# BARCODE TECHNOLOGY AND ITS APPLICATION IN NEPALESE LIBRARIES

**A thesis submitted to the**
**Central Department of Library and Information Science in partial fulfillment of the requirement for the Master Degree in Library and Information Science**

Submitted by
**AMOD RIJAL**

**Central Department of Library and Information Science**
**Faculty of Humanities and Social Sciences**
**Tribhuvan University**
**Kirtipur, Kathmandu**
**June 2011**

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**June 2011**

## LETTER OF RECOMMENDATION

This is to certify that Mr. Amod Rijal has prepared this dissertation entitled "**BARCODE TECHNOLOGY AND ITS APPLICATION IN NEPALESE LIBRARIES** ", under my supervision and guidance. I recommend this dissertation for final approval and acceptance.

Date: June, 2011

.....

**Mr. Rudra Prasad Dulal**

Thesis Supervisor

## LETTER OF ACCEPTANCE

The thesis here to attached, entitled " **BARCODE TECHNOLOGY AND ITS APPLICATION IN NEPALESE LIBRARIES**", Prepared by Mr. Amod Rijal in partial fulfillment of the requirements for the MASTER'S DEGREE OF LIBRARY AND INFORMATION SCIENCE is hereby accepted and approved.

……..

**Mr. Rudra Prasad Dulal**

Thesis Supervisor

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**Mr. Prem Raj Adhikari**

External Examiner

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**Dr. Madhusudan Karki**

Head of Department

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Finally, I apologize for the mistakes if any made knowingly and unknowingly during this research.

Thank you!

26th Dec, 2010

**Amod Rijal**

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# ABSTRACT

The thesis entitled '**BARCODE TECHNOLOGY AND ITS APPLICATION IN NEPALESE LIBRARIES'** in general based upon an indispensable part of library automation in all types of library. The thesis has included major aspects necessary for the effective library management and organization in the field of barcode technology.
The study has introduced the relation between library and barcode technology, along with the definition, history, advantages/disadvantages and types of barcode. Among different types of barcodes, some of the important types are Universal Product Code (UPC), Code 39, CODABAR, EAN-8, EAN-13, CODE 128. Scanners and decoders are essential parts of the barcode technology. So, scanning devices like laser gun, Charged Coupled Device (CCD) plays important role within barcode technology. Different types of barcode labels along with smart barcodes, generic barcode are essential for bar-coding of books and library cards.

The problem of study has included limitation of the performance of barcode technology due to lack of proper human resources as well as insufficient allocation of budget. The lack of knowledge of barcode technology among the library professionals makes the barcode technology a challenging job. The problem of the study is to know the present situation of the barcode technology and its development using different types of software for better services and suggestions necessary for the users and the libraries. Thus, among various library technologies available in computerized library and information centers, barcode technology has its own importance for speed, accuracy and reliability of the data circulation.

The objectives of the study was to know barcode technology and its application in libraries, to identify libraries using barcode technology, to know whether barcode application software in the libraries of Nepal is useful or not and to suggest libraries and libraries personal (staffs) for better services through barcode technology. The study has limited to 10 libraries using barcode system for automation and the data has been collected from 25$^{th}$ August 2008 to 8$^{th}$ March 2009, within 7 months.
In the context of Nepal, limited studies have been carried out on barcode technology in the areas of Library automation. Six related informational literature have been

studied and most of the reviewed literatures were found related to the topics and a great help has received from the reviewed literature.

The study has focused on the barcode technology and its application in the formation of library system. It has found that most of the libraries in the Kathmandu valley are not fully automated; few of them are converting their library system from manual to automate with support of barcode system. The population of the study has included the number of those libraries which were using different software supporting barcode technology. Most of the libraries or information centers are using software such as SOUL, CDS/ISIS, WINISIS, LIBRA, KOHA, ALICE, IAN.

The researcher has used a set of questionnaires including 18 questions based upon the objectives. Those questionnaires were distributed to collect data. Different types of libraries have studied inside and outside Kathmandu valley. Due to the repetition of same library software, only ten libraries of Kathmandu valley have been studied as a sample for the data collection. The selection of the libraries has depended upon the nature, types and easy availability. Out of 10 libraries, 6 are academic libraries, 1 governmental library, 1 public library and 2 special libraries.

It has found that only limited numbers of libraries were using barcode technology. This limited is due to the lack of proper budget, computer infrastructure, networking and professional human resources. The researcher has concluded that the proper implementation of barcode technology take place with the use of suitable barcode system, scanning device of better quality and advanced software. The collected data has shown that the barcode plays a role of a bridge between the users and the libraries. It provides services like circulation, searching, cataloguing, and user management in a better and smart way. The data indicates that all the libraries show positive response on the reduction of total expenditure. As in the modern age of IT, evolution of information could not be controlled, where dissemination of information in a right time is very difficult. So, barcode technology could support a library to function in an appropriate way as a modern technology in the field of automation.

Finally, researcher has recommended that, to provide effective library services to the users, all the libraries should install advanced barcode technology in their automation

system. In spite of having some limitations, this system could provide proper information too the users in a proper time with error free network. The present state of the barcode technology is not at satisfactory level, which could be made better by providing training and knowledge about barcode system to the staffs, users and to all related persons. The library management should improve accuracy and reliable performances like online circulation, reporting, registration, database searching, membership identification with effective security system and all this could be possible only by applying barcode technology. The research study recommends to qualified or well trained library staff and professional for the better image of library. One should be careful and conscious in applying the new technology, so that all the related information could be preserved and disseminate with high speed, accuracy and in the reliable and systematic way.

**AMOD RIJAL**
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# LIST OF ACRONYMS

| | |
|---|---|
| AIM: | Automatic Identification Manufacturers Assoc. |
| ASCII: | American Standard Code for Information Interchange |
| Auto ID: | Automatic Identification Technology |
| BPO: | British Post Office |
| CCD Scanner: | Charged Coupled Device |
| CD-ROMs: | Compact Disk Read Only Memory |
| CDSISIS: | Computerized Documentation Service/Integrated Set of Information Systems |
| CMOS: | Complementary metal-oxide semiconductor |
| CP: | Coincidence Point |
| EAN: | European Article Numbering system |
| ECC: | Error Checking and Correction Scheme |
| FIM: | Facing Identification Mark |
| GEMS: | Graded English Medium School |
| GPL: | General Public License |
| HCCB: | High Capacity Color Barcode |
| IAN: | Information Access Network |
| ILS: | Integrated Library System |
| ISBN: | International Standard Book Number |
| KULibrary: | Kathmandu University Education and Management Library |
| KVPL: | Kathmandu Valley Public library |
| LEDs: | Light-Emitting Diodes |
| MoGA: | Ministry of General Administration |
| NCIT: | Nepal College of Information Technology |
| OCR: | Optical Characters Recognition |
| OPAC: | Online Public Access Catalogue |
| POSTNET: | Postal Numeric Encoding Technique |
| PYC: | Public Youth Campus Library |
| QR Codes: | Quick Response's |
| SOUL: | Software for University Libraries |

| | |
|---|---|
| TU: | Tribhuvan University |
| UGPIC: | Universal Grocery Products Identification Code |
| UPC: | Universal Product Code |
| USIS: | The United States Information Services |
| WINSIS: | Windows/Integrated Set of Information System |