Developing Accounting of Regulatory Compliance Risk inside Non-Banking Finance Companies under Regulatory Technology- Theoretical Analytical Study

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Abstract

Organizations face significant risks that may threaten their operations, reputation, and financial stability. These risks highlight the importance of an effective risk management strategy (Kokina, 2021). A critical aspect of risk management that cannot be overlooked is legal and regulatory compliance. Traditional compliance approaches, often outdated, labor-intensive, and costly, have proven insufficient to address the scale and complexity of current regulatory requirements (Judijanto et al., 2023). As a result, there has been a growing demand for innovative solutions that not only meet these requirements but also enhance operational efficiency and strategic decision-making (Ofoeda et al., 2012). Regulatory technology (RegTech) in the Egyptian business environment represents an emerging tool for managing regulatory compliance risks in light of regulatory decisions. These decisions contribute to the reliance on RegTech and Supervisory Technology (RTS) to enhance the stability of non-banking financial markets. This paper aims to explore how accounting for regulatory compliance risks has evolved in light of RegTech within the non-banking financial sector. This sector is at the forefront of technological developments in the Egyptian business environment, given the regulatory authorities' pursuit of a technological regulatory and supervisory era in this sector.

This is in light of the regulatory decisions issued by the Financial Regulatory Authority (FRA) that manage regulatory compliance risks in light of regulatory technology, including Decisions No. 5 and 268 of 2022, and the package of technological decisions Nos. 139, 140, and 141 of 2023. The researchers used a theoretical survey tool by analyzing theoretical literature and previous studies relevant to the study. The most important findings reached by the researchers are the necessity of adopting regulatory technology within the Egyptian business environment as a basis for managing regulatory compliance risks, in light of the issued decisions. Managing regulatory compliance risks positively impacts the financial risks of the institution in terms of increased liquidity and credit. The research survey revealed a scarcity of research that discussed regulatory compliance risks from an accounting perspective.

KeyWords: Regulatory Technology/Regtech –Compliance risk– Regulatory Compliance – Digital transformation– Financial Risk.

تطوير المحاسبة عن مخاطر الامتثال التنظيمي داخل شركات التمويل غير المصرفي في ضوء التكنولوجيا التنظيمية– دراسة تحليلية نظرية

ملخص البحث

تواجه المؤسسات مخاطر عظمي قد تهدد عملياتها وسمعتها واستقرارها المالي، وتسلط هذه المخاطر الضوء على أهمية وجود استراتيجية فعّالة لإدارة المخاطر (Kokina, 2021). ومن الجوانب الحاسمة لإدارة المخاطر التي لا يمكن إغفالها الامتثال القانوني والتنظيمي؛ فقد أثبتت مناهج الامتثال التقليدية، التي غالبًا ما تكون تقليدية وتتطلب جهدًا مكثفًا ومكلفًا،عدم كفايتها للتعامل مع حجم وتعقيد المتطلبات التنظيمية الحالية (Judijanto et al., 2023). ونتيجةً لذلك، تزايد الطلب على الحلول المبتكرة التي لا تلبي هذه المتطلبات فحسب، بل تُعزز أيضًا الكفاءة التشغيلية واتخاذ القرارات الاستراتيجية (Ofoeda et al., 2012). حيث تمثل التكنولوجيا التنظيمية في بيئة الأعمال المصرية أداة ناشئة لإدارة مخاطر الامتثال التنظيمي في ضوء القرارات التنظيمية الصادرة. تُساهم هذه القرارات في الاعتماد على التكنولوجيا التنظيمية والإشرافية لتعزيز استقرار الأسواق المالية غير المصرفية. تهدف الورقة إلى استكشاف كيفية تطوير المحاسبة لمخاطر الامتثال التنظيمي في ضوء التكنولوجيا التنظيمية داخل القطاع المالي غير المصرفي. حيث يعد هذا القطاع في طليعة التطورات التكنولوجية في بيئة الأعمال المصرية، نظرًا لسعي الجهات التنظيمية إلى عصر تكنولوجي تنظيمي وإشرافي في هذا القطاع، وذلك في ضوء ما أصدرته الهيئة العامة للرقابة المالية من القرارات التنظيمية التي تُدير مخاطر الامتثال التنظيمي في ضوء التكنولوجيا التنظيمية، بما في ذلك قرار رقم 5 و268 لسنة 2022، وحزمة القرارات التكنولوجية أرقام 139 و140 و141 لسنة 2023. أستخدم الباحثون أداة مسح نظري من خلال تحليل الأدبيات النظرية والدراسات السابقة ذات الصلة بالدراسة. وأهم النتائج التي توصل اليها الباحثون ضرورة إعتماد التكنولوجيا التنظيمية داخل بيئات الاعمال المصرية كأساس لإدارة مخاطر الامتثال التنظيمي وذلك في ضوء القرارات الصادرة، إدارة مخاطر الامتثال التنظيمي تنعكس ايجابياً على المخاطر المالية للمؤسسة من حيث ارتفاع السيولة والائتمان. وبعد المسح البحثي توصل ان هناك ندرة في الأبحاث التي ناقشت مخاطر الامتثال التنظيمي من منظور محاسبي.

الكلمات المفتاحية: التكنولوجيا التنظيمية– مخاطر الامتثال– الامتثال التنظيمي– التحول الرقمي– المخاطر المالية.

1- Introduction

In recent years, the financial industry has faced increasingly stringent regulatory requirements, driven by factors such as increased scrutiny following the 2008 financial crisis, rapid technological developments and improving market dynamics they needed to improve (Hussain, 2025). Traditional compliance approaches, often manual, labor intensive and expensive, have proven inadequate to cope with the scale and complexity of today's regulatory requirements; consequently, there has been a growing demand for innovative solutions that can not only meet these demands but also enhance operational efficiency and strategic decision making (Zetzsche et al., 2017). Financial Regulation is a socio–political and economic need that has risks and a price; and with Spreading globalization, the growth financial institutions, both national and a–national, complex financial futures and other products, financial chains, intermediaries and networks, etc, have increased the complexity of finance. Not least, a growth of financial technologies (both in hardware and software) has amplified opportunities to profit as well as challenged regulators and regulation (Yusuf and Ekundayo,2018). A regulatory response, following 2007–2009 financial crisis, based on the Dodd–Frank act has at the same time generated hundreds of regulations, some misunderstood and misinterpreted by an endless series of court cases. These developments have rendered compliance, both complex and at best costly and elusive (Al–shanableh et al.,2024).While an extensive research on regulation has focused on the implications of one or another regulatory edict, little research has focused on defining non–compliance and defining controls to an increasingly strategic regulatory environment. Regulatory technology (Regtech) has rapidly transformed the business world. While the financial services industry was its primary user, it has expanded into various sectors as a solution to complex regulatory compliance issues. Leveraging advanced technologies such as artificial intelligence, big data analytics, Blockchain, and cloud computing, RegTech streamlines compliance processes, helping companies save time, reduce costs, and improve the accuracy of monitoring and real–time reporting (Dabour, 2024).

2- Research Problem

The regulatory framework in which the financial sector functions is dynamic and complicated, always changing in response to shifts in the economy, advances in technology, and adjustments to governance and policy. Regulatory organizations have increased their monitoring of the business as it becomes more complex and linked. They have put strict regulations in place to protect customers, maintain market stability, and stop financial misbehavior. Financial institutions are subject to a wide range of rules and regulations in this regulatory environment, which address topics including risk management, data protection, Know Your Customer (KYC) procedures, and anti-money laundering (AML) Financial Industry Regulatory Authority, (2018). Maintaining compliance within this intricate framework presents significant challenges for financial institutions. The complexity and volume of regulations necessitate a robust compliance infrastructure that can efficiently monitor, report, and respond to regulatory requirements Bamberger, (2009). However, traditional compliance processes are often manual, resource-intensive, and siloed, leading to inefficiencies and increased operational costs. These processes can be slow to adapt to new regulations, making it difficult for institutions to remain compliant in a timely manner. Manual compliance checks are prone to errors and inconsistencies, which can result in regulatory breaches and hefty fines. Furthermore, as regulatory requirements become more intricate, the demand for skilled compliance personnel has increased, further straining resources and budgets Jain, et al., (2024). The traditional approach to compliance is becoming inadequate to meet the demands of a rapidly changing regulatory landscape, exposing institutions to greater risks and liabilities. **Through this paper**, **the researchers attempt to answer the following questions**:

- Does the use of regulatory technology in companies improve the process of accounting for regulatory compliance risks?

- Does managing regulatory compliance risks have a positive impact on financial risk management?

These questions Will be answered through a theoretical and analytical study, which surveys and identifies the findings of the literature and efforts related to this research.

3- Regulatory Compliance and Regtech in Business Environment

3-1 Regulatory compliance

Regulatory compliance is a fundamental aspect of financial accounting that ensures businesses adhere to laws, regulations, and standards governing financial reporting and operations. This crucial role of financial accounting involves the accurate and timely reporting of financial information in accordance with established guidelines, thereby promoting transparency, accountability, and integrity in business practices (Hussain, 2025). Regulatory compliance not only helps organizations avoid legal penalties and reputational damage but also builds trust among investors, creditors, and other stakeholders. Despite the challenges posed by the complexity of regulations, evolving standards, and resource constraints, the benefits of regulatory compliance in financial accounting are substantial. and with advances in technology, such as artificial intelligence, Blockchain, and RegTech solutions, are enhancing the efficiency and effectiveness of compliance efforts, making it easier for organizations to manage and adhere to regulatory requirements (Dabour,2023). Generally types of compliance in companies represent with the adherence to the internal and external laws, regulations, and standards that govern the task; It takes many forms, varying according to the nature of the company and its activities; explained by Yusuf and Ekundayo, (2018); Poshakwale, et al., (2020; Adam and Erkens, (2020),as Follow:

- Legal compliance by Compliance with local and international laws. Examples: Labor law, tax laws, consumer protection laws.

- Regulatory compliance by Compliance with the instructions of regulatory bodies such as central banks, antitrust agencies, and capital market authorities. Example: Compliance with central bank rules in finance companies.

- Accounting and financial compliance by Compliance with International Financial Reporting Standards IFRS or GAAP, compliance with transparency and disclosure rules.

- Tax compliance by Accurate and timely filing of tax returns, avoiding tax evasion or manipulation.

- Internal Compliance by Compliance with Company Policies (Internal Compliance). Adherence to internally approved policies and procedures, such as, the anti-corruption policy, travel and expense policy, and code of conduct. Corporate Governance Compliance: Adherence to the separation of management and oversight controls, disclosure of conflicts of interest, and protection of shareholder rights.

- Technical and Security Compliance such as cyber security Compliance by adherence to data security standards (such as ISO 27001, GDPR), and Environmental and Social Compliance (ESG Compliance) by adherence to environmental legislation and the adoption of responsible social practices, ex: sustainability Reporting.

- Professional Compliance related to companies that require professional licenses, such As accountants' compliance with the standards of professional conduct issued by bodies such as ACCA or SOCPA.

Our paper focus on regulatory compliance as a type of compliance risk which is following the rules set by governments and other regulatory bodies, these rules can come in many forms, including laws, regulations, standards, and policies, and aims to ensure that businesses operate safely and ethically. Specific requirements will vary depending on the industry and location (Bunget and Dumitrescu, 2010). So we define Regulatory compliance is an essential part of doing business for any organization; refers to adhering to laws, regulations, standards, and other rules set by governing bodies; It can be defined as the process of complying with applicable laws, regulations, policies and procedures, standards, and the other rules issued by governments and regulatory bodies like Egyptian Financial Supervisory Authority and Stock Exchange, Ministry of Finance, etc). And some key

examples of regulatory compliance related to the financial and non-financial sec-
tors include the Sarbanes–Oxley Audit Act, laws issued by regulatory bodies to
regulate work within financial institutions, as well as laws regulating the capital
market. History of Regulatory Compliance start with theory of regulatory com-
pliance (TRC) which deals with the importance and significance of complying
with rules or regulations, this theory has implications for all rule, regulatory, and
standards development throughout human service and economic domains. TRC
has developed over the past 40 years, emphasis the importance of TRC on se-
lecting the right rules rather than having more or less rules and the nature of the-
se rules as being significantly predictive of positive outcomes by being in compli-
ance with said rules. The Theory of Regulatory Compliance was first proposed
in the 1970's when the relationship between compliance with rules was com-
pared to compliance with best practice standards and outcome data, result was
when 100% compliance with all rules, there overall best practice scores and posi-
tive outcomes began to drop off, It was also found that there was a "sweet spot" at
a substantial compliance level (Fiene, 2016; Adeniran, 2024)

3-1-1 Accounting Effects of Regulatory compliance

Regulatory compliance in companies can lead to significant accounting effects
reflected in the financial statements, impacting the accuracy of financial presenta-
tion and economic decisions. These effects according to accounting standards
(IFRS) can be addressed which our paper concluded it, as below:

- Recognizing expenses or losses: If non–compliance results in fines or pen-
  alties, they must be recognized as an expense or loss in the period in which
  they become probable and measurable. For example, if the Capital Market
  Authority imposed a fine of 2 million, E.G, on a company for failing to
  disclose material information, the fine must be recorded as an expense in
  the income statement.

- Recognizing contingent liabilities (provisions): According to IAS 37–
  Provisions and Contingent Liabilities, if there is a strong possibility that a
  future financial outcome will occur due to a regulatory violation, a provi-

sion must be established for the potential losses. The nature of the liability must be disclosed in the notes. For example, if the company has delayed filing its tax returns and may face a future fine estimated at one million E.G, a provision must be established and explained.

- Impacts on Going Concern: If non-compliance is serious (such as license withdrawal or prohibition of dealing with government entities), the entity's ability to continue as a going concern must be assessed. This may require modifying the presentation of the financial statements or even discontinuing the going concern basis.

- Amending Accounting Disclosures: International standards (such as IAS 1) require disclosure of significant risks resulting from regulatory violations, their potential impact on financial performance, and any corrective actions taken by management.

- Restrictions on Assets or Revaluation of Assets: Some regulatory authorities may impose a lien or restriction on the use of certain assets. Restricted assets must be disclosed and the valuation of assets must be reviewed if they have lost economic benefit.

- Impacts on Reputation (Indirect but Substantial): Although reputation is not a direct accounting asset, damage to it from non-compliance may lead to decreased revenue, loss of customers, and increased financing costs. All of these impacts financial performance and must be disclosed in "Risk Management.

3-2 Regulatory Technology

Strategic risk management in financial institutions is a critical component for ensuring robust regulatory compliance and maintaining financial stability. RegTech has a significant impact on regulatory compliance. It automates regulatory compliance activities, such as interpretation and reporting, using technologies like big data analytics, artificial intelligence, Blockchain, and machine learning to transform how financial institutions manage compliance and risk (Nambie et al., 2024). By RegTech Companies can address compliance risks sooner, reducing

the likelihood of costly fines, reputational damage, and other regulatory issues. Which regtech achieves this by monitoring activities in real time, tracking regulatory changes, and providing alerts for potential noncompliance; this tech-based system helps optimize resource allocation, enhance risk management, and align compliance efforts with organization's financial and operational goals (Olaiya, et al., 2024).

Teichmann et al., (2023) reported that RegTech solutions offer compelling compliance tools for companies, but they also pose significant risks. RegTech solutions can automate regulatory compliance, leading to cost savings, resource optimization, and increased agility for regulators (Ng, 2024).World Economic Forum identified RegTech as a sub-set of FinTech that focuses on technologies that may facilitate the delivery of regulatory requirements more efficiently and effectively than existing capabilities. Regulatory Technology is a technology solution developed to help organizations comply with regulations efficiently and inexpensively. These definitions highlight the core concept of RegTech as the application of technology to enhance regulatory compliance and reporting processes. Moreover, they stressed closely related to FinTech but focused specifically on regulatory and compliance aspects within the financial industry and beyond (Grassi and Lanfranchi, 2022). Our Paper defines regulatory technology as feeding artificial intelligence tools into the compliance department of institutions to verify compliance with laws, regulations, procedures, and technical standards, and then detecting the occurrence of compliance risks. It is technology-based software and tools that use data analytics, machine learning, automation, and cloud-based platforms to simplify and streamline regulatory compliance.

Importance of regulatory technology is an enabling force in environment, delivering advanced technology solutions designed to streamline regulatory processes, improve transparency and reduce risk. It help firms manage regulatory requirements and compliance imperatives by identifying the impacts of regulatory provisions on business models, products and services, functional activities, policies, operational procedures and controls; enables compliant business systems and data; manage regulatory, financial and non-financial risks; and performs reg-

ulatory compliance reporting. Automation and analytics can significantly en-hance compliance monitoring which many modern accounting systems include features for real-time anomaly detection, audit trail generation, and automated alerts when predefined thresholds are breached. For example, a rule can be con-figured to flag any expense report exceeding a certain amount that bypasses man-agerial approval. Similarly, continuous monitoring tools can scan transaction logs for indicators of fraud or noncompliant behavior, such as duplicate entries, unau-thorized data exports, or unusual access patterns (Noman, and Corcoran, 2023). These tools not only reduce manual workload but also enable faster response times to potential issues. Studies Noman and Corcoran, (2023); Grassi and Lanfranchi, (2022); Hussain,(2025); Zetzsche et al.,(2017); Dabour,(2023) de-scribed Importance for organizations to implement RegTech solutions

- To benefit from Enhanced Efficiency and Cost Reduction which regTech automates tasks that were previously performed manually, reducing opera-tional time and costs associated with compliance processes,

- Improved Accuracy and Reduced Risk because Automation reduces the likelihood of human error, That ensure more accurate compliance report-ing and mitigating potential risks,

- Real-Time Monitoring and Response because regtech provides real-time data understanding and analysis and help organizations detect and address emerging regulatory compliance issues more quickly.

- Scalability: As regulations become increasingly complex, RegTech solu-tions have the adaptability and flexibility needed to accommodate growing compliance requirements across various sectors.

3-2-1 Using RegTech in Accounting of Regulatory Compliance Risk

Using RegTech in accounting to manage regulatory compliance risk means leveraging technology to ensure a company's financial reporting, disclosures, and compliance practices adhere to regulatory requirements efficiently and accurate-ly.Here's a studies (Abhishek etal., 2024; Adeniran et al., 2024; Adejumo and

Ogburie, 2025; Dabour, 2023; Hussain, 2025; Ng, 2024; Kokina etal., 2024), of how RegTech can be used in accounting for regulatory compliance risk:

A. Understanding Regulatory Compliance Risk in Accounting: refers to the risk of failing to adhere to laws, standards, and regulations, such as: IFRS / GAAP standards, Tax laws, Anti-money laundering (AML),Financial disclosures and Industry-specific regulations (e.g., banking, insurance, fintech)

B. Non-compliance risks discussed by Studies Mustapha et al.,(2020; Butler and Brooks, (2018);Abhishek et al.,(2024), can lead to Financial penalties, Reputational damage, Investor mistrust, Access Issues to Markets & Product Delays, and Bonus Non-Compliance Risk Regulated-Out of Business

Shape 1: Non-compliance risks

- **Penalties and Fines**: on regulatory non-compliance come in multiple forms such as financial fines, limitations on activities, additional barriers to approval and even prison. Even if organization is not given an actual penalty, an investigation by a government body will cost you many hours of work and potential legal. Example, BMW was fined 10 M Euros by South Korea for a failure to comply with recall regulations and notify the government quickly in time about a product recall. Also Google was fined 50M Euros for breaches of France's data privacy regulations under.

- **Reputational Damage**: in the 1990s, the famous Kathy Lee Gifford was caught in a maelstrom of controversy when her clothing line was found to be produced in sweatshops that used child labor. The initial media frenzy caused a substantial reputational cost.

- **Access Issues to Markets and Product Delays**: One of the most financially damaging events a company faces is having their products blocked at the border, forced to issue a recall or forced to destroy merchandise due to issues related to non-compliance.

- **Bonus Non-Compliance Risk Regulated-Out of Business**: This can be a specific chemical product, or activity that is deemed dangerous to society or something that is no longer considered moral. In some countries there are list of industries that have come under strict regulation is long and growing – cigarette companies, lead in gasoline & paint, asbestos products, SO2 emissions, and various chemicals such as DDT.

C. Role of RegTech in Accounting RegTech applies advanced digital technologies (AI, machine learning, RPA, blockchain, natural language processing, etc.) to automate compliance processes, Improve accuracy of financial reporting, Monitor regulatory changes and reduce costs of compliance.

D. Key RegTech Applications for Accounting Compliance

Studies (Azuikpe et al., 2024; Yusuf, and Ekundayo, 2018; Teichmann et al., 2023; Butler and Brooks, 2018; Al-shanableh et al., 2024). Presented regulatory technology applications for regulatory compliance risks in accounting

Table 1: Regulatory Technology Applications for Accounting Compliance Risks

RegTech Tool	Use in Accounting Compliance
Automated Monitoring Tools	Track and assess compliance with standards like IFRS updates or SOX requirements in real-time.
AI-powered Risk Analytics	Identify patterns and anomalies in accounting transactions that may indicate non-compliance or fraud.
Natural Language Processing (NLP)	Analyze large volumes of regulatory texts and map them to accounting policies or disclosures.
Robotic Process Automation (RPA)	Automate repetitive accounting tasks (e.g., journal entries, reconciliations) with embedded compliance rules.
Blockchain	Ensure immutability and transparency in financial records, helping in audit and regulatory verification.
Regulatory Change Management Platforms	Automatically update accounting policies and disclosures based on new or changing regulations.

E. **Benefits of Using RegTech in Accounting Compliance**: Efficiency which automates time-consuming manual tasks; Accuracy which Reduces human error in calculations and reporting; Speed which responds quickly to regulatory changes; Transparency which creates traceable and auditable financial records; Cost Reduction which lowers the cost of regulatory audits and compliance functions (Teichmann et al.,2023)

3-2-2 RegTech in Accounting Thought

Before the advent of RegTech, the regulatory compliance process was often slow and labor-intensive, relying on a paper-based system and a large compliance team. As regulations and regulatory standards became increasingly complex, especially in the financial sector, companies struggled to address recurring compliance violations due to a lack of real-time regulatory visibility(Butler and

Brooks,2018).Global financial crisis of 2008 underscored the need for improved regulatory oversight, prompting the creation of regulatory frameworks such as the Dodd–Frank Act in the United States and the Market in Financial Instruments Directive (MiFID II) regulations in the European Union; these changes spurred demand for technologies that could facilitate compliance, and by 2015, the term "regulatory technology"(RegTech) was officially coined by the Financial Conduct Authority in the United Kingdom(Arner et al.,2017).And During the COVID–19 pandemic, the global surge in online payments during nationwide lockdowns led to fraud spikes. Increased online, real–time payments gave fraudsters greater anonymity and made it harder for financial institutions to investigate suspicious transactions thoroughly. Financial institutions' adoption of RegTech has been prompted by key regulatory changes, which require more thorough customer due diligence and transaction monitoring from organizations (Judijanto et al., 2023).

## 4- Effort Exerts toward Regulatory Compliance under Reg-Tech

4-1 International Efforts for Accounting of Regulatory Compliance

- International Financial Reporting Standards (IFRS) Foundation develops accounting standards for regulatory reporting by reviewing the role of regulatory disclosure and aligning it with international standards. It also encourages the preparation of structured digital financial reports and regulatory risk assessments, such as XBRL, which are important RegTech tools.

- The International Federation of Accountants (IFAC) issues reports on digital transformation and the role of accountants in the era of regulatory technology.

- Financial Stability Board (FSB), by Initiative Promotes RegTech and SupTech to improve efficiency in supervision and risk reporting. And 2020 report: "The Use of Supervisory and Regulatory Technology" emphasized enhanced data analytics and automation for compliance. Which

Encourages cross–border information–sharing and adoption of common RegTech frameworks.

- In 2016, Basel Committee on Banking Supervision (BCBS) for risk management and regulatory compliance in banking. Explores RegTech applications for credit risk, market risk, and anti–money laundering (AML).

- Monetary Authority of Singapore (MAS), Financial Sector Technology and Innovation (FSTI) scheme–funds RegTech development. And Developed AI–driven tools for compliance checks and regulatory reporting.

- International Organization of Securities Commissions (IOSCO) Provides principles and policy suggestions on RegTech to improve transparency and investor protection and Explores the benefits and risks of RegTech adoption for market conduct and compliance.

And Zetzsche et al., (2017); Arner et al., (2017) defined the relationship between regulatory compliance and (RegTech).
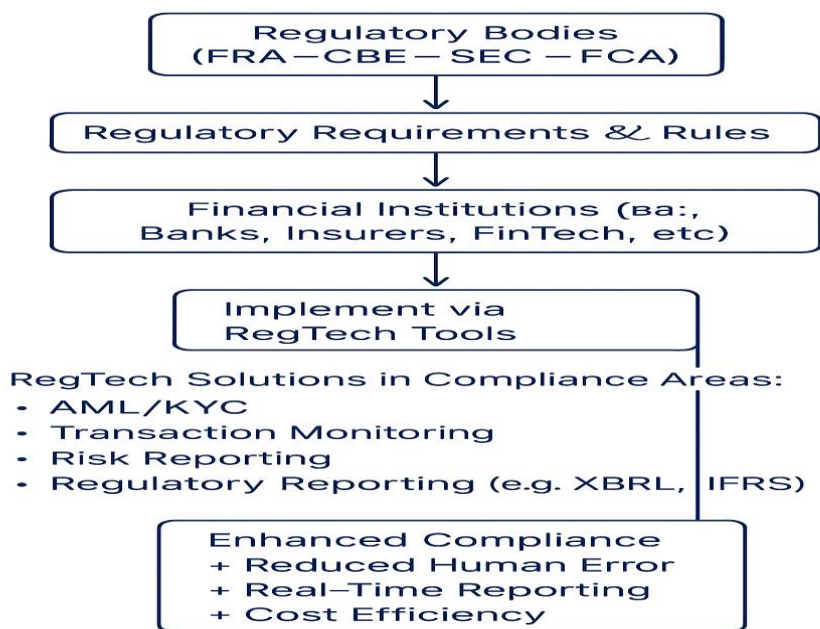
Shape 2: Relationship between Regulatory Compliance and (RegTech)

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Chart above represents a conceptual flowchart that illustrates the relationship between regulatory compliance and regulatory technology (RegTech) in the financial sector:

- Top Layer: Regulatory Bodies (Financial Regulatory Authority/ FRA– Central Bank of Egypt /CBE– Securities and Exchange Commission/SEC– Financial Conduct Authority/ FCA).These is the institutions responsible for issuing and enforcing financial regulations.

- Second Layer: Regulatory Requirements & Rules are the specific compliance standards and legal obligations set by the regulators.

- Third Layer: Financial Institutions (Banks, Insurers, Fintech, etc.), which subject to the regulations and must comply accordingly, it implement compliance using RegTech Tools.

- RegTech Solutions Layer: Includes tools and systems used for: AML/KYC (Anti–Money Laundering/Know Your Customer) Transaction Monitoring, Risk Reporting and Regulatory Reporting (e.g., using standards like XBRL, IFRS)

- Final Outcome Layer: Enhance compliance, achieved Reduced Human Error, Real–Time Reporting and Cost Efficiency; Regarding Flow Arrows show the sequential flow from regulation to implementation, and the feedback loop highlights how RegTech enables continuous improvement in compliance.

4-2 Local Efforts

Egypt is making tangible efforts to enhance compliance risk accounting through regulatory technology (RegTech) by updating regulations, digitizing disclosures, and implementing data analytics solutions. However, expanding the scope of RegTech requires strengthening the digital infrastructure, developing capabilities, and updating laws at a pace that keeps pace with technological advancements. **These efforts are as follows by key Laws Supporting Regulatory Technology**:

- Resolution of the Board of Directors of the Financial Regulatory Authority No. 268 of 2023 regarding the rules and procedures for establishing and licensing emerging companies in the field of financial technology to practice non-banking financing activities.

- Law Regulating the Use of Financial Technology in Non-Banking Financial Activities (No.5 of 2022) was issued by the Financial Regulatory Authority (FRA). It regulates the use of modern technology (FinTech and RegTech) in non-banking sectors such as real estate finance, microfinance, and financial leasing. The law's most prominent provisions include establishing rules and standards for the use of technology in compliance and disclosure, and requiring companies to electronically connect with the FRA.

- A package of executive decisions issued by the Board of Directors of the Financial Regulatory Authority. as follows:

  o Resolution (139) includes requirements for equipment, technological infrastructure, information systems, and means of protection and insurance

  o Resolution(140)regulates the requirements for creating a digital identity, digital contracts and digital records

  o Resolution (141) allows the establishment of a registry for outsourcing service providers. Those decisions are considered as announcing a new digital era for non-bank financial services, empowering different segments of society to benefit from non-bank financial services.

- FRA Corporate Governance Guide (last updated in 2021).Recommends the implementation of digital tools for risk and compliance management. It requires institutions to document their control systems electronically.

- Financial Supervisory Authority's regulatory technology initiative to protect non-banking activities from the risks of non-compliance and the occurrence of economic crises, by using artificial intelligence mechanisms

and other digital models to detect incidents that constitute violations of the laws regulating non–banking financial activities, suspicion of money laundering, and achieving early warning of risks. Related to liquidity, credit, or other matters related to financial stability.

- Academic and Research Collaboration: Universities (such as Cairo University and Ain Shams University) have begun to include courses on compliance risk accounting and the use of technology in accounting and auditing. They also support research on topics such as RegTech in Egypt, digital risk assessment in financial institutions, and the role of artificial intelligence in financial compliance.

5- Previous Studies

Study of Bunget and Dumitrescu, in 2010 pursued the typology of audit opinions expressed for clients in portfolio during the two consecutive years and aimed to find explanations for the auditor issuing other opinions than qualified opinions on one hand, and on the other hand it aimed to establish the effects of non–compliance with accounting principles on the annual financial statements. Noncompliance with accounting principles in the preparation of the annual financial statements represents one of the elements that generate the change of the audit opinion, and the main causes for this type of behavior from the side of audited companies are resulting from the influence of fiscal decisions, window dressing and "inadaptability" to the conditions of the economic and financial crisis. The relevance of the conclusions is based not only on the prerequisites and character of treated information, but also on their practical confirmation, by means of checking them with the involved business environment (investors, shareholders, administrators, business executives). And regarding Study's Feng,(2020) investigates whether material noncompliance (MNC) with laws and regulations and internal control deficiencies (ICDs) in a nonprofit charitable organization (NPO) affect the likelihood that the NPO receives a going concern audit opinion (GCO) and the viability of the NPO. Results of the survival analysis also show that GCO–receiving NPOs are more likely to discontinue operations than their financially distressed peers, indicating that either auditor are cor-

rect in issuing the GCOs or GCOs become self-fulfilling prophecies, findings of this study provide evidence of hidden costs of noncompliance and ICDs in NPOs, which can motivate regulators and the managers of NPOs to enhance NPOs' governance to lower the probability of getting a GCO and improve the NPO's sustainability. Ahmad et al., (2021) examines how risk-taking is affected by non-compliance with a 'comply or explain' based system of corporate governance. Results show that non-compliance with the UK Corporate Governance Code is positively associated with total, systematic, and idiosyncratic risk. However, profitability moderates the impact of non-compliance on firms' risk-taking; findings also reveal that the impact of non-compliance with various provisions of the UK Corporate Governance Code is not uniform, that is, non-compliance with board independence provisions is associated with higher risk-taking; These findings have implications for investors, policy makers, and corporations regarding the usefulness of compliance with a prescribed code of corporate governance.

And regarding Paper of adam and erkens,(2020) examine companies' compliance with IFRS risk disclosure rules for the first fiscal year following 2007, for a sample of 383 firms from 20 European countries, find that average risk disclosure compliance is only 62 percent; countries' enforcement strength is generally positively associated with risk disclosure compliance and even more effective in the presence of outsider monitoring. Rathna samy and Mahabeer,(2021)clarifies effect Non-Compliance of Laws and Regulations (NOCLAR), on Registered Auditors and Professional Accountants in South Africa, NOCLAR was introduced to assist legislative reporting obligations and strengthen professionalism and law coherency, study clarifies the implications the IRBA and SAICA Codes of Professionals Conduct have on Accountants and Auditors and the course of action required if, all prior equivocal guidelines fail to address an illegality; Study found that non-adherence to the amendment results in 3 key repercussions for both company and/or the Accountant and Auditor: Reputational damage, Loss of current clientele and future business opportunities and criminal charges. Study's Ofoeda, and Adjasi,(2012) aim to examine the relationship between reg-

ulation of non-bank financial institutions and their risk-taking behaviors in Ghana, results show a negative relationship between minimum capital adequacy requirement and the risks weighted assets of NBFIs, This indicates that, asking NBFIs to keep higher minimum capital adequacy ratio results in reducing their risk-taking; results also indicate a positive relationship between regulatory pressure and risk weighted assets of NBFIs ;findings suggest that, non-deposit-taking NBFIs have higher risk weighted assets and are more prone to the risk of insolvency than deposit-taking NBFIs. Adeniran etal.,(2024) Paper explores the multifaceted nature of strategic risk management and its importance in the dynamic regulatory landscape of the financial sector, highlighting how these processes help institutions navigate the complexities of regulatory requirements; Paper suggests future trends, such as advanced AI and machine learning, which could further revolutionize the approach to risk management in financial institutions. Poshakwale et al.,(2020) examines how the Statutory Audit and Corporate Reporting Directives (SACORD) affect the compliance costs, risk taking and quality of financial reporting of the EU banks; Paper finds that post SACORD, both compliance costs and risk taking increase significantly; with analysis the impact by size, we find that smaller banks face disproportionately higher increase in compliance costs while larger banks seem to engage in greater risk taking.

Study of Yusuf and Ekundayo, (2018) examines regulatory sanctions from an emerging economy perspective and analyzing the impact of regulators imposed monetary sanctions on banks' performance. Results showed that penalties imposed by regulators in the Nigerian banking industry have no significant impact on the bottom line of the defaulters. Penalties imposed on foreign exchange and international trade related infraction showed that the cost of penalties is below the benefits enjoyed from such infractions. The insignificant impact of penalties on performance implies that deposit money banks have considered penalties imposed by regulators as operational expenses and transferred such to customers. In 2023 Dabour aimed to analyze the expected impact of regulatory technology (RegTech) on the development of the accounting of financial institutions under financial inclusion. Paper discussed regtech in details theoretically, paper found

out that Regtech offers benefits to both the financial sector and regulators, For the financial sector by enabling financial institutions to control costs and risks more effectively, freeing up excess RegTech regulatory capital, and offering new opportunities for fintech startups, consulting firms, and technology firms; and for regulators, it allows the development of continuous control tools to identify risks and problems during their creation and reduce the time it takes to investigate compliance violations. It also promotes the development of traditional financial systems and protection funds, which enable the identification of potential events and results proposed for reform and the adoption of a new approach in operational processes. Olaiya etal.,(2024) paper looks at RegTech solutions as they stand now, analyzing how they affect the financial sector and examine how RegTech is changing risk management and compliance procedures, giving organizations more flexibility and efficiency in navigating the intricate regulatory environment; Paper explores the obstacles and constraints that RegTech must overcome, including the requirement for regulatory uniformity, integration problems, and data privacy concerns, study looks ahead, discussing potential paths for RegTech research and development. Study of Judijanto et al.,(2023) conducted a quantitative analysis to investigate the relationships between regulatory compliance, digital audit adoption, auditor performance, and financial reporting accuracy; results revealed a robust positive association between regulatory compliance and both auditor performance and financial reporting accuracy, regulatory compliance emerged as a vital driver of effective auditing and higher financial reporting accuracy in the Indonesian context; findings underline the importance of regulatory adherence in fostering financial transparency and accountability, and they offer valuable insights for auditors, organizations, and regulatory bodies in Indonesia.

Abhishek et al., (2024) aims to analyze the role of digitization in accounting in enhancing the overall effectiveness of accounting functions; to achieve this, the study provides empirical evidence from the stakeholder's perspective of digitization of accounting, auditing, and reporting and regulatory compliance procedures; Finding of the study signifies the relevance of digitalized accounting ap-

plications in accounting functions and reveals that there is a significant impact of digitalization on accounting, auditing, reporting and regulatory compliance aspects of accounting functions; study explores also that a digitalized accounting system reduces possible errors and improves the accuracy and transparency of the system. Odonkor et al., (2024) Paper delves into the transformative impact of Artificial Intelligence (AI) on traditional accounting practices, examining its role in reshaping financial reporting, auditing, and decision–making processes. The findings reveal that AI significantly improves the accuracy and efficiency of financial reporting, automating routine tasks and enabling predictive analytics for strategic decision–making. However, challenges such as the need for skilled personnel adept in AI, data privacy concerns, and the high costs of AI integration are notable. The study also highlights the resistance to change as a significant barrier to AI adoption in accounting practices. In 2025 Hussain presents a structured framework approach for embedding regulatory compliance into digital accounting systems. It outlines the challenges posed by regulatory complexity, dynamic compliance landscapes, and cross–border data flows, and it proposes an integrated strategy combining governance, risk management, internal control automation, and real–time monitoring. The framework offers a practical roadmap for businesses seeking to align their digital accounting infrastructure with evolving regulatory requirements, fostering trust, accountability, and resilience in the financial ecosystem.

Al–shanableh et al., (2024) paper refer to the influence of RegTech on tax compliance, paper focused on the workforce within Jordan's telecommunications firms, which regtech presents a modern approach to overseeing and ensuring compliance within the high–tech sector; and applying technological solutions to reduce the costs associated with supervising tax–related activities can sometimes clash with regulatory authorities' interventions, findings, discovered that RegTech dimensions, especially smart contracts, exerted a noteworthy and affirmative impact on tax compliance. Nambie etal.,(2024) used A quantitative research approach in this study to examine the relationship between credit risk assessment, regulatory compliance, and financial intermediation; results have indicated that

financial intermediation, along with regulatory compliance credit assessment and artificial intelligence has also been strongly correlated in sub-Saharan Africa; study, suggested that in sub-Saharan Africa, policymakers can stimulate the development of artificial intelligence to meet the needs of poor people and small-scale enterprises. Adejumo, and Ogburie,(2025) Paper explores how Blockchain can enhance security, transparency, and trust in financial transactions; by distributed ledger, Blockchain ensures that all financial records are cryptographically secured and time-stamped, making unauthorized alterations nearly impossible; smart contracts further automate compliance and internal controls, reducing human intervention and the risk of fraud; key applications of Blockchain in fraud prevention include preventing financial statement fraud, improving anti-money laundering (AML) measures, and enhancing audit processes.

After reviewing previous studies, Our Paper comment that there is a scarcity of studies that discuss accounting for regulatory compliance risks, as well as regulatory technology in accounting thought. Regulatory technology is reshaping financial oversight and regulatory accounting. The use of artificial intelligence and big data analytics models in accounting helps identify and monitor weaknesses in regulatory compliance. The use of regulatory technology has also contributed to enhancing the quality of regulatory risk disclosure in financial reports. Regulatory technology has enhanced the credibility of accounting processes, particularly with regard to voluntary risk disclosure. These solutions enable financial institutions to respond more quickly and effectively to regulatory requirements and emerging threats. Automated compliance tasks reduce operational costs and minimize human error, resulting in more accurate and reliable compliance reporting.

Limitations and considerations must be considered when adopting regulatory technology, **including**:

- Integration: Aligning regulatory technology tools with both traditional accounting systems and the laws governing the type and size of a company.

- Data security: Ensuring that compliance tools do not expose sensitive financial data.

- Staff training: Accountants must understand how to use and interpret regulatory technology outputs.

- Regulatory trust: Ensuring regulatory acceptance of regulatory technology-based reports and processes.

6- Companies Sample Applied Regtech into Accounting System

Sample of real-world companies that have implemented Regulatory Technology (RegTech) in their accounting and compliance functions to manage regulatory compliance risks:

Company	RegTech Used	Accounting Compliance Risk Managed	Impact
HSBC	Quantexa	Financial crime and AML risk in accounting	Improved compliance with AML and financial reporting regulations, and reduced human error in financial transaction analysis.
Deutsche Bank	Ayasdi, Fenergo	IFRS compliance, client accounting disclosures	Streamlined regulatory reporting and improved the audit readiness of financial disclosures.
PwC	Halo for Journals	Fraud detection and IFRS-based disclosure accuracy	Improved quality assurance for client financial reporting and risk mitigation for non-compliance with accounting standards.
BBVA	RPA, AI Tools	Journal entry compliance, IFRS 9, Basel III	Real-time compliance with global accounting and financial regulations, increased auditability.
ING	Clause Match	Policy compliance in financial statements	Better internal control over financial disclosures and real-time alignment with regulatory changes.
KPMG	KPMG Clara	Audit and financial reporting compliance	Improved transparency and compliance in financial reporting and reduced risk of financial restatements.
Standard Chartered	Custom AI tools	Multi-country financial reporting risk	Minimized regulatory compliance risk in multi-jurisdictional accounting practices.

7- Research Methodology

Methodology consists of analyzing the literature and previous studies related to accounting and managing of regulatory compliance risks within financial reports, under new technology (regulatory technology), in the non-banking financial sector, in light of the laws issued within the sector by the Financial Regulatory Authority. Researchers identified this sector due to the updates in the laws and emerging technologies within it, and because it represents the second main component, alongside the banking sector, in raising the efficiency of the Egyptian national economy. by theoretical research attempt to develop accounting for regulatory compliance risks through regulatory technology tools, in light of the issued regulatory decisions No. 5 and 268 of 2022, and the package of technological decisions Nos. 139, 140, and 141 of 2023; which regtech is revolutionizing regulatory compliance in accounting by automating processes, enhancing accuracy, and improving efficiency, It allows for real-time monitoring of transactions, proactive risk management, and better data analysis, ultimately reducing compliance costs and risks. **Researchers propose the following model to be applied as a proposal for an extended effort of this research in an applied Study**, **which consists of**:
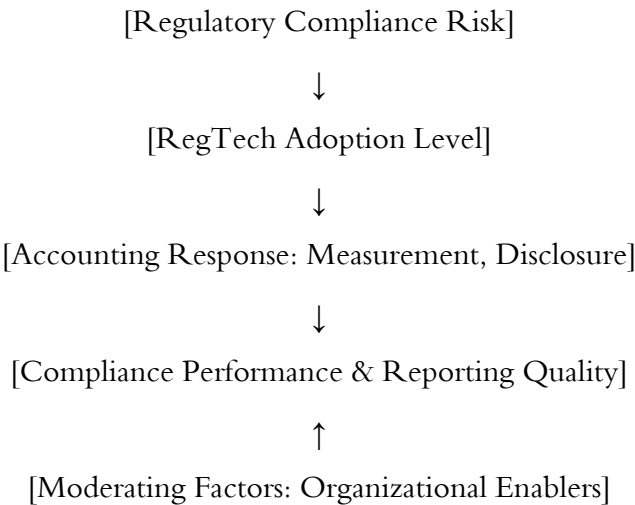
7-1 Model Objectives

- Identify and categorize regulatory compliance risks in NBFCs.

- Assess the role of RegTech in managing and disclosing these risks.

- Develop accounting procedures (recognition, measurement, and disclosure) for such risks.

- Propose an integrated framework that NBFCs can apply.

7- 2 Model Components

Dimension	Variables/Constructs	Indicators (Examples)
A. **Regulatory Compliance Risk**	- Identification - Assessment - Categorization	Risk registers, audit reports
B. **RegTech Adoption**	- Usage level - Functional coverage - System maturity	AI tools, automation, blockchain, machine learning
C. **Accounting System Response**	- Recognition - Measurement - Disclosure	Accounting entries, reports, fair value adjustments
D. **Organizational Enablers**	- Internal control systems - Staff capabilities - IT readiness	Audit trails, ERP system integration
E. **Regulatory Framework**	- National laws - Financial regulations - Supervisory audits	FRA decisions, law no. 222/2023
F. **Outcomes**	- Enhanced reporting - Risk mitigation - Compliance level	Regulator satisfaction, reduced penalties

7-3 Hypothetical Framework (Structure for Field Study)

[Regulatory Compliance Risk]

↓

[RegTech Adoption Level]

↓

[Accounting Response: Measurement, Disclosure]

↓

[Compliance Performance & Reporting Quality]

↑

[Moderating Factors: Organizational Enablers]

Structure above illustrates a flowchart related to regulatory compliance risk and how organizations manage it. Here's a clear explanation of each part:

- **Regulatory Compliance Risk**: Refers to the potential penalties or issues an organization faces if it fails to meet regulatory requirements.

- **RegTech Adoption Level**: This indicates how extensively an organization uses regulatory technology (RegTech) solutions. Higher adoption can help manage compliance risk more effectively.

- **Accounting Response** (**Measurement**, **Disclosure**): In response to compliance risks, organizations measure their compliance status and disclose relevant information in their financial statements.

- **Compliance Performance & Reporting Quality**: The effectiveness of the organization in adhering to regulations is reflected in the quality of its compliance performance and reporting.

- **Moderating Factors**: **Organizational Enablers**: Elements within the organization, such as leadership, culture, and resources, that influence how well the organization can adopt RegTech and perform compliance activities.

7-4 Measurement Model (Suggestions as For Questionnaire or Interview Guide)

Dimension	Example Questions or Metrics
Risk	What are the main compliance risks faced?
RegTech	Do you use RegTech tools? What kind? How often?
Accounting	How do you account for compliance risks (e.g., provisions, disclosures)?
Organizational	Do you have trained personnel or systems to handle RegTech implementation?
Outcomes	Have compliance violations decreased? Is reporting more accurate?

8- Results, Recommendations and Future Researches

8-1 Results

After reviewing the efforts, theoretical and analytical study, our Paper concluded:

- There is a dearth of research addressing the role of accounting for regulatory compliance risks. There is also a lack of scholarly and practical efforts to use regulatory technology to address regulatory compliance risks from an accounting perspective.

- Regulatory technology increases the efficiency of compliance management and reduces fraudulent operations that can occur due to a lack of updating or/ implementation of laws or human error. This is reflected in reduced costs for fines, penalties, and violations, in addition to enhancing the company's reputation and investor relations. Laws issued by the Financial Regulatory Authority at the local level regarding non-compliance risks are effective tools for reducing the impact of these risks on the market, in light of a new technological approach called regulatory technology.

- Improving quantitative and accurate risk measurement: RegTech tools for companies can use advanced data analytics models (such as predictive analytics and artificial intelligence) to measure the likelihood of regulatory violations and their financial impact. These models can be directly linked to accounting systems to record provisions or reserves for compliance risks (e.g., implementing Egyptian Accounting Standard 47

- Automating compliance-related accounting disclosure: RegTech simplifies the collection of data from various systems (risk, credit, operations) and generates financial reports compliant with accounting and financial control standards, supporting the disclosure process and reducing manual errors in risk accounting.

- RegTech support improving the management of precautionary provisions, such as Resolution 200 of 2023, which requires non-banking finance

companies to establish a 1% reserve of assets to mitigate the impact of implementing Standard 47. RegTech helps automatically calculate this reserve based on asset characteristics and risk levels.

- Proactive rather than reactive compliance; RegTech enables companies to monitor regulatory deviations in real time and assess the potential financial impact before penalties or violations occur, supporting proactive risk accounting.

8-2 Recommendations

- Raising awareness among professionals and companies about regulatory technology in organizations by holding workshops and practical seminars that highlight the importance and role of regulatory technology in companies.
- Raising companies' awareness of the importance of implementing regulatory technology tools in the risk management process and the company's performance in the market.
- Calling on regulatory bodies to issue compliance reports that demonstrate the extent to which organizations adhere to legal and technical standards.

8-3 Future Researches

- Developing regulatory compliance risk accounting within non-banking financial companies in light of regulatory technology – an applied study on a sample of companies in the non-banking financial activities sector
- Role of implementing regulatory technology in companies as a moderator in improving the relationship between creative accounting and audit performance. Applied Study
- The impact of using RegTech tools on accountants' efficiency in managing legal and regulatory obligations—an empirical study.
- A comparative study between international and local standards in supporting the use of regulatory technology in accounting for compliance risks.
- The mediating role of regulatory technology in managing financial risks and achieving financial inclusion: An applied study.

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