



# Blockchain Technology And Money Laundering

**Ankush Patil**

Computer Department  
Government College of  
Engineering, Yavatmal  
Yavatmal, India

**Bhagyashri Golhar**

Computer Department  
Government College of  
Engineering, Yavatmal  
Yavatmal, India

**Sarang Tadaskar**

Computer Department  
Government College of  
Engineering, Yavatmal  
Yavatmal, India

**Sampada Kadam**

Computer Department  
Government College of Engineering, Yavatmal  
Yavatmal, India

**Rajshree Rathod**

Computer Department  
Government College of Engineering, Yavatmal  
Yavatmal, India

**Abstract-**Using a bank card to make a transaction or transfer money is a necessity in today's world, but doing so opens up new options for money launderers and terrorist groups. In this work, an approach for detecting fraud using blockchain-enabled transaction scanning (BTS) of strange behaviour. The BTS approach offers the guidelines for identifying outliers and making quick movements. Of money, which prohibits unusual behaviour in transactions. The exact regulations decide Malicious behaviour patterns in the transactions. Moreover, the BTS technique scan guidelines. The history of transactions and provide a list of organizations that receive money in an unusual way. Lastly, the implementation of a blockchain-enabled workflow limits money laundering. To verify the effectiveness, A Spring Boot application is created using the recommended BTS approach

**Keywords :-** Smart Contract, Block chain, Anti-money laundering (AML).

## I. INTRODUCTION

At the moment, bank transactions make it simple to commit financial transactions. Customers can access services like ordering, shopping, and money transfers from anywhere in the world [1,2]. However, these business dealings create several opportunities for someone else to use money to engage in criminal activity without facing penalty [3]. One of These actions are referred to as money laundering. The goal of the procedure known as "money laundering" is to cover up illicit profit margins [4,5]. In three situations, the requirement for money laundering is present. If the source of money is illegal, such as through the sale of illegal drugs, racketeering or Corrupting or. Criminals who receive such income must use money laundering techniques in order to squander it at will [6, 7]. In the second instance, a business or organisation is the creation of a programme that automates the process and uses transaction scanning (BTS) with a blockchain to

implement the rules for identifying suspicious behavior- AML teams experience false alarms that entail a lot of extra work [8]. As investigators' human resources are used to verify numerous bogus claims despite warnings, actual money laundering continues to occur.

Current AML systems have some fundamental issues that need to be fixed. They start by using specific rules for every circumstance, which leads to several warnings that aren't genuinely suspicious. Second, the amount of signals they can use to identify money laundering is constrained because they only examine a small portion of the data that is

available. Thirdly, they have stringent data format requirements that necessitate a difficult data integration procedure, which frequently results in low-quality data [16,17].The following are the issues that the application fixes: The user-provided data is the sole data that is used at first. Second, it thoroughly examines every value in the user's data. Thirdly, it enables the user to initially assign keys that will be made public during the process of looking for questionable behaviour.

## II. CONCEPT OF MONEY LAUNDERING

The term "money laundering" is one that is relatively new in history. Money laundering is a sophisticated crime that no one in society should initially take seriously. It is a contemporary crime as compared to street crimes. Occasionally, people also refer to it as a crime without victims, although in actuality,Is a crime against governments, economies, and rule rather than one against a specific person. of the law and the wider world. A global threat has emerged: money laundering Many criminal activities are committed with the intent to make money for the person or group who committed them. Carries out the deed and then conceals either the money's source or its destination.

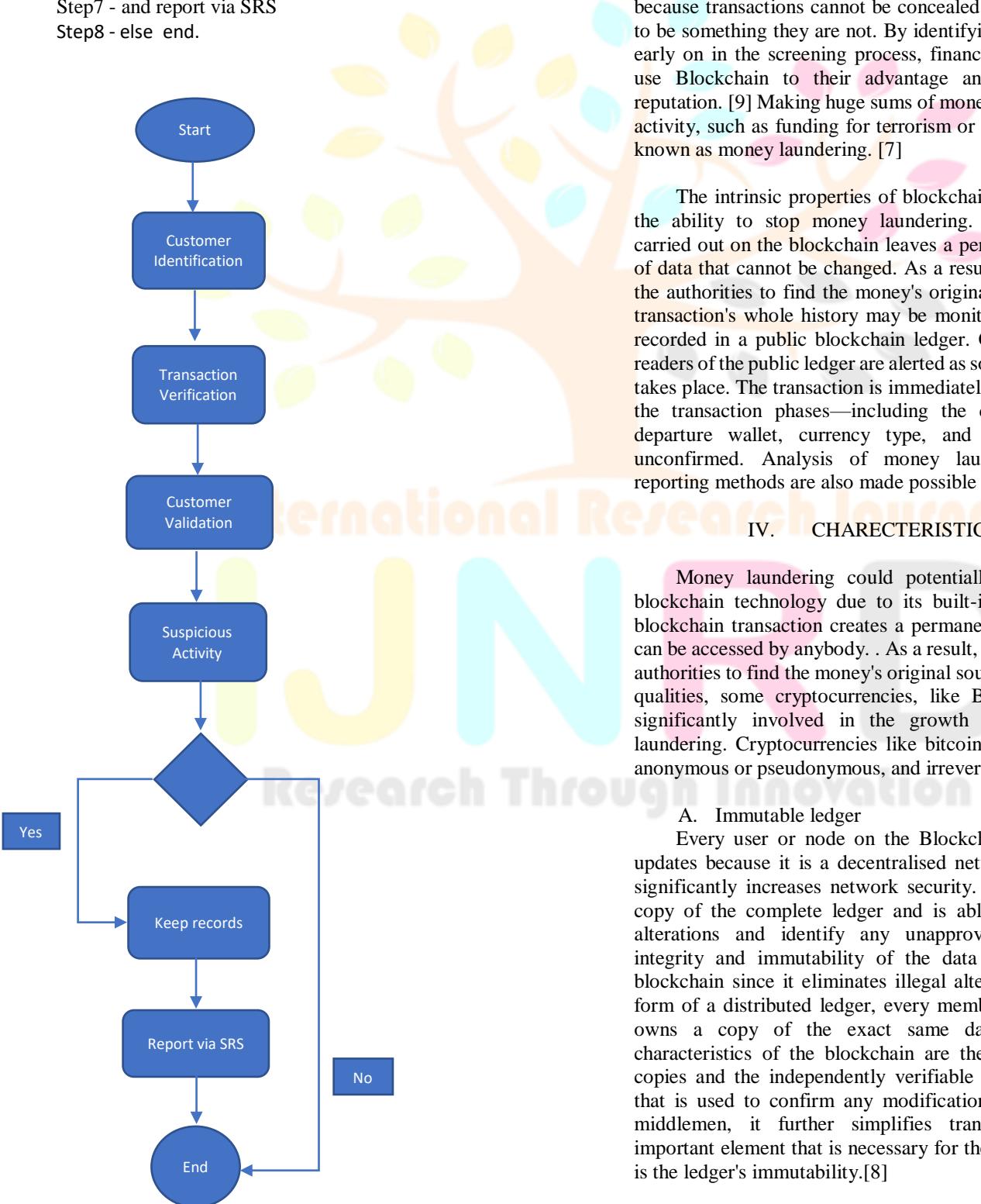
Money laundering is the process of obscuring the connection between the original criminal action and the illicit

finances by hiding the proceeds of illicit or illegal operations. Money Laundering is frequently merely a secondary step that comes before The predicate crime, or unlawful behaviour [3].

Money laundering has become a significant global issue due to Negative effects on the economy, and it is strongly related to Financing for terrorism It compromises the reliability and consistency of

International money flows are distorted by financial institutions and country economic stability, and preventing foreign direct investment [4].

- Step1 - Start
- Step2 - Customer identification
- Step3 - verify the transation
- Step4 - customer validation
- Step5 - check suspicious activity
- Step6 – if yes the person is suspicious keep records
- Step7 - and report via SRS
- Step8 - else end.



A distributed database or ledger known as a blockchain is shared by each node in a computer network. Blockchains are well known for maintaining a secure and decentralized record of transactions, which is essential in cryptocurrency systems like bitcoin. Because a blockchain ensures the confidentiality and correctness of a record of data, it develops confidence without the need for a trustworthy third party. [7] A database normally organizes its data into tables, whereas a blockchain, as its name suggests, arranges its data into parts (blocks) that are strung together. [7]

In the past, banks and other financial institutions have been the favoured locations for money laundering, but now that virtual currency is on the rise, online money laundering is gaining ground. [10] AML laws mandate transaction monitoring, and this procedure may be carefully adhered to because transactions cannot be concealed or made to appear to be something they are not. By identifying financial scams early on in the screening process, financial institutions can use Blockchain to their advantage and safeguard their reputation. [9] Making huge sums of money through criminal activity, such as funding for terrorism or drug trafficking, is known as money laundering. [7]

The intrinsic properties of blockchain technology have the ability to stop money laundering. Every transaction carried out on the blockchain leaves a permanent paper trail of data that cannot be changed. As a result, it is simpler for the authorities to find the money's original source. [9] Each transaction's whole history may be monitored, verified, and recorded in a public blockchain ledger. Crypto miners and readers of the public ledger are alerted as soon as a transaction takes place. The transaction is immediately blocked if any of the transaction phases—including the destination wallet, departure wallet, currency type, and amount—are left unconfirmed. Analysis of money laundering risk and reporting methods are also made possible by blockchain. [9]

#### IV. CHARACTERISTICS

Money laundering could potentially be avoided by blockchain technology due to its built-in qualities. Every blockchain transaction creates a permanent record trail that can be accessed by anybody. . As a result, it is simpler for the authorities to find the money's original source. [10] Due to its qualities, some cryptocurrencies, like Bitcoin, have been significantly involved in the growth of online money laundering. Cryptocurrencies like bitcoin are decentralised, anonymous or pseudonymous, and irreversible. [8]

##### A. Immutable ledger

Every user or node on the Blockchain must validate updates because it is a decentralised network. This feature significantly increases network security. Every node has a copy of the complete ledger and is able to compare any alterations and identify any unapproved changes. The integrity and immutability of the data are improved by blockchain since it eliminates illegal alterations.[10] In the form of a distributed ledger, every member of the network owns a copy of the exact same data.[12] The core characteristics of the blockchain are the spread of ledger copies and the independently verifiable consensus process that is used to confirm any modifications. By eliminating middlemen, it further simplifies transactions. Another important element that is necessary for the existence of trust is the ledger's immutability.[8]

### B. Develops trust

The ledger inherently includes user trust since it is verifiable and immutable. Blockchain makes establishing trust for any transaction, facilitating the international transfer of money or other sensitive data, incredibly simple and secure.

### C. Tracking transaction

A Blockchain-based AML technology that incorporates smart contracts automates the system's fraud detection procedure. Built-in algorithms continuously monitor every transaction, instantly block those that appear suspicious, and automatically generate an alert. By using blockchain in AML, it is possible to gain control over all transactions.

### D. Automation

Using built-in algorithms, blockchain automates the process of fraud detection. Financial institutions can prevent transactions that could result in money laundering by continuously monitoring the transactions and setting up warnings for any questionable activity. As a result, no suspicious transactions are overlooked, and the offenders are quickly found. [9]

### E. Security

A blockchain's records are protected by encryption. Participants in the network each have a private key that they use to sign transactions with their own unique digital signature. If a record is changed, the signature will no longer be valid, and the peer network will immediately become aware of the situation. Early warning is essential for stopping further harm. [14] The design of the blockchain can ensure adherence to data sovereignty laws while enhancing the efficiency of the present standard AML systems by adding an additional degree of scrutiny and visibility. Another advantage that blockchain technology may provide is a major improvement in the KYC process when onboarding new clients. [6]

Transactions on the blockchain are carried out via Public Key Infrastructure (PKI) protocols. A public key and a private key are shared by every blockchain user. A sender must be aware of the recipient's public key in order to complete a transaction because the recipient can decode the message using its own private key. Every transaction is kept in a block, and each block has a distinct fingerprint (or hash) that enables the source of the transaction to be verified.

### F. Timestamped

Every transaction that takes place on the blockchain is time-stamped, and once it has been recorded, it cannot be changed.[13]

### G. Centralised ledger

A distributed ledger, which is a component of the blockchain technology that underpins cryptocurrencies, can also be utilised to support or supplement AML compliance. Information can be entered and updated simultaneously in each block using distributed ledger technology. 198 Every bank will be aware of the most recent status of each customer thanks to the distributed ledger, which converts the traditional linear information flow into an information network.[13]

## V. LITERATURE REVIEW

This study of the literature examines the state of anti-money laundering (AML) legislation both domestically and internationally in the United Kingdom (UK), the United States of America (US), and Australia. It also evaluates developments in AML legislation currently in place. It is

noted that the UK has lagged behind the US and Australia in AML regulation since it has not yet addressed the concerns posed by cryptocurrencies. The relevant local and international authorities are also listed, along with the current legislation. A clear regulatory gap exists because the majority of cryptocurrency transactions continue to be exempt from AML regulation, despite the fact that international guidance and early initiatives to regulate cryptocurrencies are seen as a respectable first step in tackling the money laundering danger.

## VI. METHODOLOGY

This thesis adopts a socio-legal methodology, this methodology does not exist in isolation; it includes traditional doctrinal research but recognises the need to consider wider sources than legal text.

Providing "a systematic exposition of the rules controlling a particular legal category, assesses the link between rules, analyses areas of difficulty, and, maybe, forecasts future changes" is what is meant by doctrine research. [15] It is a "synthesis of several rules, principles, norms, interpretive guidelines, and values," according to Mann. As a part of a wider legal system, it clarifies, makes intelligible, or justifies a particular legal provision. [16] When comparing the doctrinal method to a study of literature, Van Hoecke has referred to it as a hermeneutic discipline[17]. The main distinction is that doctrinal research entails "interpreting texts and arguing over a choice among diverging interpretations." [18].The key advantage of the doctrinal technique is its emphasis on original sources; the approach's main goal is to evaluate the law using legislation and case law. The main critique of doctrinal research is that it is limited to specific legal concerns that can only be resolved by analysing legal text. This limits legal study since it prevents the social, political, and economic effects of the law from being taken into account. The definition of the doctrinal approach illustrates the most common objection against it: that it is just descriptive. It is said that socio-legal research has achieved more than this form of legal research, even though it will be beneficial in this study.

The main flaw in doctrinal research is addressed by using a socio-legal methodology. The value of the research would be diminished if it was purely doctrinal; discounting socio-legal research would run the danger of generating a very restricted thesis since it would mean ignoring issues revealed by other research methodologies utilised within this research.

The wide range of topics covered by socio-legal research has made it challenging to define its specific scope. Distinguishing socio-legal research from the conventional doctrinal approach to legal study is the best way to establish these dimensions. The socio-legal methodology enables a researcher to "stretch their net wider than law reports, statutes, Hansard, and academic commentaries upon doctrinal materials," in contrast to doctrinal research, which restricts a researcher to legal language. Instead, it mandates that scientists collect information "anywhere pertinent to the issue and by whatever means are most likely to produce such information." [19] This can be applied to the topic at hand; it is acknowledged right away that there would be few primary legal resources specifically related to cryptocurrencies because they are a relatively new technology. new phenomenon, and were a purely doctrinal approach used, it would be unlikely that the materials at hand would be enough for a thesis. The amount of research in this field may be analysed, and potential legal repercussions may be taken into consideration, by using sources from various disciplines.

## VII. LIBERTY RESERVE

### B. Understand Money Laundering Schemes

The oldest, safest, and best-known payment processor, Liberty Reserve claims to be serving millions of individuals from all over the world from its base in Costa Rica. [20] When the US authorities shut down the website, it had over a million users. The service was suspended, according to authorities, because of suspected illegal acts that mainly went undetected due to poor security. [21]

After an investigation by authorities from 17 various nations, Liberty Reserve was shut down in May 2013 by federal authorities in the United States acting under the Patriot Act. The founder, Arthur Budovsky, and six other people were charged by the US of money laundering and running an unauthorized financial transaction organization. It is believed that Liberty Reserve was used to launder more than \$6 billion in illegal earnings are said to have been stolen through Liberty Reserve over the course of its existence. [22]

## VIII. BACKGROUND

Liberty Reserve, a centralized digital currency service with headquarters in San José, Costa Rica, let users to sign up and send the money to other users with just a name, email address, and birthdate. [20] The website made no attempts to confirm the identity of its users, which attracted scammers looking for a payment processor. [22] Other deposit alternatives include bankwire and credit cards, which can be used to make deposits through third parties. [20] [21]. Liberty Reserve did not handle deposits or withdrawals directly. [21] Deposited monies were subsequently "transformed" into Liberty Reserve Dollars or Liberty Reserve Euros, which were related to the value of the US dollar or the euro, or to ounces of gold, respectively. [20] [23] There were no transaction size restrictions. [24] The firm generated money by charging a tiny fee on each transfer, around 1%. [20] Transactions were "completely irreversible." [24] Liberty Reserve also provided a shopping cart and other merchant services. [24]

After pleading guilty to operating a "unlicensed money transferring firm," chief technology officer Mark Marmilev received the maximum penalty of five years in December 2014.[25]

Arthur Budovsky pled guilty to one count of conspiracy to commit money laundering in January 2016.[26] Budovsky was sentenced to 20 years in jail on May 6, 2016. [27]

## IX. SAFEGUARDS AGAINST MONEY LAUNDERING

Five ways to protect your business from money laundering

### A. Ask Many Questions

When contacted with a business proposal, there are certain questions that you should ask to confirm that it is a genuine partnership or whether it raises red flags for possible money laundering. First, inquire about the amount of money involved and the investors. Vague responses are a red sign.

Second, if someone contacts you unexpectedly and wishes to invest in your company, you should inquire as to why and begin your investigation. Third, inquire about any assets that may have surfaced in the financials that they have shared with you. Fourth, inquire about any monetary payments or the reasons why they might wish to offer you cash. If the answers don't make logic or seem too good to be true, you should probably pass on this transaction.

Criminals are always devising new strategies. The more you know and share with your employees, the more probable it is that any efforts at money laundering through your small business will be detected.

There are several techniques to launder money, such as depositing unlawful cash into your account, stacking gains through wire transfers and the conversion of cash to financial instruments, and making riches from criminal activities appear legitimate by faking invoices or over-billing. Prepaid credit cards are also commonly utilized in these scams, which you should avoid taking.

### C. Perform Proper Research

Investigate everyone engaged in these financial activities thoroughly. For example, if a total stranger offers you a huge quantity of money, you have not won the lottery. It's more than likely a money laundering plan.

A customer, strategic partner, vendor, investor, or trade partner is an example of this. You may do online background checks to learn whether any of these individuals have ever been investigated or charged with a crime. Before deciding to become engaged in these trades and relationships, make sure you know who everyone involved is.

### D. Create a formal anti-money-laundering policy

Even small businesses can have a documented policy in place regarding their anti-money laundering approach. The policy may provide directions on what activities to take or avoid. Accounting and cash handling processes, for example, may be included in the policy. It might also declare that certain transaction quantities are subject to a no-cash policy.

### E. Keep Your Privacy

To you, your little business is everything. Keep it that way by not revealing any financial details or data with someone you don't know well, especially someone who has approached you by email or phone call. Also, keep all devices secure by changing passwords on a regular basis and not sharing them with anyone else. You should also use new sorts of security technologies. Make sure your staff understands the importance of keeping such facts private.

## X. IDENTIFYING THE ISSUE

Every year, hundreds of billions of 'dirty' cash are laundered via financial institutions, therefore it's critical that you recognise the red flag symptoms that accompany this unlawful activity. 'Dirty' money is money earned from illicit activity, such as drug and weapons sales proceeds. The money laundering method changes these 'dirty' monies into 'clean' money in three steps:

- Placement. The technique of bringing 'dirty' money into the financial system is known as placement. Placement includes night deposits, ATM deposits, swapping money for cashier's checks or bigger banknotes, and transporting cash out of the country. Placement is critical for money launderers since it helps to conceal 'bad' monies with 'clean' money and gives the funds respectability.

- Layering. Layering is the method of separating monies from an illicit source by utilising many financial transactions. Layering methods involve transferring funds between onshore and offshore accounts and utilizing complicated financial transactions.

- Integration. Integration is the practice of integrating laundered money into legal trade by explaining the 'dirty finances' that appear to be real.

Financial institutions and banks play an important role in the money laundering process. It cannot happen unless the funds are routed via a financial institution in at least one of the three steps. As a result, employees in the financial industry must be aware of what to look out for. We've highlighted the main 'Red Flag' indications to assist you detect instances of money laundering.

#### Money Laundering Warning Signs:

Money laundering is harmful in a variety of ways. It not only allows criminals to conceal the proceeds of their illicit operations, but it may also devastate the economy, injure honest taxpayers, and pose several threats to your business. Allowing money laundering to occur via your firm might expose you to difficulties in managing your assets.

You should be mindful of the following behaviours that may suggest that a customer is engaging in money laundering:

- Out of the ordinary transactions or activities in comparison to their routine interactions.
- Unjustified huge cash deposits or persistently high amounts
- Using big sums of money to purchase cashier's checks or money orders.
- A refusal or avoidance of disclosing information about their company. This might include hiding owner information, advantageous business relationships, or who their client is.
- Inconsistent information, such as various tax identification numbers or unconfirmed papers.
- Complicated financial transactions intended to disguise the source and ownership of funds.

#### What Should You Do If You Suspect Money Laundering?

Any questionable behaviour or transaction should be promptly reported to your company's appointed officer. A nominated officer's responsibilities include the following:

- Gather information on any unusual behaviour or transaction.
- Examine the reports to see whether there is or may be evidence of terrorist funding or money laundering.
- Fill out a Suspicious Behavior Report and report it to the National Crime Agency for any suspicious activity or transaction.
- Request a defence from the NCA for the money laundering offence, and guarantee that no more illicit transactions occur.

When the nominated officer is absent, your management must select a replacement nominated officer to whom you must report any concerns.

#### XI. CONCLUSION

The blockchain platform supports fraud detection, analysis of Smart Contracts, and risk classification

algorithms. In the end, it helps financial institutions (FIs) with administrative KYC procedures needed for commercial and personal accounts, international transfers, and significant financial transactions. The automated DLT-based KYC platform greatly lowers the annual increases in AML departmental costs. [9] KYC is a crucial step in the AML compliance process, and blockchain streamlines it. You can get help from an experienced team at AML UAE with AML/KYC compliance. Cryptocurrency money laundering is quite similar to traditional money laundering in many ways. [11]

#### References

- [1] D.R. Haller, T. Nguyen, K. T. Rowney, D. A. Berger, and G. A. Kramer System, Method, and Article of Manufacture Transaction Management in a High Availability System U.S. Patent 6,363,363 issued on March 26, 2002.
- [2] Digital money management: Dodgson, M.; Gann, D.; Wladawsky-Berger, I.; Sultan, N.; George, G. Acad. Manag. J. 2015, 58, 325-333.
- [CrossRef]
- [3] Digital Money's Rise, Annual Review of Financial Economics, 2019. T. Adrian and T. Mancini-Griffoli File:/C:/Users can be accessed online. MDPI/AppData/Local/Temp/FTNEA2019001.pdf (accessed on 5 June 2021). (accessed on 5 June 2021). (accessed on June 5, 2021) [CrossRef]
- R.A. Roks,
- [4] E.W. Kruisbergen, E.R. Leukfeldt, E.R. Kleemans Money speaks, and organised crime criminals like to engage in money laundering. In the digital age. 569-581 in Journal of Crime and Justice, 42. [CrossRef]
- [5] Money laundering and its regulation by A. Chong and F. Lopez-De-Silanes, Econ. Politics 27, 78-123, 2015. [CrossRef]
- [6] Could Blockchain herald a new era in anti-money laundering? (2018, 03 05). gtg: <https://gtg.com.mt/could-blockchain-be-the-new-dawn-for-aml/#>
- [7] a. hayes (2022, september 27). What is blockchain, how does it function, and how can it be used? Investopedia (<https://www.investopedia.com/terms/b/blockchain.asp>)
- [8] S. Mabunda (2018, september 18). Bitcoin: The New Face of Cyber Money Laundering <https://ieeexplore.ieee.org/document/8465467/authors#authors> retrieved from IEEE
- [9] Shah, P. (n.d.). How Blockchain Aids AML Compliance AMLUAE (<https://amluae.com/how-blockchain-helps-in-aml-compliance/>)
- [10] takyar, ten (n.d.). Retrieved from <https://www.leewayhertz.com/blockchain-in-aml/#:text=Blockchain%20technology%20has%20inherent%20characteristics,original%20source%20of%20money>
- [11] Ajello, N. J. "Fitting a square peg into a round hole: bitcoin, money laundering, and the Fifth Amendment right to remain silent," Brook. L. Rev. 80, no. 15 (2015)
- [12] What exactly is blockchain decentralisation? (n.d.). AWS: <https://aws.amazon.com/blockchain/blockchain-decentralization/> Palgrave,
- [13] C. Pivot (2018, december 7). Blockchain technology extends beyond currency. Link to Springer: [https://link.springer.com/chapter/10.1007/978-3-030-02330-0\\_10](https://link.springer.com/chapter/10.1007/978-3-030-02330-0_10)
- [14] miles, approx (2017, december 12). What preserves your blockchain transaction data? IBM, <https://www.ibm.com/blogs/blockchain/2017/12/blockchain-security-what-keeps-your-transaction-data-safe/>
- [15] D. Pearce, E. Campbell, and Pearce Australian Law Schools: A Discipline Assessment for the Commonwealth

Tertiary Education Commission, by Harding ('Pearce Committee'), Australian Government Publishing Service, 1987, p.7.

T. Australian Law Dictionary, ed. Mann (Oxford University Press, 2010), p.97.

[16] T. Australian Law Dictionary, ed. Mann (Oxford University Press, 2010), p.97.

[17] M. 'Legal Doctrine: Which Method(s) What Kind of Discipline?' van Hoecke ' in M. Methodologies of Legal Research, by van Hoecke (Bloomsbury, 2011), p.4.

[18] *ibid*

[19] A. edited Sense and Sensibility: Debates and Developments in Socio-Legal Research Methods. P. Thomas Bradshaw (Aldershot: Ashgate-Dartmouth, 1997), p.99.

[20] "The Liberty Reserve digital money service has been suspended," according to the BBC on May 27, 2013. It was seized on May 27, 2013.

[21] a. b. c. d. e. f. g. h. Nicole Perlroth, Marc Santora, and William K. Rashbaum are my coworkers (May 28, 2013). The New York Times reports that "an online currency exchange has been charged with \$6 billion in money laundering." It was recovered on May 28, 2013.

[22] Go to:a b c d e f g h Cloherty, I.J.K.L. (May 28, 2013). ABC News website: 'A 'Black Market Bank' is accused of

laundering \$6 billion in illegal revenues." The date was May 28, 2013.

[23] Proceed to:a b c d e f g L. David Boddiger and Arias (May 25, 2013). The Tico Times reports that "millions of dollars are at risk with the collapse of digital currency portal Liberty Reserve." The original version was archived on December 31, 2013. May 28, 2013 was the date.

[24] a b c d e "Liberty Reserve - Part 1 Interview with Mr. Joul Lee," July 22, 2007. World of Digital Money

[25] Number one is John Hawes (December 14, 2014). Naked Safety reports, "Liberty Reserve CTO and eBay auto scammer each sentenced to five years in jail." On December 16, 2014, this page was retrieved.

[26] Liberty Reserve Founder Pleads Guilty to Laundering Over \$250 Million Through His Digital Currency Business, United States Department of Justice, Office of Public Affairs, January 29, 2016.

[27] "In Manhattan Federal Court, Liberty Reserve Founder Arthur Budovsky Was Sentenced To 20 Years In Prison For Laundering Hundreds Of Millions Of Dollars Through His Global Digital Currency Business." United States Justice Department, 6 May 2016. On August 17, 2018, it was retrieved.

