Survey of Artificial Intelligence for Automated Regulatory Compliance Tracking

Abstract:

For businesses trying to negotiate complex rules, the use of artificial intelligence to automate the tracking of regulatory compliance is a significant advancement. Automation of enforcement and monitoring is achieved by leveraging state-of-the-art technology like machine learning and natural language processing. By using artificial intelligence technologies, businesses may swiftly determine whether rules apply to their operations and look into how those constraints effect their operations. These systems can entirely adapt to laws that are always changing, make sure you are following the rules, and lessen the possibility that anything goes wrong. Artificial intelligence has the potential to help identify compliance issues and promptly address them, eliminating the need for you to worry about paying a fee. Additionally, by automating time-consuming tasks like filing papers and creating reports, it frees up your team to focus on more important tasks. The use of artificial intelligence for compliance tracking offers businesses a scalable, economical, and efficient approach to managing regulatory difficulties in the ever-changing corporate environment.

Keywords: Artificial intelligence, Compliance, tracking, automation

1. INTRODUCTION:

Monitoring the compliance process is a monitoring procedure that ensures that compliance requirements are being met and discovers new compliance concerns[1-3]. The purpose of compliance tracking is to ensuring that the standards for regulatory compliance are met while also protecting the privacy and security of data[4]. Through the utilization of a dynamic process that encompasses the monitoring, assessment, and analysis of organizational performance and risk indicators[5], teams are able to identify areas of non-compliance and take corrective action in order to avert costly violations[6,120,121,122].Compliance with regulations is an essential

component of any business operation, regardless of the sector in which the business operates[7]. The process of ensuring that a corporation complies with the laws[5], regulations[8], and standards that have been established by the government or other regulatory authorities is referred to as compliance monitoring[9]. In the event that these requirements are not adhered to, the individual may be subject to legal and financial fines[10], in addition to damaging their reputation. In the first place, it works to guarantee that businesses conduct their operations in a responsible and ethical manner, thereby safeguarding the interests of stakeholders such as employees, customers, and investors[11]. Secondly, it helps to keep a fair playing field by ensuring that all businesses operate in accordance with the same laws and regulations[12]. In the third place, compliance serves to safeguard organizations from being subjected to legal and financial fines, in addition to damage to their reputation[13, 14].

In the current regulatory environment, which is extremely complicated, businesses are under increasing pressure to guarantee that they are in compliance with the numerous laws and regulations that regulate their activities[15]. Whether it is for healthcare providers who must adhere to ever-evolving healthcare laws or for financial organizations that must navigate tough banking rules, the challenge of remaining compliant is one that is both difficult and essential[16]. In the middle of this challenge, Artificial Intelligence (AI) emerges as a disruptive solution, giving capabilities in automated regulatory compliance tracking that have never been seen before[17]. When organizations embrace the potential of artificial intelligence, they are able to streamline and improve their compliance efforts, so drastically decreasing the amount of manual labor required, lowering risks, and ensuring that regulatory standards are adhered to[18]. By utilizing sophisticated algorithms and machine learning techniques, artificial intelligence systems are able to effectively monitor enormous amounts of regulatory data, read complicated legal terminology, and recognize changes or updates in regulations that are pertinent to the situation[19]. Furthermore, compliance systems that are driven by artificial intelligence are able to adapt to dynamic regulatory environments[20]. These solutions may provide stakeholders with real-time insights and alarms, which results in proactive risk management and decision-making[21]. The deployment of such technology is poised to revolutionize the way organizations handle regulatory difficulties, establishing a culture of compliance excellence and resilience in the face of regulatory scrutiny. This is because businesses are increasingly recognizing the strategic potential of artificial intelligence in compliance tracking[22].

1.1. Importance of Regulatory Compliance in Various Industries:

When it comes to ensuring that diverse industries conform to the legal criteria, standards, and rules that have been established by governing authorities, regulatory compliance serves as the backbone of these business sectors[23]. The significance of this cannot be emphasized because it is the foundation upon which the honesty, security, and long-term viability of enterprises in all industries are built[24]. Compliance with rules such as HIPAA (Health Insurance Portability and Accountability Act) in the healthcare industry, for example, preserves the privacy of patients and the security of their data, thereby protecting sensitive information from being compromised[25]. Similarly, in the financial sector, strict laws such as Dodd-Frank and Basel III play an important role in preserving the stability and transparency of financial institutions[25]. These policies safeguard investors as well as the economy as a whole from the dangers that are connected with fraudulent activities and misconduct[25]. In addition, businesses such as manufacturing are dependent on environmental rules in order to reduce the negative impact that their activities have on the ecosystem[26]. This helps to promote sustainability and corporate social responsibility. Failure to comply with regulations can have severe repercussions, including the imposition of significant fines and legal penalties, the tarnishing of one's reputation, and even the closing of a business[27]. Therefore, regulatory compliance not only helps to cultivate trust and credibility, but it also helps to cultivate a culture of accountability and ethical behavior within organizations, which ultimately contributes to the long-term survival and success of industries in a global landscape that is continually shifting[28].

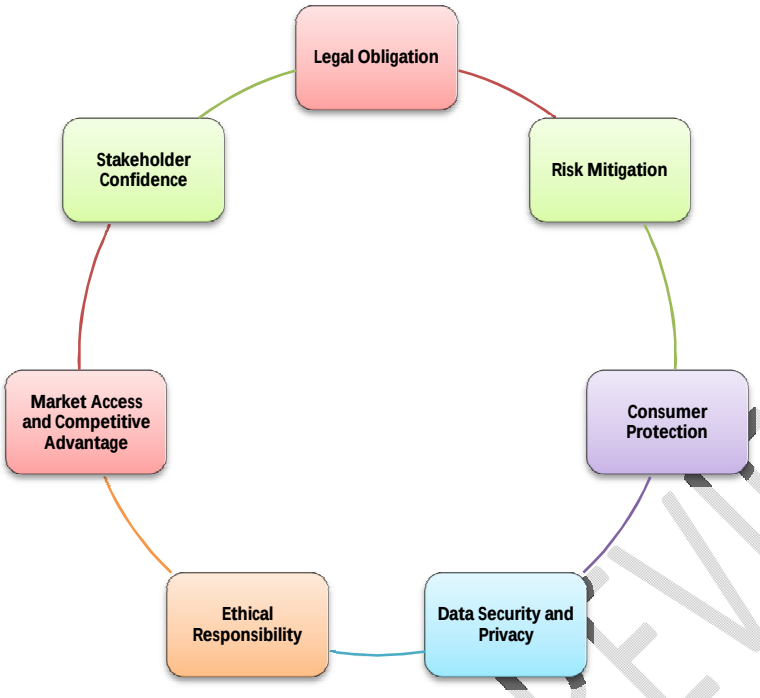

Figure 1Regulatory compliance is crucial across various industries for several above reasons

Compliance with regulations is frequently required by law, in accordance with the legal obligation[29]. Failure to comply may result in serious consequences, such as monetary fines, legal action, and even criminal charges under some circumstances[30]. In sectors such as the financial sector, healthcare, and environmental protection, failure to comply with regulations can have significant repercussions from a legal standpoint[31]. Compliance with rules helps minimize a variety of risks, including financial, legal, reputational, and operational risks. Additionally, compliance with regulations helps mitigate hazards. Businesses have the ability to reduce the possibility of regulatory infractions and the bad outcomes that are connected with them by adhering to the guidelines and standards that have been established[32]. It is the responsibility of regulatory compliance to ensure the safety and protection of consumers. In order to ensure the quality, safety, and effectiveness of their products, several industries, like the pharmaceutical industry, the food and beverage industry, and the automotive manufacturing industry, are required to comply with severe regulatory criteria[33]. With the expansion of data-driven technologies, it is essential to comply with data protection requirements such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA)[34]. In addition to protecting the privacy rights of individuals, ensuring the confidentiality, integrity, and availability of sensitive data protects enterprises against the risk of

data breaches and cyber threats while also protecting individuals' privacy rights[35]. When it comes to ethical responsibility, compliance with rules frequently coincides with ethical considerations and the obligation of corporations to their communities[36]. Streamlining operations, reducing inefficiencies, and improving overall business performance are all possible outcomes that can be achieved through the implementation of standardized procedures, the adoption of best practices, and compliance technologies[37]. Ensuring compliance instills confidence among many stakeholders, including as investors, customers, suppliers, and regulatory authorities[38]. The demonstration of a dedication to compliance helps to cultivate trust and credibility, both of which are necessary for the maintenance of regulatory goodwill and the maintenance of long-term business partnerships[39].

Finance	The finance industry, including banking, insurance, and investment firms, is heavily regulated to safeguard the stability of financial markets, prevent fraud, and protect consumers' assets. Regulations like the Dodd-Frank Act and Sarbanes-Oxley Act impose requirements related to reporting, transparency, risk management, and corporate governance
Technology	Technology regulations cover a wide range of issues, including data privacy, cybersecurity, intellectual property rights, and antitrust concerns. Laws like the General Data Protection Regulation (GDPR) in the EU and the California Consumer Privacy Act (CCPA) establish requirements for the collection, processing, and protection of personal data.
Food and Agriculture	Food and agriculture regulations aim to ensure the safety and quality of food products, as well as the humane treatment of animals and sustainable agricultural practices. Agencies like the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) enforce standards related to food labeling, sanitation, and pesticide use
Environmental	Environmental regulations are designed to mitigate the impact of human activities on the environment, including pollution, habitat destruction, and climate change. Laws such as the Clean Air Act and the Endangered Species Act set standards for air and water quality, habitat conservation, and the management of natural resources.
Telecommunications	Telecommunications regulations govern the provision of communication services, spectrum allocation, and competition in the industry. Regulatory bodies like the Federal Communications Commission (FCC) in the U.S. set rules to ensure fair competition, protect consumer interests, and promote universal access to communication services.
Energy	Energy regulations focus on environmental protection, resource conservation, and public safety. Laws like the Clean Air Act and the Clean Water Act in the U.S. set emissions standards and regulate the disposal of hazardous waste. Additionally, regulatory agencies oversee the licensing and operation of energy facilities, such as nuclear power plants and oil refineries.
Pharmaceuticals	The pharmaceutical industry is subject to rigorous regulations to ensure the safety, efficacy, and quality of drugs. Regulatory agencies such as the FDA in the U.S. and the European Medicines Agency (EMA) in the EU require pharmaceutical companies to conduct extensive clinical trials and adhere to good manufacturing practices (GMP) to bring drugs to market.
Healthcare	Healthcare regulations aim to ensure patient safety, privacy, and quality of care. Laws such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States govern patient data privacy, while regulatory bodies like the Food and Drug Administration (FDA) oversee the safety and efficacy of drugs and medical devices.

Figure 2 Compliance in different Industries

1.1.1. Health Care:

At the core of the mission of health systems all over the world is the provision of care of the highest possible standard[40]. Because of structural problems, such as insufficient staffing levels, or process problems, such as poor cleaning methods, quality might vary[41]. This can lead to discrepancies in outcomes between different health and social care providers, such as high complication rates and a negative patient experience[42]. It is normal practice for governments to implement regulations in order to check the quality of products and services[43]. Regulated businesses and individuals are required to adhere to the standards that have been imposed[44]. In the fields of health and social care, regulatory authorities often issue licenses or authorizations to providers, and/or directly regulate the structures and procedures of care through inspections, feedback, or fines[45]. One definition of regulation is "sustained and focused control exercised by a public agency over activities that are valued by a community." This definition describes the nature of regulation[46]. When it comes to health and social care, the breadth of regulation varies from country to country and varies based on the situation[47]. The primary focus of regulation is on the structural, procedural, and outcome-related aspects of service products and services[48]. For instance, regulations in nursing homes (NH) in the United States address a variety of topics, including resident rights, nursing services, infection control, physical environment, and resident assessment, among other things[49]. It is crucial to note that the manner in which countries regulate health and social care varies significantly. In one approach, the regulator is an independent agency that receives funding from the public sector and is associated with a government ministry, such as Healthcare Improvement Scotland[50]. In addition, there are instances of regulatory authorities that are integrated within government ministries, such as the Ministry of Long-Term Care in Ontario[51].
In other countries, such as Australia, required accreditation is being carried out by organizations that are not affiliated with the government[52]. This is the third way. Despite the fact that they do not possess any statutory powers, their function is comparable to that of a regulator because any decision to not accredit can result in consequences from the state[53]. This is different from other forms of accreditation that are carried out voluntarily[54]. It is possible to define regulatory compliance as "behaviour fitting expectations communicated to regulates regarding how the former should or should not behave in a given domain." That is one definition of regulatory

compliance[55]. According to this conception of compliance, there is a significant difference between conforming to clinical recommendations or voluntary codes of practice[56]. One of the characteristics of regulatory compliance is the obligatory duty to conform with standards and to make changes to deficiencies[57]. An extensive body of literature exists on the structures (such as public or private ownership, facility size and staffing levels/competencies) and processes (such as disposition towards regulation and normalization of compliance within day-to-day operations) that are responsible for determining compliance by health and social care organizations[58]. Because of the context and the aim of regulation, this body of literature, which has not yet been synthesized, constitutes a discrete subset of the more extensive body of literature on the factors that determine quality[59]. Regulation, in contrast to the majority of quality assessment projects, contains consequences for the regulate, and as a result, it introduces distinct reasons surrounding implementation[60]. Both those who are regulated and those who are regulated would prefer that all interactions result in positive findings of compliance[61]. One strategy to increase the chance of compliance is to gain an understanding of the factors that determine compliance[62]. When it comes to regulation, one might consider it to be a complicated intervention, and compliance is synonymous with successful implementation[63]. This makes it possible to use concepts from implementation science in order to gain a better understanding of the reasons why certain organizations do not comply with regulations: "implementation science enables questions to be asked about whether, and if so, how, an intervention can make a difference to the life of a patient or to the practice of a health care delivery team." There are a variety of criteria that determine whether or not an innovation will be successful[64]. As an illustration, the perspectives and convictions that employees hold towards a new innovation might have an effect on how it is implemented[65]. Within the realm of implementation science, researchers have developed a number of different tools and frameworks[66]. A framework that falls under this category is known as the Consolidated Framework for Implementation Research (CFIR)[67]. In order to provide a "overarching typology—a list of constructs to promote theory development and verification about what works where and why across multiple contexts," the CFIR was formed by bringing together a variety of different theories that were already in existence about implementation[68]. There have been instances in the past where the CFIR has been utilized as a framework for the purpose of organizing and synthesizing the findings of systematic reviews[69].

2. Challenges in Manual Compliance Tracking:

Manual compliance monitoring can provide a wide variety of difficulties, the most of which are a direct result of the inherent dependence on human intervention and supervision that it entails[70]. In the first place, manual tracking is extremely prone to inaccurate results[71]. Even with the most rigorous protocols in place, human error is unavoidable, which results in mistakes in the recording of data, monitoring of data, and reporting of data[72]. These errors can range from straightforward errors in data input to more complicated misunderstandings of regulatory requirements, and both types of errors have the potential to result in compliance violations and penalties imposed by regulatory agencies[73]. Additionally, manual compliance tracking require a significant amount of time and effort to complete. The collection, input, and analysis of data, which demands a substantial amount of human resources, diverts important time and labour away from other tasks that are of crucial importance. This inefficiency is made worse in large organizations or businesses that have substantial regulatory frameworks, as the volume of compliance data that needs to be managed can be daunting in these situations[74]. Real-time visibility and accountability are also lacking with manual tracking, which is another disadvantage[75]. When manual processes are used, there is frequently a delay in recognizing compliance issues or deviations, as well as in putting remedial steps into effect. Due to this delay, organizations may make themselves susceptible to regulatory infractions and the related consequences, which may include financial penalties, legal responsibilities, and damage to their brand[76].

In addition, manual compliance tracking is not scalable and cannot be adapted to changing circumstances. There is a possibility that manual procedures will struggle to keep up with the evolving or expanding regulatory standards, which will necessitate frequent modifications and revisions. This can put a strain on resources and lead to variations in compliance standards across a variety of divisions or agencies located in various regions[77].

When compared to automated systems, manual compliance tracking is intrinsically less transparent and auditable. It can be difficult to establish compliance to regulators or stakeholders if there is a lack of strong documentation and audit trails. This can increase the risk of scrutiny and enforcement actions being taken against the organization[78].

Although manual compliance tracking may be a well-known and initially cost-effective method, it is nevertheless fraught with substantial dangers and limits in terms of accuracy, efficiency, agility, transparency, and accountability. For the purpose of ensuring efficient risk management and regulatory compliance, organizations need to carefully assess the benefits of investing in automated compliance tracking solutions against the obstacles that aforementioned systems present[79].

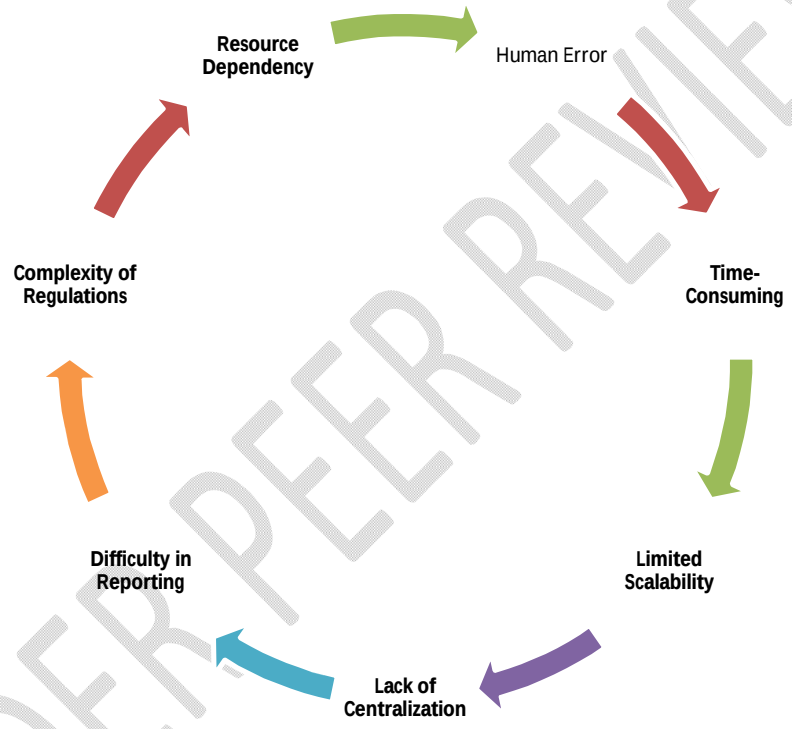

Figure 3Challenges in Manual Compliance Tracking

3. Role of AI in Automating Compliance Tracking:

A significant contribution that artificial intelligence (AI) makes to the automation of compliance tracking across a wide range of businesses is that it provides a combination of efficiency, accuracy, and adaptability that older techniques frequently lack [80]. One of the most important aspects is that artificial intelligence has the capacity to analyze enormous amounts of data in a timely and precise manner, recognizing trends and anomalies that may indicate non-compliance [81]. Artificial intelligence (AI) systems are able to continuously learn from fresh data thanks to

the utilization of machine learning algorithms, which improves their ability to detect compliance concerns over time [82]. Additionally, compliance tracking systems that are powered by artificial intelligence have the ability to expedite procedures by automating regular tasks such as data entry, monitoring, and producing reports [83]. Consequently, this not only lessens the strain placed on human resources, but it also lessens the likelihood of errors occurring as a consequence of manual input[84]. The ability of artificial intelligence to adjust to ever-evolving regulations and requirements is yet another significant advantage of using AI for compliance tracking[85]. Artificial intelligence (AI) systems are able to analyze and comprehend regulatory texts by utilizing natural language processing (NLP) and semantic analysis. This allows them to extract pertinent information in order to guarantee compliance with new rules[86]. In addition, artificial intelligence makes it possible to monitor and alert in real time, which enables organizations to receive quick notifications of any compliance breaches[87]. This proactive strategy makes it possible to intervene and take corrective action at the appropriate moment, hence reducing the likelihood of potential penalties and hazards[88]. In general, artificial intelligence is a strong technology that can be used to automate compliance tracking[89]. It provides unrivalled speed, accuracy, and adaptability, which can dramatically improve regulatory compliance and risk management across a variety of industries[90].

4. Overview of Regulatory Compliance Tracking Systems:

Regulatory compliance tracking systems are comprehensive frameworks designed to ensure that organizations adhere to the myriad of regulations governing their operations[91]. These systems serve as centralized repositories for regulatory requirements across various industries, consolidating information from local, national, and international jurisdictions[92]. They typically encompass a range of functionalities, including monitoring regulatory changes, assessing organizational compliance status, managing documentation, facilitating audits, and implementing corrective actions[93].At their core, these systems automate the complex process of regulatory compliance management, providing organizations with real-time visibility into their compliance posture and potential areas of risk[68]. By continuously monitoring regulatory updates and changes, these platforms help organizations stay abreast of evolving requirements, thereby minimizing the risk of non-compliance and potential penalties. Moreover, they streamline

compliance efforts by centralizing data and documentation, enabling efficient retrieval and analysis during audits or regulatory inspections[94].

Key features of regulatory compliance tracking systems often include:

- **Regulatory Intelligence:** These systems leverage advanced algorithms and data aggregation techniques to gather, analyze, and disseminate regulatory information from various sources[95]. This ensures that organizations are promptly notified of relevant changes and updates that may impact their operations[96].

- **Compliance Assessment:** Through automated workflows and customizable frameworks, organizations can conduct thorough assessments of their compliance status against applicable regulations[96]. This involves mapping regulatory requirements to specific business processes, identifying gaps, and prioritizing remediation efforts[96].

- **Documentation Management:** Regulatory compliance tracking systems serve as centralized repositories for storing and managing compliance-related documentation, such as policies, procedures, certifications, and audit reports[96]. They often include version control mechanisms and document approval workflows to ensure accuracy and compliance with regulatory standards[96].

- **Audit Trail and Reporting:** These systems maintain comprehensive audit trails of compliance activities, documenting changes, approvals, and user interactions[96]. They also generate detailed reports and dashboards to provide stakeholders with insights into compliance performance, trends, and areas requiring attention[96].

- **Alerts and Notifications:** To proactively manage compliance obligations, these systems offer customizable alerting mechanisms that notify relevant stakeholders of impending deadlines, regulatory changes, or compliance deviations[96]. This helps organizations mitigate compliance risks and take timely corrective actions[96].

- **Integration Capabilities:** Regulatory compliance tracking systems are often designed to integrate seamlessly with existing enterprise systems, such as enterprise resource planning (ERP), customer relationship management (CRM), and governance, risk, and

compliance (GRC) platforms. This facilitates data exchange and ensures consistency across organizational processes[96].

Overall, regulatory compliance tracking systems play a pivotal role in helping organizations navigate the complex regulatory landscape, mitigate compliance risks, and uphold their commitment to operating ethically and responsibly. By leveraging technology and automation, these systems empower organizations to achieve and maintain compliance efficiently and effectively.

5. Evolution of AI in Compliance Tracking:

The evolution of AI in compliance tracking has been transformative, revolutionizing how organizations ensure adherence to regulations and standards[97]. Initially, compliance tracking relied heavily on manual processes, making it labor-intensive, time-consuming, and prone to errors. However, with advancements in artificial intelligence (AI) and machine learning (ML), compliance tracking has undergone a remarkable transformation[97].AI has enabled the automation of many aspects of compliance tracking, streamlining processes and enhancing accuracy. Natural Language Processing (NLP) algorithms can now analyze vast amounts of regulatory documents, contracts, and policies to identify relevant information and assess compliance risks[97]. This capability not only speeds up the compliance process but also reduces the likelihood of oversight or misinterpretation[97].Moreover, AI-powered systems can continuously monitor data streams in real-time, flagging any anomalies or deviations from compliance standards[98]. These systems leverage predictive analytics to anticipate potential compliance issues, allowing organizations to take proactive measures to mitigate risks before they escalate[99].Furthermore, AI has facilitated the development of sophisticated risk assessment models that can analyze complex data sets to identify patterns and trends indicative of compliance violations[100]. By incorporating historical data, these models can predict future compliance challenges, enabling organizations to implement preemptive strategies[101].Additionally, AI has enhanced the efficiency of audit processes by automating data collection, analysis, and reporting. Machine learning algorithms can identify patterns of non-compliance, anomalies, or fraudulent activities within large datasets, enabling auditors to focus their efforts more effectively[102].Furthermore, AI-driven compliance systems can adapt and evolve over time, learning from past experiences to improve their accuracy and effectiveness

continuously. By leveraging feedback loops, these systems can refine their algorithms and decision-making processes, staying abreast of evolving regulations and compliance requirements[103].Overall, the evolution of AI in compliance tracking represents a paradigm shift in how organizations manage regulatory compliance[104]. By automating manual processes, leveraging advanced analytics, and enabling real-time monitoring, AI has empowered organizations to enhance compliance, reduce risks, and improve overall operational efficiency[105]. However, it's crucial for organizations to ensure that these AI-driven compliance systems are transparent, ethical, and aligned with regulatory principles to foster trust and credibility[106].

6. Key Components of AI-Powered Compliance Tracking Systems:

AI-powered compliance tracking systems integrate various components to ensure efficient monitoring and adherence to regulatory standards across industries[106]. Firstly, data ingestion mechanisms gather vast amounts of structured and unstructured data from diverse sources, including internal databases, external feeds, documents, and communications[106]. Natural Language Processing (NLP) and machine learning algorithms parse and extract relevant information from these sources, enabling automated analysis[106]. Next, these systems employ advanced analytics tools to detect patterns, anomalies, and potential compliance violations within the data[107]. These analytics tools utilize techniques such as statistical modeling, anomaly detection, and predictive analytics to identify deviations from regulatory norms or internal policies. Real-time monitoring capabilities enable continuous surveillance, alerting compliance officers to potential issues as they arise[107]. Additionally, AI-powered compliance tracking systems often feature intelligent reporting functionalities, generating comprehensive reports and dashboards summarizing compliance status, trends, and areas of concern[108]. These reports facilitate informed decision-making and provide stakeholders with visibility into compliance efforts. Furthermore, machine learning algorithms are continuously refined and trained using historical data and feedback loops to enhance accuracy and adaptability to evolving regulatory requirements[109]. Integration with other enterprise systems, such as risk management platforms and workflow tools, streamlines compliance processes and ensures alignment with broader organizational objectives[109]. Finally, robust security measures, including encryption, access controls, and audit trails, safeguard sensitive data and maintain the integrity of the compliance

tracking system[109]. Overall, AI-powered compliance tracking systems leverage advanced technologies to automate and optimize compliance monitoring, enabling organizations to proactively identify and address potential risks while ensuring regulatory adherence[109].

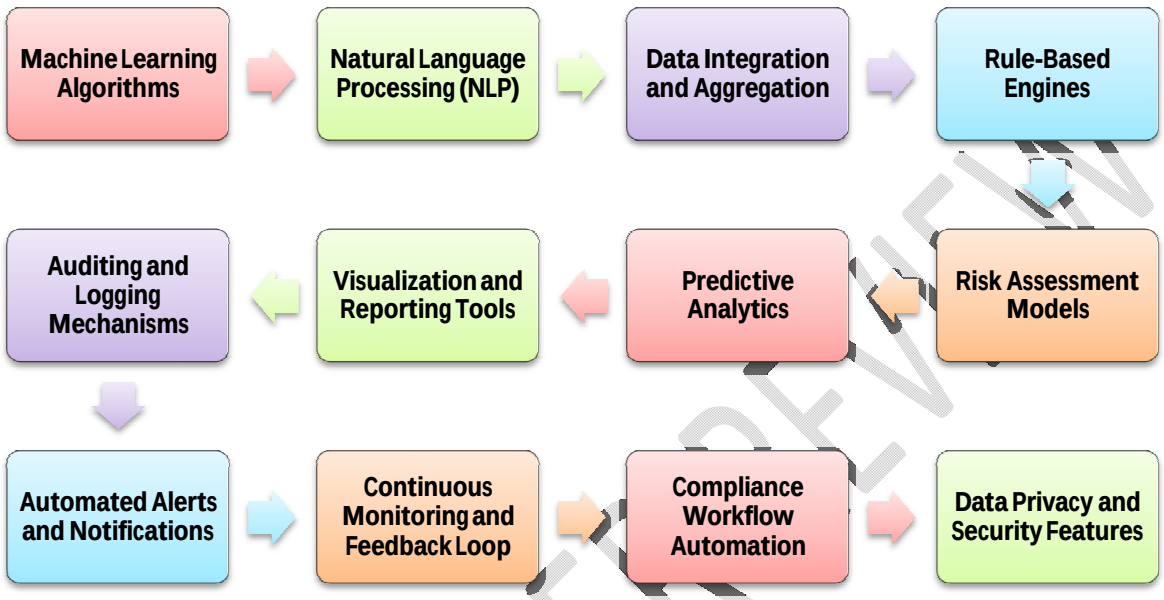

Figure 4Key Components of AI-Powered Compliance Tracking Systems

7. Applications of AI in Regulatory Compliance Tracking:

The use of artificial intelligence (AI) has revolutionized the way in which firms manage and adhere to complicated regulatory frameworks. AI plays a significant role in tracking regulatory compliance across a variety of industries. One significant application is in the financial services industry, where artificial intelligence algorithms can analyze vast amounts of transactional data in real time[110]. These algorithms can identify anomalies and flag potential instances of fraud or non-compliance with regulations such as Anti-Money Laundering (AML) and Know Your Customer (KYC) requirements. Not only can these systems improve detection accuracy, but they also drastically cut down on the number of false positives, which helps to streamline compliance procedures and decrease operational expenses[111]. In the field of healthcare, artificial intelligence-powered solutions assist organizations in complying with severe laws such as the Health Insurance Portability and Accountability Act (HIPAA)[112]. These systems automatically monitor patient data for breaches in privacy and ensure the secure management of sensitive

information. In order to identify and reduce compliance issues connected to patient confidentiality and data security, algorithms that use Natural Language Processing (NLP) can analyze clinical notes and medical records[113]. In addition, artificial intelligence-driven solutions are increasingly being used in environmental compliance monitoring[114]. These tools analyze sensor data from Internet of Things devices and satellite imagery in order to monitor pollution levels, assure compliance with environmental standards, and identify potential environmental dangers[115]. These technologies make it possible for regulatory authorities to more effectively enforce compliance and to handle environmental concerns in a proactive manner, which significantly contributes to efforts to achieve sustainable development[116]. Artificial intelligence technologies are being implemented in the manufacturing industry to monitor production processes and guarantee that quality standards and safety laws are being adhered to. The purpose of machine learning algorithms is to analyze sensor data from manufacturing equipment in order to discover deviations from set norms. This allows for the proactive identification of potential safety dangers and issues with the product. Through the use of automated compliance monitoring, manufacturers have the ability to improve product quality, reduce the likelihood of incurring regulatory penalties, and ensure that their staff are provided with a safe working environment[117]. Additionally, contract management systems that are powered by artificial intelligence assist firms in complying to contractual commitments and regulatory standards. These systems automatically extract relevant clauses and terms from legal documents, highlight potential hazards, and ensure timely compliance with contractual deadlines. Through the implementation of these solutions, the process of contract review is streamlined, legal risks are mitigated, and overall organizational efficiency is improved[118]. Generally speaking, artificial intelligence technologies have a tremendous amount of potential in the field of regulatory compliance tracking across a wide range of industries. This potential enables organizations to navigate complicated regulatory landscapes more effectively, reduce compliance risks, and maintain the highest levels of responsible and ethical behavior. It is anticipated that the role that artificial intelligence plays in regulatory compliance will extend more as it continues to develop. This will not only drive innovation but also create better confidence and openness in the regulatory procedures[119].

Conclusions:

In conclusions, the incorporation of artificial intelligence (AI) into automated regulatory compliance monitoring systems offers a comprehensive response to the problems encountered by a range of industries. Organizations can effectively monitor, interpret, and adjust to regulatory changes in real-time by utilizing artificial intelligence (AI) and sophisticated machine learning algorithms along with natural language processing capabilities. This reduces the risks of non-compliance, including financial penalties and reputational harm, while also streamlining compliance procedures. Additionally, scalability and adaptability are provided by AI-driven compliance systems, guaranteeing that businesses can successfully negotiate a constantly changing regulatory environment. Although artificial intelligence (AI) has many advantages, its application necessitates careful examination of technological, ethical, and legal issues in order to guarantee accuracy, accountability, and transparency. All things considered, the use of AI for automated regulatory compliance tracking is a revolutionary step towards improving the efficacy and efficiency of regulatory compliance in the contemporary business environment.

COMPETING INTERESTS

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc have been used during writing or editing of manuscripts. This explanation will include list the name, version, model, and source of the generative AI technology and as well as the all input prompts provided to a generative AI technology

Details of the AI usage are given below:

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