



Chapter 10

Bankruptcy & liquidation: A contemporary approach
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Modern Technology Remediating Bankruptcy and Liquidation

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Learning Objectives

At the conclusion of reading this chapter, readers ought to be able to:

1. Discuss the impact of new technologies on the practice of bankruptcy and liquidation such as Artificial Intelligence (AI), blockchain, big data analytics, metadata systems, automation, and the metaverse.
2. Knowledge AI-based models of predicting financial distress, the analysis of financial patterns, anomalies and insolvency prediction by machine learning algorithms.
3. Explain how blockchain technology can be used to guarantee transparency, immutability, auditability, and trust in the insolvency process, especially in the verification of creditors and tracking of assets.
4. Examine how smart contracts can be used to automate restructuring agreements, help enforce compliance, and issue conditional payments as well as complicate the liquidation processes.
5. Determine the significance of digital forensics and metadata analysis in the detection of fraud, tracking digital evidence, detecting document manipulation, and retrieving buried corporate assets.
6. Know the virtual court hearings and digital insolvency administration such as remote creditor meetings, digital document management and valuing digital assets with metaverse.
7. Understand the risks related to cybersecurity within the realm of digital insolvency and assess what the best practices are with respect to protecting sensitive financial data, digital evidence, and records of assets.
8. Analyze the future of the insolvency practice in a digital, automated, and decentralized global economy, considering the influence of AI, blockchain ecosystems, cryptocurrency, and DAOs, and virtual assets.

INTRODUCTION

The fast-accumulating digital technologies, including Artificial Intelligence (AI), blockchain, big data analytics, metadata systems, smart automation, and virtual environments, have significantly altered the corporate governance, auditing, and financial reporting environment, as well as insolvency practice. The contemporary insolvency administrators are now working in an extremely digitized environment where the business data, evidence tracks, asset transfers, and the relationship of creditors may be archived, examined, and tracked by utilizing superior computational technologies.⁽¹⁾

Researchers such as Hasan⁽²⁾ have highlighted the fact that AI-based accounting systems, audit trail, and metadata frameworks are important in enhancing the credibility, reliability, and

transparency of corporate financial data (Adelakun et al.).⁽³⁾ Such technologies facilitate early identification of financial distress and enhance asset recovery in case of liquidation and enhance accountability of corporate managers.

Bankruptcy and liquidation have been revolutionized by technology. AI is a better predictor, blockchain is a more transparent company, big data makes it easier to make decisions, metadata enhances investigations, and virtual environments make the processes more efficient. The efforts of such scholars as Biresaw⁽⁴⁾ show that a new insolvency practice is going to be highly digital, evidence-based, and decentralized. Those insolvency actors who adopt such changes will be in better positions to safeguard the stakeholders and provide more effective results.

This chapter focuses on the impact and effect of these emerging technologies on the theory and practice of bankruptcy and liquidation.

DEVELOPMENT

Financial Distress Prediction and Artificial Intelligence (AI)

AI has been a significant instrument in predicting the initial signs of insolvency. Conventional approaches like Altman Z-Score and Beaver ratios are fixed and base on previous information whereas AI-driven systems will be trained on trends, abnormalities, and real-time finance.

Insolvency Detection with machine learning models

The machine learning algorithms, such as neural networks, decision trees, random forests, and support vector machines, are capable of processing thousands of variables such as:

- a. cash flow movements
- b. supplier payment patterns
- c. inventory turnover abnormalities.
- d. bank transaction histories
- e. industry trends
- f. corporate governance data

These models identify the concealed risks way before the bankruptcy occurs.

Researchers^(3,4) have shown how accounting AI to identify manipulation, inconsistencies in the trend of revenue and corporate collapse are more accurate predictive of AI than human auditors.⁽⁴⁾

AI-Driven Fraud Detection

AI systems identify:

- a. fictitious sales
- b. ghost vendors
- c. asset overvaluation
- d. abnormal journal entries
- e. digital payment fraud

These will prove to be incredibly helpful in the insolvency investigations when fraud is often a cause of corporate failure.

Analytics and Digital Financial Surveillance of Big Data

The tools of big data enable insolvency professionals to analyze and work with gigantic data

sets of:

- a. ERP systems
- b. banking records
- c. social media financial sentiment.
- d. tax filings
- e. supply chain data
- f. customer behavior

Early Warning System Predictive Analytics

Both financial and non-financial indicators that are included in predictive analytics include:

- a. customer churn
- b. employee turnover
- c. litigation frequency
- d. management instability

These multi-dimensional data streams present more insights on the sustainability of the businesses.

Alassuli⁽⁵⁾ states that data-driven accounting improves financial transparency and information asymmetry between managers and the stakeholders.

Insolvency Case Analysis with Data Mining

The data mining methods can help in:

- a. finding generic reasons of failure.
- b. benchmarking in troubled companies.
- c. charting sectoral systemic risks.
- d. knowing macroeconomic insolvency trends.

These lessons inform policymakers and regulators when coming up with preventive regimes.

Bankruptcy and Liquidation Blockchain Technology

One of the most radical instruments in the practice of insolvency is blockchain. Its disseminated ledger offers unalterable by managers, auditors or other parties, tamper-proof and timestamped records.

Visibility and Non-repudiable Audit Trails

Blockchain ensures:

- a. financial transactions verification in real-time.
- b. permanent audit trails
- c. end of forgery of documents.
- d. open creditor communication.

According to a study conducted by Kokogho et al. ⁽⁶⁾ about blockchain accounting, distributed ledgers enable the creation of trust and diminish the chances of financial fraud that typically come before bankruptcy.⁽⁶⁾

Asset Tracing and Recovery

Blockchain aids during insolvency, which consists of:

- a. trace of cryptocurrency ownership.

- b. monitor the movement of digital assets.
- c. identify hidden funds
- d. keep track of the assets in real-time.

This minimizes diversion of assets which is a major problem in fraudulent insolvency cases.

Creditor Checking and Priority

Smart ledgers blockchain registers have a list of creditors, claims and repayment hierarchies that is always updated and verifiable. This prevents:

- a. duplicate claims
- b. inflated claims
- c. argument of rankings of priorities.

It promotes fairness in the process of liquidation.

Intelligent Contracts and Chronological Liquidation

As the restructuring, administration, and liquidation are becoming more relevant, smart contracts or self-executing digital agreements are becoming more applicable.

The automated creditor repayment

It is possible to automatically use smart contracts to:

- a. distribute funds to creditors.
- b. enforce priority order
- c. trigger notifications
- d. monitor compliance

The system is programmed to run without human intervention after being programmed.

Automated Restructuring Agreements

Bankruptcy restructuring can be written down on blockchain. Upon satisfaction of the conditions, e.g. increase in cash flow or equity contribution or meeting of a milestone, the contract automatically:

- a. adjusts interest rates
- b. extends repayment dates
- c. allocates profits
- d. revises capital structure

This minimises negotiation bottlenecks.

Reduction of Legal Disputes

Smart contracts guarantee that the following are reduced since they are transparent, and immutable:

- a. litigation
- b. breach of agreement
- c. inadequacy in the interpretation of the contracts.

Metadata, Digital Forensic and with Electronic Evidence in Insolvency Investigations.

Digital forensics is extremely important to insolvency practitioners with a significant number of corporate records being digital.

Metadata Extraction

Metadata helps the investigator to trace:

- a. document creation dates
- b. edit histories
- c. access logs
- d. user identities
- e. IP addresses

The data is important in identification of fraudulent transactions such as falsifying of documents, assets concealment or unauthorized transfers.

The metadata in AI-assisted accounting article by Ajueyitse⁽⁷⁾ demonstrates that it can be used to avoid audio recording manipulation and promote corporate accountability.

Email and Cloud Forensics

The digital forensic investigators can investigate:

- a. deleted emails
- b. encrypted files
- c. cloud storage histories
- d. on-line communication logs.

This is often an indication of conspiracy or malpractice in-house.

Cryptocurrency Forensics

Cryptocurrency forensics are professional analytics tracking:

- a. Bitcoin
- b. Ethereum
- c. Stablecoins
- d. NFTs
- e. decentralized assets

These are the crutches of asset recovery under modern day insolvency.

Virtual Court Hearings, The Metaverse and the Digital Insolvency Administration.

There are Virtual Insolvency Proceedings

The pandemic has left behind digital transformation that has brought about:

- a. virtual creditor meetings:

This is since witnesses can be interrogated on the internet.

- a. remote valuations
- b. Cloud-based document sharing.

Courts also conduct:

- a. bankruptcy hearings that are virtual.
- b. remote affidavit filings
- c. Centrality, virtual messages to creditors.

This ensures speed, efficiency and saving of costs.

The Digital Business Assets and the Metaverse

In the extent that we have companies operating in metaverse now, insolvency practitioners must address:

- a. digital real estate
- b. virtual stores
- c. metaverse token assets
- d. digital identities
- e. virtual intellectual property.

New valuation and regulation standards are required on these assets.

Insolvency Practice Cybersecurity Risks.

Insolvency cases will be likely to face cyber threats due to:

- a. secret financial information.
- b. creditor data
- c. asset details
- d. litigation documents
- e. digital evidence

Threats include:

- a. ransomware attacks
- b. phishing
- c. insider leaks
- d. unauthorized access
- e. digital asset theft

Strong cybersecurity tools, encryption systems, and forensic surveillance systems should also be introduced by the practitioners.

Future of Insolvency Practice in a Digital and Decentralized Economy

Increasing Effect of Automation

The introduction of task automation will be made: Insolvency routine work.

- a. data extraction
- b. claims verification
- c. payment distribution
- d. reporting

Decentralized Autonomous Organization (DAOs)

DAOs gain popularity, that is why the concept of decentralized autonomous organizations has become extremely popular during the last years

With the development of DAOs, insolvency structures will be attacked:

- a. who is the debtor?
- b. What is the way to uncoil a decentralized organization?
- c. What are the modes of enforcing creditors?

Digital Insolvency across Borders in the World

Digital assets are international; insolvency jurisdictions should be able to adjust to:

1. Multi-jurisdictional blockchains.

2. cryptocurrency international exchanges.
3. Financial platforms that are decentralized.

Increased Reliance on Technologically Skilled Insolvency Practitioners

The future insolvency experts must be cognizant:

- a. AI systems
- b. blockchain architecture
- c. digital payments
- d. crypto valuation
- e. forensic technology

These are the skills which will define the new breed of restructuring professional.

SUMMARY

Chapter Ten talked about the ways new technologies like AI, blockchain, big data, metadata analytics, smart contracts and the metaverse are transforming the practice of bankruptcy and liquidation. The use of AI-based models helps to identify financial distress at a young stage, and blockchain serves as a source of transparency, immutability, and trusted verification of the creditor.⁽⁷⁾

The metadata technologies and big data assist in the investigation of forensic evidence, identification of hidden resources and fraud case. Smart contracts reorganize the liquidation procedures, and the mistakes and delays are reduced. Virtual court hearings increase accessibility and efficiency in the form of administration in the clouds and interaction in a metaverse. Cybersecurity as a necessity is immutable especially in the insolvency field of the digital world.

This chapter concluded that the use of such technologies might assist to enhance efficiency, transparency, and internationally coordinate the insolvency practice to create more secure, automated, and decentralized future.

REVISION QUESTIONS

1. Define artificial intelligence (AI) of bankruptcy and liquidation.
2. List two methods that blockchain can be used to improve transparency in the insolvency processes.
3. And what is a smart contract and what does it do during the liquidation process?
4. Give two examples of metadata that can be used in the investigation of digital forensic.
5. Name two benefits of having virtual court hearings on insolvency cases.
6. Identify two online insolvency management cyber threats.
7. Expound on how AI-based prediction models help in financial distress detection at the early stage.
8. Discuss how blockchain can be used to track digital assets during the liquidation process.
9. How do smart contracts automate the payments to the creditors?
10. Discuss metadata in fraud discovery.
11. Inquire on how big data analytics can guide the decisions made by insolvency practitioners.
12. Demonstrate the advantages of the metaverse when meeting virtual creditors.

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