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CHAPTER 1

INTRODUCTION

1.1 Introduction

The National Board of Accreditation (NBA) is an autonomous body under the All India Council for Technical Education (AICTE), Government of India. NBA evaluates and accredits technical and professional education programs to ensure that they meet quality standards and industry requirements.

Earlier, the education system mainly focused on completing the syllabus and passing examinations. However, modern education requires students to develop practical skills, problem-solving ability, teamwork, communication skills, and professional ethics. To improve the quality of education, NBA follows the concept of Outcome Based Education (OBE).

Outcome Based Education focuses on what students are able to learn and achieve after completing a course or program. NBA accreditation ensures that institutions follow proper teaching–learning processes, have qualified faculty, use effective assessment methods, and continuously improve academic performance. NBA is also a permanent signatory of the Washington Accord, which provides international recognition to accredited programs.

1.2 Need for NBA Accreditation

NBA accreditation is required to maintain quality and accountability in technical education. It evaluates programs based on learning outcomes rather than only infrastructure or examination results.

Accreditation helps institutions align curriculum and teaching methods with industry needs and global standards. Students benefit through better employment and higher education opportunities, while institutions gain credibility, funding support, and industry collaboration. Therefore, NBA accreditation is important for ensuring quality technical education.

1.3 Objectives of NBA

The main objectives of the National Board of Accreditation are:

- To ensure quality in technical education programs
- To promote Outcome Based Education (OBE)
- To encourage continuous improvement in teaching and learning
- To improve students' skills and employability
- To support faculty training and research activities
- To align technical education with global standards
- To promote transparency and accountability in education

1.4 Outcome Based Education (OBE) Framework

Outcome Based Education is a student-centered approach that focuses on what students should know, perform, and achieve after completing a program.

The OBE framework includes:

- Vision and Mission
- Program Educational Objectives (PEOs)
- Program Outcomes (POs)
- Course Outcomes (COs)

CO–PO mapping shows the relationship between course outcomes and program outcomes. Student performance is measured using direct assessment tools such as examinations, assignments, laboratory work, and projects, and indirect tools such as student and alumni feedback. The results are used for continuous improvement in teaching and learning.

1.5 Benefits of NBA Accreditation

NBA accreditation provides benefits to all stakeholders:

- Students receive quality education and better job opportunities
- Teachers get training and research opportunities
- Institutions gain credibility, better rankings, and industry support
- Industry gets skilled and competent graduates

NBA accreditation helps in producing technically strong and responsible professionals.

1.6 Key Criteria of NBA Evaluation

NBA evaluates academic programs based on:

- Vision and Mission
- Curriculum design
- Teaching–learning processes
- CO–PO mapping
- Assessment and attainment
- Faculty quality
- Infrastructure
- Continuous improvement

The focus is on achieving learning outcomes and improving program quality based on evidence.

CHAPTER 2

Review of Literature

2.1 Existing Manual OBE System

In many colleges, OBE activities are handled manually using registers, Excel sheets, and documents. Faculty members prepare COs and POs separately and map them manually. Internal assessment marks, attendance, and feedback are also entered by hand. This process requires more time and effort. Manual calculation of attainment is difficult and may lead to errors. Maintaining records for NBA visits is also time-consuming.

2.2 Use of Spreadsheets for OBE Tracking

Some institutions use spreadsheet tools like MS Excel for CO–PO mapping and attainment calculation. These tools help in basic calculations and data storage. However, spreadsheets become complex when the number of students, subjects, and assessments increases. Data duplication, formula errors, and version control problems are common. It is also difficult to generate reports quickly during audits.

2.3 Existing Software Tools

Few colleges use software tools or learning management systems (LMS) for academic activities. These systems mainly focus on attendance, marks entry, or online learning. Most of them do not fully support NBA-based OBE requirements like CO–PO mapping, attainment analysis, and continuous improvement records. Some available tools are costly and require special training.

2.4 Limitations of Existing Systems

From the study of existing systems, the following limitations are observed:

- Manual work increases workload on faculty
- High chances of calculation and data entry errors
- Difficulty in tracking attainment and improvement actions
- Poor documentation for NBA accreditation
- Lack of centralized and user-friendly system

2.5 Need for an Automated OBE Tracking System

The literature study shows a clear need for a simple and automated OBE tracking system. Such a system should help faculty to define COs and POs, perform CO–PO mapping, calculate attainment automatically, and generate reports easily. Automation can reduce manual effort, improve accuracy, and support continuous improvement as required by NBA.

