

WHEN TECHNOLOGY MEETS MONEY LAUNDERING, WHAT SHOULD LAW DO? NEW PRODUCTS AND PAYMENT SYSTEMS AND CROSS BORDER COURIER

Dr. Go Lisanawati
Faculty of Law University of Surabaya, Indonesia
go_lisanawati@staff.ubaya.ac.id; lisanawatigo@gmail.com

Mr. Joseph Eniola Kehinde
ICT University, Cameroon
olorunkoseunti@gmail.com, eniolajoseph.kehinde@ictuniversity.org

ABSTRACT

Money Laundering has become very sophisticated by technology assistance. Perpetrator is tending to use the help of technology to create easiness of doing crime. This condition is supported also by the activity of cash courier across border which has been choosing as means to do money laundering. Some Conventions and/or multilateral agreement between countries have appointed the vulnerability of exploration of money laundering through cash courier. From research, it can be understood, the Convention just gives the guideline how to detect, but as long as it happens, there is no specific measurement how to recognize it directly. Since money laundering is proceed of crime. It needs an inspection and evaluation from the Authority and decides that the crime is money laundering. It is not a crime against Customs Law. Other condition that increases possibility to support money laundering is the development of new products and payment systems. So many innovation conducted by technology creates new payments methods and products, such as bitcoin, litecoin, linden dollars, other crypto currency and other bearer negotiable instruments, could help offender to do money laundering. In the research, it was discovered that the crime is developing further rather than the law. Technology seems like taking place in the heart of the money launderer and robs the position of the law, even though Technology is never created for something bad. The research is a qualitative research that will analyze how the law can work together with technology to fight against money laundering. The hypothesis of this research is that law is having a good position as guidance of the development of technology, and technology is having good role to trigger the readiness of law to develop. Thus money laundering will not be easy to “develop” when technology meet law.

The government of every country in the world need to synergies information on new technological discovery this is very important as it will help each country to formulate laws bordering on trans-border crime especially on money laundering. Money laundering comes in different formats and styles with the introduction of different payment system across the world. One of such latest development is the introduction of crypto-currency i.e. bitcoin a fiat currency that is mainly a block chain technology driven.

Keywords: Money laundering; New products and payment systems Blockchain Technology, Crypto-currency

1. INTRODUCTION

1.1. BACKGROUND

It can be denied that all the human activities nowadays are assisted by the advancement of technology. Technology in its positive aspect will give benefit in the process of life from any perspective. However it has negative aspects also. Unfortunately, criminal offender is tends to exploits this negative aspects of technological development rather than positive aspects.

Related with the issues of money laundering, it can remain said that money laundering is modern and difficult crimes. As one of complicated and difficult crimes, money laundering transformed through many faces both of traditional and sophisticated forms.

Generally, offender of money laundering is trying to hide, disguise, or conceal sources of property and/or assets derived from crime through many ways with ultimate purposes to make it untraceable by legal officers. Thus the offender will easily and freely use it both for legal an/or illegal activities. According to that, it can be understand money laundering is a follow up crime that the object is proceeds of crime, especially crimes that generates assets or money as their objects of crime. Eddyono & Chandra [1] mention that money laundering is as sui generis which is means it is a separate criminal offenses between money laundering crime and predicate crime, but it is related one to each other.

Ully and Tanya [2] then explain Anti money laundering regime itself have been strengthened to every countries due to the serious threat arise from money laundering. In this regards especially regarding money laundering characteristic as economic crime which is related with economical and financial threat to economic stability and states financial, and endangering the life of society and nations. Understanding money laundering is not as simple and traditional crimes, and then it needs more effort from Government to response and provides more option to tackle money laundering.

The globalization and its development have been bring impact to the increases of goods and services trade, and it means it increases the circulation of money as a payment instrument. Goods and Services trading will cause payment flows is not only done through funds transfer (both from bank and/or non bank), but also cash payment.

United Nation Office on Drugs Crimes [3] reminds:

Rapid developments in financial information, technology and communication allow money to move anywhere in the world with speed and ease. This makes the task of combating money-laundering more urgent than ever. The deeper "dirty money" gets into the international banking system, the more difficult it is to identify its origin. Because of the clandestine nature of money-laundering, it is difficult to estimate the total amount of money that goes through the laundry cycle. The estimated amount of money laundered globally in one year is 2 - 5% of global GDP, or \$800 billion - \$2 trillion in current US dollars. Though the margin between those figures is huge, even the lower estimate underlines the seriousness of the problem governments have pledged to address. There have been a number of developments in the international financial system during recent decades that have made the three F's-finding, freezing and forfeiting of criminally derived income and assets-all the more difficult. These are the "dollarization" (i.e. the use of the United States dollar in transactions) of black markets, the general trend towards financial deregulation, the progress of the Euromarket and the proliferation of financial secrecy havens. Fuelled by

advances in technology and communications, the financial infrastructure has developed into a perpetually operating global system in which "megabyte money" (i.e. money in the form of symbols on computer screens) can move anywhere in the world with speed and ease.

The rapid developments on Information Technology have been followed with some scheme of money laundering. The problem of cash courier in regards with new payment systems and new products have certainly troubling any efforts to cut off money laundering. Other development is the integration of border across the nation which is enabling the movement of Bearer Negotiable instruments and also those payments products in and out of territories.

As it is understood, money laundering is kind of process to hide and disguise any illegal sources of dirty money which will be used to legitimate appearances of money. In this regards, offender of predicate crimes are willing to evade its sources of original funds since their purposes are to use the illicit money to conduct other illegal activities. Hence, money laundering will bring benefit to their illicit activities of doing crimes.

In this situation, offender will do anything to gain their successful. Thus the presence of technology will be gratefully explored to assist them. Blackham [4] explained the assistances of technology for money laundering development such as below:

The task may sound simple, but it is far from it. Undertaking in-depth customer investigations requires the disciplined application of rigorous systems, a certain amount of detective work and the application of good judgment – if doubts should arise – on when to make a suspicious activity report (SAR) to the National Crime Agency (NCA). The increasing use of digital technology in the business world adds another layer of complexity to the task. Criminal enterprises can hide themselves in plain sight on the web to create an illusion of integrity..... while technology gets more advanced so criminals become more sophisticated. “Data breaches are likely to be more frequent in 2017 with increasing penetration of personal information and its subsequent misuse...

Further, it is clarified that technologies in the form of cyber crime actually do not always dealing with money laundering. Thus it needs collaborating the indicators and knowledge and red alert of money laundering with cyber security and technology issues. More collaboration between Technology, cyber security policy, and anti money laundering regime is specifically in the context of the using of digital currencies, cyber payments, and also bearer negotiable instruments. Any transaction which is using large-scale cash transactions will be easily to be caught as a red flag, but not easy when it is dealing with anonymous and global accessible transactions using money. Money launderers in its nature will be exploring anything to bring benefit to them. In this sense, the presence of clarity of money laundering flags will be beneficially help the law and legal officers.

The exploration and exploitation of technology will technically assist the money laundering itself. New products of payment and new payment methods are the product of technology elaboration for the human beings. Unfortunately money launderer and other criminal's offenders use technology to grab their illegal benefit. Bitcoin, ZCash,

Silk road crypto currencies, Bearer Negotiable Instruments courier, game card, shopping card and many others are reflecting the idea for better life, but vulnerable to deal with money laundering.

1.2. PROBLEM QUESTIONS

During its process, money laundering was intervened with many Based on background that have been explained above, it is important to analyze how is technology influence and penetrating money laundering, and how law can prevent the development of technology itself.

1.3. PURPOSES OF STUDIES

This paper will assess on how technology can be explored and exploited but on other hand, it will be use to reduce the vulnerability of itself by money launderer.

As it is a qualitative research with normative approach, it will analyze using the regulations in anti money laundering and also technology based approach to give solution. Normative legal approach is used as a tool to analyze how the regulation works with technology.

2. METHODOLOGY

This research paper is using qualitative research methodology that uses direct observation. The researcher is using technology to analyze their observation. In this regards, it used to observe the development of technology and its impact to the money laundering problems. Researcher is also using case study approach to gathered information and data regarding the problem that should be solved. Through this method, the construction of law and technology might help its way to prevent and eradicate money laundering.

3. ANALYSIS

3.1. What is new with Money Laundering?

As it can be understood, money laundering in its nature is going to conceal and/or disguise the sources of its illicit money. Money laundering crime is well known as proceeds of crime which is generated by any kinds of initial crimes. Money laundering is categorized as an economic crime and organized crime as well. In 1994, all nations had been declared their global action plan against Organized Transnational Crime, that is:

To effectively combat organized crime, States should take its structural characteristics and modus operandi into account in devising strategies, policies, legislation and other measures. While not constituting a legal or comprehensive definition of the phenomenon, the following qualities are characteristic: group organization to commit a crime; hierarchical links or personal relationships which permit leaders to control the group; violence, intimidation and corruption used to earn profits or control territories or markets; laundering of illicit proceeds both in

furtherance of criminal activity and to infiltrate the legitimate economy; the potential for expansion into any new activities and beyond national borders, and cooperation with other organized transnational criminal groups.

From that action plan, it can be understood that money laundering has been take place in the heart of Organized Transnational Crime. Thus for all States should pay attention to their law and regulation as a part of a national building to prevent and eradicate money laundering. Organized Transnational crimes in its characteristic will furtherance cause disturbance and disruption to economic condition of country. It means the eradication approach of money laundering and other organized transnational crime shall be proceeds to a systemic and holistic approach.

Esoimeme [5] then highlight that: "Moreover, they (= means offender) can use these laundering proceeds to expand their criminal enterprises, thereby increasing their wealth and power, including the power to corrupt and buy protection from the political and law enforcement establishment". In this matter, money laundering will emerge any will to protect their illicit money through many ways. Thus now, International develops new approach in tackling money laundering, both through due diligence and/or risk based approach. It is including to the development of technology itself. Money laundering in its development has been supported through technology and its manifestation is in the modus of Virtual Currencies as a part of new payments systems, and also new products which is being used by the money launderer to launder their illicit money. Williamson, et al [6] explains: "The shift within these private cryptocurrencies then moves to maintaining anonymity between individuals and organizations. For example, if drug dealers are open to accepting digital currency in payment for a bag of heroin through a cellphone or via a website, both parties, the dealer and the buyer, would like to ensure their online anonymity, even if digital currency could potentially be tracked based on encrypted coding". Bryans [7] explains further that: "New virtual currencies, such as Bitcoin, add yet another layer of anonymity by allowing users to transfer value without the collection of any personally identifiable information. Regulations often fail to affect such virtual currencies due to lack of foresight by the regulation writers, creating a legal gray area. Thus, criminals can continue to capitalize on technological innovation to bolster their illegal activities. Money laundering is one particular criminal craft that stands to benefit from technological advancement."

Nowadays, Technology creates ability of money laundering to develop new methods and mode. The transformation of money and payment systems is enabling money launderers to hide illicit money easily. It is often linked to sophisticated cybercrime techniques and operations that may avoid its illicit sources of the money. The anonymity of transactions could be one of big problem in tracing whether it is suspicious transaction or not. But fortunately, money laundering process is putting transaction as their main behavior. Thus, all the process and methods are used by the money launderers to gained illicit profit. Demetis [8] would like to tell that Technology has created a new platform for orchestrating information utilization and its management. It means that as long as human is remaining depends on technology, the development of technology will trigger unanticipated effects of other crimes.

At glance, the characteristic of Cybercrime can be understood well in the context of money laundering. Clough [9] emphasizes that Cybercrime has some key features reviewed from: Scale; Accessibility; Anonymity; portability and transferability; global reach; and absence of capable guardian. Emphasizing to the underlines words as explained by Clough, the case of money laundering in the context of involvement of technology can be analyzed. Its characteristic of easiness in global access and to do transfers of everything, will cause the needed of awareness and capability of human resources to work carefully with technology, and it needs experts who can be a guardian to the possibility of negative exploration caused by bad intention person (offender of crime).

3.2. How can Bearer Negotiable Instruments, New Payment and New Products vulnerable to Money Laundering?

Regarding with Bearer Negotiable Instruments, FATF has been reminds that it can be one modes of money laundering and endangering. It needs to be prevented. FATF recommendation Number 32 was developed with the objective of ensuring that terrorist and other criminals cannot finance their activities or launder the proceeds of their crimes through the physical cross border transportation of currency and bearer negotiable instruments.

According to the FATF Recommendation Number 32, every country should ensure the mechanism and procedures on:

- How to detect the physical cross border transportation of currency and bearer negotiable instruments;
- How to stop or restrain currency and bearer negotiable instruments that are suspected to be related to terrorist financing or money laundering;
- How to stop or restrain currency or bearer negotiable instruments that are falsely declared or disclosed;
- How to apply appropriate sanctions for making a false declaration or disclosure; and
- Enable confiscation of currency or bearer negotiable instruments that are related to terrorist financing or money laundering.

Thus, cash courier both in the form of cash and bearer negotiable instruments is troubling with the mechanism of detection. While the recommendation mention that: "Countries should ensure that their competent authorities have the legal authority to stop or restrain currency or bearer negotiable instruments that are suspected to be related to terrorist financing, money laundering or predicate offences (bold and underline by authors), or that are falsely declared or disclosed". The mechanism to stopped and detected is important to be assisted by technology. It should be thinking that technology can be collaborating with the detection mechanism. The systems of Disclosure and/or Declaration which have been implemented in every country cannot be the main tools to solve these problems. In the previous research that had been conducted by the author, the problem of bearer negotiable instruments is remains become constraint. The officer of Customs office usually relies on the declaration of the people who carry the bearer negotiable instruments, or the experience of the officer in diagnose suspected of offender. In this regards, we should be thinking how to use technology to assists in order to stop or restrain bearer negotiable instruments. The Issuer bank of Bearer Negotiable Instruments and

receiver banks should be connected one to each other by technology to detect the physical movement of that Bearer Negotiable Instruments.

Another problem that may appear as difficulties in the money laundering prevention and eradication regime is about new payment systems and methods. The digital currencies, cybercurrencies, and other methods such as game card, discount cards, gift cards that may smuggle, and it can be dangerous for money laundering schemes. In this regards, Williamson et al [10] then remain further:

One of the latest trends in money laundering involves digital currency. Many people are only beginning to learn about the growing use of independent virtual cryptocurrency, such as Bitcoins, Litecoins, Zen and Namecoins. But the reality is, online and alternative currencies exist in many places, from Linden Dollars used in the online game Second Life, and Justice Points in World of Warcraft, to Berkshares, an alternative currency created by five banks to promote local business in the Berkshire region of western Massachusetts. And where there are opportunities to exchange real money for online money, there money laundering can also exist.

Some virtual currencies are completely anonymous, unlike credit card transactions or personal checks, which can be tied to a specific person or entity. Virtual currencies are not like dollars, yen or euro because there is no government or central regulatory agency that regulates their value or use. They are exchanged freely and anonymously on peer-to-peer networks worldwide.

Because some virtual currencies can be freely exchanged without being traced, they can be useful in the underbelly of the Internet, also known as the Deep Web, which organized crime groups, terrorist cells and other shadowy figures, from child pornography enthusiasts to human traffickers, call home.

Further, Deep Web itself will assist in its evasion process of money disappear. In its core, Deep web will become an invisible part of the website that will not be accessible and indexed by other search engines. Ultimately Deep web itself has giving and creating anonymity and freedom that may hosting and exploring loop holes which may explored by offender of money laundering.

From explanation above it can be understood that virtual digital has created anonymity in tracing. But as it known, technology should create other way to solve the problems. Lisanawati [11] in her earlier paper had mentioned:

The negative impact of rapid technological development is seen in changes in human behaviour, which tend to be criminal, and especially in the context of money laundering crime. In accordance with its characteristic, money laundering occurs as a modern, complicated, complex, and borderless crime. The complexity of modern crime that was produced by increases in technology has produced the consequence that put the positive law behind the society development.

Many forms of cybercurrencies such as Bitcoin, Liberty Reserves, Linden dollars, e-cache have been arise as a big enemy for the money laundering prevention and eradication schemes. Some cases regarding with virtual currencies and money laundering have been appears. The wallstreet Journal in 2013 [12] told that FBI reports Bitcoin attracted criminals to move or steal funds. Bitcoin might also logically attract money launderers and other criminals who avoid traditional financial systems

by using the Internet to conduct global monetary transfers. Bitcoin is decentralized network administered by the network users, and it is peer to peer. As Singh [13] quote from Michael Nielsen, is explaining how bitcoin is vulnerable to money laundering through understand the three key concepts that are: (i) the double spending problem; (ii) the occurring transaction of Bitcoin; and (iii) What and how Mining is.

The problem of double-spending here explained as the most barriers which is emerging usable unphysical currency. In line with this, people can deploy the same unit of currency in multiple transactions. It means, people can multiply virtual currency in major virtual currency networks. Thus it can be understood that Bitcoin is special in alleviates double-spending hazard without employ to the third party lapse.

Other concept that regarding with how is the Bitcoin transaction occurs can be understood as a process that a stage before users able to commerce in Bitcoin, he should download an application called as “Bitcoin Wallet” that comprises “public key” and “private key”. The public ledger emphasizes that Bitcoin is more fictitious rather than unidentified network. It is traceable transactions. Further Singh [14] quote from Michael Nielsen, explains: “

And while a public address cannot be traced directly to a person’s identity, accessing the Internet. It is linked to an IP address—the unique identifier assigned to devices. For the unwary, this allows someone to discover a user’s location and personal identity with relative ease. This fear has prompted users to employ anonymizing software, such as “The Onion Router” (Tor), which hides a user’s IP address to grant total anonymity on the Internet. Anonymous Bitcoin users utilizing Tor pose one of the biggest challenges for potential Bitcoin regulation and enforcement. Tor allows criminals to purchase bitcoins anonymously with stolen U.S. dollars (USD), which effectively conceals funds from law enforcement and tax authorities. When a money launderer feels it is safe, he can use these bitcoins to either buy goods or exchange them for USD, without ever revealing his IP address. Workable anti-money-laundering laws for Bitcoin, therefore, must either bypass or eliminate anonymity in the network.

Last concepts regarding with Miners and Mining process, it can be understood that Mining process is used as a tool to confirm a Bitcoin arrangement. Miners group these transactions into “blocks,” which miners add to the public ledger forming a compilation of recent transactions. The process itself will emerge precise historical transaction uses all Bitcoin. Every block contains a reference point identifying the immediately preceding block. Moreover, users will verify block of transaction. In this stage, new bitcoin will enter flows. After that Miners will receive new Bitcoin as indemnity for updating the public ledger with recent transactions.

Through the explanation of Singh above, it is clearly define that money launderers will be very grateful to use bitcoin since they knows that law enforcements agents will remain face difficulties in tracing any transactions of money launderers using technology. While Liberty reserve is a centralized form of virtual currency which is controlled by the central authority. It is anonymous. Pamplin [15] explains about the process how to have account in Liberty reserves. Each applicant should provide personal identity such as name, address, date of birth, but unfortunately the authority do not do personal identity verification. The importances of Customer Due Diligence,

and/or Identity verification in this process should be an urgent attention regarding with new payment method and systems. Hence many agents are able to open many accounts in Liberty Reserves. Thus, it can be very dangerous to money launderers to open accounts and/or to access in order to conceal and hide the original sources of illicit money.

3.3. What can Technology reduce their mainstream exploitation by Money Launderer?

The effective prevention and eradication of money laundering solution should be based on the ability to reveal any kind of suspicious transactions, cash transactions, and any other methods of activities which are conceal and disguise the character of illicit money. It has to be able to identify the criminal launders both for individual and organizations. The law enforcement should be able to monitoring all the transaction that using illicit money, discovering any kind of unusual schemes and behavior of the offender. It should be effective to detect the effort of perpetrator to separating out transaction into another legal scheme. In money laundering, it developed many tools to identify, such as Due Diligence (Customer Due Diligence and Enhance Due Diligence), Risk based approach for the reporting parties, client risk assessment, red flags, compliances, and many others. It means money laundering has been dangerous criminal act. As it has been explained above, technology is actually being the major tools to assist money laundering, but it also means technology should be the major way out to prevent and eradicate money laundering itself.

Guadamuz and Marsden [16] remind that:

The most interesting development arising from Bitcoin has nothing to do with the currency itself, or with regulation. It is an idea proposed by a group of developers that turns the Blockchain, Bitcoin's proof-of-transaction open log, into a platform for creating a smart contract decentralised platform called Ethereum. The project will allow the creation of a transaction log (Blockchain) with a built-in Turing-complete programming language, allowing anyone to write smart contracts and decentralized applications where they can create their own arbitrary rules for ownership, transaction formats and state transition functions.

Blockchain Technology is actually become important nowadays. Blockchain Technology is assisting in reducing new payments methods abuse and its possibility to cause Money Laundering. Many people know it as the technology behind Bitcoin, but 'Blockchain' potential extend far beyond digital currencies. Blockchain is actually a program using cryptography in order to held exchange data and information. Blockchain allows any consumers and suppliers to have direct connection and avoiding the request and need of other third party.

The conventional banking system is becoming obsolete by the time. Blockchain Technology becomes fully functional and accepted; the role of the middle man is eliminated as practiced in the normal banking convention. Blockchain provides a decentralized database, or "digital ledger", of transactions that everyone on the network can clearly see the transaction. This network is essentially a chain of computers that must all approve an exchange before it can be verified and recorded. Hutt [17] explains that; " The findings (*of the research, sic*) suggest this technology

has the potential to “live-up to the hype” and reshape financial services, but requires careful collaboration with other emerging technologies, regulators, incumbents and additional stakeholders to be successful”. Thus it can be said that Blockchain will need to be collaborated more with regulators, parties, and the most important thing is how it can be effective and useful for anti money laundering regime.

Further, Hutt [18] explains how working process of Blockchain as below:

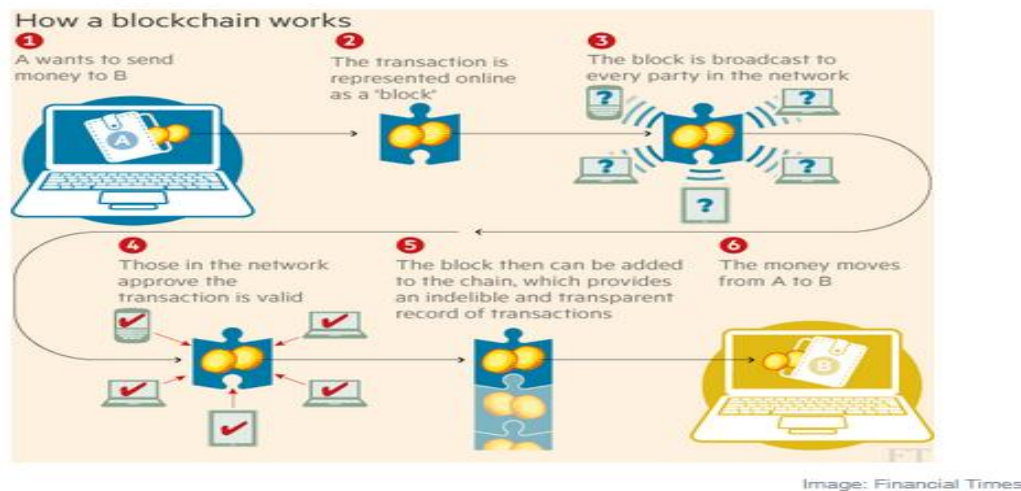


Chart 1: The Blockchain works

The Blockchain can work for every transaction that using money, goods, property, and other value based. Blockchain is almost unlimited that enabling people to send benefit (money) as they want to all country. It means it will be difficult to be traced. But Blockchain can help to reduce deception of the people because it enabling to recorded and distributed every transaction that have been made.

In its relationship with AML Regime, Philips & Page [19] mentions:” Blockchain is playing an increasingly prevalent role in combating money laundering and this article will explore the commercial advantages for companies that incorporate such Fintech into their AML procedures. It will also examine the potential concerns from a client perspective and how these should be addressed before platforms such as Blockchain gain universal industry approval”. Fundamentally, Blockchain provides database which will record any transactions conducted by any people, institutions and/or companies. Thus, all the transactions will be put together into one block, and order into a Blockchain. The information in Blockchain itself cannot be changed once people verified. It is only can be updated. The form of Blockchain will permit to be used like a ledger, which can be shared and confirmed by permitted person. Through the digital record of the Bitcoin transaction and or other digital currency, it can assist the trace process of the transactions. Thus, under this situation, any company or institution who use Blockchain, should comply with AML procedures such as record keeping and customer due diligence. If note, the AML will not be supported.

In the end, it can be mention as below:

4. CONCLUSION AND RECOMMENDATION

The discourse about money laundering and its interaction with technology will impact the need of how to maximize the usefulness of technology development as against money laundering. In line with the problem of Cash Courier in the form of Bearer Negotiable instruments, it should be synchronize with technology on detecting its exchange, such as the technology to detect its placement of the Bearer Negotiable Instruments itself. The customs office should be notice with the limitation of Bearer Negotiable Instruments characteristic, and each bank that will issued and received the BNI should be connected by technology in order to know the source of the money itself. Responding to the appearances of New Payment Systems, such as Bitcoin, Litecoin, etc, it needs the specific technology to reduce the potential risk to money laundering eradication regime. Blockchain technology itself has been acknowledged as a tool to a process of prevention and eradication of Money Laundering.

As a recommendation, it could be reminder for anyone (individuals, companies, and/or institutions) to remain comply with the procedures of Anti Money Laundering such as to do record keeping, implementing identity verification as known as Know Your Customers, or Customer Due Diligence, and upgrade the technology itself. AML regime is about compliance for each party who involved in the transaction using money or property or any other value which arise from criminal activities.

5. REFERENCES

- [1] S.W Eddyono and Y.I Chandra. **Mengurai Implementasi dan Tantangan Anti Pencucian Uang di Indonesia**, *Institute for Criminal Justice Reform*, Jakarta, 2015, 7 & 27
- [2] J.Ully and B.L. Tanya. **Money Laundering**. Laros, Surabaya, 2008, 1
- [3] UNODC. Money Laundering and Technology. www.unodc.org
- [4] A. Blackham. **“Is Money Laundering enabling money laundering?”**, <http://www.telegraph.co.uk/money/criminal-activities/is-technology-enabling-money-laundering/>
- [5] E.E. Esoimeme. 2016. **The Risk-Based Approach to Combating Money Laundering and Terrorist Financing**. Eric Press: USA, p. 2
- [6] C. Williamson, et al. **“Technology In The Fight Against Money Laundering In The New Digital Currency Age”**, Thomas Reuters, July 2013, p. 12, retrieved from www.instituteofat.org/whitepapers/GRC00403_0.pdf
- [7] D. Bryans. 2014. **“Bitcoin and Money Laundering: Mining for an Effective Solutions”**. Indiana Law Journal Vol 89 Issue 1, p. 1, retrieved from: <http://repository.law.indiana.edu/ilj>
- [8]. D.S. Demetis. **Technology and Anti Money Laundering: A System Theory and Risk Based Approach**. Edward Elgar Publishing Limited: United Kingdom, 2010, p. 1
- [9]. J. Clough. 2010. Principles of cybercrime. Cambridge University Press: United Kingdom, pp. 5 - 7
- [10] C. Williamson, *Op.Cit*, p. 7
- [11] G. Lisanawati. 2010. **“Electronic Funds Transfer in Money Laundering Crime: Regulation Needed in Response to Meeting of Technology and Crime in Indonesia”**,

International Journal of Cyber Society and Educations, Vol 3 No. 2, December 2010, p. 165

[12]. The Wallstreet Journal, 2013, "***Web Money Gets Laundering Rule***", retrieved from: <https://www.wsj.com/articles/SB10001424127887324373204578374611351125202>, on April 2nd, 2017

[13]. K. Singh. 2015. "***The New Wild West: Preventing Money laundering in the Bitcoin System***", Northwestern Journal of Technology and Intellectual Property, Vol 13 No. 1, pp. 40-44

[14] *Ibid.*

[15]. B.A Pamplin. 2014. "***Virtual Currencies and the Implication for U.S Anti Money Laundering Regulations***", retrieved from: <search.proquest.com/openview/1f7e0456bee46d7c0cf4aec953590cbb/1.pdf?pq.>, on 5 April 2017

[16]. A. Guadamuz & C. Marsden. "***Bitcoin, the wrong implementation of right idea at the right time***", retrieved from: <sro.sussex.ac.uk/54104/1/SSRN-id2526736.pdf>

[17]. R. Hutt. "***All you need to know about Blockchain explained simply***", retrieved from <https://www.weforum.org/agenda/2016/06/blockchain-explained-simply/>, on 3 April 2017

[18] *Ibid*

[19] K. Philips & J. Page. "Blockchain: A new AML Kid on the block", retrieved from <http://www.antimoneylaundering.lawyer/blockchain-anti-money-laundering/> on 27 April 2017