

Evaluating Outcome and Impact of Selected National Policies on Education and Mining Sector in Gujarat

A Thesis submitted to Gujarat Technological University
for the Award of
Doctor of Philosophy

In

Management

By

Pandya Ghanshyam Tansukhlal

Enrollment No. 209999903049

Under Supervision of

Dr. Sachin P. Parikh



**GUJARAT TECHNOLOGICAL UNIVERSITY
AHMEDABAD**

[September – 2026]

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112 Pages

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confidence in the future of technical education by promoting learner-centric education, strengthening industry-academia collaboration, improving employability, and encouraging research-driven institutional development. The second study examines the evolution and impact of India's National Mineral Policy (NMP) from its early formulation to the revised National Mineral Policy 2019. The research explores policy reforms introduced to promote transparency, sustainability, private sector participation, environmental responsibility, and investment in the mining industry. Special emphasis is placed on stakeholder perceptions regarding policy implementation and its socio-economic implications. Data collected from 142 respondents, including mining professionals, geologists, managers, academicians, and technical experts, were analysed using descriptive statistics and Chi-square tests. The results demonstrate that stakeholders acknowledge the policy's contribution toward improving investment opportunities and regulatory transparency; however, concerns remain regarding increased private sector dominance, reduced public sector opportunities, and the need for enhanced awareness and professional skill development. The study further emphasizes that successful implementation of NMP-2019 requires effective stakeholder engagement, capacity building, environmental accountability, and continuous policy awareness programs. Collectively, these studies demonstrate that policy reforms achieve meaningful outcomes only when supported by strong institutional mechanisms, stakeholder participation, capacity building, and evidence-based implementation strategies. While NEP-2020 has laid a strong foundation for transforming India's higher and technical education ecosystem through flexibility, innovation, and learner-centric reforms, NMP-2019 has sought to modernize mineral governance by balancing economic development with environmental sustainability and regulatory transparency. The findings of this research contribute to the existing body of knowledge by providing empirical evidence on policy implementation, identifying critical success factors and challenges, and offering practical recommendations for policymakers, educational institutions, regulatory authorities, and industry stakeholders. The research serves as a valuable reference for future policy evaluation studies and supports evidence-based decision-making aimed at strengthening sustainable governance and national development across both education and mineral sectors.

Acknowledgment

I would like to express my deepest gratitude to all those who have supported and guided me throughout my journey in completing my PhD thesis. First and foremost, I am thankful to my supervisor Dr. Sachin P. Parikh for his invaluable guidance, support, and encouragement throughout my research work. His expertise and domain knowledge have been instrumental in shaping my research outcome.

The envisaged multidisciplinary approach in this work has fostered the research ideas into leading break through which may not be possible without continuous support from both the Doctoral Progress Committee members. I am thankful to Dr. Dhiren Pandya and Dr. Nikesh Shah, Saurashtra University for their support thought the work. I am thankful for the support by Dr. Nikhil Singh, Asst. Prof., GEC Gandhinagar for his voluntary assistance whenever needed during the course of my Ph.D. research. I am also grateful to Shri. S. N. Mathur, Ex CGM GMDC, Dr. Vinay Purani, Principal VGEC, Dr. Pankajray Patel, Professor School of Management Studies GTU for their valuable input and support.

My partner in this journey of advanced learning has been my family. Their presence with me made it possible for me to start the work. My Mother Smt. Krishnaben Pandya and my wife Mrs. Vaishali Pandya always remained source of my positive energy and am thankful to them for their support and encouragement.

I am sincerely grateful to the Government of Gujarat for allowing me to pursue my research study and all the officials of different departments who directly or indirectly became helpful to me in doing research work.

Pandya Ghanshyam Tansukhlal

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ABSTRACT

Public policy reforms play a vital role in shaping the governance, quality, and sustainability of national development sectors. Among these, the National Education Policy (NEP) 2020 and the National Mineral Policy (NMP) 2019 represent two landmark policy initiatives introduced by the Government of India to modernize higher education and mineral resource governance, respectively. This doctoral research presents a comprehensive empirical evaluation of the implementation and impact of these policy reforms through three independent but interrelated studies. First study examine the multidimensional impact of NEP-2020 on technical and higher education institutions, while the second investigates stakeholder perceptions regarding the implementation of NMP-2019 in India's mining sector. Together, these studies provide valuable insights into policy effectiveness, stakeholder acceptance, institutional preparedness, and implementation challenges. The first study extends this investigation by empirically evaluating the implementation of NEP-2020 across higher education institutions in Gujarat. Primary data were collected from 360 faculty members representing universities and colleges using a structured questionnaire based on a five-point Likert scale. Reliability analysis was performed using Cronbach's Alpha, while data normality was examined through the Kolmogorov-Smirnov and Shapiro-Wilk tests. Since the collected data were not normally distributed, non-parametric statistical techniques, particularly the One-Sample Wilcoxon Signed Rank Test, were employed for hypothesis testing. The analysis revealed statistically significant positive perceptions ($p < 0.001$) across all policy dimensions, including curriculum flexibility, pedagogy and assessment reforms, governance and institutional autonomy, research and innovation, student-centric initiatives, and overall policy effectiveness. The study investigates the influence of NEP-2020 on six major stakeholder dimensions within technical education, namely academics, students, faculty members, employment, research, and educational institutions. The policy's emphasis on multidisciplinary education, flexibility in curriculum, technology-enabled learning, vocational education, research, innovation, institutional autonomy, and faculty development was critically examined to understand its transformational potential. The study concludes that NEP-2020 has initiated substantial reforms within higher education institutions; however, its long-term success depends upon effective implementation strategies, institutional capacity building, continuous faculty development, and sustained governmental support. The findings indicate that NEP-2020 has significantly enhanced stakeholder

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List of Abbreviation

Abbreviation	Full Form
NEP	National Education Policy
NMP	National Mineral Policy
FDI	Foreign direct investment
GDP	Gross Domestic Product
SDF	Sustainable Development Framework
UNFC	United Nations Framework Classification
MMDR	Mines and Minerals (Development and Regulation)
MCDR	Mineral Conservation and Development Rules
ABC	Academic Bank of Credits
UGC	University Grant Commission
AICTE	All India Council of Technical Education
NPE	National Policy on Education
ECTS	European Credit Transfer System
EU	European Union
WIPO	World Intellectual Property Organization
NAAC	Mean Riemannian Covariance Grid
NBA	Relative Distance Comparison
NCERT	National Council of Educational Research and Training
SLEEE	State Level Engineering Entrance Examinations
GER	Gross Enrolment Ratio
NRF	National Research Foundation
NTA	National Testing Agency
SOP	Pairwise Constrained Component Analysis
UNESCO	Large Margin Nearest Neighbor Classification
IBM	Indian Bureau of Mines
R&D	Research and development
GSI	Geological Survey of India
FDI	Foreign Direct Investment
NMEP	National Mineral Exploration Policy
EIA	Environment Impact Assessment

IAA	Impact Assessment Agency
MoEF	Ministry of Environment and Forest
SO	Statutory Orders
IPR	Industrial Policy Resolution
DMF	District Mineral Fund
NMET	National Mineral Exploration Fund
GMDC	Gujarat Mineral Development Corporation
IQAC	Internal quality Assurance cells
ODL	Open Distance Learning
SPSS	Statistical Package for the Social Sciences

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CHAPTER - 1

INTRODUCTION

Effective implementation of national policies are important in shaping the socio-economic development of a country by guiding sectoral growth, governance, and innovation. In India, some of the transformative policies that have been formulated include the National Education Policy (2020) [1] and National Mineral Policy (2019) [2] in order to address existing challenges and comply with international standards. The former policy addresses quality, accessibility, flexibility, and research orientation in the education sector, while the latter policy is concerned with sustainable development, transparency, and efficient utilization of mineral resources. It is imperative to evaluate the results and impacts of the policies for understanding the impact, challenges of implementation, and contribution towards national/region development. The objective of this paper is to critically evaluate the impact of selected national policies on sectoral development and performance.

1.1 National Mineral Policy - NMP

The National Mineral Policy of India has evolved from resource exploitation (1993) to sustainable and inclusive mineral development (2019) with focus on balancing economic growth with environmental and social responsibility.

The National Mineral Policy (NMP) is a policy framework of the Government of India that guides the exploration, extraction, management, and conservation of mineral resources in the country [2, 4, 5, 6]. The National Mineral Policy of Government of India has evolved over time to match India's economic needs, industrial growth, and sustainability concerns. We have evaluated impact of NMP, 2019 in the Mining sector across the Gujarat State.

Evolution of national Mineral policy is as under over the period of time

1. National Mineral Policy, 1993

- Introduced after economic liberalization (1991)
- Allowed private sector participation in mining

- Focused on systematic exploration and mineral development
- Marked a shift from state-dominated mining to a market-oriented approach

2. National Mineral Policy, 2008

- Emphasized sustainable development
- Introduced concerns for environment protection and mine closure
- Encouraged foreign direct investment (FDI)
- Stressed scientific mining practices and transparency

3. National Mineral Policy, 2019 (Current Policy)

- Strong focus on sustainable and responsible mining
- Promotes zero-waste mining and value addition
- Protects tribal and local communities
- Encourages digital technologies, exploration, and recycling
- Supports Make in India and Atmanirbhar Bharat

1.1.1 History of National Mineral Policy in India

a. Early Foundations (1947-1992)

The genesis of mineral policy in India can be traced to the Mineral Policy Conference that took place in January 1947, which led to the passage of the Mines and Minerals (Regulation and Development) Act, 1948 [2, 3, 4], marking the first legislative instrument for the mineral industry in India. The Act brought state control into the mineral sector and served as the main legislative instrument for the regulation of the mineral industry for several decades. For about four and a half decades, the mineral sector of India had an entirely state-controlled and centralized character with very little involvement of the private sector.

b. Liberalization Era: National Mineral Policy 1993

It was in 1993 that for the first time a National Mineral Policy (NMP 1993) was announced, which marked a radical change from the earlier state-controlled system [3, 4, 5]. This policy came at a time when India was undergoing economic liberalization.

Key features of NMP-1993:

- Allowed private capital to enter the mining sector for the first time ever.
- Advocated for a free-market mining policy.
- Emphasized the role of the private sector in the exploration and exploitation of minerals.

- Was geared toward attracting foreign investors to the mining sector.
- Tried to strike a balance between government interests and industrial growth.

The policy introduced in 1993 proved to be a revolutionizing move since it realized that minerals were valuable natural assets required for economic progress.

c. National Mineral Policy 2008

The NMP-1993 is modified and come into the effect as National Mineral Policy 2008 (NMP 2008). It was a revision of the 1993 policy and announced in 2008. This revision reiterated the government's commitment to a market-based approach while setting out more specific goals for mineral sector development.

Key objectives of NMP 2008:

- Reaffirmed commitment to sustainable mineral development.
- Targets based mineral sector growth.
- Focuses on private sector participation.
- Focused on equitable distribution of mineral wealth.

1.1.2 National Mineral Policy 2019

The Union Cabinet of India, headed by the Prime Minister, Mr. Narendra Modi, adopted the National Mineral Policy 2019 in February 2019, which replaced the NMP 2008 [5]. The National Mineral Policy 2019 is the latest one in Indian mineral policy [6, 7]. Key objectives of NMP-2019 are listed in Table 1.1.

Table 1.1: Key objectives of NMP-2019

Objective	Description
GDP Contribution	Enhance the GDP share of mineral sector.
Production Target	Achieve twice the level of production of minerals.
Trade Balance	Balance the trade imbalance in mining industry within seven years.
Sustainable Mining	Conduct sustainable mining activities.
Private Investment	Encourage private investment in mineral exploration.
Intergenerational Equity	Guarantee the well-being of current and future generations.
Domestic Industry	Contribute to domestic industry development and limit imports.
Make in India	Contribute towards Make in India campaign.

Fair Allocation	Conduct fair mineral distribution process.
Reasonable Prices	Make mineral-based products affordable.

There are some of vital new elements introduced in NMP 2019:

1. **Inter-generational Equity:** Inclusion of this concept to secure the future generation [4].
2. **Inter-ministerial Committee:** Proposal to set up an inter-ministerial committee to put in place procedures for ensuring sustained growth in mining industry
3. **Sustainable Development Framework (SDF):** Focus on adopting SDF along with Star Rating of Mines Scheme
4. **Equitable Benefit Distribution:** Securing distribution of benefits from mining to those affected by mining
5. **Stakeholder Cooperation:** Ensuring cooperation among stakeholders maintaining their trust level
6. **Ease of Business:** Creation of a business-friendly environment by ensuring smooth procedures to obtain clearances
7. **UNFC Adoption:** India adopted the United Nations Framework Classification (UNFC) for reporting mineral resources, exploration and extraction capacity

1.1.3 Regulatory Framework and Key Stackholders

These rules have been formulated under Section 18 of MMDR Act 1957 for

- Mineral Conservation
- Development of mineral deposits systematically
- Protection of environment by preventing pollution in mining areas

MCDR gives key provisions because balanced economic growth with environmental sustainability remains a major challenge in India's mining sector [8]. Effective implementation, stronger accountability, and community-centered governance are essential for achieving the actual objectives of NMP 2019 without adverse impact on environment [8, 9]. Considering these, Key MCDR provisions are:

- **Rule 12(1):** Mining activities shall make sure that there is systematic development, conservation, and environmental protection.
- **Rules 35-44 (Chapter V):** Regulations on Sustainable Mining

- **Reporting:** Lease owners should give monthly and annual returns, exploration outcomes, and progressive mine closure reports.

Key Stackholders:

Stackholder identification and defining its role is crucial to the success of government policy [10, 11, 25]. Some of the important stackholders of NMP, which are involved in achieving the optimal result of the policy, are:

- **Governments and Policy Makers**
They draft policies, allocate mineral resources, and promote balanced economic growth via good mining governance.
- **Mining Firms and Operators**
They conduct mineral exploration, extraction, and processing, thus serving as key sources of mining productivity and supplies.
- **Regulating and Statutory Authorities**
Such bodies oversee mining safety, environmental protection, and compliance of mines to regulations.
- **Local Communities and Stakeholders**
The opinions of local communities regarding mineral operations can be positive or negative, depending on the rehabilitation and environmental impact associated with mines.
- **Environmental and Sustainability Agencies**
They oversee ecological issues, including pollution and sustainability of mining activities.
- **Industrial and Consumer Segments**
The industries of steel, cement, and electricity require the use of minerals to create value.
- **Research, Academia, and Training Institutions**
They facilitate mining research, training of personnel, technological innovation, and resource sustainability.
- **Financial Institutions and Investors**
The mining sector requires financial support from banks and other investors.

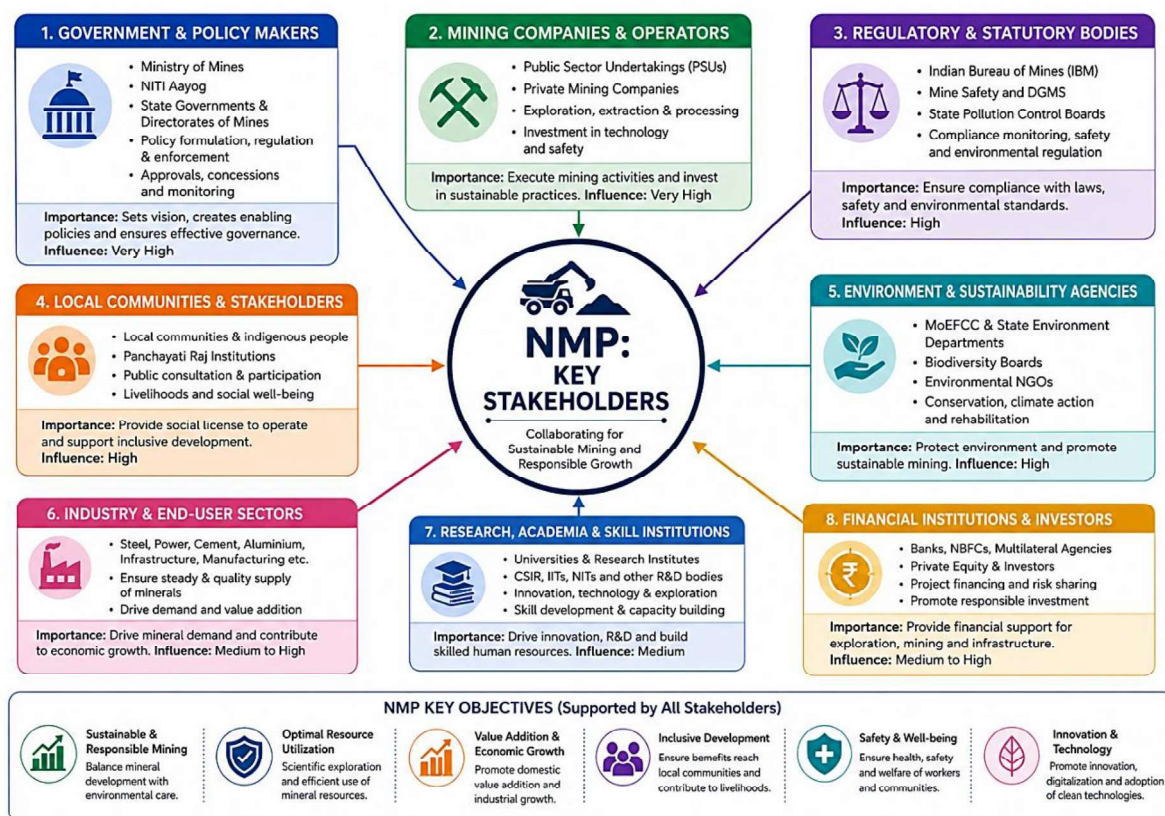


Figure 1.1: Key stakeholders of NMP

1.1.4 Summary & Status of NMP

As per 2026, NMP 2019 is still the existing policy which governs the Indian mineral sector growth [5, 6]. Brief of NMP evolution is shown in Table 1.2.

Table 1.2: Evolution Summary of NMP

Policy	Year	Key Characteristics
MMDR Act	1948	First legal framework; state control.
NMP 1993	1993	Liberalization; private investment opened.
NMP 2008	2008	Revision with specific goals.
NMP 2019	2019	Sustainable mining; intergenerational equity; current policy.

The main aspects highlighted by NMP 2019 are:

- Elevation of mineral sector's contribution to GDP
- Conducting mining operations in a sustainable manner
- Equitable benefit-sharing

- Lowering reliance on imports
- Making “Make in India” initiative successful

Recently, various scholars have shown interest in Indian Mining Policy and have attempted to analyze its strengths and weaknesses.

As per Blondeel et al. [27], Major mining items in India include:

- Coal
- Iron ore
- Bauxite
- Limestone
- Manganese
- Copper ore
- Zinc
- Chromite

Among these, coal is the most strategically important due to its role in power generation and heavy industry.

The latest research studies conducted on the Indian mining policies have revealed that there is an excessive emphasis on economic growth, energy security, and industrial development. According to Blondeel et al. [27], coal was considered to be the most important mineral for India, but the country still persists in mining coal while ignoring all the climate changes that occur across the world in favor of the domestic production, industrialization, and job opportunities. According to Sahoo et al. [28], such policies like liberalization and 100 percent FDI resulted in increased productivity, effectiveness of operation, and mechanization within the process of coal mining. But, the main problems faced are those of technology advancement, labour-intensive methods, environmental pollution, politics, bureaucracy, and poor governance of the mining industry [27][28][29]. Dhavan et al. [29] further observed that earlier mining policies were highly state-controlled and often influenced by political patronage rather than scientific and sustainable mining practices.

Comparison of NMP with Other Countries

Table 1.3 presents a comparative analysis of the National Mineral Policy (NMP) with the mineral policies of selected countries. It highlights the key direction, motivation, and policy

approaches adopted across these nations. India continued expanding coal mining because of rising electricity demand and developmental priorities.

Table 1.3: Comparisons of NMP with other Countries Policies

Country	Policy Direction	Main Motivation	Coal Mining Approach
India	Expansion-oriented	Energy security and development	Increase domestic production
China	Temporary restriction/moratorium in some regions	Industrial restructuring and overcapacity control	Controlled reduction with state planning
USA	Temporary leasing restrictions	Fiscal and environmental concerns	Policy reversal depending on political leadership
Australia	Export-oriented expansion	Economic benefits and export revenue	Continued coal export growth

1.2 National Education Policy - NEP

The National Education Policy (NEP) 2020 is a major educational reform by the Government of India to transform India's education system in line with 21st-century needs [12]. It replaces the earlier 1986 National Policy on Education. NEP 2020 aims to create an inclusive, flexible, multidisciplinary, and skill-oriented education system that promotes critical thinking, creativity, ethical values, and lifelong learning. Some of the key feature of NEP-2020 are:

- School Education Reforms
- Higher Education Reforms
- Teacher Education
- Vocational & Skill Education
- Technology & Digital Learning

NEP 2020 marks a shift from content-based education to competency-based learning, preparing students to meet future challenges while preserving India's cultural and ethical values [12].

Main Objectives of NEP 2020.

- Universal access to quality education
- Improve learning outcomes
- Promote equity, inclusion, and lifelong learning
- Make India a global knowledge hub

1.2.1 Foundation of National Education Policy

Before, however, the education system in India had been more centered around curriculum, theoretical knowledge, rote learning, and examination performances. The 1968 and 1986 policies of India aimed at promoting literacy and access to education but were criticized for their inflexibility, outdated curriculum, lack of industry links, and poor focus on skills and innovations. Continuous innovations, reforms, and coordination are required for enhancing the capability such as sustainability and competitiveness of higher education in Europe [15].

NEP 2020 in India is the latest education policy formulated after the National Policy on Education 1986 revised in 1992. This policy has been initiated by the Ministry of Education (former Ministry of Human Resource Development) for the purpose of upgrading the educational system of India to comply with international standards of the 21st century.

The major objective of NEP 2020 is to introduce an adaptive, multidisciplinary, skill-focused, and student-centered education system for developing creativity, critical thinking, innovation, and employability [1, 13]. Rather than focusing on rote learning and examination, it highlights the importance of developing students holistically. Its other objectives include increasing Gross Enrollment Ratio (GER), using digital technology in education, promoting vocational education, building up research culture, and equitable access to education [25, 26]. NEP 2020 mainly focuses on:

- Achieving universal access to high-quality education from pre-schools to universities.
- The introduction of the new 5+3+3+4 structure of schooling, which replaces the old 10+2 system.
- Emphasis on outcome-based learning through experience.
- Linking education to vocation and skill acquisition.
- Use of local languages in early stages of learning.
- Development of multidisciplinary and flexible learning at the higher level of education.
- The use of technology to enhance learning processes, including digital learning.
- Innovations through research by NRF.

1.2.2 National Education Policy Stakeholders

Stakeholders identification and care of their interests are important for success of any policies. The key stakeholders of NEP-2020 are shown in Figure 1.2.

Each stackholders play important role in NEP [16]. Major stackholders and their roles are:

- The State/Central Government and Policy Makers – They are responsible for designing, regulating, funding, and monitoring NEP 2020 implementation, which makes them one of the main drivers of the educational reform process.
- Educational Institutions – NEP reforms can be implemented through schools, colleges, and universities by means of curricular re-design, multi-disciplinary learning, and skill-based learning practices [13, 14].
- Teachers/Faculty Members – The teachers are instrumental in imparting outcome-based, experiential, and learner-centered education under NEP 2020 [21].
- Students/Parents – Students are primarily the beneficiaries of NEP whereas parents have a bearing on student participation and learning and encourage holistic development.
- Industries/Employers – Industries can facilitate integration of education with the requirements of the labor market through internships, vocational learning, innovation, and employability [16].
- Digital Platforms – Modern technology can make it possible to have online learning and AI-based education and learning.



Figure 1.2: Stackholders of NEP-2020

1.2.3 Current Status and Key findings about NEP

The current status of NEP 2020 indicates its phased implementation in India. Several state governments and educational institutes have already started initiatives like adoption of multidisciplinary curriculum, implementation of the Academic Bank of Credits (ABC), launching 4 years undergraduate courses, promotion of digital education, and vocational & skill courses [22, 23]. Nationwide efforts are being made to implement NEP 2020 despite its various challenges related to implementation [24]. Organizations like UGC and AICTE are issuing implementation guidelines. But challenges include lack of finance, teachers' training, lack of digitization, geographical inequality, and consistent implementation throughout all the states [22]. In general, NEP 2020 is seen as a revolutionary step to transform the Indian education system by making India competitive globally while ensuring its economic sustainability [21].

As far as the implementation of NEP 2020 in Gujarat is concerned, it has been moving forward with changes in educational reforms at both the school and university levels. The state of Gujarat has introduced the concept of multidisciplinary courses, skill-based education, and digitized learning programs in universities and colleges. Those institutes which come under Gujarat Technological University and other universities have initiated ABCs as well as flexibilities in courses. The Government of Gujarat is trying to promote vocation, regional languages, and teachers' training programs as per NEP.

The recent research works concerning NEP of India 2020 have pointed out the positive role of NEP in making significant changes with respect to multilingual education, inclusion, skill training, and result-oriented teaching [17, 18, 19]. Some of the strengths that were found by Singh et al. [25] included inclusion and cultural identity through multilingual education, whereas some of the weaknesses included insufficient trained teachers, no availability of regional languages' material, and administrative difficulty. Raj et al. [26] focused on flexibility in higher education, multidisciplinary approach, and ABC but mentioned digital divide and inequitable infrastructure as issues. The competency-based education and global competition was found to be strength by Ashokkumar et al. [30] and Sharma et al. [23], outcome-based education (OBE) in higher education with an SDG perspective by Mahrishi et. Al. [31] but funding, infrastructure, lack of readiness in teachers, and implementation emerged as weaknesses.

The analysis of NEP 2020 and NMP in relation to their impact and effectiveness in Gujarat can be assessed based on various dimensions including educational, economic, social, technological, environmental, and governance aspects.

The NEP-2020 can be analysed for its outcome and impact on various parametres. Some of the most crucial criteria are student enrollment, learning achievements, student employability, teacher professional development, digitalization of learning process, multi-disciplined education, innovation in research work, and inclusiveness in rural areas and other disadvantaged sections of society. The impact assessment will also analyze efficiency in implementing such policies, building educational infrastructure, and contribution of such policies towards developing a knowledge-based economy in Gujarat. On the other hand, important criteria for the national mineral policy includes mineral production, revenue generation, creation of more jobs, advancement in technology, environmental sustainability, community well-being, and effective governance.

In our research, the demographic profile of stakeholders in the education sectors affected by the National Education Policy 2020 was analyzed in our research work by using responses from 142 participants, including student, professor and different stakeholders.

The National Mining Policy was analysed by including professionals such as AGM/DGM, geologists, managers, and lecturers. The study found significant concerns regarding NMP 2019, particularly its orientation towards private sector benefits and its impact on public sector opportunities.

1.3 AIM

AIM of this work is to do critical evaluation of two most important policies of national interest namely: National mineral policy and National education policy. For this, our research was designed with aim of analysing how the NMP policy has influenced mineral governance, sustainable mining practices, transparency, environmental sustainability, value addition, and capacity building and the overall growth of mining after NMP implementation, and how the NEP policy has impacted skill development, industry–academia collaboration, employment generation, curriculum reforms, multidisciplinary education, teacher training, digital learning, institutional autonomy, education and training institutions in the state.

1.4 OBJECTIVES

The research aims to achieve the following specific objectives in the context of the National Mineral Policy 2019 and its implementation in Gujarat:

1. To examine the key provisions of NMP 2019 and analyze their relevance to Gujarat's mining and education ecosystem.
2. To assess the impact on the mining sector in Gujarat in terms of mineral production, value addition, transparency in mineral allocation, investment inflow, and sustainable mining practices.
3. To examine the impact on education and skills development, especially in mining engineering, geology, environment, and vocational education courses as per industry requirements.
4. To estimate employment creation and entrepreneurship opportunities created in the mining and related industries following the implementation of NMP 2019.
5. To assess any difficulties faced in implementing the policy.
6. To recommend ways to improve policy effectiveness and sustainability of the mining and education sectors in Gujarat.

The study is aimed at accomplishing the following specific objectives in relation to the National Education Policy 2020 and its implementation in Gujarat:

1. To study and review the important reforms made under NEP 2020 and to see their suitability to Gujarat's existing education structure.
2. To determine the impact on higher education
3. To determine the changes in higher education, such as multidisciplinary education, ABC (Academic Bank of Credits), multiple entry-exit system, and restructuring of institutions.
4. To review the concept of digital education and the use of technology.
5. To determine the implementation difficulties and administration hurdles in the educational institutions of Gujarat.
6. To provide policy suggestions for improved implementation and sustainable educational transformation in Gujarat.

1.5 SCOPE and Limitations

The research is aimed at assessing the outcome and effects of the National Mineral Policy 2019 on mining and the impact of the National Education Policy 2020 on education in the State of Gujarat. The scope of the research covers the following aspects:

1. **Geographic Scope:** The research is limited to the State of Gujarat only, including mining districts and educational institutes of Gujarat.
2. **Sectoral Scope:** National policies on mining and education sectors.
3. For NEP-2020 Higher Education was considered.
4. **Time Scope:** The research is about the changes that have happened since 2020 in the field of mining and education and their outcomes and impact.

There is no need to compare the findings with the policies of other States unless it becomes a requirement for understanding the context. This defined scope ensures a focused and systematic evaluation of NEP 2020's implementation effectiveness and its transformative impact on Gujarat's education ecosystem.

Limitations

Main focus of our research is on policy outcome in context of Gujarat state.

1.6 Contribution of the Thesis

The main contributions of this thesis to academia, methodologically and in terms of policy, lie in its empirical analysis of the two significant national policies: the NMP 2019 and NEP 2020 and their influence on the mining and higher education sectors respectively. In contrast to previous academic studies, which mainly concentrate on the provisions of the policy and theoretical discussion, this study empirically analyzes stakeholders' perceptions through the use of quantitative statistical methods.

Firstly, the thesis presents an empirical framework of analysis on the implementation and impact of NMP-2019. In particular, the research conducted a study using primary data from various stakeholders in the mining and education sectors such as mining people, geologists, engineers, managers, academicians, government officials, and students. With the help of descriptive analysis and Chi-square testing of hypothesis, the research proves the significance of NMP-2019 in influencing the stakeholder perception on the aspects of technological improvement, sustainable mining, economic development, mineral resource management, and

involvement of the private sector. At the same time, the research highlights the serious issues about the environmental aspect, conservation of mineral resources, privatization, public sector participation, and job creation.

The second major contribution lies in an extensive empirical examination of the implementation of NEP-2020 at higher educational institutes across the state of Gujarat. Based on feedback received from 360 faculty members from around 95 institutions, the study examines six key aspects of policy implementation: curriculum, pedagogy and assessment, governance and autonomy, research and innovation, student-oriented policy implementation, and effectiveness of the policy itself. Reliability of the questionnaire has been established using Cronbach's Alpha method and proper non-parametric statistical analysis has been carried out post confirmation of the non-normality of the data set. One-Sample Wilcoxon Signed Rank test proves significant positive perception towards the policy across all six dimensions, proving the transformative power of NEP-2020 in improving higher education.

In terms of methodology, the thesis makes its contribution by making use of the robust quantitative research methods of designing structured questionnaires, performing reliability tests, normality tests, Chi-Square Tests and Wilcoxon Signed Rank tests.

In terms of policy, the results offer some important recommendations regarding improving policy implementation. In terms of NMP-2019, the results underscore the importance of raising awareness and developing skills, along with environmental protection and good governance, for achieving sustainable mineral development. On the other hand, with respect to NEP-2020, the results stress the importance of ongoing faculty development, improved infrastructure, greater institutional independence, digitization, and research, among other aspects.

On the whole, this thesis has contributed to the existing knowledge base by linking policy analysis with empirical testing through two major national policies. This research provides a framework for decision makers, educational institutions, mining organizations, and scholars as well as a basis for further research on longitudinal policy assessment, comparative policy analysis, and evidence-based governance. The findings of this study can be used to make evidence-based policy improvements as well as to ensure sustainable national development through the implementation of NMP-2019 and NEP-2020.

1.7 Layout of the Thesis

The present thesis is organized into five chapters, each addressing a specific aspect of the study. Chapter 2 presents the background studies and a comprehensive review of the literature related to the National Education Policy (NEP) 2020 and the National Migration Policy (NMP) 2019. Chapter 3 examines the major problems associated with NMP-2019 and analyzes its socio-economic effects. Chapter 4 focuses on the effects and broader implications of NEP-2020 in the context of education and policy implementation. The analysis in these chapters provides a detailed understanding of the challenges and opportunities arising from both policies. Finally, Chapter 5 summarizes the key findings of the research, presents the overall conclusions, and offers recommendations for future studies and policy improvements.

CHAPTER - 2

BACKGROUND STUDY AND LITERATURE REVIEW

2.1 Introduction

National policies serve as the main tools used by a country to articulate its development objectives and convert them into institutional reforms. In this research paper, the effect and influence of two of these tools, namely the NEP 2020 and the NMP 2019, have been examined in the socio-economic setting of the state of Gujarat. Both the policies being relatively new, the literature available on these is quite immature; it is rich in theoretical perspectives but scarce in empirical studies on the same. This chapter critically synthesizes that body of work, establishes the theoretical scaffolding for the investigation, and isolates the gaps the thesis is designed to address.

The purpose of a literature review is not merely to catalogue prior contributions but to interrogate them — to compare the claims of competing authors, expose the methodological choices that underpin their conclusions, and judge the evidentiary weight those conclusions can bear. Accordingly, this chapter is organized analytically rather than chronologically. It first sets out a theoretical and conceptual framework that links policy-evaluation theory to the two sectors under study. It then reviews the education and mining literatures in turn, moving from the historical evolution of each policy to a thematic appraisal of recent research. Finally, it draws the two strands together through a comparative analysis, a methodological review, a structured statement of research gaps, and a justification of the present study's relevance.

Two clarifications frame what follows. First, although NEP 2020 and NMP 2019 govern very different sectors, they share a common reform grammar — modernization, sustainability, transparency, stakeholder participation, and skill formation — which makes a comparative reading both possible and instructive. Second, the review deliberately foregrounds the Gujarat dimension. Much of the existing scholarship is national in scope; the comparatively sparse state-

specific evidence is itself a finding, and one that motivates the empirical design adopted in subsequent chapters.

2.2 Theoretical and Conceptual Framework

Evaluating a public policy requires a theoretical lens that connects stated intentions to observed effects. Three families of theory inform this study and recur, implicitly or explicitly, across the reviewed literature.

2.2.1 Policy-Evaluation and Implementation Theory

Classical policy-evaluation theory distinguishes between a policy's outputs (the formal provisions and mechanisms it creates), its outcomes (the proximate behavioral and institutional changes it induces), and its impacts (the longer-term developmental consequences). Implementation theory brings the key point of the relationship between intention and outcome being influenced by local capability, administrative discretion, and alignment of interests. It can be seen in the modern studies related to NEP 2020, where the effectiveness of reforms is proved to rely on the preparedness of institutions instead of the elegance of the text of the policy. Similar principles are also applicable to the analysis of NMP 2019, where the critics highlight disconnect between aspiration to achieve sustainability and implementation mechanisms [8] [11].

2.2.2 Stakeholder Theory

Stakeholder theory, in the formulation advanced by Freeman (1984) [32], holds that an organization's or a policy's legitimacy rests on how it distributes costs and benefits across the groups it affects. Applied here, the relevant constituencies differ sharply by sector: in education they comprise students, faculty, institutional management, employers and the state; in mining they comprise operators, the workforce, investors, regulators, and the project-affected and tribal populations living near extraction sites. The theory also supplies the methodological warrant for the survey-based designs that dominate both literatures, including this one, since it licenses stakeholder's perception as an admissible proxy for policy outcome wherever administrative data are absent or lagged.

2.2.3 Sustainable Development and Intergenerational Equity

Both policies invoke sustainability, but they operationalize it differently. NEP 2020 construes it as the lifelong formation of capable citizens and the building of a knowledge economy; NMP

2019 construes it as responsible extraction of finite resources under the principle of intergenerational equity — the standard set out in the Brundtland Commission report, which defined sustainable development as meeting present needs without compromising the ability of future generations to meet their own (WCED, 1987) [33]. The framework adopted here therefore treats sustainable development as a shared evaluative criterion applicable to both policies, while acknowledging that the construct carries a sector-specific meaning in each. Figure 2.1 summarizes the conceptual model linking policy provisions, mediating institutional factors, and the outcome dimensions measured in this study.

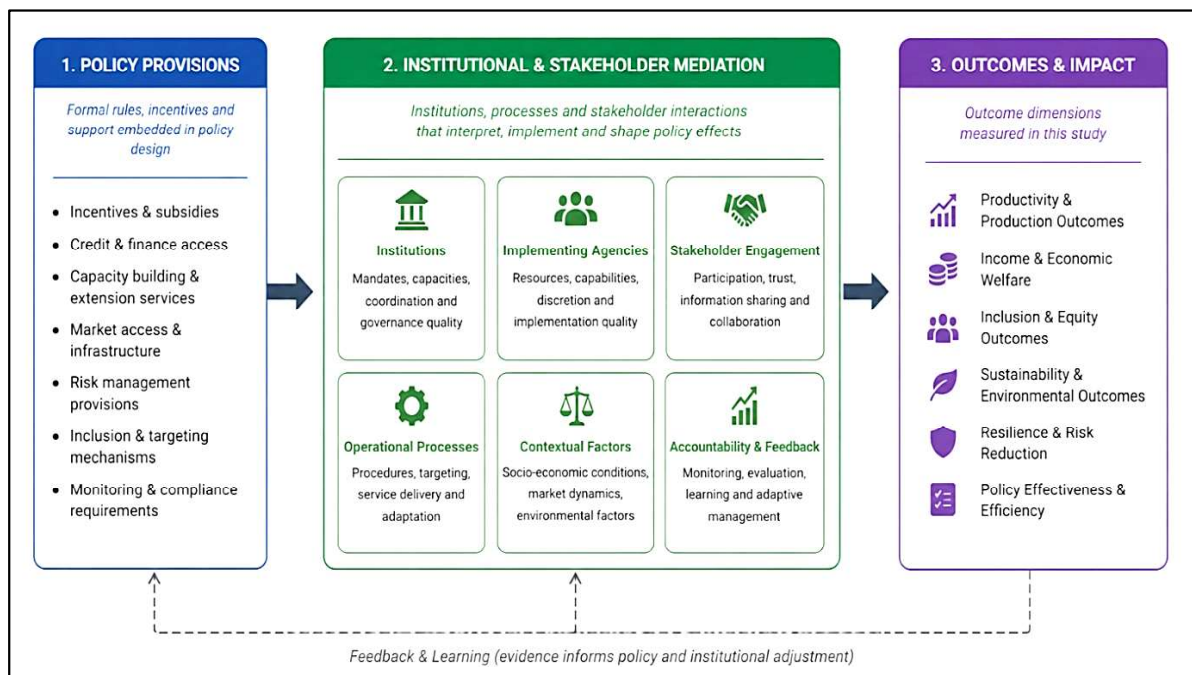


Figure 2.1: Conceptual framework linking policy provisions to measured outcomes via institutional mediation.

2.3 National Education Policy (NEP)

Technical instruction in India began as an instrument of colonial administration rather than of national development. The survey school founded at Madras in 1794 trained Indian personnel to assist British land surveyors, and the institutions established over the following century were shaped by the same logic: successive commissions recommended technical schools whose graduates would maintain public buildings, roads and other infrastructure of colonial governance [13].

The early twentieth century saw the first institutions founded on Indian rather than colonial initiative. The engineering college at Jadavpur, established under the National Council of Education, initially offered a diploma in mechanical engineering and subsequently one in chemical engineering; the Indian Institute of Science, endowed by Jamsetji Tata, introduced a certificate course in electrical engineering. Provision nonetheless remained thin — by the close of the 1930s roughly ten institutions were operating, with limited facilities between them [34].

The Department of Planning and Development, constituted in 1944 under Sir Ardeshir Dalal, was charged with reorganizing the Indian economy. Dalal argued that higher technical education was a precondition of economic advance and that India would need a substantial cadre of scientists, technologists and technicians to exploit the opportunities that science and industry were opening up. His program accordingly emphasized training young Indians in foreign institutions and directing research towards national requirements [35, 36, 37].

Following steps were carried out for promoting scientific research and technical education in India by the government:

- Establishment of scientific and industrial research department.
- Formation of a committee under the chairmanship of Mr. N.R Sarkar in 1945.
- Establishment of fellowship scheme for overseas training of scientists and technologists.
- Formation of all India council of technical education to advise the government for the development of technical education at diploma level and above levels, including post graduate teaching.

Maulana Abul Kalam Azad, independent India's first Education Minister, sought centralized federal direction of education so that provision would be uniform across the country. To that end the Union government constituted the University Education Commission (1948–49) [38] and the Secondary Education Commission (1952–53) [39] to recommend a modernized framework, and in 1968 Prime Minister Indira Gandhi promulgated the first National Policy on Education, which established the terms on which the national system would subsequently be assessed [12]. Between 1947 and 1968 the country's stock of technical institutions, polytechnics included, reached 135 [13]. Provision for advanced study and research in engineering nonetheless remained undeveloped for much of this period; the five original Indian Institutes of Technology were

founded once the government recognized that deficiency, with the following objectives of raising the competence of technical teachers and building research and development capacity.

- To enhance the knowledge and competence of technical teachers and to augment such teachers to meet the future demands of nation.
- To develop adequate facilities for training in research and development and to provide leadership in this area.

In line of the above objectives the facilities for higher studies and research were expanded in India.

a. Objective of Education Policies

According to the policy of education in India, every children has right to education and is free and compulsory at least for elementary and fundamental stages of schooling. Technical education forms the basis of economy and development in the country. Thus the government of India is now more focused on technical education and research promotion since last few years. The main objectives of NPE 1968 [12], was to provide primary education to all, and also to train teachers for quality education. The NPE was focused to ensure that people should know at-least three languages i) English ii) Hindi iii) regional language. The NPE 1979 [12] was focused on training for the improvement of identity and character. It focused on learning of arithmetic, history, language, elementary sciences, etc.

As highlighted in NEP 2020 [1], education must be directed towards holistic development, and not only towards development of cognitive abilities. The idea here is to develop good humans who can think and act rationally, possessing qualities like compassion, empathy, courage, resilience, scientific thinking, creativity, imagination, etc., with a sound ethical base. To prepare students for the industry and to keep pace with global advancements, the curriculum will incorporate cutting-edge fields like Artificial Intelligence (AI), 3-D machining, big data analysis, and machine learning, alongside genomic studies, biotechnology, nanotechnology, and neuroscience, all of which have significant applications in health, the environment, and sustainable living.

b. Need of Education Policies Amendment

The objective of India's education scheme is to bring about literacy among all Indians, thereby enabling them to earn their livelihoods. Technical education has the aim of enhancing India's status among developed nations around the world. Due to the rapid advancements in science and technology, India will have to possess those technologies which help India compete against developed nations such as the United States, Germany, and many others. As a result of this, changes in technical education will become inevitable, and colleges and universities will have to make changes in their systems to educate future technicians and technocrats.

2.3.1 Background of Education Policies

Here Educational Policies and amendments of different countries and continents are discussed as below -

a. European Higher Education

European systems have historically treated higher education as a public service [14]. Entry to publicly funded provision follows a selective process after secondary schooling, with students admitted to a defined professional track — medicine, law, engineering, business administration, the sciences — rather than to a general course of study. The pedagogical emphasis has been theoretical, with applied competence acquired largely in employment; the model functioned in part because selection was tight and the graduating cohort correspondingly small. Research, on this traditional pattern, was not principally located in the universities [40].

b. The Bologna Declaration of European Union [41]

The six fundamental principles of the Bologna Declaration [42] [14] are –

1. The use of a system of easily comparable degrees;
2. The development of a system which is largely based on two main cycles namely undergraduate and graduate
3. Developing a system of credits that would facilitate broad-based student mobility, the European Credit Transfer System (ECTS);
4. The development of a policy that would address any barriers and ensure mobility of the students, teachers, researchers and administrative staff;

5. The enhancement of European cooperation to ensure the quality of higher education by developing criteria and methodologies that are comparable and
6. The development of the European dimensions in higher education mainly through curriculum development, inter-institutional cooperation, mobility programs and integrated programs of study, training and research.

Enrolment of non-European students in EU institutions has risen since 1999, a shift commonly attributed to the Bologna Process. Brookes and Huisman (2009) [43] report that international enrolment grew faster in Europe than in the United States: against a 17 per cent increase in the United States in 2006, the United Kingdom recorded 29 per cent, Germany 46 per cent and France 81 per cent. The Institute of International Education has estimated the market's value at approximately \$14.5 billion, the bulk of it accounted for by tuition and living costs [44, 45].

Bologna was intended to push the universities to adopt themselves to the new trends through increasing the number of universities and widening the courses offered. Shortcomings of the EU system versus the American system are as follows:

- Students are not serious about graduating and are unaware of the school expense.
- There is a gap in industry-academia interaction.
- Linking research to instructions.

c. United States Higher Education System

The United States follows a different sequence. Secondary education is followed by roughly four years of general or liberal study, with entry to professional training in law, medicine or engineering deferred to the postgraduate stage [14]. Because provision is substantially private and public involvement comparatively limited, costs to the student are high; the sector is also markedly more heterogeneous than its European counterparts. Although distribution requirements in the arts, mathematics, history and religion are common, the system is frequently characterised as oriented towards occupational preparation rather than intellectual formation [46, 47, 48].

The importance of research in this system makes colleges find funds for it through businesses, making academics spend more time on research than teaching. Weaknesses of the US system in comparison with the EU system are –

- Insufficient training for a job
- Publicizing education
- Growing intellectually
- Linking research to instruction

d. Technical Education in India

The technical education in India is not focused much by both government and industry. There is a lack of linkage between government and academia in terms of funding and providing autonomy to the universities. In the same way, the link between the industry and academia is weak, technology is developing at an exceedingly fast rate, and the contribution of Indian academia in this area is negligible. Indians have made much fewer patents compared to people from other countries because of poor funding.

The industry needs to approach academia for research and development and for this, the government needs to make some policies that would compel such collaboration for the benefit of both the industry and academia. Only then the technology from India would reach everywhere in the world.

Looking at the picture of filing patents throughout the world, Indians have filed 2053 patents which is only about 1% of total patents filed across the globe according to the report of World Intellectual Property Organization (WIPO) compiled from Geneva based organization reported in Financial Express. This shows the need to encourage such efforts from institutes and industries in this regard. Industries may provide problems to academics and work together accordingly.

Major Amendments till 2019

Educational policies of India are primarily concerned about quantity of education and not quality of education. Technical education has always been considered expensive because of the large amount of investments required in the same. In the pre-independence era, technical education was provided just to meet the needs of British colonial government. However, after Independence, India understood the importance of technical education and its role in developing the economy of the country. Thus, numerous premier institutes such as IITs were set up to meet the requirement of technocrats in the country. Nowadays, government has established numerous universities and colleges, but the government has also allowed private sector to establish their institutions by

allowing them to become deemed and to be deemed universities. For the purpose of developing the quality of technical teachers, the government has initiated many schemes where the teachers are allowed to do their doctoral studies in premier institutes of India. In order to promote research, the government research organizations have started providing grants to undertake research on sustainable energy sources having socio-economic significance. For checking the quality of technical education, the government has constituted various accreditation agencies such as NAAC and NBA.

A way ahead with NEP 2020

The Hindu for NEP 2020 [49] is concerned about holistic development of students in each and every phase of education that is primary, secondary and higher education. In case of higher education, NEP 2020 has targeted the development of higher education system to a higher level. It is about improving the qualities of students by educating them in multiple disciplines instead of one particular discipline of expertise. Humanities are an important part of the curriculum, and vocational training of students is encouraged for having a solid career base. There is talk about choice based credit system wherein students will be able to choose their subjects and keep on studying the same throughout their careers.

It is hoped that the weaknesses of Technical Education, discussed in the section entitled "Technical Education in India," will be overcome through NEP 2020. NEP 2020 is more about vocational training and skill development. Vocational training will require industry support. This will increase institute-industry interaction, which will lead to employable technocrats/technicians. NEP 2020 also offers flexibility in choice of subjects and time frames. NEP 2020 has found overwhelming response both in academia as well as in society. It is envisaged that it will pave a new path in the field of global education.

Evolution of National Education Policy in India

India's education policy has evolved through three principal national statements, each a response to the developmental anxieties of its era. The historical record is well documented by [12] and [13], whose accounts trace technical and higher education from the colonial survey schools of the late eighteenth century to the post-independence institution-building that produced the Indian Institutes of Technology. Sadgopal (2009) [20] offers a more critical historiography, arguing that successive policies prioritised the quantitative expansion of education over the structural reforms

needed to guarantee quality and equity — a tension that, as the later review shows, NEP 2020 has inherited rather than resolved.

Following independence from British rule in 1947, the Government of India implemented several schemes aimed at addressing illiteracy in urban and rural parts of the country. The first minister of education in India was Maulana Abul Kalam Azad, who had the vision of centralized management of the education sector of the country. Some commissions were formed by the union government to promote modern education in India, such as the University Education Commission (1948-1949) [38], Secondary Education Commission (1952-1953) [39], University Grants Commission and Kothari Commission (1964-1966) [50, 51, 52]. Following the vision of the first prime minister of India, Jawaharlal Nehru, the government formulated the Resolution on Scientific Policy and developed some scientific educational institutions of great prestige, the Indian Institutes of Technology. The Government of India established the National Council of Educational Research and Training (NCERT) in 1961.

The NPE-1968 [53] was the first National Policy on Education, whereas NPE-1986 [54] was the second. After 34 years, the third National Education Policy 2020 has come out. This National Education Policy 2020 aims to develop the children holistically, education based on skills and values, which will lead to the formation of new India and Atmanirbhar bharat.

a. National Policy on Education – 1968 [53]

In 1968, the Indian government under Prime Minister Indira Gandhi formulated its National Policy on Education based on the recommendations of the Kothari Commission (1964-1966) [49, 51]. In pursuit of national integration and development through cultural and economic development, this policy focused on "radical restructuring of the education system.

Focus Area

- The Constitution of India has provided for free and compulsory education for all children till the age of 14 years.
- It envisages the continuous specialized training and improvement of qualifications of teachers along with academic freedom and honor of the teaching profession.
- The policy advocates the adoption of “three-language formula” in secondary education with the teaching of English, the official language of the concerned state and Hindi.

- There is an emphasis on the encouragement of teaching Sanskrit considering it an essential part of the cultural heritage of India.
- Equal educational opportunities for all through the elimination of disparities in the provision of educational facilities in the rural and backward areas.
- Service to community and reconstruction of nation.
- Emphasis on science education and research with special focus on agriculture and industries.
- Publishing high-quality text books for schools and universities.
- Prospects for secondary education along with development of technical education.
- Education at universities according to availability of facilities.
- Degree programs on part-time basis and correspondence courses at university level.
- Literacy and adult education.
- Uniform education structure in the pattern of 10+2+3.
- Increasing education spending to six percent of the national income.

Advantages

- In case of rural and underdeveloped regions, education was made compulsory for all people starting from their childhood period.
- Teacher's quality education would assure that high-quality teaching would take place. Stress the academic freedom of teachers for conducting independent research and studies.
- For bringing about the equality between common people and intellectuals, language education was considered important.
- For providing one language to all Indians, Hindi education was promoted.
- Spending 6% of the total income of the country on education would ensure the growth of education.

Limitations

- The choice to make Hindi the official national language caused controversy and opposition in some parts of India.
- There is little focus on a university education.

b. National Policy on Education 1986 [54]

As directed by Rajiv Gandhi, a new National Policy on Education was introduced in 1986 in order to overcome inequalities and provide educational opportunities equally, especially for Indian females, ST, and SC communities.

In the year 1992, during the term of P. V. Narasimha Rao as prime minister, there were some modifications in the National Policy on Education of 1986. Later, under the Prime Ministry of Manmohan Singh, the National Policy on Education of 1986 was incorporated into the Common Minimum Program in 2005. In accordance with the NPE of 1986, PoA of 1992 focused on the following:

- More scholarships
- Promotion of adult education
- Employment of teachers from SC and ST groups
- Motivation of poor families to ensure that their children come to schools regularly
- Opening of new educational institutions
- Housing and services
- To enhance the standard of primary schools throughout the country, the 1986 policy introduced "Operation Blackboard" and emphasized a "child-centred approach" in primary education. The Indira Gandhi National Open University was opened in 1985 under the policy's extension of the Open University system. The policy also emphasized the creation of rural universities based on the concepts of Mahatma Gandhi for local development in rural India.
- The objective of the policy was to allocate 6% of the GDP for education.

c. 1992 Modified Policy [55]

Under the revised policy of 1992, for admission into various professional and technical courses in the entire nation, a single entrance test was to be conducted on an all-India basis. The Three-Examination Scheme of the government included JEE, AIEEE (at national level), and SLEEEs (State Level Engineering Entrance Examination) for admission to engineering and architecture/planning courses. These policies had the advantage of standardizing the admissions

process, maintaining professionalism, and reducing the burden of many entrance tests on students and parents. However, the policies had certain limitations:

- The issue of the condition of the schools that operate commercially throughout the country was not covered.
- There were not enough measures put in place to narrow down the learning gaps of children from underprivileged backgrounds compared to those who are well-off.
- Some students might not get an opportunity to join university should they depend entirely on aptitude.
- It was not clear whether the open universities will serve as a good alternative to regular universities.
- Should the deserving students not afford the prescribed capitation fees in technical institutions, they may not join such institutions.

d. National Education Policy 2020 [1]

Several public consultations were conducted in connection with the Draft New Education Policy of the Ministry of Human Resource Development for the year 2019. The new National Education Policy was formulated by the government on July 29, 2020, which aimed to introduce many changes to the present education system of India.

Focus Area

- This “5+3+3+4” system, designed for children from 3 to 18 years of age, was adopted. Below is the new system:
 - PRE-PRIMARY: Five years for the foundational stage. Three out of five years will be at the pre-primary school while two more years will be on grade 1 and 2.
 - LATER PRIMARY: Preparation Stages will be the next three years. They include Grade 3, Grade 4, and Grade 5.
 - UPPER PRIMARY: Three middle-level years will be covered in this stage. They include Grade 6, Grade 7, and Grade 8.
 - SECONDARY: Four higher level years will be included in this stage. They include Grade 9, Grade 10, Grade 11, and Grade 12.
- B.Ed., an integrated four-year course, would be the basic educational requirement for any teacher. This will become a reality by the year 2030. Moreover, there would be online

courses about teaching methods for the teachers. These courses would focus on those methods which can be used in the Indian context.

- Points relevant to School Education
 - Mandatory to use the child's mother tongue as medium of instruction till Class 5. It aims to universalize pre-primary education by 2025. The pre-primary education includes children in the age group 3 and 6 years. It also aims to universalize education from pre-school to secondary school by 2030. Also, by 2030, the Gross Enrolment Ratio of Secondary level is to be brought to 100%.
 - New curriculum at preschool and Anganwadi.
 - The students will be allowed to take the exams twice. The exams will test core competencies rather than memorizing facts.
- Points relevant to Higher Education
 - Each college would be motivated to become a self-sufficient degree-granting body or a university.
 - The GER in higher education, inclusive of vocational education, seeks to achieve a 50% target by 2035 starting from the current 26.3% recorded in 2018.
 - The establishment of the Higher Education Commission of India (HECI) is envisioned, which would act as the overarching body in the domain of higher education, with separate verticals for funding (Higher Education Grants Council), accreditation (National Accreditation Council), regulation (National Higher Education Regulatory Council), and standards (General Education Council).
 - Over 15 years, colleges would increasingly become autonomous and, eventually, institutions of higher education in one stream would become institutions with multiple streams.
 - The policy motivates interdisciplinary education by allowing students to enroll in courses from different streams.
 - The period of the undergraduate degree program will vary between three and four years, with many options for completing the program (certificate after one year, diploma after two years, or bachelor's degree after three years). The M.Phil degree will be discontinued under the new policy.

- An Academic Bank of Credit will be set up to electronically document academic credits from various universities that can be transferred and added to the degrees.
- In order to increase access, equity, and inclusion in the system, the regulatory framework for higher education will be "light but tight," governed by a unified regulatory body.
- Multi-disciplinary institutes will be established in every district by 2030, and by 2040, every higher education institute will be multi-disciplinary, with at least 3,000 students per institution.
- Universities will focus on holistic education, offering quality teaching, research, and community engagement, with a spectrum of institutions ranging from research-intensive to teaching-intensive universities.
- High-performing Indian universities will be encouraged to establish campuses abroad, and top global universities will be supported to operate in India.
- With the goal of reaching a minimum exposure of 50% by 2025, vocational education will be incrementally incorporated into all schools and higher educational institutions.
- Learners from marginalized populations shall be incentivized for their academic successes.
- The presence of specialized International Students Offices within the host educational institutions shall make India a global hub for education where learners receive high-quality education at affordable costs.
- In order to create a strong culture of research within higher education, a National Research Foundation (NRF) shall be established.
- In order to preserve and promote linguistic diversity and translation, National Institutes of Languages and an Indian Institute of Translation and Interpretation shall be established.

Advantages

- The undergraduate program will be either a three-year or four-year program with many opportunities for students to exit the system at various intervals during this period. The colleges will have to issue certificates to students who will complete their studies in one year for any stream or vocational/ professional course; a diploma after two years of studies; and Bachelors' degree after three years of program.

- The new scheme is meant to improve Gross Enrollment Ratio (GER) in higher education, including vocational education, to 50 per cent by 2035 from 26.3 per cent (2018). In order to achieve this target, there will be an addition of 35 million seats in higher education institutes.
- The government will establish a National Research Foundation (NRF) with the goal of stimulating and energizing research and innovations in all disciplines of academics especially in universities and colleges.
- Every six months, the NTA will conduct a college entrance test that resembles the SAT.
- The colleges will enjoy graded autonomy to confer degrees within the next fifteen years. These institutions will not belong to any university and will be referred to as "deemed to be university."
- The proposed reform also suggests an upper limit on the tuition fees levied by the private educational institutions.
- This will facilitate the visit of leading international universities to India. In like manner, the leading Indian universities will be encouraged to venture into the international market.
- The abolition of MPhil will enable master's degree holders to move to PhD level studies.
- 100% literacy of children and adults is the objective of the National Education Policy.

Limitations

- Disparities amongst the different social classes are going to get even wider due to this education policy. Students from private schools will be introduced to English right from the start, whereas students from government schools will be taught in their mother tongue. Since they will be introduced to the language seven years later as compared to the kids studying in private schools, there will be a lot of kids who will not be comfortable with English.
- In order to graduate using the new system, it is required that the individual studies for four years. In case the person is able to graduate in two years, will he or she remain in the program? The person could have had two years of experience in case they left the program midway through two years.
- Introducing mother languages in academic institutions for each subject can face problem in finding a competent teacher in different languages and develop study material in mother languages.

2.3.2 Literature Review on NEP-2020

Reforms in educational policies have long been identified as key facilitators of innovations and quality improvements in higher education systems. Scholars have highlighted that contemporary higher education institutions need to implement adaptive curriculum, multidisciplinary approaches to education and research-based academia to address the challenges of the knowledge economy [56]. Moreover, educational reforms are important factors for achieving better access, equality, and quality in education systems. As stated by Leal Filho et. al. [57], the SDGs are being integrated in the institutional strategy and practices of higher education institutions. The integration of the SDGs in teaching, research, and governance remains inconsistent and requires further planning efforts.

The introduction of the National Education Policy 2020 is a turning point in terms of India's educational reform process. As per the views of Das et. al. [58], NEP 2020 seeks to create a revolution in India's higher education system through innovations, research, and knowledge production. They explain that policies like the establishment of the National Research Foundation (NRF), interdisciplinary research, and inter-institutional collaboration are important for building an effective research system and making Indian universities competitive globally. Another key objective of the policy is to make India's education system meet global standards through interdisciplinary research and collaboration. According to Seth et. al. [59], digital technologies have become an integral part of higher education in India in recent times, with the potential of improving the quality of teaching, learning, and institution management.

Kumar et al. [60], in, 2025, have reviewed the changes in structure in India's education system over the first five years of implementation of NEP 2020. It has been mentioned in the study that NEP-2020 gives utmost importance to learner-centered teaching-learning practices like project-based learning, digital learning, and outcome-based education. Such learning approaches will increase the flexibility and skills of the education system and learning outcomes.

One other notable aspect of NEP-2020 is research and innovation. According to NEP, the formation of the National Research Foundation would improve the research environment in universities [61]. The provision of funds and promotion of collaborations will improve India's global competitiveness in terms of research.

There is another component of NEP-2020 which involves governance. In order to improve efficiency and academic excellence, NEP-2020 promotes institutional autonomy and decentralization of decision making [62]. Despite the potential benefits of NEP-2020, scholars have pointed out several challenges related to implementation, including infrastructure constraints, faculty training requirements, and resource limitations [63].

The post-2020 NEP literature can be grouped into seven recurring themes: overall assessment and implementation, educational quality, digital education, higher-education structural reform, skill development and employability, equity and inclusion, and teacher education. The following subsections review each critically.

2.3.2.1 Overall Assessment and Implementation

The earliest and most-cited analyses are conceptual. Aithal and Aithal (2020) [17] provide a systematic appraisal of NEP 2020 against its own stated objectives, concluding optimistically that the policy is capable of achieving its aims if implementation strategies are well designed; their companion work (Aithal & Aithal, 2019) [64] had already mapped the implementation challenges of the draft. The value of these papers lies in their comprehensive objective-by-objective mapping; their limitation is that they are normative and document-based, offering predictions rather than evidence. A markedly more sceptical voice is Jha and Parvati (2020) [18], who characterise the policy as “long on rhetoric and short on substance,” drawing attention to the absence of financing commitments and the gap between visionary language and budgetary reality. Muskan Sha (2020) [19] and Kalyani (2020) [65] occupy intermediate positions, the latter contributing one of the first stakeholder-oriented empirical sketches.

More recent reviews have begun to converge on a shared diagnosis. Dey (2022) [21] critically analyses the school, teacher, and higher-education reforms and, while acknowledging their ambition, flags persistent implementation challenges; Sharma (2025) [23] catalogues the policy’s inclusivity and regulatory measures as transformative but concedes limited empirical validation of long-term outcomes; and Sethy and Mahapatro (2025) [22] emphasise the policy’s potential to enhance flexibility and global engagement while themselves relying on conceptual rather than field analysis. However, what is common between these readings is that the scholarly material has an abundance of analysis of policies, but lacks any concrete figures that show outcomes from such policies at the state level – Ghai (2025) [24] captures this best in his description of the field.

2.3.2.2 Educational Quality and Institutional Service Delivery

The second issue revolves around whether NEP 2020 has brought about improvements in the quality of education from the perspective of stakeholders. Recent quantitative research involving the use of the SERVQUAL measures together with stakeholder theory reveals significant perceptual differences: while administrators have greater satisfaction compared to students, the latter still find tangible problems and a lack of responsiveness, as well as a growing urban-rural digital divide. The point of analysis here is that such results raise questions about the underlying belief in conceptual research literature, which assumes that a single nationwide reform would bring about the same positive change for all stakeholders.

2.3.2.3 Digital Education and Technology Integration

Learning through technology holds an important place in NEP 2020, and there is an independent research stream that assesses this objective. Institutional studies like the analysis by the Observer Research Foundation (2025) [66] on five years of the implementation of EdTech under NEP based on national UDISE+ figures indicate some success, albeit partial; while the digital hardware availability in schools increased from around 34% in 2019-20 to 57% in 2023-24, government-run schools and some states were lagging behind, with wide regional differences. This is the only empirical stream of research in the literature on digital education that is based on solid data rather than perception alone. In contrast, a plethora of commentary articles on "digital learning under NEP 2020" in journals are merely descriptive and reiterate the policy objectives – DIKSHA, blended learning, digital pedagogy – without assessing the impact or actual take-up of learning through technology.

2.3.2.4 Higher-Education Structural Reform

Structural reforms in higher education, like multidisciplinary curriculum design, the Academic Bank of Credits, multi-entry and multi-exit pathways, and the four-year bachelor program receive most research interest. Shukla et al. (2022) [67] contend that holistic and multidisciplinary education increases career prospects for graduates. Sharma and Sharma [68] suggest that NEP 2020 enacts structural reforms to create a transformation of the educational system in India by introducing multidisciplinary and flexible education and vocational education in mainstream education. Other important aspects of the policy include the creation of a National Curriculum Framework, competency-based education and holistic development of the students to bring

education in line with the needs of the 21st century. Recurring weaknesses in the analysis related to this theme include a tendency to rely on focus group discussions and secondary syntheses rather than testing any hypotheses about impact. Recent educator-focused research using structural equation modelling marks a methodological advance, showing that institutional support mediates the translation of NEP innovations into effective teaching — a finding that relocates the explanatory burden from the policy to the institution.

2.3.2.5 Skill, Employability, and Industry–Academia Linkage

A central promise of NEP 2020 is the integration of vocational training and skill formation to improve graduate employability. The literature here is enthusiastic but evidentially thin. Studies of skill-based education and employability typically restate the policy's mechanisms — internships, apprenticeships, vocational credits — and infer employability benefits without longitudinal tracking of employment outcomes. Anil Sadgopal [20] older critique of weak industry–academia linkage and low research-funding intensity remains pertinent: the structural conditions that historically limited employability are not dissolved by curricular reform alone. The present study's explicit attention to employment generation and industry–academia interaction is thus a response to a genuine deficit in measured evidence.

2.3.2.6 Equity, inclusion, and access

Equity is one of NEP 2020's five pillars, and a growing body of work examines whether the policy reaches marginalised groups. P. K. Mangat [69] provides a qualitative case study of NEP implementation for marginalised communities in rural and semi-urban Punjab, finding that the policy's inclusivity goals are mediated by community engagement, local governance, and digital access, and that significant barriers persist. The strength of such work is its attention to lived experience; its limitation, for the purposes of this thesis, is geographic non-transferability — findings from Punjab cannot be assumed to hold in Gujarat, reinforcing the case for state-specific evidence.

2.3.2.7 Teacher education and faculty readiness

Finally, several studies identify faculty readiness as the binding constraint on NEP success. The educator-perspective research noted above demonstrates statistically that NEP innovations contribute to professional growth only where institutional support is robust, while field studies

repeatedly cite teacher preparedness as a weak link. This theme connects directly to the present study's inclusion of faculty perception as an outcome dimension, on the stakeholder-theoretic premise that teachers are both implementers and assessors of reform.

2.3.2.8 Gujarat-Specific Evidence

State-specific scholarship on NEP in Gujarat is notably sparse. Beyond the Government of Gujarat (2023) [70] implementation SOP and the institutional disclosures of individual universities, the academic literature offering measured outcomes for Gujarat is limited; P. S. Aithal et. al. [17] is among the few works to foreground the state explicitly, and even it is largely analytical. It constitutes one of the major deficiencies in the literature surveyed and is a clear justification for the subsequent empirical chapters. Table 1 shows a summary of the articles on the topic of education policy in relation to NEP-2020.

Table 2.1: Summary of Key Literature on Higher Education Reforms and NEP-2020

Ref.	Author(s) & Year	Study Focus	Key Findings
[1]	Government of India (2020)	Policy framework of National Education Policy 2020	Introduced multidisciplinary education, flexibility, research orientation, and institutional autonomy in higher education.
[71]	Philip G. Altbach & Jamil Salmi (2011)	Development of world-class universities	Emphasized research excellence, governance reforms, and global academic standards.
[72]	Jandhyala B. G. Tilak (2015)	Higher education challenges in India	Identified issues of quality, equity, and access in Indian higher education.
[73]	Simon Marginson (2016)	Social role of higher education	Higher education contributes to public good, innovation, and national development.
[74]	UNESCO (2021)	Global education reforms	Emphasized inclusive, equitable, and sustainable education systems.
[75]	Bhattacharya, R. (2024)	The study analyzes the reforms proposed under NEP 2020 for India's higher education system, particularly examining issues of expansion,	The paper finds that while NEP 2020 proposes major structural reforms to improve quality, access, and governance, its success depends on addressing challenges related to institutional fragmentation,

		privatization, governance, and centre–state policy dynamics.	privatization, and effective policy implementation.
[76]	Tripathy, S. K. (2024)	Digital learning transformation	NEP-2020 promotes technology-enabled teaching and digital infrastructure.
[77]	Shinde, S. P., Pasa, M. E. K., Waghmare, R., & Saikia, B. (2024)	The study examines the opportunities and implementation challenges of the National Education Policy (NEP) 2020, particularly in transforming India’s education system through multidisciplinary learning, digital education, and institutional reforms.	It is important to note that NEP 2020 holds a lot of promise for better quality and skill-based education, but the actual implementation of NEP is faced with many hurdles.
[78]	Nirmal, P. B. (2024)	The study examines how the multidisciplinary approach proposed in NEP 2020 aims to transform India’s higher education system by promoting flexible curricula, interdisciplinary learning, and holistic education.	The paper concludes that while the multidisciplinary model can contribute to innovation, critical thinking, and employability, the success of this model is contingent on institutional restructuring, curricular changes, and faculty capacity building.
[79]	Chattopadhyay, S. (2025).	The study analyzes the governance reforms proposed in NEP 2020, focusing on enhancing university autonomy, accountability, and institutional restructuring in India’s higher education system.	The paper concludes that although NEP 2020 seeks to improve governance through institutional autonomy and less complex regulations, the success of this framework is dependent on policy coordination, transparency, and institutional capacity building.
[80]	Jain, S., Khare, A., Goel, O., & Goel, P. (2023)	The study evaluates the impact of NEP 2020 on higher education institutions in India by comparing institutional practices and academic	The study finds that NEP 2020 has encouraged curriculum flexibility, multidisciplinary learning, and skill-oriented education, though institutions face challenges in infrastructure, faculty readiness, and policy

		structures before and after the policy's implementation.	adaptation.
[81]	Trivedi, C. (2025).	The study critically examines the policy framework affecting university autonomy in India, analyzing how government regulations and reforms influence institutional governance and decision-making.	The paper finds that increased regulatory control and policy centralization might reduce the autonomy of universities, emphasizing the importance of finding an equilibrium to ensure both accountability and freedom of academics.
[82]	Veerabhadraiah, C. (2024).	The study examines the role of NEP 2020 in promoting skill development and aligning higher education with industry and employment needs in India.	The paper finds that NEP 2020 promotes vocational skills and industry connections, which would be helpful in bridging the gap between academic studies and employability.
[83]	Gupta, B. L. (2023).	The study examines the management and promotion of multidisciplinary research in higher education institutions under the framework of NEP 2020.	The paper finds that NEP 2020 promotes collaborative research and interdisciplinary research to improve innovation and knowledge production, but institutions should improve infrastructure and processes to promote those.
[58]	Das, P., & Das, G. (2024).	The study examines how NEP 2020 promotes research and innovation to transform the quality and relevance of higher education in India.	The paper finds that NEP 2020 promotes the development of research culture, innovative environments, and collaboration through programs such as the National Research Foundation.
[23]	Sharma, N. (2025).	The study analyzes the objectives, implementation strategies, and long-term prospects of the National Education Policy (NEP) 2020 in transforming India's education system.	The paper finds that NEP 2020 is promoting improved quality, accessibility, and multidisciplinary learning, but its effectiveness will depend on its proper implementation and sufficient resources.
[84]	Edwards, D. B. (2023).	The study examines the World Bank's role in	This paper discovers that the policies formulated by the World Bank create

		shaping education governance and development policies, focusing on participation frameworks and policy influence in education systems.	participatory governance and policy reforms in education, although the extent of their application depends on the country and the context in which it is applied.
[85]	Inampudi, S., & Gaurav, A. K. (2024).	The study analyzes the role of NITI Aayog in transforming governance institutions in India to promote inclusive and sustainable development.	The paper discovers that NITI Aayog is an institution that makes a considerable contribution to policy coordination, cooperative federalism, and evidence-based policymaking in India.
[86]	Kumar, K. (2017).	The book examines the historical development, structure, policies, and challenges of the education system in India, covering school and higher education.	It highlights that India's education system faces issues of access, quality, equity, and governance, emphasizing the need for comprehensive policy reforms and institutional strengthening.
[87]	Agarwal, P., & Kamalakar, G. (2013).	The study discusses the future prospects and challenges of India's higher education system, focusing on expansion, quality improvement, and policy reforms.	The paper highlights that impactful governance, increasing research capacity, and increasing investment are essential to enhance the quality and global competitiveness of Indian higher education.
[17]	Aithal & Aithal (2020)	NEP 2020 vs. stated objectives based on Conceptual; focus-group analysis	Policy can meet objectives with sound implementation strategy. Their study is Predictive, not evidence-based; no field data.
[18]	Jha & Parvati (2020)	Critique of NEP 2020 based on Critical policy analysis	Strong on vision, weak on financing and substance. No primary outcome measurement.
[21]	Dey (2022)	School, teacher, higher-education reforms based on Analytical Review	Reforms ambitious; implementation challenges noted. No quantitative regional evidence.
[22]	Sethy & Mahapatro	Higher education transformation based on	ABC, multiple entry-exit enhance flexibility. Lacks empirical state-level

	(2025)	Conceptual policy analysis	outcomes.
[24]	Ghai (2025)	Ground-level NEP challenges based on Field-based description	Infrastructure and teacher-preparedness gaps. No measurable academic outcomes
[69]	Mangat (2024)	Equity for marginalised groups using Qualitative case study (Punjab).	Inclusivity mediated by access and governance. Geographically non-transferable to Gujarat.

2.4 National Mineral Policy (NMP)

Minerals constitute a primary natural resource and an input to several basic industries. Their exploration, extraction and management are therefore treated in policy as matters to be directed by national economic objectives rather than left to sectoral drift, with domestic production encouraged and import dependence reduced in support of the Make in India programme. Two commitments recur in the policy framing: that mineral wealth is a shared inheritance held by the state in trust for the public, which imposes a requirement of fair and transparent allocation; and that extraction must proceed on environmentally sustainable terms with affected stakeholders meaningfully involved [2].

The National Mineral Policy (2019) [2] aims to ensure the effective regulation and sustainable development of the mining sector. It proposes granting the status of 'industry' to mining activity to boost financing for the private sector, encourages the use of coastal waterways and inland shipping for transportation of minerals, harmonizes taxes with world benchmarks, and emphasizes the maintenance of a database of mineral resources [2]. The policy also focuses on the development of inland waterways, dedicated mineral corridors, and district mineral funds to aid the development of districts where minerals are extracted. Moreover, the policy seeks to conserve the environment, involve the private sector in its implementation, and bring about transparency in the use of district mineral funds [2].

The Ministry of Mines has been implementing various reforms and initiatives for the mining sector which have been in line with the “Make in India” initiative. The initiatives that have been implemented by the ministry include the auction for Critical and Strategic Minerals, amendment of acts such as Mines and Minerals (Development & Regulations) Act, and cooperation both bilaterally and multilaterally in the mining sector. The results of this policy include an increase in the production of MCDR minerals by 200% and decrease in the trade deficit in minerals by 50%

within 7 years. This will assist in the development and growth of the Indian economy [88]. It is important for the successful implementation of the policy to propel India into a more developmental path.

The management of mineral resources in India is a joint responsibility of the central and state governments as mentioned in the constitution. The transparency in granting of mineral concessions, together with security of tenure and transferability of mineral concessions, is important for sector development, thereby creating a favorable regulatory regime. It becomes essential to develop institutions like the Indian Bureau of Mines (IBM) and State Directorates of Mining & Geology to ensure proper enforcement of mining plans [89].

On the state side, it becomes imperative to facilitate mining and regulate the activity along with infrastructure development and revenue generation. The states need to issue annual business plans for development of the mineral sector and proper allocation of space to state organizations. Ease of doing business through online portals becomes possible along with pre-clearance of mineral blocks.

Minerals become the mainstay of various basic sectors, especially with the Make in India movement generating huge demand for them. National goals and objectives for long periods of time need to be kept in mind while exploring minerals and managing the same with a focus on zero waste mining.

Research and development (R&D) efforts must covers geological surveys, beneficiation, and processing with the aim of innovating machinery, techniques, and technologies. Incorporating suitable technologies for indigenous industries, upgrading local technologies, and improving the safety and efficiency of mining methods are vital. Coordination among the public and private sectors, incentivizing state-of-the-art technology, and facilitating the adoption of robotic and automated equipment are essential for sustainable mineral development.

a. Objectives of the National Mineral Policy 2019 [2][3]

The key objective of the 2019 National Mineral Policy in India is to enhance the regulation and sustainable development of the mining sector. The objectives include the following:

- Increase exploration activities with greater involvement from the private sector.
- Maximize the sector's contribution to the Indian economy.

- Reduce imports of minerals.
- Support the 'Make in India's initiative by promoting domestic production and self-reliance on mineral resources.

b. Challenges of Mineral Sector [90][91][92][93]

The challenges faced by the mineral sector in India include:

- **Regulatory Hurdles:** Indian law restricts miners from owning a mining lease beyond 10 km for a mineral in a state, limiting major companies from participating in auctions.
- **Inadequate Mineral Exploration:** India's expenditure on exploration, especially for deep-seated minerals such as copper, zinc, lead, gold, and silver, has been low, hindering the discovery of new mineral resources.
- **High Import Dependency:** India's dependence on imports for minerals is due to lack of exploration and mining in the country. This makes India face a huge bill in terms of imports and affects the nation's mineral independence.
- **Double Taxation:** Minerals such as iron ore and bauxite face issues of double taxation in the form of royalties on royalty, adding to the financial burden on mining companies.
- **Environmental Concerns:** Mining activities contribute to environmental issues, such as water pollution, air contamination, and displacement of local populations, leading to health hazards and ecological damage [90].
- **Administrative Issues:** Challenges such as arbitrary allocation of coal mines, delays in environmental clearances, and judicial interventions causing project delays and cancellations affect the efficiency and growth of the mining sector in India [90].

2.4.1 Background of National Mineral Policy in India

In this section, the evolution of the Policy (NMP) is discussed stating from 1993 to 2019 is discussed.

a. National Mineral Policy 1993 (NMP) [94][95]

In pursuit of reforms initiated by the Government of India in July 1991 in fiscal, industrial, and trade regimes, the National Mineral Policy was announced in March 1993. The main aim of NMP (1993) is to encourage the flow of private investment and the introduction of state-of-the-art technology in exploration and mining. The key features and objectives of the 1993 NMP are:

- Allowed private companies to lease and operate mines, with the government receiving royalties
- Aimed at bringing new mining technologies and tools to identify new mineral deposits and increase production.
- Promoted a market-based approach to mining and development of the mineral sector
- Improve the regulatory environment to make it more conducive to investment and technology flows

Some of the major limitations of NMP 1993 are –

- During this period, India lacked high-risk ventures, such as investment in detailed exploration or other development activities, due to not taking the risk in detailed exploration that involves spaced drilling (depending on mineral) and substantial testing to establish commercially exploitable ore bodies. Both require large investments and long periods of time.
- The basis for investment in mining is dependent only on the exploration conducted by the Geological Survey of India (GSI).
- Foreign Direct Investment (FDI) at a slow pace might be due to the mining laws and policies of developing countries, which states that to attract global investment, the existence of minerals is not significant, but the regulatory regime should also be investor-friendly.
- Lack of interest shown by the domestic private sector for investment in prospecting.
- Limited budget for promotional exploration with public sector agencies and other state and central agencies. This shows that the sector was unable to contribute to the growth of the Gross Domestic Product (GDP).

b. Review of NMP-1993 by High Level Committee in 2005 [93][96][97]

Thus, on September 14, 2005, a High-Level Committee was set up by the Planning Commission with Shri. Anwarul Hoda as Chairman with the mandate to review the existing policy and make suggestions for possible amendments to the Mines and Minerals (Development and Regulation) Act, 1957 to attract investments into the mining sector. In March 2008, the Government of India announced the National Mineral Policy of 2008 that is an outcome of the deliberations of the Hoda Committee [94]. The National Mineral Policy of 2008 seeks to attract investments and technologies through focused activities. The Terms of Reference for the high-level committee were provided by the Planning Commission of India as follows [97][96]:

- Examine the Mines and Minerals (Development and Regulation) (MMDR) Act 1957 and National Mineral Policy 1993 and suggest the requisite changes to stimulate investment in public and private sector mineral exploration and mining.
- Examine and make recommendations for streamlining the existing procedures for the grant of prospecting licenses (PLs), mining leases (MLs) and reconnaissance permits (RPs).
- Examine and make recommendations for streamlining the existing procedures for approval of mining and mineral exploration projects under the Forest (Conservation) Act 1980 and Environment (Protection) Act 1986.
- Prioritize the important infrastructure needs of Indian mining industry and suggest ways of stimulating investment for addressing the same.
- In order to measure the effects that the policies adopted by states rich in minerals in generating value in their states as a requirement before any mineral concessions are granted.
- To explore ways through which state income can be increased from the mineral industry, and;
- To explore any other matters related to fostering investment flows and introducing modern technologies in the industry.

c. Hon`ble Supreme Court Judgement of Common Cause vs Union of India on 2 August, 2017

The Supreme Court judgment in W.P. (C) No. 114/2014 highlighted the rapid mining of iron ore and manganese ore by lessees in the districts of Keonjhar, Sundergarh, and Mayurbhanj in Odisha [98]. The court mandated the Ministry to revisit the existing National Mineral Policy 2008 [94] and announced a fresh and more effective, meaningful, and implementable policy before December 31, 2017. The Terms of Reference for the committee are as follows [99]:

- To review the National Mineral Policy 2008 and suggest a new policy to indicate measures required for transparency, balanced socioeconomic growth, and sustainability in the mining industry.
- Recommendations for conservation and mineral development, environmental protection, and measures to assess the carrying capacity of mining in states/regions.
- To suggest measures for improving the survey and exploration of minerals, database formulation, scientific methodologies, manpower development, infrastructure development, financial support for mining, and research in mining.

- To examine and make recommendations for development of strategic minerals.
- Examine and review fiscal aspects conducive to the promotion of mineral exploration and development, including beneficiation and other forms of product refinement.
- Any other matter which the Committee feels relevant.

d. Committee Meetings to review the NMP 2008

Four committee member meetings were conducted to review the NMP 2008 [94] as follows [100]:

1. First Meeting on 28-08-2017: The Important topics which were discussed in the first meeting are enlisted as below -

- Surveillance/monitoring, efficient mechanisms for granting statutory clearances, sustainability, inter-generational equity, macro environmental impact assessment, etc.
- Forest clearance issues during exploration need to be streamlined. Issue of sustainable mining.
- Focused on the need for concentrating on exploration
- Introducing an efficient regulatory mechanism to stop auctions that turn corrupt. The cost of auction money, the cost of land, NPV and payments for compensatory afforestation, royalty, contributions to DMF and NMET, GST charges of L8 o/o on royalty, etc., all added together he said will make the cost of raw material to the manufacturing industry much costlier, which might compel the industry to look at imports to meet their raw material requirements.
- Development of infrastructure facilities in a holistic manner, particularly in mineral-rich regions where bulk minerals are found, which require enormous amounts of infrastructure, including rail, roads, ports, slurry pipes, and inland waterways (Appendix B Part C).

2. Second Meeting on 11-09-2017: More concerned to the 'Particularly Vulnerable Tribal Group' which a classification is created by the Government of India with the purpose of enabling improvement in the conditions of certain identified tribal communities with particularly low development indices.

3. Third Meeting on 26-09-2017: Suggestions from stakeholders regarding amendment to NMP 2008 has to be undertaken visualizing the existing situation.

4. Fourth Meeting on 13-10-2017: In fourth meeting following points were discussed -

- Discussion of First draft of National Mineral Policy.
- Points discussed related to sustainable development, tribal welfare, responsible mining, exploration, as well as the Hon`ble Supreme Court's directives on intergenerational equity.
- NGOs are requested to better address the Inter-generational equity part of the draft NMP.

e. Draft release of NMP 2018 for stake holder's comments/suggestions [101]

Based on a report submitted by the committee on 31.12.2017 [60], The Ministry of Mines prepared a draft National Mineral Policy (NMP) 2018 [101] and uploaded it on the official website of the Ministry on 10.01.2018 to seek comments/suggestions from the Stake Holders.

f. Preparation of Draft of NMP 2018

Draft prepared by the Ministry of Mines after addressing the comments of stakeholders. The draft of NMP 2018 was kept on the website of the Ministry of Mines, and comments/suggestions were invited from the general public, governments of states and union territories, the mining industry, stakeholders, industry associations, and other persons and entities. This Draft Policy emphasizes [101] -

- Mining must be carried out in an environmentally sustainable manner, keeping stakeholders' interests in mind.
- Transparency of mineral concessions.
- To ensure enforcement of Mining plans.
- Strengthening the Indian Bureau of Mines (IBM) and the state Directorates of Mining & Geology by adequate manpower, equipment, and skills.
- The regulatory mechanism should be strengthened by incorporating e-governance, including satellite and remote sensing applications.
- Provisions should be made for end-to-end accounting of the mineral/ore in the supply chain using IT-enabled systems.
- Efforts should be made to establish an appropriate mechanism for awareness and information campaigns and for the involvement of local populations to supplement law enforcement capabilities in preventing illegal mining.
- Welfare to tribal communities.

g. National Mineral Policy 2019 [2]

Based on the Committee Report and inputs received from stakeholders during subsequent consultations, the Ministry of Mines prepared the National Mineral Policy 2019. The Union Cabinet, in its meeting held on 28.02.2019 approved the “National Mineral Policy 2019.” The salient features of the “National Mineral Policy 2019” are as follows [2]:

- i. Introduction of Right of First Refusal (Right to first refusal):** Earlier, if a firm with a reconnaissance permit (RP) finds evidence of minerals, it has to inform the government. The government auctioned off the area. However, under the new policy, such firms will get the right of first refusal, that is, the same firm would be given the area for mining) for RP/PL (Prospecting Licenses) holders.
- ii. Encouraging the private sector:** Private sectors were encouraged to take up exploration, the NMP-2019 included -
 - Auctioning in virgin areas for composite RP cum PL cum ML (Mining Lease) on a revenue share basis
 - Encouragement of mergers and acquisition of mining entities, transfer of mining leases and creation of dedicated mineral corridors to boost private sector mining areas.
 - The 2019 Policy proposed to grant the status of industry to mining activity to boost financing of mining for the private sector and for acquisitions of mineral assets in other countries by the private sector.
 - It also mentions that long term import-export policy for mineral will help the private sector in better planning and stability in business.
 - The Policy also mentions rationalizing reserved areas given to PSUs that have not been used and putting these areas into auctions, which will give more opportunity to the private sector for participation.
 - The Policy also mentions making efforts to harmonize taxes, levies, and royalties with world benchmarks to help the private sector.

iii. National Mineral Exploration Policy (NMEP, 2016) [102]

The NMEP, 2016 encourages Private Sector participation through its revenue-sharing model. It also emphasizes the generation and dissemination of baseline geo-scientific data from World

Standards in the public domain and the creation of the National Geoscience Data Repository to promote exploration activities.

iv. Environment Impact Assessment (EIA) [103][104]

Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural, and human health impacts, both beneficial and adverse. Table 2.2 shows the Socio-Environmental impacts due to Mining Activities.

Table 2.2: Socio-Environmental impacts arising due to Mining Activities [103]

Environmental Impacts	Social Impacts
Water accessibility and quality	Housing displacements
Air quality	Resettlement
Land disturbance	Employment
Waste generation	Health and Safety
Biodiversity loss	Ecosystem services
Nuisance and disturbance	Socio political conflicts

The EIA in India began in 1976-77, when the Planning Commission asked the Department of Science and Technology to examine river-valley projects from an environmental perspective. This was subsequently extended to cover projects that required approval from the Public Investment Board. These were the administrative decisions. The Government of India enacted the Environment (Protection) Act on May 23, 1986. To achieve the objectives of the Act, one decision was to make the EIA statutory.

After following the legal procedure, a notification was issued on January 27, 1994, and subsequently amended on May 4, 1994, April 10, 1997, and January 27, 2000, making an environmental impact assessment statutory for 30 activities.

v. Salient features of Notification

- The Act made it mandatory for all projects listed in Schedule 1 to get an environmental clearance from the central government, be it, for setting or expanding any plant anywhere in the country.
- The notification also made provisions for the formation of an Impact Assessment Agency (IAA), which essentially consisted of experts for review of the documents submitted to the MEF for clearance.
- The notification also made the provision for the proponent to reapply if it was rejected due to a lack of data.
- However, it placed a penalty for automatic rejection in the case of misrepresentation and concealing factual data.

vi. Exemption of Environmental Clearance

Exemption for projects already initiated for projects listed in Schedule 1 to the notification with respect to which the required land has been acquired and all relevant clearances of the State Government including NOC from the respective State Pollution Control Boards were obtained before January 27, 1994, and a project proponent will not be required to seek environmental clearance from the Impact Assessment Agency (IAA).

vii. Amendments in EIA notification [104][105][106][107][108]

a. 4th May 1994 [104]:

Statutory Orders (S.O) 356 (E) includes detailed procedures and documents to be submitted for obtaining environmental clearance from the Ministry of Environment and Forest (MoEF).

b. 10th April 1997: S.O. 318 (E)

- Inclusion of Environmental Public Hearing (EPH) procedure in the environmental clearance procedure.
- The State Pollution Control Board (SPCB) was entrusted with conducting public hearings to obtain the views and concerns of the affected community and interested parties for the proposed project.
- It was also entrusted with the formation of an EPH committee to ensure fair representation during the public hearing process.

c. 13th June 2002: S.O. 632 E

- Dilution in the process EIA by exempting various projects
- Pipeline and highway projects are exempted from preparing the EIA report, but public hearings are mandatory in all the districts through which the pipeline or highway passes.
- The EIA is exempted if the investment was less than Rs 100 crore for new projects and less than Rs. 50 crore for the expansion/modernization of projects. Exemption to those projects with very high socio-environmental impact, even if the investment was less than Rs 100 crore. For example, in the case of hydropower projects, irrespective of investment, there will be social impacts due to displacement.
- No EIA was required for modernization projects in the irrigation sector if the additional command area was less than 10,000 hectares or the project cost was less than Rs. 100.

d. 28th February, 2003: S.O. 248 E

It considers location sensitivity in the environment clearance process. This amendment prohibited certain processes and operations in specified areas of the Aravalli Range, except with prior permission from the central government.

e. 7th May 2003

The notification was amended to expand the list of activities involving risks and hazards. In this list, river valley projects include hydel power projects, major irrigation projects, and their combination, including flood control projects, except projects relating to improvement work, including widening and strengthening of existing canals with land acquisition up to a maximum of 20 m (both sides put together) along the existing alignments, provided such canals do not pass through ecologically sensitive areas such as national parks, sanctuaries, tiger reserves, and reserve forests.

f. August 4th 2003

This amendment was similar to that in February 2003, which attempted to bring in location-sensitivity in the entire environmental clearance process. Any project located in a critically polluted area within a radius of 15 km of the boundary of reserved forests, ecologically sensitive areas, which include national parks, sanctuaries, biosphere reserves, and any state, had to obtain environmental clearance from the Central Government.

g. September 2003

Site clearance was mandatory for green field airports, petrochemical complexes, and refineries. Moreover, the amendment added that no public hearing was required for offshore exploration activities beyond 10 km from the nearest habitation, village boundary, goothans, and ecologically sensitive areas such as mangroves (with a minimum area of 1,000 sqm), corals, coral reefs, national parks, marine parks, sanctuaries, reserve forests, and breeding and spawning grounds of fish and other marine life.

h. July 7th, 2004

It made EIA mandatory for construction and industrial estate.

i. 4th July 2005

The amendment provided that projects related to the expansion or modernization of nuclear power and related projects, river valley projects, ports, harbors and airports, thermal power plants, and mining projects with a lease area of more than five hectares could be taken up without prior environmental clearance. The Central Government in the Ministry of Environment and Forests may, on a case-to-case basis, relax the requirement of obtaining prior environmental clearance and may, after satisfying itself, grant temporary working permission on receipt of application in the prescribed format for a period not exceeding two years, during which the proponent shall obtain the requisite environmental clearance as per the procedure laid down in the notification. A grant of temporary working permission would not necessarily imply that environmental clearance would be granted for the project.

There was a widespread opinion that the EIA notification was not able to address all concerns and had several weaknesses that made the entire clearance process weak. This was why the Union Ministry of Environment and Forest (MoEF) initiated the process of bringing in some significant modifications to the environment clearance process. The draft notification was published on September 15, 2005. This was put up for public comments for a year and notified in September 2006 [84].

viii. Mines and Minerals (Regulation and Development) Act-1957 [109][110][111][112][89]

The First Act came into 1948, and this act came due to the Industrial Policy Resolution (IPR) 1956. Important point were -

- The public sector is allowed to participate in mining all the major minerals (Schedule A).
- The public and private sectors were allowed to participate in mining all minor minerals (Schedule B).

Amendments

- Amendments came in 1972 and then in 1986 which includes enhanced government control.
- After the 1991, liberalization of the National Mineral Policy – In 1994, the private sector was allowed to participate in the mining of 13 major minerals. Additionally, foreign participation is allowed in exploration and mining in the form of technology and equity.
- In 1999, the government found that not much investment was coming, so it emphasized development rather than regulation. Thus, the concept of reconnaissance emerged, which is an important stage prior to prospecting.
- Power to states is given to renew the Prospecting License and Mining Lease and also transfer the mining lease of minerals in Part C.
- During this year, the MMRD Act became an MMDR because the government is now focusing mainly on development works.
- In 2015,
 - exploration was virtually nationalized,
 - Termination of leases in 2020 and limiting the lease period to 50 years for the private sector
 - Mining lease is granted on the basis of auction and
 - The reconnaissance Permit is not exclusive, so the RP holder is not assured of obtaining the Prospecting License (PL).
- **Auction System:** Government believes that because of this transparency should be maintained and more revenue will be generated, but the Supreme Court has said that the auction system will be one of the ways to give ML, not the only basis for giving ML.

Drawbacks of Auction System

- Successful bidders raise the price of raw materials beyond the current market price, so the consumer will become the victim to pay more.

- Successful bidders who have ML for a limited 50 years will mine out the high-grade ore before the ML expires and leave the low-grade ore.
- During the five years, no large mine has commenced production granted through auctions.

MMDR Act 2015:

- Introduction of e-Auction Method.
- Establishment of District Mineral Fund (DMF) [DMF is 10% of royalties should paid to Govt.]. This fund is used to benefit people residing around mining leases.
- Establishment of National Mineral Exploration Fund (NMET) [NMET is 2% of royalties should paid to government]. Money was collected for exploration work. Only the government is involved.
- Stringent penal provisions for illegal mining (5 Lacs or 5 years imprisonment)

MMDR Act 2016:

- Leased area: Infrastructure or allied activities related to mining are allowed in mining lease areas.
- Transfer of captive mining leases granted other than auctions. Before 2016, no lease transfer was allowed, which resulted in a commercial blockage.

MMDR Act 2020:

Transfer of the statutory clearances to new bidders: If the mining lease of a lessee is transferred to B bidder, then all the statutory clearances of a lessee will be transferred to B, Lessee B does not have to wait for production.

MMDR Act 2021:

- Extension of the lease period to government companies holding leases for 50 years.
- Captive miners can sell 50% of mineral to merchant mines after meeting the requirements of the end use plant linked with the mine.
- Transfer of statutory clearances, all valid rights, approvals, and licenses to a successful bidder.

- The central government released guidelines regarding the utilization of DMF by establishing the District Mineral Foundation. A discrepancy was previously created when utilizing DMF.
- Involvement of Private entities for funding in the National Mineral Exploration Fund and exploration work.
- Advance auctions for pending cases such as the lessee had applied and given a 2-year time to convert application to mining lease but could not meet the time, also mining leases that were blocked for 10-15 years for only reconnaissance or exploring or prospecting purposes. Such mining leases must undergo auctions. Mining leases can occur in the auction before the expiry of the lease period.
- Cancellation of mining leases in the non-operating stage (non-production).
- Transfer of all mineral concessions without charge. However, the government is taking 80% royalty and 0.5% upfront value for the mineral.
- High penalties for illegal mining. Implementation at ground level is a point of view because it is in the hands of the state government to penalize illegal mining. · Power of the central government to auction ML that failed to be auctioned by the state government.

2.4.2 Literature Review on NMP-19

Three main stages can be marked in the development of the National Mineral Policy in accordance with the changing ratio of the liberalization and sustainable aspects and self-sufficiency. Randive et. al. [3] describes the history of development of this policy and its influence on the Indian mining industry in the scholarly literature. The 1993 National Mineral Policy was developed after the processes of economic liberalization and allowed private enterprises to participate in mining. The 2008 National Mineral Policy continued this trend and accentuated the necessity of the foreign investments, scientific approach to mining and Sustainable Development Framework.

NMP 2019 is not just any ordinary update since it is a court-ordered one that has taken into account the directive of the Supreme Court in *Common Cause v. Union of India* (2017). It has several objectives, including effective regulation, transparency, balanced socio-economic development, sustainable mining, and politically critical 'industry' recognition for the mining

industry. Another important objective of NMP 2019 includes the principle of inter-generational equity. It also suggests an overarching inter-ministerial mechanism for sustainable mining.

However, crucially, the early critical literature differs in its views about the extent to which 2019 represents real reform or rebranding. The most trenchant analysis is offered by Madhav (2019) [8], who describes the policy as highlighting established continuities – massive operations, the role of the private sector, the decreased involvement of the state – but merely borrowing modern terminology of ‘sustainable development’, ‘ease of doing business’ and ‘intergenerational equity’ without creating the necessary scientific and governance frameworks for this new language. In even starker terms, Kumar (2020) [9] describes the policy as “a remedy as bad as the disease,” while Basu (2020) [10] and Nawn (2020) [11] question the ability of the policy to deliver the stakeholder equilibrium promised by it – especially with regard to the protection of the interests of tribal communities and people affected by the projects. This foundational critical consensus is significant because it positions the New Mining Policy 2019 as an open-to-contestation tool rather than an established best practice.

The mining industry is economically significant in Gujarat. The state is one of the top producers of lignite in India, and a major producer of bauxite, limestone, bentonite, fluorspar, silica sand, and manganese, with GMDC and other leaseholders mining in Kachchh, Bhavnagar, Bharuch, and Surat districts. The government body responsible for mineral resources in the state, the Industries and Mines Department of the Government of Gujarat, acknowledges the need to examine mine conditions, ecological balance in mining zones, and mining skills development. Thus, there exists an institutional framework in Gujarat that makes the state an appropriate location for studying the response of stakeholders to the national mineral policy.

NMP 2019 research can be grouped into six main topics: sustainable mining and regulatory design, environmental implications, socio-economic impacts and community development, corporate social responsibility, governance and transparency, and the emerging topic of critical minerals. Mining literature varies from education literature in one aspect that is important for the present review: A much greater proportion of mining literature consists of legal analysis and policy criticism than surveys, making stakeholder perception studies, such as the one at hand, relatively rare.

2.4.2.1 Sustainable Mining and Regulatory Design

The core research concern is the operational credibility of the sustainability commitments made in NMP 2019. The official documentation offers the Sustainable Development Framework and the Star Rating of Mines as mechanisms for implementation. However, the literature is more sceptical about them. For instance, according to the analysis by the National Law School (CEERA, 2021) [113], while the policy talks about benchmarking and environmentally sustainable approaches, the use of the latter is “rather superficial” since the ways of implementing the same have not been defined. Similar criticism is offered by Madhav [8], who states that the inter-ministerial institution that would institutionalize the sustainability aspect will have no scientific institution conducting life cycle and socio-environmental analysis beforehand.

2.4.2.2 Environmental and Ecological Impact

There is a body of literature on the environmental externalities of mining, namely deforestation, soil erosion, water pollution, and biodiversity reduction, which the environmental controls in NMP 2019 need to be evaluated on. Literature reviews and assessments of institutional nature, like those conducted by TERI, discuss the issue of environmental externalities in terms of Sustainable Development Goals, claiming that the mining industry could help in achieving all seventeen of them if these externalities were internalised. As for Gujarat, at the state and project levels there are acknowledgements of the ecological impacts in lignite and limestone belts. The crucial thing is that the issue of enforcement and not just the issue of aspiration in environmental matters is identified as a weakness.

2.4.2.3 Socio-Economic Impact and Community Development

Analysis of socio-economic aspects is primarily focused on the study of the District Mineral Foundation (DMF) scheme and the Pradhan Mantri Khanij Kshetra Kalyan Yojana. The study by the Centre for Social and Economic Progress (2020) [114] shows that, although huge balances accumulate in the DMF, little of that money goes into skill development or livelihoods in top mining states – usually less than zero to four percent of the money disbursed – whereas most of the mining districts suffer from severe rural poverty. In later discussion it became known that the 2024 revision of guidelines increased the amount allocated for important sectors, however, according to independent analysis, there is still a discrepancy between the money raised and the

achievements in human development. The general point made here is that the existence of a redistribution scheme doesn't imply its effects – just like in the case of education.

2.4.2.4 Corporate Social Responsibility in Mining

Another specific stream of empirical work investigates the role of CSR as the mechanism through which the mining industry deals with the externalities to the community. According to Singal (2021) [115], CSR is discussed from the perspective of stakeholder theory, and it is pointed out that mining industry companies focus their efforts on the environment, health and safety, and community development issues. Case-based studies of state mining corporations reach broadly congruent conclusions: CSR can improve local socio-economic conditions but is unevenly designed and inconsistently linked to measured community resilience. This theme supplies useful methodological precedent for the present study, since it demonstrates the viability of survey and case designs for capturing stakeholder-mediated mining outcomes.

2.4.2.5 Governance, Transparency and Regulatory Challenges

Governance is the connective tissue of the NMP critique. Across the founding analyses (Madhav, 2019; Kumar, 2020; Basu, 2020; Nawn, 2020) [1, 9, 10, 11], the recurring concern is that transparency provisions and the promised inter-ministerial coordination remain institutionally underspecified, and that the policy's investor-facing reforms — industry status, harmonised levies, mineral corridors, and incentives for overseas asset acquisition — risk crowding out the public-sector and minor-firm interests that the policy also claims to protect. The present study's stakeholder findings, which surface concern about private-sector orientation and declining public-sector opportunity, can be read as an empirical test of exactly this governance critique.

2.4.2.6 Employment, Skill, and the Critical-Minerals

The most recent literature reframes the mineral sector around strategic self-reliance. The National Critical Mineral Mission (Ministry of Mines, 2025) [116], announced in the 2024–25 Union Budget and approved in 2025, commits substantial outlays to exploration, processing, recycling, and skill formation across the mineral value chain, explicitly linking mining policy to the energy transition and to workforce development. Independent commentary frames this as both an opportunity — domestic employment, value addition, reduced import dependence — and a challenge, given India's heavy import reliance on a small number of supplier countries. This

emerging agenda extends the relevance of NMP 2019 evaluation: the stakeholder skills and capacity questions the present study examines are precisely those the critical-minerals strategy now foregrounds.

2.4.2.7 Gujarat-Specific Evidence

As with education, rigorously empirical, peer-reviewed studies of NMP outcomes specific to Gujarat are scarce. The material that has been gathered mostly consists of institutional sources such as GMDC's disclosures, documents on project feasibility, and reports from the state department. There is a lack of independent research on stakeholders in this regard, and this gap in knowledge is being filled by this thesis through the surveying of mining professionals working in Gujarat.

Table 2.3: Literature Review on NMP-19

Author(s) & Year	Focus	Methodology	Key Findings	Gap Identified
Randive (2017) [3]	Evolution of mineral policy	Historical-analytical review	Tracks 1993–2019 shift to sustainability framing	Pre-dates NMP 2019 outcomes
Madhav (2019) [8]	Critique of NMP 2019	Legal-policy critique	Sustainability language superficial; weak institutions	No stakeholder-perception evidence
Kumar (2020) [9]; Basu (2020) [10]; Nawn (2020) [11]	Stakeholder balance in NMP 2019	Critical commentary	Investor orientation may undercut tribal/public interests	Conceptual; no field validation
Singal (2021) [115]	CSR in metal & mining firms	Quantitative empirical	CSR aids community development; uneven design	Firm-level, not policy-outcome focused
CSEP (2020) [114]	DMF livelihood spending	Secondary data analysis	Livelihood allocation negligible despite large funds	Mechanism exists but outcome weak
Ministry of Mines (2025) [116]	Critical Mineral Mission	Policy/programe document	Links mining to skills and energy transition	Too recent for outcome evaluation

2.5 Comparative Analysis of NEP 2020 and NMP 2019

Despite belonging to different domains, NEP 2020 and NMP 2019 can be compared as examples of the same paradigm of reform. The comparative reading of both literatures results in insights not derivable from either literature alone. There are four convergences and two divergences worth noting.

The convergences are quite obvious. Both policies, first of all, replace some outdated models (NEP 1986; NMP 2008), claim their transformative nature and at the same time face the same academic critique — their aspirational rhetoric runs ahead of their mechanism of implementation. Second, both invoke sustainability and stakeholder welfare as legitimating principles, NEP through equity and holistic formation, NMP through intergenerational equity and community protection. Third, both are critiqued for a gap between provision and outcome: the DMF-livelihood shortfall in mining mirrors the implementation-activity-versus-validated-outcome gap in education. Fourth, both literatures are methodologically lopsided toward conceptual analysis and short on state-level empirical validation — the very deficit this thesis targets.

The divergences are equally instructive. The NEP literature leans toward optimistic, proponent-led conceptual work punctuated by sceptical critique, whereas the NMP literature is anchored by a critical-legal consensus that treats the 2019 policy as contested from the outset. And where NEP's primary stakeholders are internal to the institution (students and faculty), NMP's most consequential stakeholders — tribal and project-affected communities — are external to the firm, which raises distinct questions of distributive justice. Table 2.4 systematizes this comparison.

Table 2.4: Comparative analysis of NEP 2020 and NMP 2019 across evaluative dimensions.

Comparative Policy Dimension	National Education Policy (NEP) 2020	National Mineral Policy (NMP) 2019
Policy Framework Replaced	National Policy on Education (NPE) 1986, revised in 1992	National Mineral Policy (NMP) 2008
Primary Driver for Policy Reform	Alignment with 21st-century knowledge economy and educational transformation	Judicial and regulatory reforms following the Supreme Court judgment in <i>Common Cause v. Union of India</i> (2017)
Foundational Policy Objective	Equitable access, multidisciplinary education, and lifelong learning	Intergenerational equity, scientific mineral exploration, and sustainable resource extraction

Principal Stakeholder Groups	Students, educators, higher education institutions, regulators, and employers	Mining enterprises, investors, state governments, regulatory agencies, and tribal/affected communities
Major Institutional and Structural Reforms	Academic Bank of Credits (ABC), Multiple Entry–Exit System, Four-Year Undergraduate Framework, and Multidisciplinary Universities	Industry status for mining, Sustainable Development Framework (SDF), Star Rating System, and Inter-Ministerial Coordination Mechanisms
Dominant Academic Discourse	Predominantly reform-oriented and conceptually optimistic, with emerging implementation critiques	Primarily legal-regulatory and critical, questioning implementation effectiveness and policy substance
Recurring Policy Concern	Policy implementation has progressed faster than evidence of measurable educational outcomes	Sustainability commitments are stronger in policy rhetoric than in enforcement and compliance mechanisms
Prevailing Research Methodology	Conceptual analyses, policy reviews, perception surveys, and institutional case studies	Legal-policy analysis, governance studies, and limited empirical perception-based research
Evidence Base in Gujarat	Limited empirical studies; largely focused on administrative implementation guidelines and institutional practices	Limited state-specific empirical research; primarily based on institutional reporting and corporate disclosures

2.6 Methodological Review of Previous Studies

A critical literature review must appraise not only what prior studies found but how they found it, since methodological choices condition the credibility of conclusions. Four methodological families recur across the reviewed corpus.

1. The first, and most common, is that of conceptual or document-based analysis such as that seen in the works of Aithal and Aithal (2020) [17], Sethy and Mahapatro (2025) [22], as well as the original NMP criticisms of Madhav, 2019 [8] and Kumar, 2020 [9]. They are useful for interpretative purposes, and in terms of policy logic mapping, but do not test hypotheses and their conclusions are necessarily provisional.
2. The second kind of design is qualitative case study, as seen in Mangat (2024) [69] in education research as well as the CSR case studies of the mining companies owned by the

states. Case designs provide context and experiential knowledge at the cost of external validity.

3. Thirdly, there is the use of secondary data analyses such as that done successfully by the Centre for Social and Economic Progress (2020) in analysing DMF spending, and the Observer Research Foundation (2025) [66] in analysing the UDISE+ access to digital data.
4. The fourth, and most important for this thesis, family of research approaches is quantitative survey research based on stakeholder theory. Recent NEP literature based on the use of SERVQUAL tools and structural equation modelling along with Singal's (2021) [115] CSR questionnaire shows that, indeed, perceptual measures taken with valid instruments and analysed by means of proper statistics can be used to obtain valid outcome estimates in the cases where hard data is unavailable or untimely.

In that way, the current research belongs to the fourth family of methods. The design of the research methodology – Likert-type instruments, measuring the reliability of those using the Cronbach's alpha coefficient, testing the normality of data using Kolmogorov-Smirnov test and analysis of non-normal data with Chi-square and One-Sample Wilcoxon Signed Rank tests specifically targets two methodological problems which occur regularly in the existing literature and lack of reliability measurement and inappropriate use of parametric tests on non-normal Likert data.

2.7 Research Gaps

The five interrelated gaps, identified through the syntheses of the above discussed themes and methods assessments, that the current research seeks to bridge are articulated below and summarised in the Research Gaps Matrix (Table 2.3).

1. Empirical gap at the state level. The literature is replete with conceptual discussions at the national level, while there is almost no empirical validation of the impact of either policy at the Gujarati level.
2. Mix-up between outcome and activities. Prior literature tends to provide information about implementation activities, such as committees, SOPs and fund accrual, without validating if the desired outcome has been achieved, a question that is answered in this study.

3. Under-rigorous approach to research methodology. Reliability coefficients or data normality prior to choice of inferential tools are rarely reported in prior studies, which makes their conclusions questionable.
4. Scarcity of stakeholder-perception evidence in mining. Unlike the education literature, the NMP corpus is predominantly legal-analytical, with very few primary stakeholder surveys of the kind this study conducts among Gujarat mining professionals.
5. Absence of cross-sectoral comparative evaluation. No reviewed study evaluates an education and a mineral policy within a single comparative frame, despite their shared reform grammar; this thesis supplies that integrative perspective.

From above findings we observe that impact analysis of NEP & NMP with focused on Gujarat state is desirable to validate its importance to decide future roadmap.

Table 2.5: Research Gap Matrix mapping identified gaps to the present study's response

Gap Theme	What the Literature Establishes	What Remains Unaddressed	How the Present Study Responds
State-level evidence	National conceptual reviews of NEP and NMP are plentiful	Measured outcomes specific to Gujarat	Primary surveys of Gujarat education and mining stakeholders
Outcome vs. activity	Implementation machinery (SOPs, DMFs) documented	Whether outcomes are actually realised	Stakeholder-outcome and hypothesis testing
Methodological rigour	Many perception studies exist	Reliability and normality rarely reported	Cronbach's alpha, K-S test, non-parametric inference
Mining stakeholder voice	Strong legal-policy critique of NMP 2019	Few primary mining-stakeholder surveys	Chi-square survey of mining professionals
Cross-sectoral comparison	Sectoral studies treated in isolation	No integrated NEP–NMP evaluation	Unified comparative evaluation framework

The relevance of this study follows directly from the gaps articulated above. By generating primary, state-level evidence on two recent national policies within a single comparative and methodologically rigorous framework, the thesis contributes on three fronts. Theoretically, it operationalizes policy-enactment and stakeholder theory in the under-studied setting of Gujarat,

testing whether perception-based outcome measurement can adjudicate the optimistic and skeptical claims that divide the existing literature. Empirically, it supplies the measured, state-specific data whose absence virtually every reviewed author laments, covering curriculum, pedagogy, governance, skill formation, and employability for NEP, and sustainability, transparency, employment, and stakeholder welfare for NMP. Methodologically, it models a more defensible analytical pipeline — reliability assessment, normality testing, and appropriately chosen non-parametric inference — that future state-level policy evaluations can adopt.

For policy and practice, the study's relevance is equally concrete. Its findings are positioned to inform institutional planning and faculty-development priorities under NEP, and inter-ministerial coordination, environmental safeguarding, and community-benefit design under NMP. In a moment when the National Critical Mineral Mission has renewed the strategic salience of the mineral sector and Gujarat continues to expand its higher-education footprint, evidence on how these policies are actually received by the stakeholders who must enact them is not merely academically useful but practically timely.

This chapter has critically reviewed the literature on the National Education Policy 2020 and the National Mineral Policy 2019, moving from their historical evolution to a thematic and methodological appraisal of recent scholarship, and culminating in a comparative reading, a structured statement of research gaps, and a justification of the present study. The review establishes a clear and consistent picture. Both are ambitious policies, both are transformative in nature, and both have literatures associated with them that are rich with interpretation and short of measurable, state-specific outcome evidence. In the case of education, there is a tension between optimistic conceptualization and criticism, with only a few studies showing differential and capacity-dependent impacts. Regarding mining, the legalistic consensus is skeptical about the sustainability of 2019 policy and its stakeholders' commitments, while the empirical research on DMFs and CSR reveals that redistribution processes do not always translate to distributional outcomes.

In both cases, there is a recurring divide between implementation process and validated outcome and the lack of rigorous state-specific stakeholder-driven evidence, particularly regarding Gujarat. The current study fills this very gap. Through assessing NEP 2020 and NMP 2019 with the use of primary data from their stakeholders, an analytically defensible non-parametric

approach, and an integrative comparative framework, the thesis addresses the gaps outlined above and provides the empirical foundation for the following analysis.

CHAPTER - 3

IMPACT ANALYSIS OF NMP-19

3.1 Introduction

In this chapter, the results of the empirical study carried out to assess the effects of NMP 2019 on the stakeholders who are directly connected with the mining and education industries will be discussed. This analysis is aimed at assessing the opinions of the stakeholders on the effects of the national policy on sustainable mineral development, technological innovation, private investment, and economic growth. It is important to evaluate the opinions of the stakeholders, since NMP 2019 implemented many reforms that were expected to make India's mining industry more modern and efficient.

This analysis was conducted in order to assess the impact of NMP 2019 on various stakeholders and to evaluate the primary concerns and expectations related to the policy. It is vital to know about the stakeholder perception as the success of any policy cannot depend solely on its objectives; the knowledge and readiness of the stakeholders also play an essential role. This research will also allow to reveal the disadvantages of the policy, such as the problems related to the privatization, protection of environment and preservation of mineral resources, opportunities for public sector organizations, creation of new job positions, technological development, and foreign investments.

In all, this chapter presents a thorough interpretation of the findings from the survey and statistics, pointing out the positive and negative sides of the NMP 2019. The analysis has provided an empirical basis for the development of the stakeholders' views and helped formulate the recommendations on how to improve policy awareness and its implementation, as well as stakeholder involvement for maximum socio-economic benefit of NMP 2019.

3.2 Dataset

In order to accomplish these goals, primary data was collected through a structured questionnaire survey of stakeholders from both the mining industry and the education sector.

The respondents were from various professional backgrounds such as AGM/DGM, mine owners, geologists, managers, assistant managers, engineers, supervisors, lecturers, assistant professors, royalty inspectors, laboratory assistants, overmen, liaison officers, curators, and students having educational qualifications and experience in the mining industry. Two different sets of data were used in this study, where the first set comprised 82 respondents who evaluated the effect of NMP 2019 and the second set comprised 60 respondents who assessed the opinion of the stakeholders on the negative aspects of the policy. The demographic features of the respondents, such as gender, age, educational qualification, professional designation, and experience, were analysed.

3.3 Methodology

Analysis of the collected data was done through descriptive and inferential statistics. Descriptive statistics like frequency and percentages were used to give a description of the demographic information of the respondents and their views about the provisions of the NMP 2019. This was done through tables and graphs. After this, the research used a Chi-square (χ^2) test of independence to find out whether NMP 2019 has any significant influence on the stakeholders in the mining industry. The null hypothesis is that NMP 2019 has no significant effect on the stakeholders while the alternative hypothesis is that NMP 2019 has a significant influence on the stakeholders.

The Chi-Square test calculated the differences between observed frequencies and expected frequencies for different policy statements. The value of Chi-Square was larger than the critical value at the 5% level of significance, thus making the null hypothesis invalid. The results of the Chi-Square test clearly show that NMP 2019 plays an important role in determining the stakeholders' perceptions about the changes that need to be done within the mining industry. In addition, the results show that even though the stakeholders realize the contributions made by NMP 2019 towards technology, sustainable mining, global competitiveness, database management, GDP growth, and market development, they have concerns regarding privatization, conservation of mineral resources, and environmental regulations.

3.4 Result and Analysis

Based on collected dataset from conducted Survey, Tables 3.1 and 3.2 describe the demographic profile of the stakeholders of the mining and education sectors, which are major stakeholders in the study domain affected by NMP 2019. Table 3.1 shows the demographic profile of 82

respondents for analyzing the Impact of NMP-19 and Table 3.2 shows the demographic profile of 60 respondents for analyzing the Drawbacks of NMP-19. Respondents for both analyses included AGM/DGM, Owner, Geologist (Asst./Fellow Also), and Manager/Asst. Manager, Engineer/Supervisor, Designation: Lecturer, Royalty Inspector, Lab Asst./Overman, Student who is well educated and has experience in the mining sector. Hence, the conclusion drawn from this study would be beneficial for the judgment predicting the effect of mining on the adoption of NMP 2019 without many complications.

Table 3.1: Demographic Profile of 82 Respondents for analyzing Impact of NMP-19

DEMOGRAPHIC DISTRIBUTION		
Particulars	Numbers	Percentage
Gender (Male)	74	90.24
Gender (Female)	8	9.76
Age below 23	10	12.20
Age 23 to 28	28	34.15
Age 29 to 35	20	24.39
Age Above 35	27	32.93
Designation: AGM/DGM	7	8.54
Designation: Owner	1	1.22
Designation: Geologist (Asst./Fellow Also)	19	23.17
Designation: Manager/Asst. Manager	15	18.29
Designation: Engineer/Supervisor	13	15.85
Designation: Lecturer	10	12.20
Designation: Royalty Inspector	7	8.54
Designation: Lab Asst./Overman	3	3.66
Designation: Student	7	8.54

Table 3.2: Demographic Profile of 60 Respondents for Opinion on Drawback of NMP-19

DEMOGRAPHIC DISTRIBUTION		
Particulars	Numbers	Percentage
Gender (Male)	52	86.67
Gender (Female)	8	13.33
Experience less than 2 Years	13	21.67
Experience: 2 to 3 Years	8	13.33
Experience: 3 to 4 Years	5	8.33
Experience: More than 4 Years	34	56.67
Education: PhD	1	1.67
Education: PG	26	43.33
Education: UG	31	51.67

Education: Diploma	2	3.33
Designation: AGM/DGM	3	5.00
Designation: Geologist (Asst./Fellow Also)	10	16.67
Designation: Manager/Asst. Manager	12	20.00
Designation: Engineer/Supervisor	5	8.33
Designation: Lecturer	8	13.33
Designation: Assistant Professor	2	3.33
Designation: Royalty Inspector	7	11.67
Designation: Lab Asst./Overman	2	3.33
Designation: Student	7	11.67
Designation: Liaison	1	1.67
Designation: Curator	1	1.67

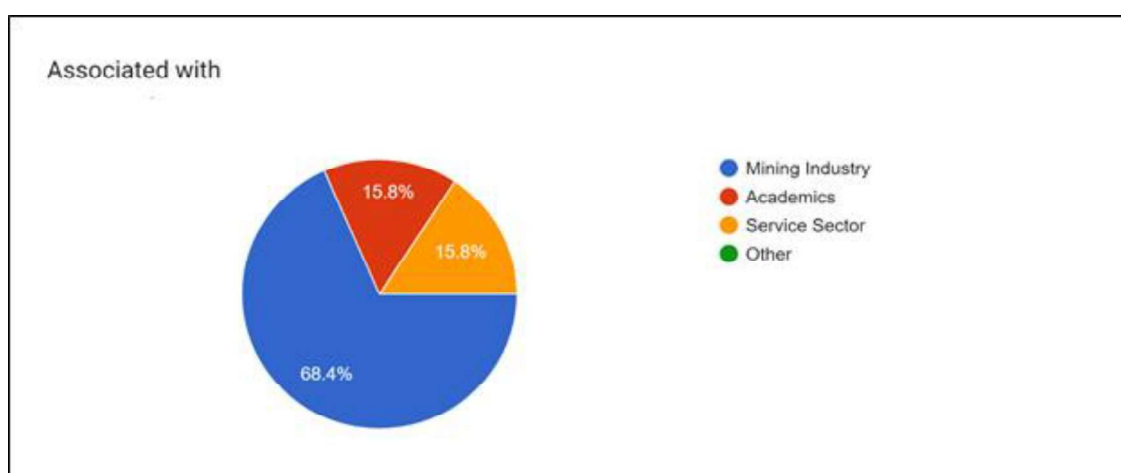


Figure 3.1: Responses from Diverse Fields on drawback of NMP-19 out of 60 Respondents

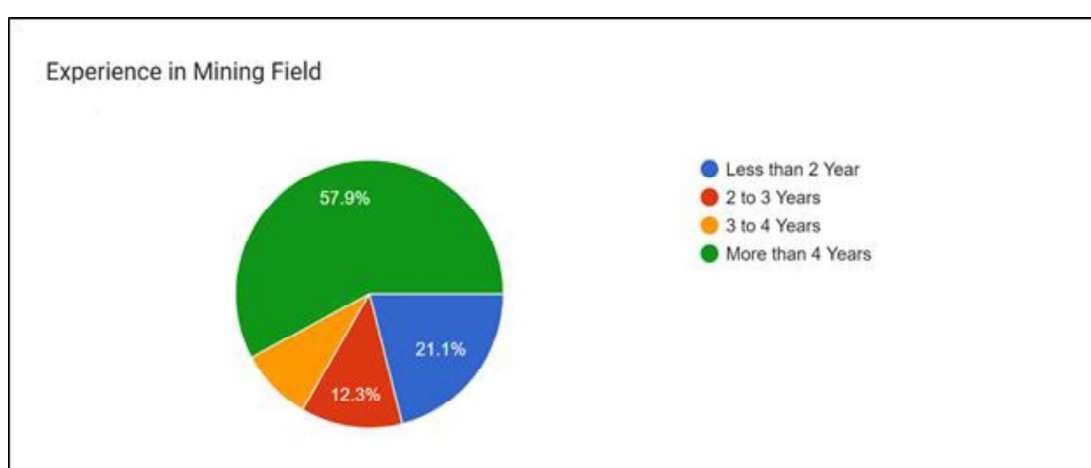


Figure 3.2: Experience of Mining on drawback of NMP-19 out of 60 Respondents

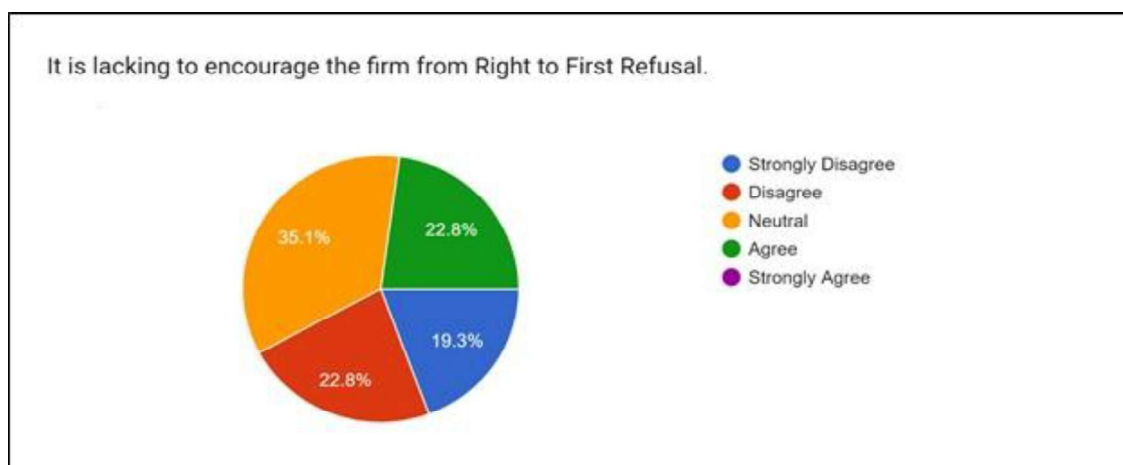


Figure 3.3: Sample of Particulars Responses on drawback of NMP-19 out of 60 Respondents

Table 3.3: Respondents Opinion on the Drawback of the NMP-19

Particulars	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total Samples
It is lacking to encourage the firm from Right to First Refusal.	0	13	21	13	13	60
It is mainly private sector oriented.	3	19	18	12	8	60
The policy is mainly oriented to obtain financial benefits.	3	18	20	14	5	60
It is degrading the opportunities for Public sector and minor firms.	4	21	11	20	4	60
It is lacking in the conservational requirement of minerals for the future.	4	25	13	14	4	60
Overall employability ratio will decrease due to privatization.	6	16	13	21	4	60
Rationalization of reserved areas given to PSUs will not attract private sectors.	5	15	14	25	1	60
More and more national reserve will go in the hands of foreign investors.	5	15	10	26	4	60
It is not encouraging the indigenous technological advancement.	4	16	12	18	10	60

Less emphasis is made in enforcement of environmental rules and regulation.	2	24	12	14	8	60
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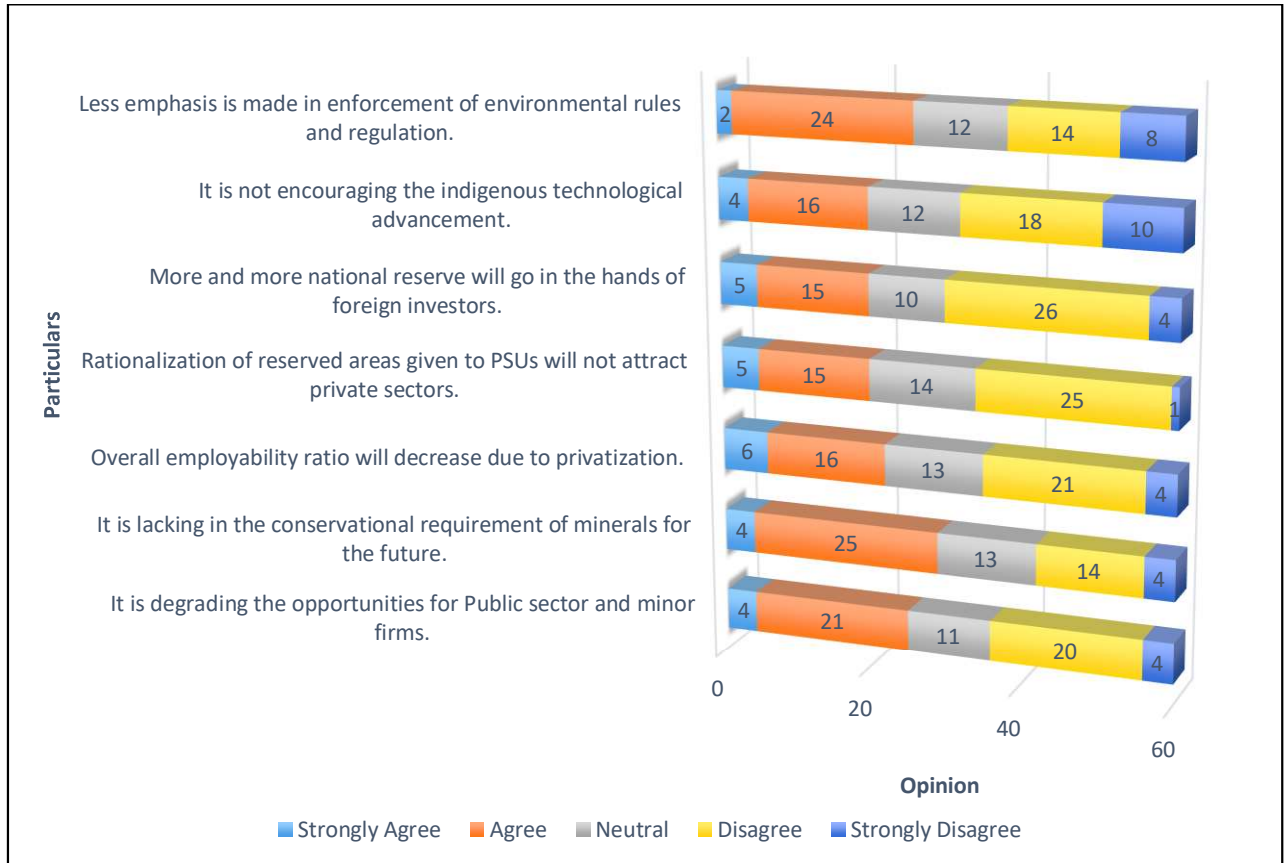


Figure 3.4: Respondents Opinion on the Drawback of the NMP-19 out of 60 Respondents

Table 3.3 presents respondents' opinions on the limitations of the current National Education Policy. Out of the 60 samples collected from the various stakeholders, some conclusions can be drawn such as 22 of the respondents think that the NMP 2019 is private sector oriented, 18 are neutral on the decision, and 20 (33 %) stakeholders are either disagree or strongly disagree on the orientation of NMP 2019 towards the private sector. Similarly, 21 people (35 %) respondents believed that the policy was mainly financial-oriented, whereas 20 (33%) thought that it was not financially oriented, and rest of the respondents were neutral at their decision. 25 respondents (42 %) believed that NMP 2019 in the sector is degrading the opportunities for public sector and minor firms, whereas 24 respondents (40%) disagreed on the note.

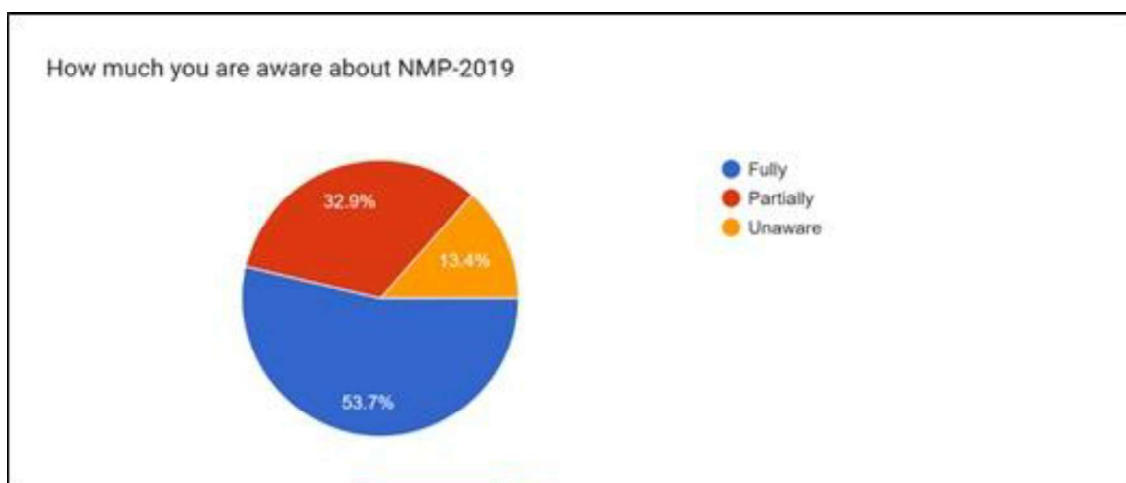


Figure 3.5: Awareness of NMP-19 out of 82 Respondents for Impact Analysis

Table 3.4: Opinion of Respondents on Particulars

Particulars	Agree	Disagree	Total
NMP 2019 builds the road map for foreign investors to start their business in early stage.	71	9	80
NMP 2019 is more mineral exploitation oriented.	72	8	80
NMP 2019 aims to develop technological advancement in mining sector.	74	6	80
NMP 2019 aims to bring better opportunities to foreign investors.	69	11	78
NMP 2019 develops market capital in mineral sector that meets future demands.	77	4	81
NMP 2019 opens mineral market for mining sector at global level.	74	6	80
NMP 2019 encourages private sectors to acquire mineral resources in other countries.	65	13	78
NMP 2019 will encourage national GDP growth.	76	4	80
NMP 2019 encourage maintenance of database of mineral resources under Mining sector.	72	7	79
NMP 2019 will lead to sustainable Mining sector development.	76	4	80
Total	726	72	796

$$Expected\ Frequencies = \frac{(Row\ Total * Column\ Total)}{Table\ Total}$$

Table 3.5: CHI Square Analysis Table

Particulars	Agree				Disagree			
	(O)	(E)	O - E	(O - E) ² / E	(O)	(E)	O - E	(O - E) ² / E
NMP 2019 builds the road map for foreign investors to start their business in early stage.	71	72.96	-1.96	0.05	9	7.24	1.76	0.43
NMP 2019 is more mineral exploitation oriented.	72	72.96	-0.96	0.01	8	7.24	0.76	0.08
NMP 2019 aims to develop technological advancement in mining sector.	74	72.96	1.04	0.01	6	7.24	-1.24	0.21
NMP 2019 aims to bring better opportunities to foreign investors.	69	71.14	-2.14	0.06	11	7.06	3.94	2.21
NMP 2019 develops market capital in mineral sector that meets future demands.	77	73.88	3.12	0.13	4	7.33	-3.33	1.51
NMP 2019 opens mineral market for mining sector at global level.	74	72.96	1.04	0.01	6	7.24	-1.24	0.21
NMP 2019 encourages private sectors to acquire mineral resources in other countries.	65	71.14	-6.14	0.53	13	7.06	5.94	5.01
NMP 2019 will encourage national GDP growth.	76	72.96	3.04	0.13	4	7.24	-3.24	1.45
NMP 2019 encourage maintenance of database of mineral resources under Mining sector.	72	72.05	-0.05	0.00	7	7.15	-0.15	0.00
NMP 2019 will lead to sustainable Mining sector development.	76	72.96	3.04	0.13	4	7.24	-3.24	1.45
Total	726	726	0.00	1.07	72	72.0	0.00	12.56

H_0 : NMP 2019 has no significant impact on stakeholders in the mining sector.

H_1 : There is significant impact of NMP 2019 on stakeholders of mining sector.

$\alpha = 0.05$

$1-\alpha = 0.95$

Degree of freedom= $10-1 = 9$

Chi square value= $1.07+12.56 = 13.63$

Critical value ($\alpha=0.05$, d.f= 9) = 3.940

Decision: The Chi square value is more than the critical value ($13.69 > 3.940$); hence, H_0 is rejected.

Table 3.4 shows the respondents opinion on particulars and Table 3.5 presents the chi-square analysis, a non-probability test conducted to test the hypothesis of independent variables. The chi-square analysis proved that NMP 2019 will majorly impact the stakeholders of the mining sector. Hence, all stakeholders must be studied to enhance the knowledge of NMP 2019 so that they can adopt it NMP 2019 easily without much error and work effectively for the growth of the Indian economy and betterment in the mining sector.

Stakeholders must start analyzing the NMP 2019 working factors to help identify the skills required for working with NMP 2019. The stakeholders must develop the required skills and adopt NMP 2019 positively so that it leads to faster economic growth. The student community must analyze their skill set before opting for the course because the NMP 2019 aims for outcome-based learning; if the students opt for the course based on their skills, then they can achieve their goals faster. There is a wide scope for the study on NMP 2019 because the majority of people still lack knowledge on the working of NMP 2019; hence, researchers must undergo enormous research in this field to improve the knowledge among the stakeholders, which ultimately leads to the adoption of NMP 2019 at a greater speed and leads to economic development. State involvement is also an important factor in NMP-2019. The facilitation and regulation of mining and exploration activities will be the main duties of the state in the mining industry, providing applicable provisions for infrastructure development and revenue collection. The relevant states must prepare a business plan/road map for the development of the mineral sector. Openness and fairness should occur when allocating space to state agencies, unless security concerns or public interests are involved. Grant clearance to start mining operations will be expedited with easier and time-bound procedures that can be performed through an online public portal with the option of triggering triggers at higher levels in the case

of a delay. The states shall attempt to sell mineral blocks with pre-embedded statutory clearances as part of the initiative for the ease of doing business.

3.5 Summary

This study broadens the understanding of the impact of NMP 2019 on stakeholders in the mining sector. By comparing the current NMP with NMP 2019, this study highlighted deficiencies in the former that hindered economic growth and youth achievement. The NMP 2019 aims to align stakeholders with national and global industrial demands, thereby enhancing living standards and economic growth. The analysis suggests that stakeholders must deepen their knowledge of NMP 2019 to facilitate its smooth adoption and effectively contribute to India's economic progress and improvement in the mining sector. Emphasis should be placed on leveraging the positive impact of the policy on national welfare. This study analyzes the demographic profiles and opinions of 142 stakeholders in the mining and education sectors regarding the National Mineral Policy (NMP) 2019. Respondents such as AGMs, DGMs, geologists, managers, engineers, lecturers, and students, provided insights into the policies perceived drawbacks. The chi-square analysis indicated a significant impact of NMP 2019 on these stakeholders. The results suggest that stakeholders need to enhance their understanding and skills to effectively adopt the policy and facilitate economic growth and sectoral development. This study underscores the importance of proactive engagement and education in mitigating the challenges and optimizing the benefits of NMP 2019.

CHAPTER - 4

IMPACT ANALYSIS OF NEP-2020

The National Education Policy 2020 stands out as a paradigm shift towards transforming India's education system to become more flexible, inclusive, research-driven, and competitive. The majority of the institutions had a clear understanding of the goals of NEP-2020 along with its guiding principles. The universities have taken steps to adopt the goals of NEP through curriculum changes based on multidisciplinary education, introduction of skill and value based courses, focusing on students as learners, and flexibility. The development of faculty was listed among the critical factors for effective implementation of NEP-2020. Technology was seen as an important factor in the adoption of the NEP.

In the Gujarat context, the state has been an early and visible adopter. The Government of Gujarat (2023) issued a detailed Standard Operating Procedure for NEP implementation, fixing credit structures (132 credits for three-year and 176 for four-year undergraduate programmes), constituting apex and steering committees, and identifying districts without universities for institutional expansion. These administrative facts establish that Gujarat provides a meaningful field site for outcome evaluation — the policy machinery exists — but they also reveal that documented implementation activity is not the same as validated outcome, which is precisely the distinction the present study seeks to test empirically. Therefore, this study seeks to contribute to the literature by examining faculty perceptions regarding the impact of NEP-2020 in higher education institutions in Gujarat.

For the evaluation of NEP-2020 we conducted a survey using the Google Form. This form was prepared in line with different aspects of NEP-2020 which included: Academic flexibility and multiple entry-exit options, Curriculum changes and multidisciplinary approach, Skill and employability focused education, Faculty readiness and capacity building, Digital infrastructure and governance reforms. Responses were obtained from different universities within Gujarat state.

The results obtained from the survey suggest that there is a positive institutional stance towards the implementation of NEP-2020 in Gujarat. Although the theoretical acceptance rate is very

high, the phased implementation process and resource availability play a crucial role in determining its sustainability. Areas of challenge in implementing NEP-2020 discovered by us are the following: Infrastructure and Funding, Training of faculty members, Regulatory Alignment and Academic Autonomy. These results will provide useful inputs for the development of policies, planning and monitoring in order to realize the objectives of NEP-2020.

We conduct an analysis of the impact of NEP-2020 on higher education institutions of Gujarat through the following six dimensions: Curriculum Reforms, Pedagogy and Assessment Reforms, Governance and Autonomy, Research and Innovation, Students' Initiatives and the Impact of the Policy in general. The objectives of the study are the following:

1. To assess the impact of NEP-2020 on curriculum reforms in higher education institutions.
2. To assess the impact of NEP-2020 on teaching methods and assessment procedures.
3. To assess the impact of NEP-2020 on governance and academic autonomy.
4. To assess the influence of NEP-2020 on research and innovation.
5. To examine the role of NEP-2020 in improving student-centric initiatives and inclusivity.
6. To evaluate the overall perception of faculty members regarding the effectiveness of NEP-2020.

Our study focused on these objectives and define the hypothesis based on these objectives. Six hypothesis that we want to test are:

H1: NEP-2020 has a significant effect on the flexibility of curricula in universities.

H2: NEP-2020 changes have had a significant effect on teaching and assessment practices.

H3: NEP-2020 has a significant effect on the improvement of governance and academic freedom.

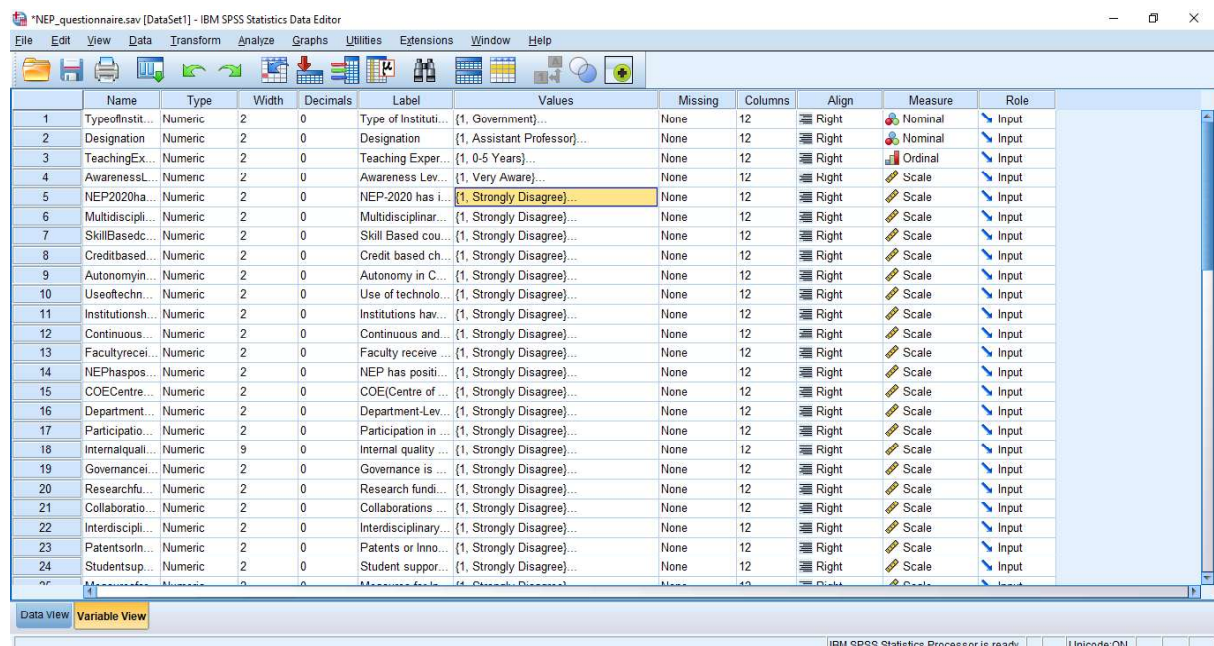
H4: NEP-2020 has a significant effect on the encouragement of research and innovation.

H5: NEP-2020 has a significant effect on student inclusion.

H6: NEP-2020 has significantly impacted the overall quality of higher education.

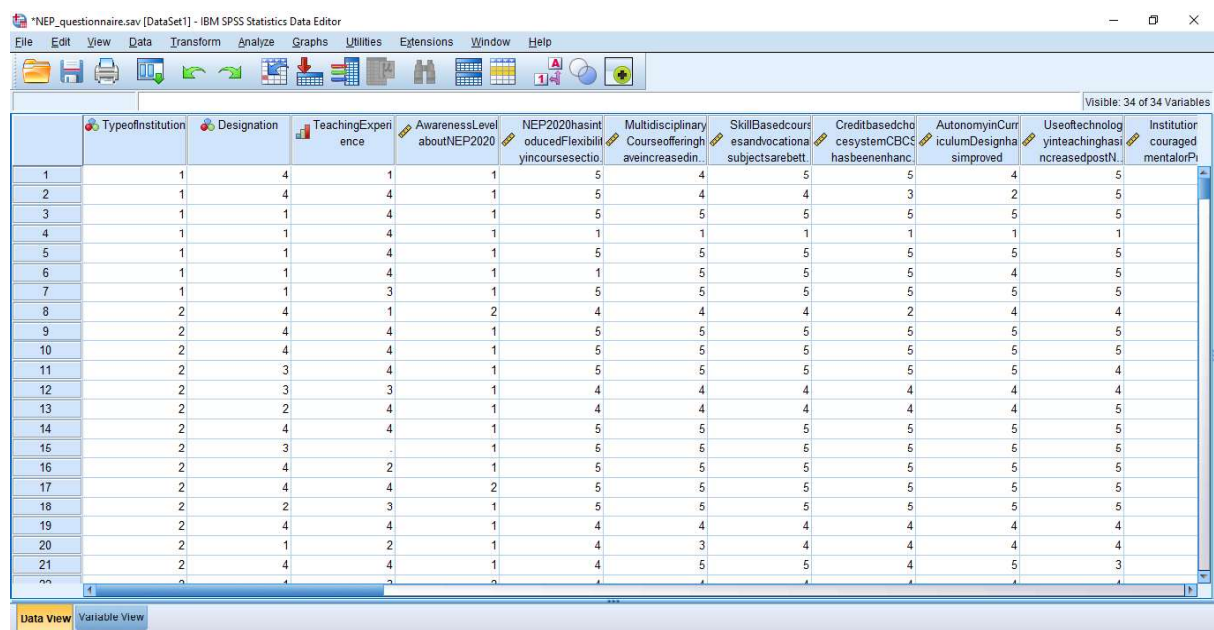
4.1 Research Methodology and Experimental Setup

For our study the primary data were collected from 360 faculty members from universities and colleges using a structured questionnaire based on a five-point Likert scale. The study used a quantitative research design based on a survey method. Responses were measured using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). Figure 4.1 shows screenshot of SPSS (Statistical Package for the Social Sciences) editor for the responses we collected.



	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	TypeofInstit...	Numeric	2	0	Type of Instituti...	{1, Government}...	None	12	Right	Nominal	Input
2	Designation	Numeric	2	0	Designation	{1, Assistant Professor}...	None	12	Right	Nominal	Input
3	TeachingEx...	Numeric	2	0	Teaching Exper...	{1, 0-5 Years}...	None	12	Right	Ordinal	Input
4	AwarenessLev...	Numeric	2	0	Awareness Lev...	{1, Very Aware}...	None	12	Right	Scale	Input
5	NEP2020ha...	Numeric	2	0	NEP-2020 has i...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
6	Multidiscipli...	Numeric	2	0	Multidisciplinar...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
7	SkillBasedc...	Numeric	2	0	Skill Based cou...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
8	Creditbased...	Numeric	2	0	Credit based ch...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
9	AutonomyinC...	Numeric	2	0	Autonomy in C...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
10	Useoftechn...	Numeric	2	0	Use of technolo...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
11	Institutionsh...	Numeric	2	0	Institutions hav...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
12	Continuous...	Numeric	2	0	Continuous and...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
13	Facultyrecei...	Numeric	2	0	Faculty receive...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
14	NEPhaspos...	Numeric	2	0	NEP has positi...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
15	COECentre...	Numeric	2	0	COE(Centre of ...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
16	Department...	Numeric	2	0	Department-Lev...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
17	Participatio...	Numeric	2	0	Participation in ...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
18	Internalquali...	Numeric	9	0	Internal quality ...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
19	Governance...	Numeric	2	0	Governance is ...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
20	Researchfu...	Numeric	2	0	Research fundi...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
21	Collaboratio...	Numeric	2	0	Collaborations ...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
22	Interdiscipli...	Numeric	2	0	Interdisciplinary...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
23	PatentsorIn...	Numeric	2	0	Patents or Inno...	{1, Strongly Disagree}...	None	12	Right	Scale	Input
24	Studentsup...	Numeric	2	0	Student suppor...	{1, Strongly Disagree}...	None	12	Right	Scale	Input

Figure 4.1: NEP-2020 survey Response in SPSS



	TypeofInstitution	Designation	TeachingExperience	AwarenessLevel about NEP2020	NEP2020hasintroducedFlexibilityincoursesectio	Multidisciplinary Courseofferinghaveincreasedin	SkillBasedcoursesandvocational subjectsarebett	CreditbasedchancesystemCBCShasbeenenhanc	AutonomyinCurriculumDesignhasimproved	UseoftechnologyinteachinghasincreasedpostN	Institution encouraged mentalorP
1	1	4	1	1	5	4	5	5	4	5	
2	1	4	4	1	5	4	4	3	2	5	
3	1	1	4	1	5	5	5	5	5	5	
4	1	1	4	1	1	1	1	1	1	1	
5	1	1	4	1	5	5	5	5	5	5	
6	1	1	4	1	1	5	5	5	4	5	
7	1	1	3	1	5	5	5	5	5	5	
8	2	4	1	2	4	4	4	2	4	4	
9	2	4	4	1	5	5	5	5	5	5	
10	2	4	4	1	5	5	5	5	5	5	
11	2	3	4	1	5	5	5	5	5	4	
12	2	3	4	1	4	4	4	4	4	4	
13	2	2	4	1	4	4	4	4	4	5	
14	2	4	4	1	5	5	5	5	5	5	
15	2	3		1	6	6	6	6	6	6	
16	2	4	2	1	5	5	5	5	5	5	
17	2	4	4	2	5	5	5	5	5	5	
18	2	2	3	1	5	5	5	5	5	5	
19	2	4	4	1	4	4	4	4	4	4	
20	2	1	2	1	4	3	4	4	4	4	
21	2	4	4	1	4	5	5	4	5	3	

Figure 4.2: Data normalization in SPSS editor

Statistical analysis was conducted using SPSS software. Figure 4.2 shows normalized responses. Data analysis is done using three steps namely: reliability analysis, normality analysis and hypothesis testing. Reliability analysis was performed using Cronbach's Alpha, while normality was assessed through the Kolmogorov–Smirnov and Shapiro–Wilk tests. Since the data were not normally distributed, non-parametric tests were used for hypothesis testing. The One-Sample Wilcoxon Signed Rank Test revealed statistically significant positive perceptions across all constructs ($p < 0.001$).

The dataset of responses collected consists of 360 responses from faculty members from around 95 unique institutions (after normalization of institution name variations). The questionnaire consists of 39 attributes (variables). These variables include demographic data, institution-specific information, and the faculty member's perceptions about the implementation and impact of NEP-2020. The 39 attributes are: Timestamp, Score, Name of University/Institute, Type of Institution, Designation, Discipline, Years of Experience in Teaching, Level of Awareness of NEP-2020, NEP-2020 has introduced Flexibility in choosing courses, Multidisciplinary Course Offering, Skill Based Courses and Vocational education Integration, Credit transfer and ABC, Multiple Entry and Exit Options, Research and Innovation opportunities, Digital Learning and Technology Integration, Holistic/Multidisciplinary education, Student Centric Teaching and Learning, Faculty Development, Curriculum Revision/Modernization, Industry-Institution Collaboration, Internships and Experiential Learning, Assessment/Evaluation reforms, Institutional Autonomy, Infrastructure Support, Administrative Support, Availability of Learning resources, Challenges in Implementation, Policy awareness/training, Faculty readiness, Student engagement, Improvement in employability skills, Improvement in critical thinking skills, Promoting research culture, Inclusiveness & Equity, Overall satisfaction with NEP-2020 implementation, Impact on teaching quality, Impact on learning outcomes, Suggestion for improvement, and Overall success of NEP-2020 implementation. These attributes provide comprehensive information for assessing faculty perspectives on the implementation and impact of NEP-2020 across higher education institutions in Gujarat.

4.2 Data Analysis and Result Discussion

4.2.1 Reliability Analysis (Cronbach's Alpha)

The reliability test is carried out to determine the extent to which the items measuring various constructs are measuring something consistently. One of the techniques commonly used in measuring reliability is Cronbach Alpha. In our research, the reliability test was performed by using Cronbach Alpha. Ideally, the value of Cronbach Alpha ought to be between 0.6 and 0.95, and this is the range in which if the value of Cronbach Alpha lies, then the questions are considered reliable.

(a) Curriculum Reforms

Table 4.1: Reliability Statistics on Curriculum Reforms

Reliability Statistics	
Cronbach's Alpha	No. of Items
.809	5

Table 4.2: Item Statistics on Curriculum Reforms

Item Statistics			
Items	Mean	Std. Deviation	N
NEP-2020 has introduced Flexibility in course section	4.18	.844	360
Multidisciplinary Course offering have increased in my institution.	4.17	.795	360
Skill Based courses and vocational subjects are better integrated now.	4.27	.728	360
Credit based choice system (CBCS) has been enhanced due to NEP.	4.25	.707	360
Autonomy in Curriculum Design has improved.	4.16	.736	360

(b) Pedagogy and Assessment Reforms:

Table 4.3: Reliability Statistics on Pedagogy and Assessment Reforms

Reliability Statistics	
Cronbach's Alpha	No of Items
.846	6

Table 4.4: Item Statistics on Pedagogy and Assessment Reforms

Item Statistics			
Item	Mean	Std. Deviation	N
Use of technology in teaching has increased post-NEP.	4.30	.746	360
Institutions have encouraged experimental or Project-based learning.	4.35	.696	360
Continuous and Holistic assessment is being adopted.	4.28	.663	360
Faculty receive training in modern Pedagogical methods.	4.24	.725	360
NEP has positively impacted student Engagement.	4.21	.705	360
COE (Centre of Excellence was helpful in providing academic and administrative autonomy in Gujarat	4.28	.655	360

(c) Governance and Autonomy:**Table 4.5:** Reliability Statistics on Governance and Autonomy

Reliability Statistics	
Cronbach's Alpha	No of Items
.776	4

Table 4.6: Item Statistics on Governance and Autonomy

Item Statistics			
Item	Mean	Std. Deviation	N
Department-Level autonomy has increased.	4.08	.679	358
Participation in Academic decision making has improved.	4.19	.677	358
Internal quality Assurance cells (IQACs) are more active now.	4.36	.644	358
Governance is now more decentralized than before.	4.06	.690	358

(d) Research, Innovation and Internationalization:**Table 4.7:** Reliability Statistics on Research, Innovation and Internationalization

Reliability Statistics	
Cronbach's Alpha	No of Items
.824	4

Table 4.8: Item Statistics on Research, Innovation and Internationalization

Item Statistics			
Item	Mean	Std. Deviation	N
Research funding opportunities have increased.	4.15	.735	360
Collaborations with foreign universities have improved.	4.04	.778	360
Interdisciplinary Research is encouraged.	4.30	.708	360
Patents or Innovations outputs have increased.	4.21	.659	360

(e) Student Centric Initiatives and Inclusivity:**Table 4. 9:** Reliability Statistics on Student Centric Initiatives and Inclusivity

Reliability Statistics	
Cronbach's Alpha	No of Items
.753	4

Table 4.10: Item Statistics on Student Centric Initiatives and Inclusivity

Item Statistics			
Item	Mean	Std. Deviation	N
Student support system (Mentoring, Counselling) have improved.	4.33	.632	360
Measures for Inclusivity (gender, Socio-economic) have become stronger.	4.21	.652	360
Use of regional/ Local language in instruction has been encouraged.	4.13	.774	360
Drop-out rates have reduced post NEP implementation.	3.98	.765	360

(f) Overall Perception and Impact of NEP 2020:**Table 4. 11:** Reliability Statistics on Overall Perception and Impact of NEP 2020

Reliability Statistics	
Cronbach's Alpha	No of Items
.862	6

Table 4. 12: Item Statistics on Overall Perception and Impact of NEP 2020

Item Statistics			
Item	Mean	Std. Deviation	N
NEP-2020 is a transformative policy.	4.19	.618	360
Implementations of NEP is realistic and achievable.	4.17	.615	360
Faculty are regularly involved in NEP- related planning or review.	4.24	.674	360
NEP has positively impacted the overall quality of higher education.	4.27	.621	360
ABC portal credit system significantly improves students' academic flexibility and overall satisfactory compared to traditional credit system.	4.28	.644	360
APAR (a lifelong digital academic registry) improve students' long term academic continuity and employability outcomes.	4.28	.646	360

Summarising the reliability analysis of all the 6 constructs following table is obtained:

Table 4.13: Cronbach alpha values for given construct

Construct	Items	Cronbach Alpha
Curriculum Reforms	5	0.809
Pedagogy & Assessment	6	0.846
Governance & Autonomy	4	0.776
Research & Innovation	4	0.824
Student Centric Initiatives	4	0.753
Overall NEP Impact	6	0.862

The results presented in Table 4.13 demonstrated that Cronbach Alpha scores were between 0.753 and 0.862, which exceed the acceptable level of 0.60 and fall into the interval between 0.6 and 0.95. Thus, the survey can be regarded as reliable. The maximum score for reliability was obtained for the measure 'Overall Perception of NEP-2020' (0.862), whereas the minimum one corresponded to the measure 'Student-Centric Initiatives' (0.753). These findings prove that the tool chosen for the research is appropriate for further statistical analysis.

In general, the reliability analysis proves that the survey demonstrates acceptable levels of internal consistency and can be used for further statistical analysis.

4.2.2 Normality Testing (Kolmogorov-Smirnov Test)

This is done to establish if the gathered responses are statistically normally distributed or not. Depending on the normality of the data, the type of tests to conduct will be determined. In case the data is normally distributed, parametric tests are conducted but in case it is not normally distributed, non-parametric tests are carried out.

Normality of the gathered data was determined using the Kolmogorov-Smirnov test and Shapiro-Wilk test as illustrated in Table 4.14. It was found that all the significance values of the variables were below 0.05, which means that the data was not normally distributed. As a result, non-parametric statistical analysis methods were employed for hypothesis testing.

Table 4.14: Normality Test Statistics

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Awareness Level about NEP-2020	.447	358	.000	.580	358	.000
NEP-2020 has introduced Flexibility in course section	.312	358	.000	.714	358	.000
Multidisciplinary Course offering have increased in my institution.	.294	358	.000	.749	358	.000
Skill Based courses and vocational subjects are better integrated now.	.274	358	.000	.736	358	.000
Credit based choice system (CBCS) has been enhanced due to NEP.	.261	358	.000	.765	358	.000
Autonomy in Curriculum Design has improved.	.283	358	.000	.775	358	.000
Use of technology in teaching has increased post-NEP.	.268	358	.000	.719	358	.000
Institutions have couraged experimental or Project -based learning.	.277	358	.000	.740	358	.000
Continuous and Holistic assessment is being adopted.	.281	358	.000	.768	358	.000
Faculty receive training in modern Pedagogical methods.	.252	358	.000	.790	358	.000
NEP has positively impacted student Engagement.	.265	358	.000	.785	358	.000
COE(Centre of Excellence was helpful in providing academic and administrative autonomy in Gujarat	.284	358	.000	.767	358	.000
Department-Level autonomy has increased.	.285	358	.000	.806	358	.000

Participation in Academic decision making has improved.	.280	358	.000	.794	358	.000
Internal quality Assurance cells (IQACs) are more active now.	.285	358	.000	.761	358	.000
Governance is now more decentralized than before.	.279	358	.000	.812	358	.000
Research funding opportunities have increased.	.276	358	.000	.798	358	.000
Collaborations with foreign universities have improved.	.270	358	.000	.829	358	.000
Interdisciplinary Research is encouraged.	.268	358	.000	.768	358	.000
Patents or Innovations outputs have increased.	.293	358	.000	.784	358	.000
Student support system (Mentoring, Counselling) have improved.	.304	358	.000	.752	358	.000
Measures for Inclusivity (gender, Socio-economic) have become stronger.	.303	358	.000	.774	358	.000
Use of regional/ Local language in instruction has been encouraged.	.272	358	.000	.799	358	.000
Drop-out rates have reduced post NEP implementation.	.290	358	.000	.830	358	.000
NEP-2020 is a transformative policy.	.319	358	.000	.773	358	.000
Implementations of NEP is realistic and achievable.	.325	358	.000	.770	358	.000
Faculty are regularly involved in NEP- related planning or review.	.293	358	.000	.774	358	.000
NEP has positively impacted the overall quality of higher education.	.304	358	.000	.767	358	.000
ABC portal credit system significantly improves students' academic flexibility and overall satisfactory compared to traditional credit system.	.286	358	.000	.774	358	.000
APAR (a lifelong digital academic registry) improve students' long term academic continuity and employability outcomes.	.287	358	.000	.776	358	.000
a. Lilliefors Significance Correction						

The results in Table 4.14 indicated that all constructs were statistically significant ($p < 0.05$), suggesting deviation from normality. Therefore, non-parametric statistical tests were used for subsequent hypothesis testing.

4.2.3 Hypothesis Testing (Wilcoxon Signed Rank Test)

There are two types of hypothesis- null and alternate hypothesis. During the hypothesis testing, through a statistical test, whether a null hypothesis is accepted or rejected is assessed. If null hypothesis is accepted then alternate hypothesis is rejected and vice versa.

The statistical significance claim asserts that a result from data is unlikely to occur randomly or by chance but is instead likely to be attributable to a specific cause. Results of NEP-2020 were validated using the statistically significant test. The statistical significance test checks whether the observed outcome is just coincidence or real. The results are statistically evaluated with statistical significance tests. The statistical significance test is used for hypothesis testing. If statistical test rejects null hypothesis then it means it accept the alternative hypothesis.

Because the data were measured on a Likert scale and were not normally distributed, a non-parametric statistical approach known as the One-Sample Wilcoxon Signed Rank Test was applied. In statistical test p-values is used to decide whether to accept or reject null hypothesis. Whenever p value is less than 0.05 it reject null hypothesis (thus accept the alternate hypothesis) and whenever p value is more than 0.05 accept null hypothesis (thus reject the alternate hypothesis). A p-value (probability value) in statistics measures the probability of observing data as extreme as, or more extreme than, your sample results, assuming the null hypothesis (no real effect) is true; a small p-value (typically < 0.05) suggests strong evidence against the null hypothesis, indicating a statistically significant result, while a large p-value means the results could easily happen by chance. It helps determine if a difference or relationship in your data is likely real or just random variation. Here, we present hypothesis testing for each of six focused dimension of education.

a. Curriculum Reforms

Null Hypothesis H_0 : NEP-2020 has not significantly impacted curriculum flexibility in universities of Gujarat.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of NEP-2020 has introduced Flexibility in course section equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
2	The median of Multidisciplinary Course offering have increased in my institution. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
3	The median of Skill Based courses and vocational subjects are better integrated now. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
4	The median of Credit based choice system (CBCS) has been enhanced due to NEP. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
5	The median of Autonomy in Curriculum Design has improved. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4. 3: Curriculum Reforms Hypothesis Summary

The One-Sample Wilcoxon Signed-Rank Test was used to see if the belief about the significant effect of NEP-2020 on curriculum flexibility in Gujarat state universities has a significant difference with the neutral mid-value of 3. The finding showed there is a statistically significant difference between the obtained median and the hypothesized median ($p < 0.001$). Hence, the null hypothesis was rejected, indicating that NEP-2020 has a significant effect on curriculum flexibility in Gujarat state universities.

b. Pedagogy and Assessment Reforms

Null Hypothesis HO: NEP-2020 reforms have not significantly influenced teaching methods and assessments.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of Use of technology in teaching has increased post-NEP. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
2	The median of Institutions have encouraged experimental or Project based learning. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
3	The median of Continuous and Holistic assessment is being adopted. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
4	The median of Faculty receive training in modern Pedagogical methods. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
5	The median of NEP has positively impacted student Engagement. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
6	The median of COE(Centre of Excellence was helpful in providing academic and administrative autonomy in Gujarat equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4. 4: Pedagogy and Assessment Reforms Hypothesis Test Summary

One-sample Wilcoxon signed rank test was done to find out whether there is any significant influence of NEP-2020 reforms on teaching and assessments and whether the perception is significantly different from the neutral point of 3. It was found that there is statistically significant difference between the observed median and the hypothesized median ($p < 0.001$). Thus, the null hypothesis was rejected. It means that NEP-2020 reforms have significantly influenced teaching and assessments.

c. Governance and Autonomy

Null Hypothesis H_0 : NEP-2020 has not led to increased academic and administrative autonomy.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of Department-Level autonomy has increased. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
2	The median of Participation in Academic decision making has improved. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
3	The median of Internal quality Assurance cells (IQACs) are more active now. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
4	The median of Governance is now more decentralized than before. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4. 5: Governance and Autonomy Hypothesis Test Summary

The One-Sample Wilcoxon Signed-Rank Test was performed to determine whether there is any difference in the perception of NEP-2020 in increasing autonomy and whether it is significantly different from the midpoint value of 3. It was found that there is a statistically significant difference between the median observed and the median hypothesized ($p < 0.001$). Thus, the null hypothesis was rejected indicating NEP-2020 in increasing autonomy.

d. Research, Innovation and Internationalization

Null Hypothesis H_0 : NEP-2020 has not significantly promoted research and innovation culture.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of Research funding opportunities have increased, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
2	The median of Collaborations with foreign universities have improved, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
3	The median of Interdisciplinary Research is encouraged, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
4	The median of Patents or Innovations outputs have increased, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4. 6: Research, Innovation and Internationalization Hypothesis Test Summary

One Sample Wilcoxon Signed Rank Test was carried out in order to determine if NEP-2020 has made a significantly positive impact on research and innovation culture and to find out if there is any significant difference between it and the neutral point of 3. The results revealed that there is a significant difference between the sample median and the hypothesized median ($p < 0.001$). Thus, the null hypothesis was rejected, suggesting that NEP-2020 has significantly promoted research and innovation culture.

e. Student -Centric Initiatives and Inclusivity

Null Hypothesis HO: NEP-2020 has not improved student access and inclusivity in education.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of Student support system (Mentoring, Counselling) have improved, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
2	The median of Measures for Inclusivity (gender, Socio-economic) have become stronger, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
3	The median of Use of regional/ Local language in instruction has been encouraged, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
4	The median of Drop-out rates have reduced post NEP implementation, equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4.7: Student -Centric Initiatives and Inclusivity Hypothesis Test Summary

The One Sample Wilcoxon Signed Rank Test was done to determine if NEP-2020 had contributed to the accessibility and inclusiveness of education and whether there is a significant difference from the neutral point of 3. There was a significant difference between the actual median and the median hypothesized ($p < 0.001$). Thus, the null hypothesis was rejected implying that NEP-2020 has contributed to the accessibility and inclusiveness of education.

f. Overall perception and Impact of NEP 2020

Null Hypothesis H_0 : NEP 2020 is neither effective nor impacted the Higher Education.

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The median of NEP-2020 is a transformative policy. equals 3.000	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
2	The median of Implementations of NEP is realistic and achievable. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
3	The median of Faculty are regularly involved in NEP- related planning review. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
4	The median of NEP has positively impacted the overall quality of higher education. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
5	The median of ABC portal credit system significantly improves students' academic flexibility and overall satisfactory compared to traditional credit system. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.
6	The median of APAR (a lifelong digital academic registry) improve students' long term academic continuity and employability outcomes. equals 3.000.	One-Sample Wilcoxon Signed Rank Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4.8: Overall perception and Impact of NEP 2020 Hypothesis Test Summary

One-sample Wilcoxon signed-rank test was performed to find whether there is any significant difference between the perception of faculties regarding the effectiveness of NEP 2020 or impact of NEP 2020 on the curriculum flexibility of higher education and the midpoint value of 3. As per results, the difference between the median obtained and median expected was found to be statistically significant ($p < 0.001$). Hence, the null hypothesis was rejected and the findings indicate that NEP-2020 has been an effective initiative for higher education in the universities of Gujarat.

These test was performed to find out if there was any significant difference between the median perception score and the mid-point value of 3. The results show p-values less than 0.001 for all

constructs and hence, the null hypotheses were rejected for all and proves alternative hypothesis for all constructs.

4.3 Policy Implications

There are many implications of the findings of this research on the policy level. Firstly, policymakers must continue to fund and support the implementation of NEP-2020. Secondly, universities should provide proper training to their faculty members so that they may implement modern teaching practices. Thirdly, universities must enhance the research culture through interdepartmental collaboration with the industry. Fourthly, student-centric policies need to be strengthened.

4.4 Limitations

Despite its contributions, the study has certain limitations.

7. The study focuses only on faculty perceptions and does not include perspectives of students or administrators.
8. The research is limited to higher education institutions in Gujarat.
9. The study examines early stages of NEP-2020 implementation.

Future research may conduct longitudinal studies to evaluate long-term impacts of the policy.

4.5 Result and Analysis

It has been proven through the findings that the introduction of NEP-2020 has had a considerable positive effect on the higher education institutions of Gujarat. It can be seen through reliability analysis that there has been a strong consistency in all constructs and thus, the test has provided the evidence of reliability and validity of the instrument used in the study. In addition, it has been found through normality tests that the data distribution is not normal, which explains the application of the non-parametric approach of statistics in the study. As the findings of the One-Sample Wilcoxon Signed Rank Test have led to rejection of all null hypotheses ($p < 0.001$), it proves that there has been a statistically significant improvement in different aspects like curriculum flexibility, pedagogical and assessment practices, governance and autonomy, research and innovations, initiatives for students, inclusivity, and quality of education.

The findings of the study reveal that NEP-2020 has had a substantial impact on several dimensions of higher education institutions in Gujarat. Here we summarise the major impact on each major dimension:

- **Curriculum Reforms**

The study indicates that curriculum flexibility has significantly improved. Institutions have increasingly adopted multidisciplinary programs, skill-based courses, and credit-based systems.

- **Pedagogy and Assessment**

Teaching methodologies have evolved toward technology-enabled learning and experiential education. Project-based learning, digital tools, and continuous assessment practices are becoming more common.

- **Governance and Autonomy**

Institutions have experienced greater academic autonomy and improved participation in decision-making processes. Internal quality assurance systems have also become more active.

- **Research and Innovation**

The policy has encouraged interdisciplinary research and innovation activities. Faculty members perceive increased opportunities for research funding and academic collaboration.

- **Student-Centric Initiatives**

Student support mechanisms such as mentoring, counselling, and inclusivity measures have improved. The policy also promotes the use of regional languages in education.

- **Overall Policy Impact**

Faculty members largely perceive NEP-2020 as a transformative policy that has the potential to significantly improve the quality of higher education.

4.6 Impact on Stakeholders

Based on the survey and findings as above, this section discusses the impact on following stakeholders of NEP 2020 in fields of Technical Education -

1. Academics
2. Students

3. Faculties
4. Employment
5. Research
6. Institute

4.6.1 Impact on ACADEMIC

1. Education must have less of ‘content’ and more of thought process, critical analysis and problem solving approach. It should make the learner, a more creative, innovative, adaptive and multi-disciplinary thinker. The pedagogy should aim to make education more experiential, holistic, integrated, inquiry-driven, discovery-oriented, learner-centred, discussion-based, flexible, gainful, fulfilling employment and of course, enjoyable.
2. To lay the foundation for free exchange of ideas on the use of technology for planning, learning, assessment and administration, an autonomous body, National Educational Technology Forum will be created.
3. To determine the pros and cons there will be a need to carry out carefully designed and appropriately scaled pilot studies.
4. The concerns of equity must be adequately addressed by the use of technology for online and digital education.
5. To address present and future challenges in delivering quality education to all, it is essential to expand and optimize existing digital platforms and ongoing ICT-based educational initiatives.

4.6.2 Impact on STUDENTS

1. Recognizing, identifying, and nurturing the unique capabilities of each student by sensitizing teachers and parents to promote holistic development in academic and non-academic aspects.
2. Incorporating flexibility into the learning process to empower learners in choosing their educational paths based on their talents and interests.
3. Eliminating rigid separations between arts and sciences, curricular and extra-curricular activities, and vocational and academic streams to break down hierarchies and integrate different areas of learning.
4. Providing multidisciplinary and holistic education to uphold the unity and integrity of all knowledge.

5. Prioritizing conceptual understanding over rote learning and exam-centric education.
6. Admission process will be relaxed for the students because of implementation of one common entrance exam with the option to choose subjects under UG admission.
7. Most of the students from shall have an exposure to vocational courses.
8. Increase in focus on the skill development and competency development of students
9. Make students future ready by building 21 century skills
10. Make students focus on both academic and non-academic pursuits
11. Mid-term drop students will be able to complete after break

4.6.3 Impact on FACULTIES

1. A good teacher in a traditional classroom may not be that effective teacher in an online classroom. So, to be effective online educators' teachers require suitable training and development.
2. Through the use of technical platforms like DIKSHA, SWAYAM etc. the faculties will have continuous learning opportunities, continuous training opportunities and minimal career gap while pursuing their careers.
3. Faculty can advance the career opportunities through operationalization of career-progression mechanism, professional development opportunities and improved structures of incentives.
4. Vast opportunities for faculties through enhanced scholarships
5. Introduction of professional teaching standards
6. Clearer outlined roles and responsibilities
7. Training to monitor and improve their capabilities.

4.6.4 Impact on EMPLOYMENT

Market orientation of vocational education will be increased as NEP focuses to develop industry-linkages and demand-driven vocational courses keeping in centre the expectations of the industry.

4.6.5 Impact on RESEARCH

1. Encouraging creative and critical thinking to foster logical decision-making and innovation.
2. Promoting multilingualism and leveraging the power of language in educational instruction and learning.

3. Emphasizing regular formative assessments focused on learning progress, moving away from the prevalent 'coaching culture' associated with summative assessments.
4. Leveraging technology extensively in teaching and learning to break language barriers, enhance accessibility for students with disabilities, and improve educational planning and management.
5. Implementing a 'light but tight' regulatory framework to ensure integrity, transparency, and resource efficiency within the educational system through audits and public disclosure, while also encouraging innovation through autonomy, good governance, and empowerment.

4.6.6 Impact on INSTITUTE

1. Gradual phase out of affiliating college system to establish greater institutional autonomy through independent Board of Governance (BoG).
2. Suggestion to implement a BoG, as a single regulatory body, consisting of highly qualified and competent individuals will definitely work to improve efficiency of governance.
3. Fabulous resource sharing and outcome monitoring will be achieved through reformation and stabilization of the institutes which will have a major impact on the magnitude of the institutions by downsizing them to nearly one-third. It will result in less fragmented educational institutions in the country.
4. Improved budgetary efficiency, which can be directed towards enhancing educational outcomes.
5. Multi-disciplinary education will focus on quality education in diversified streams.
6. International academia will be attracted to participate in the Indian Educational System because of the International reforms proposed by NEP 2020 which will result in the integration of global skills in Indian curricula thereby creating an International Education ecosystem in India for Indian students and faculties.
7. Open Distance Learning (ODL) will create opportunities for expanding and increasing enrolments, online programmes and branch campuses in other countries.
8. Better mobilization opportunities will open up for ITIs and Diploma institutes to collaborate and merger with secondary schools which will help address issues related to awareness and perception.

The implementation of the National Education Policy (NEP) 2020 in technical education is poised to bring about significant transformations across various stakeholders. From a pedagogical perspective, there's a shift towards fostering critical thinking, creativity, and problem-solving skills, alongside leveraging technology for a more experiential and learner-centric approach. The formation of the National Educational Technology Forum highlights the willingness to adopt technology for improvement in the educational sector, ensuring equity and inclusiveness in digital education.

To conclude, the above analysis about the impacts of the policy on statistics is conclusive that NEP-2020 has immensely affected curriculum design, teaching processes, institution's governance, researches, and the support system of the students. The teachers see this policy as a revolutionary policy that will revolutionize the competitiveness of higher education in India. As for the students, the NEP is focused on identifying and developing talents of each individual, providing flexibility in learning paths, and breaking disciplinary barriers for holistic growth. Through emphasis on conceptualization rather than memorization and simplification of admission process, the policy seeks to ensure accessibility and relevance of education for all kinds of learners. Faculty members have great potential of learning continuously, advancing their career, and establishing professional norms. The aspect of research promotes critical thinking and innovations whereas multilingualism and technology integration promote inclusiveness and effective learning environment. Institutes should reform their structure to be more autonomous, efficient and collaborative with other international institutes in order to improve the learning outcomes and efficient use of resources. Phased process of transitioning from affiliated colleges to governing boards and consolidation of institutes would bring streamlining of administrative processes and improvement of education. Even though there are certain issues arising due to the policy implementation and development of required infrastructure, it can be said that NEP-2020 has made a good base for the development of flexible, innovative and inclusive education system. It can be concluded that NEP-2020 has brought revolutionary changes in the higher education sector even though its successful implementation requires policies, institutions and faculties' development. In general, NEP-2020 in the context of technical education has changed the paradigm of higher education system which is dynamic and inclusive as well as internationally competitive.

CHAPTER - 5

CONCLUSION & FUTURE SCOPE

5.1 Conclusion

In this thesis project, I have done a comprehensive analysis of the implementation and impacts of two important policy reforms initiated by the government of India, viz., the National Education Policy (NEP) 2020 and the National Mineral Policy (NMP) 2019. In three different empirical studies, the research work has been carried out through an understanding of stakeholders' perceptions about these policies, their outcomes using statistical analysis, and the opportunities and challenges of policy implementation. All these findings together make it clear that well thought-out public policies have the capability to bring revolutionary changes within institutions and make significant contributions to national development if proper implementation, stakeholder participation, and capacity building are there. The first research study is about the impact of NEP-2020 on technical and higher educational institutions. The finding shows that the policy has positive impacts on various aspects of higher education like curriculum design, interdisciplinary learning, teaching-learning process, assessment changes, governance, institutional autonomy, research culture, faculty development, and student support system. Faculty members view NEP-2020 as a progressive and futuristic reform with potential for improving quality, inclusiveness, innovation, and global competitiveness of Indian higher education. The focus on flexibility, multidisciplinary education, the use of technology, vocational education, research, entrepreneurship, and lifelong learning in this policy represents a remarkable shift from traditional education systems to more learner-cantered and result-oriented education systems. While there remain several issues like those of infrastructure, financial constraints, institution readiness, and faculty training, it is evident from the results of the study that NEP-2020 has laid down a very solid base for future educational reforms in India. The empirical study done in various higher education institutions in Gujarat confirms these findings. The application of suitable non-parametric statistical methods has made the findings even more reliable and it is clear that successful implementation of NEP-2020 would require consistent government support, faculty development programs, institution development, digital

infrastructure, and periodic evaluation of the policy. The findings further prove the significance of making decisions based on evidence and monitoring to ensure that the desired objectives from educational reforms are attained. The second research work assessed the impact of National Mineral Policy (NMP) 2019 on stakeholders involved in mining activities in India. The study indicates that NMP 2019 is a positive step that addresses such issues as transparency, sustainability in mining operations and involvement of the private sector in mining and national economic growth. It should be noted that although NMP 2019 introduces positive changes and creates some investment opportunities, certain issues arise with regard to the impacts of the policy on employment in the public sector, stakeholders' awareness, and their readiness to meet the requirements of the new policy. The findings from statistical analysis proved that stakeholder opinions about the policy are important, and it becomes necessary to engage in continuous skills development, policy awareness programs and collaboration between the government, educational institutions and the business. All in all, the results obtained from this Thesis prove that sustainable policy reforms require institutional readiness, engagement of stakeholders, administrative efficiency, and ongoing assessment, along with the legislative changes. Both NEP-2020 and NMP-2019 policies aim at the modernization of their respective sectors through the introduction of innovation, inclusiveness, transparency, accountability, and sustainability. Although the two policies differ by domain, both of them emphasize the importance of capacity-building, technological progress, skills acquisition, research orientation, and governance reforms as the key drivers of national development. This Thesis makes an important contribution to the existing literature on the subject, offering empirical data about the implementation and efficiency of these major policy reforms. Additionally, the study presents a broad framework for evaluating public policies in terms of large-scale public policy initiatives based on quantitative evaluation and stakeholders' involvement. As far as the conclusion is concerned, the realization of the vision of India regarding its education and sustainable mineral extraction depends on collaborative governance, institutional dedication, policy improvements, stakeholders' involvement, and evidence-based policy decision making. The results of this research can be applied in further academic research and evaluations of policies with the aim of making better decisions for national development and institutional performance.

5.2 Future Scope

Future research may undertake longitudinal studies to assess the long-term implementation and outcomes of NEP-2020 and NMP-2019 across different regions and institutional contexts.

Comparative studies across Indian states and between public and private institutions could provide deeper insights into variations in policy implementation and effectiveness. Further research may examine the impact of NEP-2020 on measurable outcomes such as graduate employability, innovation, research productivity, and industry-academia collaboration. Similarly, future studies on NMP-2019 could evaluate its long-term effects on investment, employment generation, environmental sustainability, and the socio-economic development of mining communities. Greater attention may also be given to the perspectives of students, industry professionals, local communities, and other stakeholders who were not fully represented in the present studies. Future research could employ mixed-method and advanced statistical approaches to obtain more comprehensive and robust evidence on policy outcomes. Studies may also explore the role of digital technologies, artificial intelligence, and data-driven governance in strengthening the implementation of both policies. Further investigation is required to assess how institutional capacity building, professional skill development, and continuous awareness programs influence policy success. Cross-sectoral research could examine the potential linkages between educational reforms and the development of skilled human resources required for sustainable and technologically advanced mining. Ultimately, future research should support continuous evidence-based policy evaluation and the formulation of adaptive strategies for achieving inclusive, sustainable, and effective national development.

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