ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XIII, Issues– II March – April, 2024

OPEN ACCESS Original Research Article

A COMPREHENSIVE ANALYSIS OF POSITIVE AND NEGATIVE IMPACT OF AI ACROSS INSTITUTIONS IN THANE DISTRICT

** Utkarsha Prashant Girjapure,** Kajal Pinku Gupta,*** Rutuja Raju Rawool & **** Dr. Madhu Shukrey*

** Student Researcher,** Student Researcher,*** Student Researcher & **** Research Guide, B.K. Birla College, Kalyan (Empowered Autonomous)*

Abstract:

AI (artificial intelligence) is a technology that changes all areas of life. It's a comprehensive tool that empowers people to rethink how we integrate data, analyze data and use insights to improve decision-making. This research paper undertakes a thorough examination of the multifaceted effects of Artificial Intelligence (AI) within various institutions. Through an extensive review of existing literature, the study aims to elucidate the transformative potential of AI technologies while also addressing the challenges and ethical considerations associated with their implementation. The study uncovers the positive impacts, such as heightened efficiency, innovation, and decisionmaking process across diverse institutions. Simultaneously, it addresses the negative consequences, encompassing concerns related to job displacement, ethical implications, privacy issues, etc. The goal is to provide a comprehensive understanding of AI's effects on institutions that how AI is shaping institutional landscapes and to propose informed recommendations for optimizing its benefits while mitigating potential risks. The research will also investigate the readiness of institutions to adopt AI technologies and the challenges they face in integrating AI into their operations. By examining these aspects, the study will provide valuable insights into the implications and informed strategies for maximizing the benefits while mitigating potential drawbacks.

Keywords: *Artificial Intelligence, Positive Impact, Negative Impact, Institutions*

Introduction:

In recent years the rapid advancement of artificial intelligence ai technologies has catalyzed transformative changes across various institutions worldwide from healthcare and education tofinance and manufacturing ai applications have penetrated every sector promising unparalleled efficiency innovation and convenience however this technological revolution also brings fortha spectrum of both positive and negative impacts that necessitate comprehensive analysisand understanding.

Artificial intelligence (AI) has permeated every aspect of society, transforming industries in areas as diverse as health, education, finance and governance. Advances in AI offer wonderful opportunities for advancement, but examining their impact requires an understanding of the potential benefits and pitfalls. This study delves into this complex environment, analyzing themultifaceted impact of AI in various industries.

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ISSN–2278-5655

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Positive Impact:

Efficiency and Productivity: AI technologies, like machine learning algorithms and robotic process automation (RPA) can enhance operations in establishments within Thane district. For example, AI driven systems have the capability to automate tasks, in procedures ultimately boosting efficiency and productivity.

Enhanced Decision Making: AI enables institutions to make data-driven decisions by analyzing large volumes of data quickly and accurately. Institutions in Thane district can leverage AI- powered analytics tools to gain insights into trends, customer behavior, and operational patterns, thus enabling better decision-making processes.

Improved Customer Service: AI-powered chatbots and virtual assistants can provide round- the-clock customer support to individuals and businesses in Thane district. These AI-based systems can handle common inquiries, resolve issues promptly, and improve overall customer satisfaction levels.

Healthcare Advancements: In healthcare institutions across Thane district, AI technologies are being used to diagnose diseases, predict patient outcomes, and personalize treatment plans. AI- driven medical imaging systems can assist healthcare professionals in the early detection of diseases, leading to improved patient care and outcomes.

Education and Skill Development: AI-powered educational platforms and tools can personalize learning experiences for students in schools and universities across Thane district. These platforms can adapt to individual learning styles and provide personalized recommendations to help students enhance their academic performance.

Negative Impact: Job Displacement: The automation of tasks through AI technologies may lead to job displacement across various sectors in Thane district. Employees performing repetitive and routine tasks are particularly vulnerable to being replaced by AI-driven systems, leading to unemployment and economic instability.

Privacy Concerns: AI systems often rely on vast amounts of data to operate effectively. In Thane district, concerns regarding data privacy and security may arise as institutions collect and analyze large volumes of personal and sensitive information. Unauthorized access to data or data breaches could compromise individuals' privacy and lead to legal and ethical implications.

Bias and Discrimination: AI algorithms may exhibit biases inherent in the data they are trained on, which can perpetuate discrimination and inequality across institutions in Thane district. Biased AI systems may unfairly discriminate against certain groups of individuals, exacerbating existing social disparities and hindering efforts towards inclusivity and diversity.

Dependency on Technology: Overreliance on AI technologies may lead to a dependency on automated systems, reducing individuals' and institutions' abilities to perform tasks manually or think critically. In Thane district, overdependence on AI could potentially undermine human skills and creativity, limiting innovation and adaptability in the long run.

Cybersecurity Risks: AI-powered systems are susceptible to cybersecurity threats such as hacking, malware attacks, and data breaches. Institutions in Thane district must implement robust cybersecurity measures to safeguard AI infrastructure and data from malicious actors seeking to exploit vulnerabilities for financial gain or disruptive purposes.

Case Studies: Real-World Examples

Positive Impact Case Study:

As one of the world's largest e-commerce platforms, Amazon has integrated artificial intelligence technology into every aspect of its operations and has achieved good results. Amazon is using artificial intelligence algorithms and machine learning

ISSN–2278-5655

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technology to improve its recommendations and provide customers with personalized recommendations based on their purchases. This artificial intelligence-assisted system helps improve customer experience by providing relevant suggestions to increase customer engagement, satisfaction, and sales (Borison, 2021). Through smart algorithms, Amazon optimizes products and predicts the future and product status. It not only improves operational efficiency, but also saves costs and improves customer satisfaction through direct and reliable delivery. In addition, Amazon is beginning to use smart customer support methods such as chatbots and assistants. Amazon knows how to integrate other assistive technologies and has demonstrated the best effects of artificial intelligence. By leveraging artificial intelligence algorithms to provide personalized recommendations, optimize supply chain management, and improve customer service, Amazon not only improves efficiency but also enhances customer experience, thereby increasing customer satisfaction and loyalty.

Negative Impact Case Study:

An example of one company grappling with the challenges and negative consequences of implementing artificial intelligence A well-known example of a company facing these challenges is Facebook, a social network that relies heavily on artificial intelligence algorithms to manage content and user experience. This has raised concerns about the effectiveness of artificial intelligence algorithms in solving product transformation problems and highlighted the problem of insufficient human supervision of automated systems (Hao, 2020). However, this personalization creates a phenomenon called “filter bubbles,” where most users see content that matches their beliefs and interests. Undesirable Consequences of Facebook's Integration of Artificial Intelligence Extends to User Privacy and Profile Abuse. This case illustrates the risks and dangers associated with the use of artificial intelligence to collect and use personal data and platforms (Cadwalladr and Graham-Harrison, 2018). Facebook’s experience reminds us that implementing artificial intelligence does not have to be difficult or dangerous. . The complexities, breach risks and data breaches affecting content management highlight the need for reliable artificial intelligence systems, transparency and public oversight to address these issues.

AI tools used by various institutions in Thane district, India

Institutions	AI Tools used
1. Education	ChatGPT Quill Bot Google Bard Grammarly Gamma, etc.
2. Business	AI tools in business can vary widely based onthe industry and specific needs. Some common applications include: Customer Relationship Management (CRM)systems that use AI to analyze customer dataand enhance customer interactions. Predictive analytics tools for salesforecasting and inventory management. Chatbots for customer support andengagement.
3. Banks	Banks often employ AI tools for tasks such as: Fraud detection: AI algorithms analyzetransaction patterns to identify suspicious activities. Credit scoring: Machine learning models assess creditworthiness based on historical data. Chatbots and virtual assistants: These assist customers with inquiries and transactions.

Source: Secondary data

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Research Methodology: Research Questions

1. What do you think which institution need more AI implementation?
   - Financial Sector
   - Health Care
   - Education
   - Other
2. What are the specific positive impacts of AI on institution?
   - Increase efficiency
   - Cost savings
   - Improved decision - making
   - Enhanced customer experience
3. What are the specific negative impacts of AI on institution?
   - Job displacement
   - Privacy concerns
   - Bias in algorithms
   - Security risks
4. Why have some institutions in India been hesitant to embrace AI technology?
   - Lack of understanding
   - Costly implications
   - Cultural resistance
   - Regulatory concerns
5. In the context of financial institution do you agree that AI application lead to improve fraud detection and prevention?
   - Yes
   - No
   - Maybe
6. Is there a risk AI might compromise privacy and ethical consideration within institutions?
   - Yes
   - No
   - Maybe
7. Do you believe that AI driven automation has improve the overall productivity and efficiency of administrative tasks in various institutions?
   - Yes
   - No
   - Not sure
8. How familiar are you with the concept of AI and its potential impact on job displacement within institution?
   - Very familiar
   - Somewhat familiar
   - Not familiar at all

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9. In your opinion how do you think AI had affected workforce dynamics within dynamics institution?
   - Improve efficiency and productivity
   - Increase job security
   - No noticeable impact
10. How concern are you about the potential risks of AI technology in terms of data privacy and security within various institution?
   - Very concerned
   - Somewhat concerned
   - Not concerned at all
11. What measures do you think should be taken to mitigate the associated with AI technology in terms of data privacy security within the institution?
   - Increased regulation & oversight
   - Enhanced cybersecurity protocols
   - Employee training on data protection

Objectives:

- To Analyse the positive and Negative impacts of AI in overall institution To Evaluate the overall net impact of AI on overall institution
- To investigate the impact of AI on job displacement To examine the potential risks of AI technology

Hypothesis:

Hypothesis Testing:

H0 = In the context of financial institution AI application do not lead to improve fraud detection and prevention.

H1 =In the context of financial institution AI application led to improve fraud detection and prevention.

observed (0)

	yes	No	may be	total
male	12	3	4	19
Female	18	2	11	31
	30	5	15	50

Expected [e]

	yes	No	may be
male	11.4	1.9	5.7
Female	18.6	3.1	9.3

Observed value – Expected value

	yes	No	may be
male	0.031579	0.636842	0.507018
female	0.019355	0.390323	0.310753

x2	1.895869
df	1
p-value	0.168541

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Since the P-value is **0.168541** is greater than 0.05 means P>0.05, so I will reject the alternativehypothesis & accepted the null hypothesis that is; In the context of financial institution AI application do not lead to improve fraud detection and prevention.

H0 = AI driven automation has not improved the overall productivity and efficiency of administrative tasks in various institutions.

H1= AI driven automation has improved the overall productivity and efficiency of administrative tasks in various institutions.

observed (0)

	yes	No	Not sure	total
male	14	1	4	19
Female	20	0	11	31
	34	1	15	50

Expected (e)

	yes	No	Not sure
male	12.92	0.38	5.7
Female	21.08	0.62	9.3

Observed value - Expected value

	yes	No	Not sure
male	0.090279	1.011579	0.507018
female	0.055332	0.62	0.310753

x2	2.59496
df	1
p-value	0.107204

Since the p- value is 0.107204 is that p is greater than 0.05 means p > 0.05, so I will reject the alternative hypothesis & accept the null hypothesis that is; AI driven automation has not improved the overall productivity and efficiency of administrative tasks in various institutions.

Significance:

The research could provide insights into the current level of AI adoption in various institutions in Thane district, including schools, businesses, healthcare facilities, government offices, etc. This understanding can help policymakers, educators, and business leaders make informed decisions about AI implementation.

Analysing the positive and negative impacts of AI on institutions in Thane district can shed light on its economic implications. This could include job creation

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or displacement, changes in productivity, and overall economic growth.

Based on the findings of the research, policymakers at the local, regional, or national level could develop policies to maximize the benefits of AI while mitigating potential risks. This could include guidelines for AI implementation, training programs for AI skills, or regulations to ensure ethical AI use.

By analyzing the negative impacts of AI across institutions in Thane district, the research can help identify potential risks and vulnerabilities associated with AI implementation. This information can guide risk management strategies to minimize adverse consequences.

Methodology:

There are two source of data collection method:

Secondary Sources:

Secondary data are those which have already been collected by someone else and which already has been passed through the statistical process.

The Secondary data was collected through websites, Journals.

Primary Sources:

Primary data are those which are fresh and are collected for the first time and thus happen to be original in character. The Primary data was collected through direct (Close Ended Questionnaires).

In this research, both secondary (websites, journals) and primary (Questionnaires) data collection method is used to collect the data.

Limitations:

The Study is having a limited sample size, which can restrict the generalizability of the findings of a larger population.

The research relies on individuals' behaviour, which may introduce biases and in accuracies in the data collected.

Difficulty in accessing relevant reliable data for analysis.

Review of Literature:

"Impact of artificial intelligence on employees working in industry 4.0 led organizations" This research aims to create a realistic understanding of the both positive and negative experiences that employees have as a result of adopting artificial intelligence (AI) and experiencing technostress. Different skill sets and technology competencies are required since the current job profiles are being changed by the increasing knowledge economy and technological interventions. As a result, the firms must implement strategic workforce development initiatives that include knowledge management and skill enhancement. Employees also require assistance in managing both positive and bad outcomes in their evolving socio-technical ties.

"The Impact of Artificial Intelligent in Education toward 21st Century Skills "The purpose of this study is to determine how Artificial Intelligence in Education (AIED) affects 21st century skills. Science Direct, Scopus, and Google Scholar were the academic databases that were utilized to gather papers. The majority of the review period was from 2013 to 2023.The findings indicate that the use of artificial intelligence in the classroom has an impact on the six 21st century abilities (6C) of critical thinking, creativity, citizenship, character, and communication.

"Impact of Artificial Intelligence (AI) Technology in Healthcare Sector: A Critical Evaluation of Both Sides of the Coin" This article discusses the advantages and disadvantages of implementing AI in healthcare and offers a few recommendations for potential fixes for any problems that may arise. Artificial intelligence (AI) has been growing in popularity in recent years, especially in the medical area. Its effect has increased to such an extent that it is resolved to establish it as the basis of the medical field going ahead. AI is particularly good at things like quick adaptability, accurate diagnosis, and data management, all of which can increase worker productivity.

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"Impact and Role of AI Technologies in Teaching, Learning, and Research in Higher Education" This Research paper focuses All of the advantages and disadvantages of AI technology for research, teaching, and learning in higher education. Higher education's future depends heavily to developments in new technologies and the computing capacity of more sophisticated machines. Artificial intelligence developments in this sector present both new opportunities and difficulties for higher education teaching and learning, with the potential to drastically alter institutional design and governance. Instead of reducing education to a set of protocols for material distribution, control, and assessment, technology in higher education should be used to augment and enhance human thought.

"Artificial intelligence in developing countries: The impact of generative artificial intelligence (AI) technologies for development" This study examines potential advantages and disadvantages of generative artificial intelligence (generative AI) in developing nations across a range of information, cultural, and industrial domains. Artificial intelligence (AI) systems that generate text, music, or video with the goal of producing original and creative outputs based on training data are referred to as generative AI systems. The Fourth Industrial Revolution has brought about significant developments in Artificial Intelligence, such as ChatGPT, which have gained prominence and changed the way material is created and produced. The study highlights the significance of integrating Generative AI into the context of the Fourth Industrial Revolution in developing countries, where technological change is a crucial determinant of progress and equitable growth.

"Impact of ChatGPT on Education: Challenges and Opportunities" Artificial Intelligence (AI) is one of the leading and most influential innovative technologies of this century. In many cases, it has affected all industries such as healthcare, banking, automobiles, retail education, food processing and more. Artificial intelligence has become one of the biggest challenges in the world today, related to the quality of service provided, the future of many jobs, the correct use of technology and much more. Education is one of the most influential areas where the impact of artificial intelligence leads to positive and sometimes negative results Therefore, AI- powered tools and techniques automate tasks, personalize the learning process and provide real-time feedback.

"The Impact of Artificial Intelligence Disclosure on Financial Performance" This study examines the extent to which Jordanian banks relate to and use AI technologies in their operational processes, and examines the impact of disclosure of AI-related terms on financial performance. Content analysis is used to analyse the spread of artificial intelligence and related information in the textual information of the annual report. The survey reveals that mentions of AI-related terms have steadily increased since 2014. The results show that the disclosure of AI-related keywords has an impact on the financial performance of banks. AI has a positive effect on accounting performance in terms of ROA and ROE and a negative effect on total costs, which supports the common view that AI increases revenues and decreases costs, and is also consistent with previous findings in the literature

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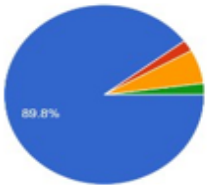
Data Analysis:

1. Age of the respondents

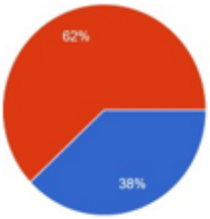


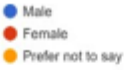
Data interpretation: The younger generation dominated the project's participation, with 89.8% of respondents aged 18-26, 6.1% aged 36-45, and 2% aged 26-35 and 46-55.

2. Occupation

Data Interpretation: The survey revealed that 86% of respondents are students, 10% are salaried individuals, and 4% are housewives.

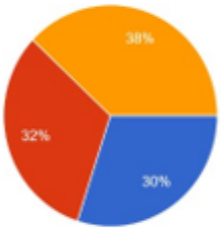
3. Gender





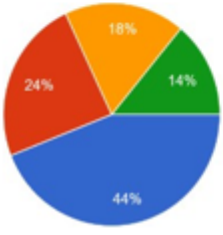
Data Interpretation: The study has a total sample size of 50, with 19 38% of respondents being male and 62% being female.

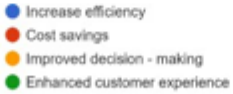
4. Institutions which need more AI Implementation:



Data Interpretation: The data indicates a significant need for AI implementation in the education sector, with 30% prioritizing it, followed by healthcare at 32% and the financial sector at 30%.

5. Positive Impact of AI on Institutions:





Data Interpretation: AI in institutions significantly boosts efficiency, reduces costs, improves decision-making processes, and enhances customer experience, demonstrating its positive impact on operations.

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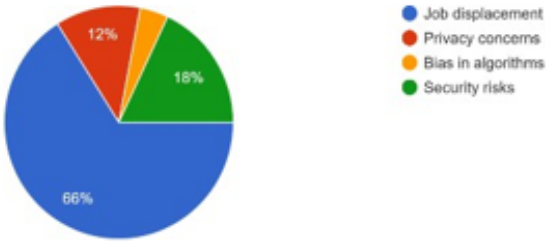
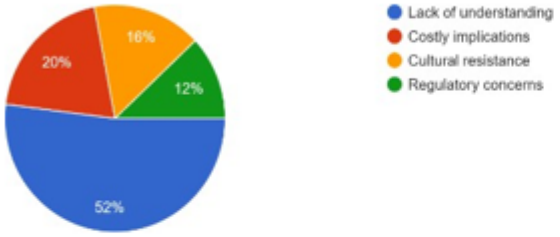
6. Negative Impact of AI on Institutions:



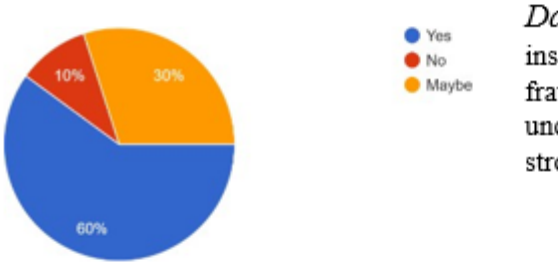
Data Interpretation: AI adoption in institutions faces challenges like job displacement, security risks, privacy concerns, and 1% algorithm bias risk, necessitating a delicate balance to mitigate its negative impacts.

7. Reasons- Institutions in India Hesitant to Embrace AI Technology:



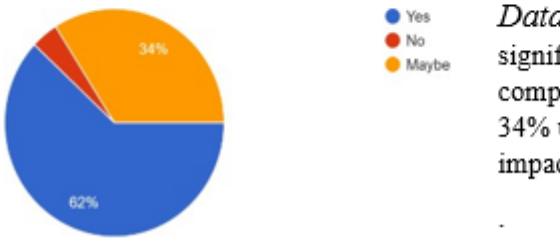
Data Interpretation: From the above chart it is observed that, Lack of Understanding is one of the reason due to which 52% respondent think that Institutions hesitant to adopt AI, while 20%, 16% and 12% of respondent believe that Costly Implication, Cultural Resistance and Regulatory Concerns respectively, are another reason for the same.

AI Application led to improve fraud detection and prevention:



Data Interpretation: 60% of financial institutions believe AI applications can enhance fraud detection and prevention, with 30% uncertain and 10% disagreeing, indicating a strong consensus on AI's potential.

8. Risk due to which AI might compromise an Ethical consideration within institution:



Data Interpretation: 62% of respondents express significant concern about AI's potential to compromise privacy and ethics in institutions, with 34% uncertain and 1% confident in its benign impact.

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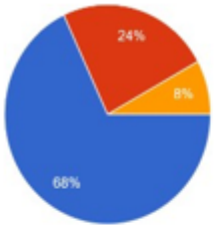
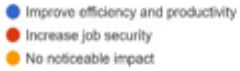
9. AI driven automation has improved the overall productivity and efficiency of administrative task:

Data Interpretation: The majority of respondents (68%) believe that AI-driven automation can improve administrative task productivity, with 30% expressing uncertainty and only 2% disagreeing, indicating a strong consensus.

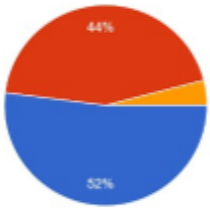
11. How AI affected workforce Dynamics:

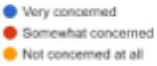




Data Interpretation: Respondent reveals AI enhances efficiency in institutions (68%), with job security (24%), and no significant changes (8%), indicating improved performance and workforce adaptability.

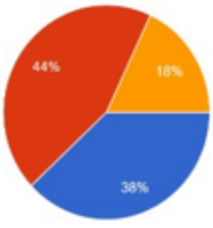
12. Potential risks of AI technology in terms of data privacy and security:

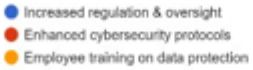




*Data Interpretation*The survey revealed that 52% of respondents are very concerned, 44% are somewhat concerned, and 3% are not concerned about AI's potential risks to data privacy and security in institutions.

13.Measures taken to mitigate data privacy security:





*Data Interpretation*The study indicates that enhanced cybersecurity (44%), regulation (38%), and employee training (18%) are effective in mitigating AI's data privacy and security risks in institutions.

Summary of Findings:

The Thane district research revealed a strong interest among the younger generation, particularly those aged 18 to 26, in the use of AI in a variety of sectors such as education, healthcare, and finance. The study found that implementing AI in institutions could lead to increased efficiency, cost savings, better decision-making, and a better customer experience.

Concerns about job displacement, security risks, privacy issues, and potential algorithm bias were raised. Respondents were concerned about privacy and data security, but they also saw the potential benefits of AI in terms of productivity and administrative tasks.

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Mitigation strategies, such as increased cybersecurity measures, regulations, and employee training, have been identified to address these concerns and ensure a balanced approach to AI implementation in Thane district institutions.

Suggestion:

Conducting a more in-depth analysis of the specific sectors within institutions in Thane district that are most impacted by AI technology, such as healthcare, education, or business operations.

Exploring the ethical implications of AI implementation in institutions and developing guidelines or frameworks to ensure responsible and ethical use of AI technology.

Investigating strategies to address the potential job displacement caused by AI and identifying ways to upskill or reskill the workforce to adapt to the changing technological landscape.

Conclusion:

The integration of AI in Thane district's institutions brings both positive and negative impacts. On the positive side, AI enhances efficiency, streamlines processes, and fosters innovation. However, challenges such as job displacement and ethical concerns must be addressed. Striking a balance through thoughtful implementation and continuous monitoring is crucial for maximizing the benefits while mitigating potential drawbacks in the evolving landscape of AI adoption within Thane district's institutions.

Reference:

Examining the Impacts, Both Positive and Negative, of Artificial Intelligence on Businesses | by Timothy Troy | Medium

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Cite This Article:

Girjapure U.P., Gupta K.P., Rawool R.R. & Dr. Shukrey M. (2024). *A Comprehensive Analysis of Positive and Negative Impact of AI Across Institutions in Thane District. In Aarhat Multidisciplinary International Education Research Journal: Vol. XIII (Number II, pp. 206–217).* ***AMIERJ.*** *https://doi.org/10.5281/zenodo.10935772*