015 (Retrieved from http://www.rtmonline.in accessed on 18-11-2019)
3. Gaur, Raj Bala. RFID Technology: a gatekeeper to library. Proceedings of National Conference on Library Information Science & Information Technology for Education (NCITE'15) p. 209-212(Retrieve from http://www.rtmonline.in/proceedings/ncite15-proceeding.pdf on 29-11-2019)
4. Gupta, ShyamBhari. Radio Frequency Identification (RFID). Proceedings of National Conference on Library Information Science & Information Technology for Education (NCITE'15) p. 343-345 (Retrieve fromhttp://www.rtmonline.in/proceedings/ncite15-proceeding.pdf on 25-11-209)
5. Jharotia, Anil Kumar. National Conference Library Information Science and Information Technology for Education (NCITE-2015). New Delhi:Modern Rohini Education Society, 2015 (Retrieved from http://www.rtmonline.in accessed on 26-11-2019)
6. Jindal, Rajni and Khan, Javed. RFID Application in College Libraries ofUniversity of Delhi. Proceedings of 2nd National Conference: Library Information Science and Information Technology for Education (NCITE-2016) p. 96-100 (Retrieve from http://www.rtmonline.in/proceedings/ncite-2016/ncite-2016-pview.pdf on 23-11-2019)
7. Kumar, Jatinder. Mobile Applications and Information Resources for Library Users. Proceedings of National Conference Library Information Science and Information Technology for Education. p. 456-460 (NCITE-2015). New Delhi: Modern Rohini Education Society, 2015 (Retrieved from http://www.rtmonline.in accessed on 31-10-2019)
8. Kumar, Rajeev. Mobile technology and Applications for Libraries. Proceedings of National Conference Library Information Science and Information Technology for Education. p. 61-67 (NCITE-2015). New Delhi: Modern Rohini Education Society, 2015 (Retrieved from http://www.rtmonline.in accessed on 31-10-2019)

9. Kumar, Satish and Mishra, Anil Kumar. RFID Technology for Identification, Security and Document Handling in Library. Proceedings of National Conference on Library Information Science & Information Technology for Education (NCITE'15) p. 18-21(Retrieve fromhttp://www.rtmonline.in/proceedings/ncite15-proceeding.pdf on 29-11-2019)

10. Malhotra, Sonali. Mobile Technology use in Library. Proceedings of National Conference Library Information Science and Information Technology for Education. p. 218-220 (NCITE-2015). New Delhi: Modern Rohini Education Society, 2015 (Retrieved from http://www.rtmonline.in accessed on 31-10-2019)

11. Mishra, Anil K. Academic Libraries with RFID. Proceedings of National Conference on Library Information Science & Information Technology for Education (NCITE'15) p. 259-261(Retrieve fromhttp://www.rtmonline.in/proceedings/ncite15-proceeding.pdf on 22-11-2019)

12. Nahak, Brundaban and Patra, R.K. Ch. Implementation of RFID in Indian Libraries and Information Centres: Issues & Challenges. Proceedings of National Conference on Emerging Trends in Libraries & Information Services (ETLIS-2014). INFOLIB. Vol. 7, No. 1-4 March-December, 2014.(Retrieve from http://jilaranchi.org.in/images/Proceding/jilacon15.pdf on 22-11-2019)

13. Nalluri, Srinivasa Rao and Gaddam, Brahmaiah. Mobile Library Services and Technologies: AStudy. International Journal of Research in Library Science 2015; 2(2); (July-December, 2015): p. 59-66 (Retrieved from http://ijrls.inwp-contentuploads201608Mobile-Library-Services-and-Technologies-A-Study.pdf accessed on 30-11-2019)

14. Pal, Tapas. Modern Library and its New Technology: a great challenge in our digital era. Proceedings of ECO-CGL 2016. Edited by Das, ParthaSarathi, Patra, Chittaranja and other. Kolkata: Central Government Library Association, January-2016. p. 39-42

15. Pal, Tapas. Application of ICT in VivekSangha Town Library and Vivekananda Pathagarh : A comparative study. Proceedings' NCCPUDE-2016. April, 2016. p. 349-357

16. Pal, Tapas. Application of RFID Technology in Libraries: A Strong Security. Proceedings of Platinum Jubilee Commemorative Seminar on RFID and Library Services: use and concern. May, 2016. p. 436-446

17. Pal, Tapas. Emergence Trends in LIS Product and Services: A paradigm Shift in 21st Century. Proceedings of NCLS 2017. Edited by Rao, Somasekhara K. And others. Visakhapatam: Department of Library and Information Science, Andhra University, 2017. p. 353-359

18. Proceedings of National Conference on Emerging Trends in Libraries & Information Services: ETLIS-2014. Edited by Pralash, Shiva and others. Ranchi : Jharkhand Information & Library Association, 2014

19. Saxena, Archana. Impact of Mobile Technology on Libraries: a descriptive study. International Journal of Digital Library Services. 3(4); (October-december, 2013): p. 1-13 (Retrieved from http://www.ijodls.inuploads36033603729vol-3_issue-4_part-1.pdf-Print 1-11accessed on 30-11-2019)

20. Vishwakarma, Mohan Lal, Maurya, ShyamLal and ShivaniGovil. Use of Mobile and Wireless Technology in Indian libraries.International Journal of Engineering and Computer Science. 2(6); June, 2013: p. 1799-1805 (Retrieved from http://www.ijodls.inuploads36033603729vol-3_issue-4_part-1.pdf-Print 1-accessed on 30-11-2019)

21. https://en.wikipedia.org/wiki/Mobile_phone