AN ANALYTICAL STUDY OF CRYPTOCURRENCY AND ITS CONNECTION WITH MONEY LAUNDERING POLICIES AND FINANCIAL TERRORISM AND THE IMPACT OF ANTI MONEY LAUNDERING POLICIES UPON IT

Research dissertation presented in partial fulfilment of the requirements
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Candidate Declaration

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I certify that the dissertation entitled: "AN ANALYTICAL STUDY OF CRYPTOCURRENCY AND ITS CONNECTION WITH MONEY LAUNDERING POLICIES AND FINANCIAL TERRORISM AND THE IMPACT OF ANTI MONEY LAUNDERING POLICIES UPON IT"

submitted for the degree of **MSc International Business and Law** is the result of my work and that where reference is made to the work of others, due acknowledgement is given.

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Dedication

This dissertation is dedicated to my family, especially my parents whose unyielding love, support and encouragement filled my soul and inspired me to undertake and complete this study.

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Abstract

Globalisation and technological advancements have improved every aspect of human life and advancements in trade and business environments have been improved exponentially. However, the development and advancement which has completely changed the method of business and trade is its financial transaction of the economic exchange process and the most significant development in this field is virtual currency or cryptocurrencies. Bitcoin was created by Satoshi Nakamoto and it was approved for operation in economic transactions in 2009 and hence, it became the first kind of cryptocurrency the 21st century observed and established as the replacement for tedious economic transactions. However, there are multiple situations that observe a sudden drop of faith and belief in the cryptocurrency transactional process and multiple rampant scams and corruptions contributed to developing this notion about the cryptocurrency and its association with financial terrorism and other illicit activities. Hence, with this research process, an outline has been selected so that all the loopholes and limitations of the anti-money-laundering policies could be identified with investigating the lack of central authorities in mind. This is the reason; a mixed method analytical (quantitative-qualitative) study has been conducted with the inclusion of experts from the UK and Ireland as research participants and the data collected from their interview and survey responses have been used to identify the answers this research finds through its comprehensive analysis.

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1   Introduction

1.1   Overview

Global economic and finance sector is transforming drastically in the 21st century as multiple innovative transactional means have been introduced that present safe and timely transfer of assets around the world (Caytas, 2018). These new paradigms are inclusive of digital assets, instrumental credits, system and financial channels as well as foreign capital conduits that have initiated and promoted this financial change throughout the world (De Vido, 2019). With the increasing competition and the requirement for innovation within organisational processes, the majority of the organisations are implementing Cryptocurrencies (Forgang, 2019). Cryptocurrencies are considered as a digital asset that functions as a digital medium of financial and economic exchange and this transformation started with the creation of Bitcoins (Fraser and Bouridane, 2017).

Bitcoin was created by Satoshi Nakamoto and it was approved for operation in economic transactions in 2009 and hence, it became the first kind of cryptocurrency the 21st century observed and established as the replacement for tedious economic transactions (Sokolenko *et al.,* 2019). After this, multiple Cryptocurrencies namely the Namecoin, Altcoins, and several others have been developed and used in digital transaction processes. This transaction technology is different from the traditional economic exchange processes due to the blockchain public ledger (Hardy, 2020). This process uses a blockchain ledger which is shared between two parties and then the digital money is transferred between the two participants without any filter and governing authority (central authorities in case of cryptocurrency regulation) (Hrudnytskyi *et al.*, 2019).

Bitcoin has emerged as the largest used cryptocurrency around the world and with multiple beneficial parameters, such as different set of block times, issuance schemes and currency supply abilities, this cryptocurrency has improved the transactional strategies around the world (Howell *et al.*, 2018). However, with multiple benefits, in recent years, the number of organisations that primarily used cryptocurrency as their

primary transactional means, are turning up from these transactional processes. In the report of Szmigiera (2020), while in 2017 the cryptocurrency achieved in $566.26 billion market share, decreased their market share up to $128.78 billion and $237.1 billion in 2018 and 2019 respectively. Hence, a major drop in the usage of cryptocurrency in the contemporary organisation has been observed and hence, it is important that proper discussion about Cryptocurrencies and their current state in the internationalised world (Mbiyavanga, 2019).

1.2 Research Purpose

As discussed in the previous section, majority of the organisations that previously dealt in Cryptocurrencies as their primary source of economic transactions were eliminating this transactional process and were returning to their traditional financial transaction methods (Matyushonok *et al.*, 2018). This change was due to the sudden drop of faith and belief in the cryptocurrency transactional process and multiple rampant scams and corruptions that contributed to developing this notion about the cryptocurrency (Mekpor, 2019). Multiple events such as increasing fake cryptocurrency associated events in South Korea in 2017, Ponzi Schemes scam and other fake transactional events increased fear in organisations about using this digital transactional method for their organisational financial transactions. Besides this, it was also found in the report of (Naheem, 2020) that the majority of the organisations that dealt with cryptocurrency transactional methods were hacked by multiple malware that corrupted their transactions. Further, it was also identified that 'Cryptocurrency Clipboard Hijackers' was one such malware that managed to hijack more than $2.3 billion from such peer to peer transactions (Nakano, 2018). Upon identifying the leading source of this, it was found that lack of the central authority for the transaction processes and development of private peer to peer room of transaction was contributing to the increasing events of fraud and corruption in the usage of Cryptocurrencies (Oleiwi, 2019).

1.3 Significance of the Study

The current world is suffering more from financial and economic terrorism than war and other defensive processes. This situation has been considered as far more

dangerous situation than war as it is affecting the world governments, their economies and associated peoples' livelihood within hours (Paraskevopoulos, 2017). In the research of (PHAT, 2018), it was mentioned that more than 5% of the world's GDP is depending upon Cryptocurrencies which could be calculated as 2 trillion dollars. Hence, it is of primal importance for the organisations and government authorities to identify the conditions and reasons that could create complication in the transaction processes using cryptocurrency digital transaction (Reynolds and Irwin, 2017). Though implementation of anti-money laundering policies and guidelines is a revolutionary step, examples of multiple corruption and fraud cases have been observed in this transactional process and therefore, it is important to conduct a study which is contemporary and significant in this situation (RODIMA-TAYLOR and Grimes, 2019). Hence, with this research process, an outline has been selected so that all the loopholes and limitations of the anti-money-laundering policies could be identified by investigating the lack of central authorities in mind (Yeoh, 2019). Therefore, through these discussions, a significant and relevant research paper with a deeper understanding of the cryptocurrencies and the associated complications in transactional methods would be developed.

1.4   Research Objective

The research question that was finalised to comply with this research is as follows:

Is the implementation of virtual Cryptocurrencies and lack of central authorities in the majority of the organisations, the primary reason for the money laundering policy associated complications and threats faced by the world governments?

The research objectives that were formulated as the primary roadmap to achieve the research aim and identifying strategies to collect answers to the research question are as follows:

- In compliance with the research aim, the primary objective of this dissertation would be to understand the anti-money laundering policies and their effect in controlling cryptocurrency associated scams financial terrorism and other illegitimate work.

- Concerning the involvement of Cryptocurrencies in the money laundering process, the second objective would be identifying the loopholes such as lack of central authorities as well as the inclusion of virtual Cryptocurrencies in money laundering processes due to which threats upon transitory regulations are increasing.

1.5   Structure of the Study

As the majority of the organisations are speculating about increasing risk of cryptocurrency associated transactional processes, the market capitalisation of this transactional method is decreasing every year. Hence, there are multiple anti-money laundering policies and regulations that are being implemented so that the destroyed reputation of this digital transaction process could be maintained. However, despite these policies and frameworks, the number of fraud and corruption incidents associated with cryptocurrencies increased. The primary aim of this research paper would be to understand the loopholes present in the anti-money laundering policies and identify the role of the absence of a central authority in this transaction process. The structure of this research process will include a literature review conducted in a systematic process, and then with an accurate and appropriate methodology, this research will focus upon developing results and analysis.

2   Literature Review

2.1   Overview

Before conducting any primary or secondary research, multiple research articles could be followed and used to develop a theoretical basis of the research and develop relevancy to the chosen research topic (Moritz and Block, 2016). This process is named as conducting a literature review in which, primarily all the relevant and accurate research papers that are similar to the chosen research question are included in developing theoretical basis (Van Mieghem *et al.*, 2020). The literature review is inclusive of discussion of research papers, surveys, books, peer-reviewed research papers and other appropriate journals that are relevant to the chosen research topic (Dumay *et al.*, 2016). In the development of findings, these literature review papers, their purposeful evaluation, summarization and description helps to develop a research framework and depending upon this theoretical framework the primary or secondary research is conducted (Wang *et al.*, 2018). Hence, with the literature review process, it is possible to develop a relatable discussion through the research data and findings of the previously conducted research which then helps to develop a discussion of the current research as well. As this research aims to identify and conduct primary research process with the conduction of semi-structured surveys and interview, with literature review and its secondary data, it will be easier to develop the purpose and objectives of the research associated with practical data identified in this section.

2.2   Systematic search strategy for literature search

Before identifying the research papers that are relatable to this chosen research question and topic, it is important that one strategy is identified which could be used for the search and identification of the relevant research papers (Thompson *et al.*, 2018). This planned and defined strategy or process is the systematic search strategy which is important for identifying defined and relevant sources. As per Goossen *et al.* (2018), the systematic search process is a defined and programmed strategy in which using a systematic process, a framework is developed which will help to sieve accurate and relevant research papers from the pool of research papers. The first step in

conducting a systematic research process is identifying keywords and phrases related to the research objectives and questions that will help in the identification of comprehensive and critical research papers (Booth, 2016). It is an important process as Durach *et al*. (2017) identified that with identification and implementation of accurate keywords and phrases, it will be easier for identifying accurate and relevant research papers. Further, the application of Boolean Operators in these phrases and keywords will help to implement probability in the process so that the array of accurate research papers could be increased. These phrases and keyword combinations are then searched in multiple scientific databases that will help to identify accurate and relevant research papers (Dumay et al., 2016).

In this research process as well, a set of keywords have been developed in compliance with the research questions and research aims, objectives as identification of keywords from these sections will increase the relevancy of the search strategy. The set of keywords and the research objectives it complies with has been provided in Table 1 below.

Table 1: Development of search terms for systematic search strategy

Keyword 1	Boolean Operator	Keyword 2	Boolean Operator	keyword 3	The Key phrase	Research objective it aligns with
Anti-money laundering policies	AND	Their effect in controlling cryptocurrency associated scams	AND	Financial terrorism and other illegitimate work	Anti-money laundering policies AND Their effect in controlling cryptocurrency	Research objective 1: In compliance with the research aim, the primary objective of

					associated scams AND Financial terrorism and other illegitimate work	this dissertation would be to understand the anti-money laundering policies and their effect in controlling cryptocurrency associated scams, financial terrorism, and other illegitimate work.
Loopholes in the Anti-money laundering policies	AND	Lack of central authorities	AND	Increased threat upon transitory regulations	Loopholes in the Anti-money laundering policies AND Lack of central authorities AND Increased threat upon transitory	Research Objective 2: identifying the loopholes such as lack of central authorities in money laundering processes due to which threat upon transitory

					regulations	regulations are increasing
Involvement of Cryptocurrencies	AND	In the money laundering process	AND	Implementation of virtual Cryptocurrencies in the majority of the organisations	Involvement of Cryptocurrencies AND In money laundering process AND Implementation of virtual Cryptocurrencies in a majority of the organisations	Research objective 2: identifying the loopholes such as the inclusion of virtual Cryptocurrencies in money laundering processes due to which threat upon transitory regulations are increasing
The loopholes such as lack of central authorities	AND	In money laundering processes	AND /OR	Threat upon transitory regulations are increasing	The loopholes such as lack of central authorities AND In money laundering processes AND/OR	Research objective 2: identifying the loopholes such as lack of central authorities in money laundering processes

					Threat upon transitory regulations are increasing	due to which threat upon transitory regulations is increasing.

These developed keywords and phrases were used for conducting a search process in scientific databases such as Pro Quest and EBSCO as these databases have thousands of accurate and reliable research papers that could be used for conducting primary and secondary research process. At first, implementation of these keywords and phrases will help to collect a pool of relevant and irrelevant papers and hence it is important to identify the inclusion and exclusion criteria that will help to identify the relevant and appropriate papers that are important to develop a theoretical basis of this research. Hence, with inclusion and exclusion criteria and all the filters included within this strategy accuracy and reliability within the systematic search process will be restored.

The inclusion criteria which have been used for identification of accurate papers would only be included within this research paper and those that do not comply with the inclusion criteria would be eliminated from this search strategy. All the research papers, that are published within 2014 to 2020, are published in English language and conducted with authentic primary or secondary research methods would be included within this research search strategy and will be termed as the inclusion criteria. Similarly, papers that were published before 2014, published in languages other than English and are abstract or descriptive papers would be eliminated from this research process. A detailed PRISMA flow diagram has been included in this section so that a complete search strategy could be described using this flow chart.

Identification

Research papers collected through the database of Pro Quest searching (n = 674)

Research paper records identified through EBSCO database searching (n= 545) (n = 1)

Screening

Records after duplicates removed (n = 300)

Records excluded due to lack of primary data (n=101)

Descriptive study (n=21)

No Controls in the study (n=6)

No IL-6 measures were present in the study (n=9)

Comment studies (n=11)

Records screened (n = 148)

Eligibility

Full-text articles that have been assessed for eligibility of the research processes (n = 20)

Full-text articles excluded, (n=81)

IL-6 measures not reported (n=15)

No IL-6 Measure (n=15)

No Controls (n=17)

Included

Studies included in the literature review (n = 15)

Figure 1: PRISMA diagram for systematic search strategy (developed by the author)

2.3 Theme 1: Involvement of Cryptocurrencies in money laundering processes

In this theme, all the research processes that confirm and analyse the involvement of Cryptocurrencies in different money laundering processes, as well as financing terrorism, has been analysed. As mentioned in the reports of the Financial Action Task Force or FATF, digital currencies have been given a status of the medium of exchange; however, it limited their legal tender status. Therefore, from this decision of FATF, it could be analysed that there are multiple complications associated with cryptocurrency associated processes due to which, central authorities have not been assigned to control the transactional processes involved within this system (Houben and Snyers, 2018).

The first research that would be discussed to establish the presence of Cryptocurrencies in money laundering processes is from researchers (Dyntu and Dykyi, 2018). The researchers focused upon the point that despite having a huge representation around the world for several transactions and purchasing, Cryptocurrencies have not been given legal status and hence, it is important to analyse the possibilities or limitations of money laundering processes involved with it. Hence, this entire research focuses upon anonymity, decentralisation, and possibility of the involvement of Cryptocurrencies in illegal money laundering events. For this research, researchers included legal and case study discussions of money laundering events with Cryptocurrencies in mind, and included all cases with criminal charges or press charges from Ukraine, so that the role of Cryptocurrencies and the lack of legal framework against its controlled transactions could be identified. Through extensive analysis and research, it was identified that even for an unlimited transaction between two parties, none of the parties is required to provide their complete identification details, if the transaction is conducted through Cryptocurrencies and hence, anonymity and lack of identification of the parties are considered as the primary loopholes of the process. Further, it was also identified that any transaction that is conducted with Cryptocurrencies, are not under any governmental or third-party scrutiny. Therefore, a central author that can verify each transaction for its authenticity is found to be missing in transaction methods using cryptocurrency. Therefore, due to the lack of

central authorities (both governmental and non-governmental authorities) for conducting verification of the transaction, it was identified through this research that cryptocurrency plays a crucial role in increasing money laundering possibility within anonymous financial transactions.

In the research of (Brenig and Müller, 2015) as well, discussion about the unintended consequences of the implementation of Cryptocurrencies as a primary transactional method was discussed to identify the economic impact of it upon the system. With the discussion about the role of criminal-minded activities upon decreasing the accuracy and reliability of the process, this paper identifies that the structure, anonymity and lack of governing bodies within the system as the primary incentives that are utilised by criminals. Therefore, with the inclusion of practitioners and experts from economic industry in a discussion session, this research was able to bring out the factors such as anonymity, lack of governing body and lack of tracing and tracking of the money transaction making cryptocurrency transactional methods prone to be utilized in illegal money laundering processes.

Researchers (Albrecht *et al.*, 2019) also supported the findings of these two previously mentioned research papers and aimed to understand the way government agencies are responding to the implementation of Cryptocurrencies in multiple money laundering incidences around the world. With the thematic and theoretical analysis of the research papers included in the discussion, it was identified that lack of intermediate financial institutions (that governs the transaction process) and peer to peer transaction allowed multiple money-laundering channels to act within the process. Blockchain involving darknet or other criminal channels maintained the anonymity of the process and hence, the transaction between two peers was successful without being tracked by any central authority. Hence, through this finding, the connection between money laundering incidences and the involvement of multiple illegal websites of channels were identified in the process.

With all these research papers and their crucial findings in identifying the role of Cryptocurrencies in money laundering processes, the official report of the European Parliament about the association between Cryptocurrencies and its impact upon

blockchain technologies should be discussed. In this report of the European parliament, it was discussed that with increasing usage of Cryptocurrencies for transactional purposes within the provinces of European Union (EU), activities such as financial terrorism, tax evasions and money laundering have increased (Houben and Snyers, 2018). As per the report of the Policy Department of EU, the total money laundered within the EU borders and spread worldwide could be estimated up to EUR 7 billion. Therefore, it was found that 5 limitations within the EU regulatory framework are responsible for increasing the risk of money laundering or criminal activities within EU territories (Houben and Snyers, 2018). These are persistent anonymity, cross border nature of the cryptocurrency transactions, lack of central intermediates within the transaction process, presence of loopholes or cracks within the transactional regulation and improper implementation of data protection, cybersecurity and privacy-related rights. Hence, discussion about these factors provided an insight that Cryptocurrencies are associated with money laundering complications and lacking proper tracking and tracing facilities due to its widespread and inevitable anonymity creates complications for the governmental authorities that lead to its deep and crucial association with money laundering complications (Houben and Snyers, 2018). Hence, with all these abovementioned research papers and a government report from the European Union parliament helped to develop a connection between the cryptocurrency transaction method and money laundering, tax evasion or financial terrorism associated activities.

With the establishment of the fact that Cryptocurrencies are associated with money laundering activities, the next valid question that arises is about the role of multiple anti-money laundering policies and guidelines that are developed by governments all around the world to contain the events of money laundering. Besides this, the question would also arise regarding the impact of these policies on managing or controlling scams or financial terrorism all around the world. Hence, this has been selected as the new theme for discussion in this literature review section so that the role or efficiency of the anti-money laundering policies in preventing the usage of Cryptocurrencies in money laundering or other illegal activities could be identified.

2.4   Theme 2: Anti-money laundering policies and their impact upon managing cryptocurrency associated scams

In the previous section, discussion about the way Cryptocurrencies are being utilised for money laundering, tax evasion as well as financial terrorist associated situations is conducted. In this situation, it is important to understand the way policies and guidelines developed by countries all around the world help to contain these illegal transactional methods. Multiple countries, such as the United Kingdom, the United States, even the European Union and others have developed multiple strategies and regulations so that widespread money laundering associated events could be controlled. Hence, in this situation, research papers that discuss the benefit or efficiency of these regulations should be included in this literature review section.

The first research that would be included in this section is conducted by (Vandezande, 2017) in which, the foremost objective of the researchers was to understand the way these virtual Cryptocurrencies are controlled or regulated within European Union with financial and economic laws. In this paper, it was found that within the last decade, with the development and inclusion of Cryptocurrencies and Bitcoins, the EU has developed multiple legal frameworks, incorporated governing strategies through payment methods. However, to what degree or extent these aspects help to control the money laundering conditions, are unknown or have been not included in the public domain. As this paper was based upon the national legislation and its efficiency in containing illegal cryptocurrency transactions, a legal theoretical study was implemented as a methodology in this paper. Through the findings of this research, it was identified that besides developing the legislation, it is important that government implements regulation exchanges and custodian wallets for every transaction method for the verification and identification of the transaction process. Therefore, it was identified that the lack of proper identification and effective monitoring was the main reason for the increasing risk of money laundering processes and lack of decisive governance regarding controlling money laundering through cryptocurrency with the effective application of guidelines was also identified as the complication that increased the risk of money laundering using cryptocurrency.

In another research paper carried out by Haffke *et al.* (2019), researchers studied ways of identifying anti-money laundering policies and their shortcomings of its directive 2018/843 (the fifth anti-money laundering Directive), so that its impact in regulation of illegal money laundering activities could be identified. The complete focus of this research paper was upon the regular forms of Cryptocurrencies, the services upon which it is implemented and the intermediaries in the process. It was found through effective discussion that government directives are not being followed in states of EU and it limits their ability to counter the activities of money laundering processes. Further, it was also identified that the majority of the legislations or policies that have been developed by the government authorities are recommendations of the national consultations of Member States of the EU. Therefore, in this condition, certain loopholes in the policies and legislations were found to be the key reason for the increasing risk of utilizing Cryptocurrencies for the money laundering processes.

The finding of these aforementioned theoretical discussion papers of EU legislation was supported by the research paper by Kethineni and Cao (2019) in which the primary objective of the research was to understand the way Cryptocurrencies such as Bitcoin and Ethereum increased illegal; activities such as money laundering, drug dealing and tax evasions. For this process, this research implemented systematic review as the research strategy and analysed all the regulations, reform documents, news articles, court cases as well as scholarly articles so that effective answers to the research questions could be obtained. Through the implementation of this research process, it was identified that due to continuous development and improvement of the Cryptocurrencies, government regulatory agencies are unable to control the illegal activities. Therefore, continuous technological advancement and new features of the Cryptocurrencies are causing a slow progress in bringing forward robust regulations to counter the existing threat thus making it difficult to be regulated by the system.

Besides this, with the research of Bebris and Mukkamala (2018), the focus of the research was to understand the impact of anti-money laundering and counter-terrorist financing associated policies and guidelines that could be used for the regulation and control of the cryptocurrency associated situations. However, while discussing the anti-money laundering and counter-terrorist financing regulations of EU and its

associated states, it was identified that there is no registration process that has been made mandatory for the implementation of the transaction process and thus, in this condition legislations failed to control or regulate the illegal activities associated with this technological advancement.

The final research that is crucial to be included under this theme discusses the cyber world and increasing tendency of Cryptocurrencies as with increasing technological advancements and up-gradation of the system, legislations are becoming unable to control or regulate the system (Ngai, 2014). This research identifies that with the increasing popularity of the cryptocurrency associated transactional methods, there are multiple key concerns such as enhanced anonymity and improper regulatory facilities. The governing abilities of the economic strategies were found to be weak. Further, it was also mentioned by experts included in this research that majority of the governments are neglecting this critical situation and therefore, their inability to control economic terrorism is increasing the use of Cryptocurrencies in the illegal transaction or other illegitimate activities.

With effective discussion including all these papers and reports, one factor that was found to be the reason for the inability of cryptocurrency associated laws and regulations to cope with the increased illegal activities was the continuous development occurring within the cryptocurrency technologies. As per Vandezande (2017), government regulations and legislations are not being modified at a speed in which Cryptocurrencies are being upgraded by the information technology organisations, due to which their privacy and anonymity associated conditions are being improved with each up-gradation. Therefore, it was identified that governments are unable to implement effective efforts for the control or regulation of the money laundering, tax evasion and financial terrorism associated situations caused by the cryptocurrencies. Hence, it is important to understand the impact of the appointment of central authorities for eliminating the loopholes present within regulatory authorities. This would be discussed in the following theme.

2.5 Theme 3: Lack of central authority and loophole in the anti-money laundering policies with threats upon transitory regulations

While the above-mentioned two themes helped to develop a base to the chosen research question that Cryptocurrencies are involved in the money laundering processes and the legislation/regulations are unable to control this system, this theme would discuss the reason due to which the governments are failing to control the money laundering events caused by the usage of Cryptocurrencies. This is an important section as multiple pieces of research are constantly pointing towards the lack of central authorities as the primary reason for increasing money laundering, tax evasions and other illicit activities. Hence, in this theme of literature review, discussion about the lack of central authorities, and loopholes in anti-money laundering policies are increasing threats in such transitory regulations would be discussed in this paper.

The first paper that would be included in this discussion is research by Peters *et al.* (2015), in which the primary aim of the researchers was to establish the role of technological advancements, rapid up-gradation and peer to peer online transactional methods with increased risk of illegal activities. In this research paper, researchers established through their conducted study that with increased implementation of online transactions, limitless peer to peer financial or non-financial transactions, the requirement of governing authorities and regulatory bodies have become secondary. These digital technologies have developed or created as well as backed by legislations due to which it is difficult to regulate or control them through other governing bodies. In such condition, lack of central authorities is increasing the risk of illegal transactions as no government body would be able to track or trace the presence of tax evasion, money laundering or other complications. Hence, through the discussion of findings of this research, it was identified that governmental bodies are unable to develop a system, which should be implemented for the regulation or control of usage of Cryptocurrencies in situations associated with illegal activities.

Similar results were found in the research of Foley *et al.* (2019), as this research also included that majority of the transactions that are done through the channel of Cryptocurrencies can overcome the regulatory bodies without any complication.

However, one finding of this paper contradicts the finding of Peters *et al.* (2015). More than 76% of the illegal transaction that is done through the cryptocurrency associated channel is not conducted through the implementation of normal Cryptocurrencies. In this situation, a different Cryptocurrency is used for the money laundering process and these 'opaque currencies' are developed with added advantages to bypassing the surveillance methods. Therefore, more than lack of central authorities, this paper helped to identify the technological advancements that are upgrading the Cryptocurrencies for their ability to overcome the governing regulations. Thereby, this paper identified a different issue associated with the reason, due to which the central authorities are failing to control money laundering issues. Another research by Richter *et al.* (2015) was conducted to understand the way Cryptocurrencies are becoming a revolution in the transaction processes and their contribution in increasing events of financial terrorism, tax evasions and money laundering processes, all over the world. As more than 10,000 leading organisations in the world accept money through Cryptocurrencies, it was difficult to analyse the channels in which money laundering was conducted. Findings of this paper identified that there are multiple strategies associated cryptocurrency associated money laundering have not been implemented in the economic or financial regulatory agencies as this transactional method is electronic and regulation could create ethical complication with user privacy and anonymity. Hence, in this situation, the regulatory body is unable to work in their full potential due to ethical consideration associated facilities.

Therefore, with the discussion of findings collected from these research papers, it could be identified that central authority's absence is the foremost reason due to which, majority of the transactions can overcome the regular surveillance mechanisms for any transaction process. It was also identified that with technological advancements, a different type of Cryptocurrency has been developed by illegal organisations due to which it becomes difficult to identify the illegitimate transactions. These newly upgraded Cryptocurrencies can overcome the regulatory process with their anonymous and privacy associated ethical considerations and in the lack of new and developed legislations or regulations, the primitive economic or financial

regulatory bodies are failing to control or contain the cryptocurrency associated crimes.

2.6   Conceptual Framework

A conceptual framework is considered as the blueprint of the complete research process in which all the important aspects of the research are presented through pictorial representations so that a compact knowledge of the complete research could be provided to the readers (Adom *et al.*, 2018). This chronological plan includes details about the methodology and with simultaneous strategies, positions the steps that with details about the field and the current research development about it. Therefore, with a detailed analysis and representation of the conceptual framework within the research, it would be easier to identify the variables that are important for the research process (Ravitch and Riggan, 2016).

In this research paper, the primary variables that are Cryptocurrencies and money laundering events, in which, moderator variables (variables, presence of which alters the outcome) are lack of central authorities as well as the failure of governmental policies in containing the illegal activities. Hence, the blueprint included these variables along with the methodological processes, implementation of which increased the attainment of research findings. The conceptual framework developed for this research is as follows:
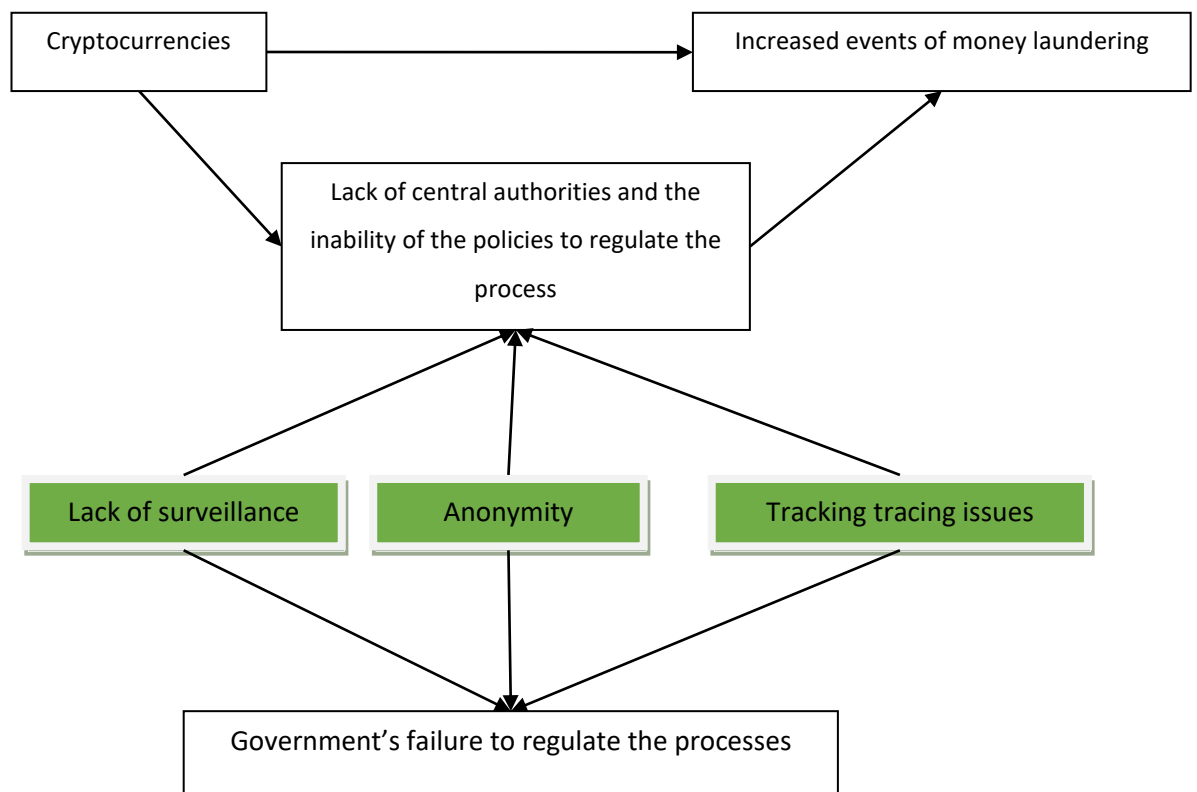
(Developed by the author)
Figure 2: Conceptual framework of research

2.7 Selected hypothesis for this study

After completion of the above-mentioned discussion, and developing the conceptual framework of this study, it is crucial that multiple hypotheses could be developed so that by testifying this hypothesis, the research questions could be answered. The first hypothesis for this research would be:

H1: Anti-money laundering policies and their complications are the primary reason for financial terrorism

Null H1: Anti-money laundering policies and their complications are not associated with financing terrorism.

If H1 is proven significant, it will ensure that anti-money laundering policies and their failures are the reason for increasing financial crimes.

H2: Central authorities are crucial for controlling money laundering through Cryptocurrencies

Null H2: Central authorities are crucial, but they cannot control money laundering through Cryptocurrencies

Proven significance of H2 would identify the crucial role of central authorities in controlling money laundering incidences.

H3: There is a connection between outdated governmental policies and lack of central authorities and associated involvement of Cryptocurrencies

Null H3: There is no connection between outdated governmental policies and lack of central authorities and associated involvement of Cryptocurrencies

If this hypothesis is proven to be significant through research, then the role of outdated governmental policies upon the Cryptocurrencies associated anti-money laundering incidences would be justified.

2.8 Conclusion

While concluding this literature review chapter, it is mandatory to summarise the main points of the complete chapter. In this literature review, it was important to develop a theoretical basis regarding the chosen research topic and hence, the systematic literature search strategy was implemented. In this systematic literature search strategy, keywords were developed with the help of research objectives and these were included in the search process in reliable scientific databases. In this situation, all the papers that complied with the inclusion and exclusion criteria were included in the discussion and three themes were developed for the discussion. In such situation, through the discussion of these themes, it was established that due to electronic nature and its ability to skip the surveillance strategies, illegal channels are implementing these channels for their money laundering activities. Further, this literature review also established that due to lack of policies and frameworks for the regulation or control of the money laundering activities, governments are finding it difficult to identify the channels through which these processes are commenced. Finally, it was also established that with the absence of central authorities,

transactional processes skip the governing and regulatory processes due to which, these transactions remain unidentified. Therefore, these findings of the literature studies helped to develop a theoretical base for the complete research paper, depending upon which, the conceptual model for the ongoing research paper was developed.

3 Methodology and Research Design

3.1 Overview

The methodology section that has been developed for completion of this research is based upon the Research Onion Model propounded by (Saunders *et al.*, 2016). As mentioned within the Research Onion Model, all the layers or sections of it help to implement a general and/or a more specific approach to it (Melnikovas, 2018). There are six steps of this research model, the application of which helps the researcher to implement a primary research process. Therefore, with the implementation of this methodological approach, this chapter will develop a detailed discussion about the research strategies and research approaches implemented within this research paper (Omotayo and Kulatunga, 2015). The research onion developed for this research is as follows:

Research approach: Inductive and deductive boundary

Philosophy: Positivism/constructivism

Research design: exploratory study

Data collection: survey and interview

Data analysis: survey testing and hypothesis testing with thematic analysis
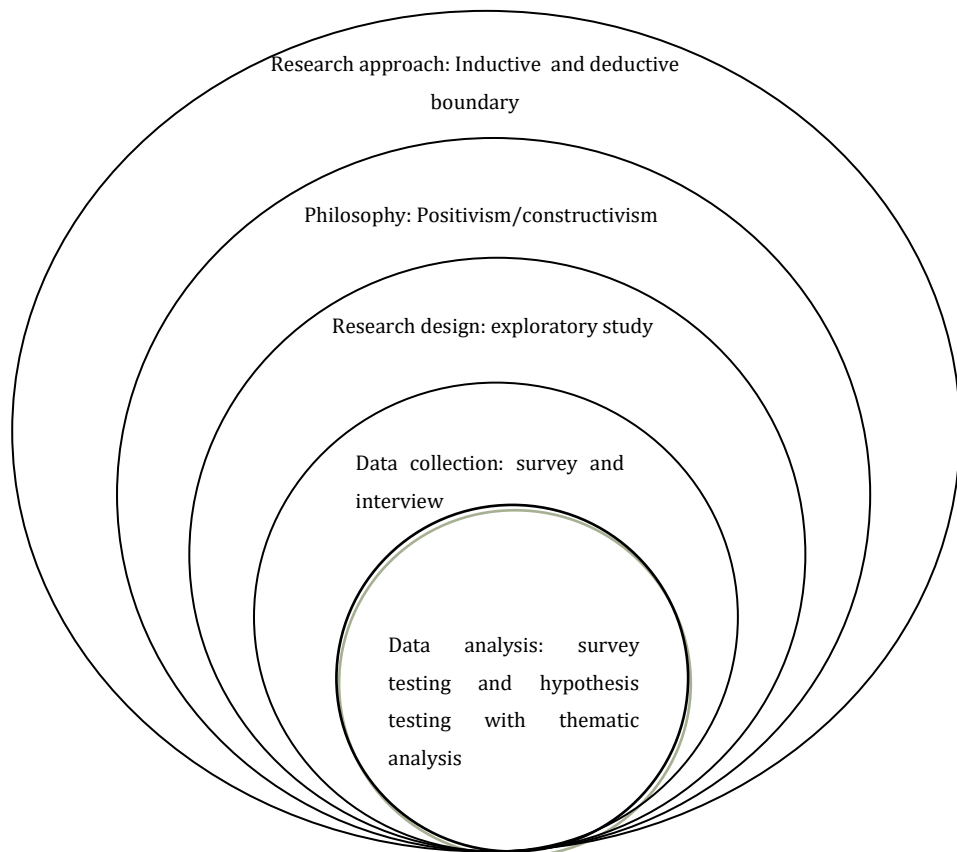
Figure 3: Research Onion model for this research

3.2   Research Philosophy and Approach

Research philosophy is considered as the belief of the researcher that helps them to conduct the entire process from its conception to data collection and data analysis process and also allows them to draw inferences from the entire process while identifying findings of the research (Rahi, 2017). As per (Ormston *et al.*, 2014), there are four main research philosophies around which the majority of the research approaches revolve and these are Interpretivism, Realism, Positivism, and Pragmatism. In this research, **positivism** has been chosen as the research philosophy for data collection and analysis from the quantitative survey. As per (Kivunja and Kuyini, 2017), a positivist approach helps researchers to analyse the research data from an objective viewpoint. More specifically, while collecting and analysing the data collected from research participants, positivist research philosophy would help the researchers to eliminate the personal opinion of the respondents and use an objective approach for the study. Therefore, as per (Antwi and Hamza, 2015), the entire approach of positivist research philosophy implements an objective approach to measuring data with the help of data manipulation and the analysis developed from this approach becomes free from personal opinions of the research participants. As the primary aim of this research is to understand the connection of implementation of virtual Cryptocurrencies and lack of central authority with complications of anti-money laundering policies, an objective approach would help the research to focus more upon the data than the opinions of the participants. Therefore, with Internal realism as the research ontology, positivism was chosen as the epistemology for the research philosophy (Schmidt, 2016). Similarly, for the interview process of this research, relativism was chosen as the research ontology, while constructivism was selected as epistemology so that a constructive and exploratory study could be conducted.

While conducting any research, it is important to visualise or conceptualise the complete process so that while collecting and analysing data, and drawing inferences for the complete research process, reliability and authenticity of the process could be maintained (Khan, 2014b). The research approach is considered as the process that helps researchers from the commencement of the research to completion of it, with its ability to help in conceptualisation of theoretical and conceptual models (Ormston *et*

al., 2014). However, before selecting the research approach appropriate for the research process, it is important to align it with the research philosophy so that all the theories, approaches and ideas could be used in the favour of the research. As mentioned in (Saunders *et al.*, 2016), two primary research approaches are used for the majority of the research processes, inductive approach and deductive approach. The inductive research approach is a research process, which is a novel approach and no previously conducted research are being used for the development of research findings, on the other hand, the deductive approach helps to develop research findings from previous research processes and no new research data or collected or analysed (Khan, 2014a). As this research developed its conceptual framework and has conceptualised surveys and interviews with research participants to collect data and analyse them to draw the inference, a mixture of both inductive and deductive approach have been selected for this research process (Creswell and Creswell, 2017). With the identification of new data and analysing them to find answers to the research question, the inductive-deductive approach to this research would help to the current understanding of the research process.

3.3 Research Strategy

As mentioned by (Avella, 2016), there are two kinds of research design that are implemented within research papers, qualitative and quantitative research design. These are primarily data collection techniques, however; these processes help to draw the inference, influenced by the modalities through which the data collection strategies are conducted within the research. While quantitative research design is associated with the collection of numerical data, qualitative research design focuses upon data that could help to understand the information, conceived through research processes (Palinkas *et al.*, 2015). As the primary aim of this research is to understand the way absence of central authorities and presence of virtual Cryptocurrencies is increasing risk to anti-money laundering policies, this research requires a valid discussion, data collection and trends mentioned by the experts as research participants. Hence, as per this justification, opinions of the research participants would be eliminated from the data analysis and collection process.

Research strategies, on the other hand, are categorical guidelines, which are identified at the beginning of the research process and through effective data collection and data analysis methods, help to achieve the research objective identified for the process (Wohlin and Aurum, 2015). There are three primary types of research strategies that could be implemented to comply with the chosen research philosophy, research approach and research design, and these are qualitative survey or interview, quantitative survey and case study analysis. As per (Roller and Lavrakas, 2015), qualitative survey or interviews are conducted in research, when it is important to collect data from the practical world or to analyse the opinions of the experts about a specific topic, to increase reliability and accuracy of the process. On the other hand, quantitative surveys are conducted to collect numeric data regarding any topic, as a qualitative approach cannot justify the complete research approach (Creswell and Creswell, 2017). Hence, with the implementation of the mixed method (quantitative-qualitative) approach to the research process, a group of research participants would be included in the paper so that with honest responses of the participants, research findings could be developed. Therefore, with identification of this research strategy and research design, researchers would include a group of honest and knowledgeable participants to obtain data for the accuracy and reliability of the research process (Khan, 2014a).

3.4   Collection Primary Data

3.4.1   *Sources*

Designing questionnaire

Research questionnaire is a type of research instrument, in which a series of pre-identified research questions that comply with the chosen research topic is accumulated so that identification and accumulation of the research data, important for effective research process could be identified (Taherdoost, 2016). However, before developing the research questions, there are multiple aspects which should be taken care of. The first aspect would be identifying the need of the research objective and then develop substantive research questionnaires so that accurate answers to the

questions could be obtained (Ponto, 2015). Further, appropriate sampling, collection of data, rate of response should be analysed in the research. Before the development of the research questionnaire, these two crucial aspects should be taken into consideration so that while developing questionnaire and survey questions, reliability and accuracy could be maintained and research objectives could be achieved (Rahi, 2017). Further, all these steps are also important while conducting the survey and developing research data so that knowledge needs and attitudes, as well as perceptions of the research participants, could be used for the development of substantive results. For this research process, all the research questions that were included in the research survey questionnaire were closed-ended, while questions included in the interview process were open-ended so that perceptions of the experts could be identified (Watson, 2015). The identification of planning and possibility to honest replies from respondents were important for the development and achievement of the research objectives and hence, the decision of implementing closed-ended questionnaire and open-ended interviews was taken in this research (Taherdoost, 2016).

Research population

As mentioned by (Thomas, 2017), the research population are research participants that are included in the research process so that with their responses accurate research data could be collected and analysed. However, before including research participants, multiple inclusion criteria were selected such as in-depth knowledge about Cryptocurrencies and the way central authorities could be used for identification and implementation of anti-money laundering policies. Therefore, after identifying and verifying the profiles of the participants for their acceptance in the process, research participants were selected.

In this research process, total 30 research participants were selected for the survey and 10 participants were identified for the research process and therefore, with all the inclusion and exclusion criteria, all these aspects were important for identification. As per (George *et al.*, 2014), while identification of research participants for the research, it is important that rather than intuition for their selection in the process, researchers

use inclusion and exclusion criteria. This helps by supporting the research with ethics, accuracy and reliability for future research prospects. Hence, to comply with this finding of Newington and Metcalfe (2014), the aforementioned inclusion and exclusion criteria were selected for the identification of the participants.

However, for identification of the primary pool of the participation sample, random sampling was conducted within the United Kingdom as well as Ireland so that experts from both these countries and their knowledge could be used for getting the answers to the research questions (Rahi, 2017). With random sampling for the primary selection of the pool of participants, it was ensured that all these participants could be provided with equal opportunity to take part in the survey questionnaire (Ponto, 2015). However, inclusion criteria were crafted for the identification of accurate participants. The first criteria were associated with professions that make them experts of Cryptocurrencies and understanding all their positive and negative aspects. Secondly, it was also ensured that these participants are aware of the legislations of the United Kingdom as well as the Republic of Ireland so that they could comment on the anti-money laundering policies and relevant statutory enactments. Therefore, these are the strategies that were implemented for the identification of appropriate research participants.

3.4.2   *Access and Ethical Issues*

Ethical considerations are a set of guidelines or rules that help researchers to understand the limitations for conducting their researches. As per Roberts and Allen (2015), while leading any research, multiple guidelines and set of moral principles must be complied with so that the findings of the research could be implemented for the benefit of the society. As ethics are a primary set of principles or guidelines for a healthy and progressive society, all the researchers require complying with these guidelines for a reliable research process (Nardi, 2015). For this research as well, all the participants were provided detailed research information and they were asked to provide their consent letters if they are willing to take part in the research (Ruel *et al.*, 2015). Further, no participant below the age of 18 years was included in the research

process to maintain the reliability and applicability of this research in future research papers (Rea and Parker, 2014).

3.5   Approach to Data Analysis

As the complete research process is dependent upon the mixed methods such as, a quantitative survey questionnaire and qualitative semi structured interviews, the data analysis also included a mixed method approach including a statistical analysis and thematic analysis. In this multiple themes were identified in association with the interview data results and questionnaires results (Castleberry and Nolen, 2018). These themes were then used to analyse all the data that fall under that specific theme. As per Terry *et al.* (2017), thematic analysis is considered as a prominent research data analysis process in which, all the themes that are identified are developed with data collected from the research participants and hence it eliminates the chances of bias on the part of the researcher as well as participants. Further, with thematic analysis, a statistical analysis of all the survey question responses would be provided in the *Findings* sections so that the analysis of collected data could become holistic. Finally, a hypothesis testing using the Pearson coefficient and p-value (significance) would be conducted for the survey so that the hypothesis could be testified. In this way, all the relevant inferences from the collected data would be collaborated and included within the research data analysis section, so that with existing theoretical analysis in the literature review, practical data and its thematic analysis could also be deducted from this research (Nowell *et al.*, 2017).

3.6   Conclusion

While summarising this chapter, the crucial contribution of this chapter in the achievement of the research goals should be re-established. The methodology is the pathway that leads researcher towards the answers to the research question and through the implementation of research philosophy, research approach, research design and strategy, this pathway becomes guided and strategic for the achievement of its target. In this research, **positivism** research philosophy was implemented with an **inductive-deductive** research approach as it aimed to identify a research topic, which

is novel and has rarely been worked upon. Further, with **quantitative as well as qualitative** research design (Mixed Data Analysis) and data collection strategies, it decided to include research participants, the knowledge and opinion of those would help to identify the impact of lack of central authorities in increasing money laundering associated risks for organisations.

4   Presentation and Discussion of the Findings

4.1   Overview

This chapter of this dissertation discusses the data collection as well as data analysis process depending upon the quantitative survey conducted to understand the impact of governmental policies and central authorities upon the anti-money laundering incidences of cryptocurrencies. All 30 survey respondents were provided with the survey questions (Attached in Appendix) for more than a month so that they can respond to the questions as per their convenience. After analysing these survey questions, the hypotheses identified in the literature review chapter would be analysed so that while discussing these results in the next section, a detailed analysis of the primary variables included in this research could be obtained.

4.2   Findings

4.2.1   *The response rate of the survey*

As per (Hardigan *et al.*, 2016), conducting a survey is considered as the most significant type of quantitative analysis depending upon which, it becomes easier for researchers to infer findings of any research question. Inclusion of an effective questionnaire with multiple options and Likert scales, numeric values about the questions are obtained and through this, interpretation of quantitative results becomes easier (Saleh and Bista, 2017). However, in this case, it is important that every respondent included in the study responds to the research questions as depending upon their responses, the obtained results are considered reliable to be generalised for the entire society (Funkhouser *et al.*, 2017). This concept is known as the 'response rate of survey' and it is known as the percentage of a number of participants that actually responded in the survey compared to a total number of participants included in the study (Wei *et al.*, 2020). As this research survey was responded by all 30 professionals included in the survey, the response rate of this survey is 100%.

4.2.2 *Descriptive data of the participants*

All the 30 survey respondents were asked about their demographic details such as their gender, their age group, their educational qualification as well as their professional experience of being associated with the finance sector of their country.

Table 2: Gender of the respondents

Gender	Number	Percentage	Cumulative Percentage
Male	18	60	60
Female	12	40	100
Total	30	100	

The responses identified that a total number of male and female respondents participated in this research were 18 and 12 respectively, representing 60% and 40% of the total percentage of the number of respondents. The graphical representation is as follows:
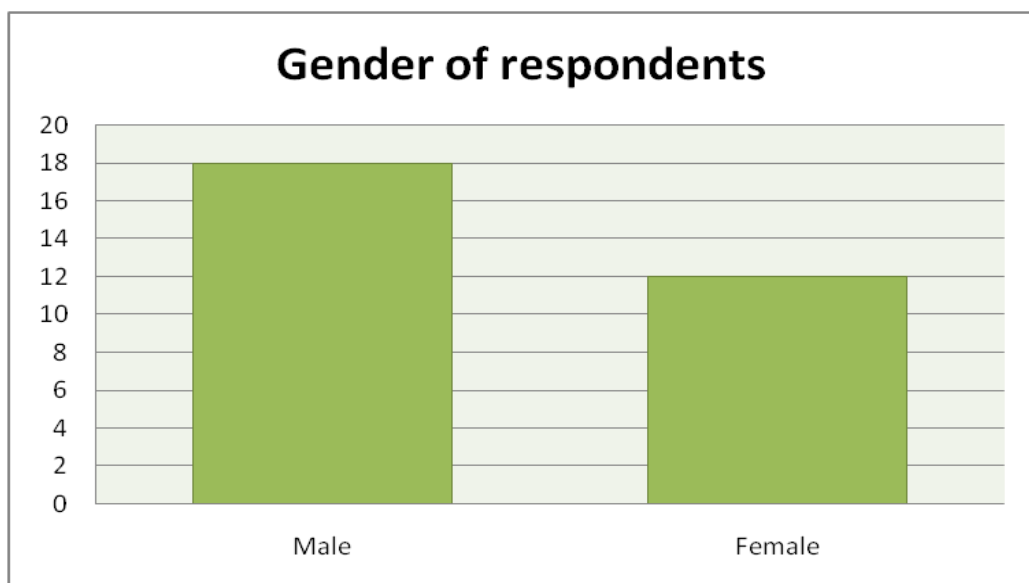
Figure 4: Graph of Gender of Respondents'

Similarly, upon asking about their age group, they were provided with five options. Their responses have been provided in the tabular format in the following section:

Table 3: Age group of respondents

Age groups	Numbers	Percentages	Cumulative percentage
21-30 years	6	20	20
31-40 years	7	23.4	43.4
41-50 years	7	23.3	66.7
51-60 years	7	23.3	90
61 and above	3	10	100
Total	30	100	

From this data table, it could be identified that a maximum number of survey responded were in the age group of 31 to 40 years, 41 to 50 years, 51 to 60 years (as all three age groups were present in equal numbers, 7 individuals each). Similarly, 6 individuals were associated with the 21 to 30 years of age group and 10% of the participants were associated with age group 61 and above. The graphical interpretation is as follows:
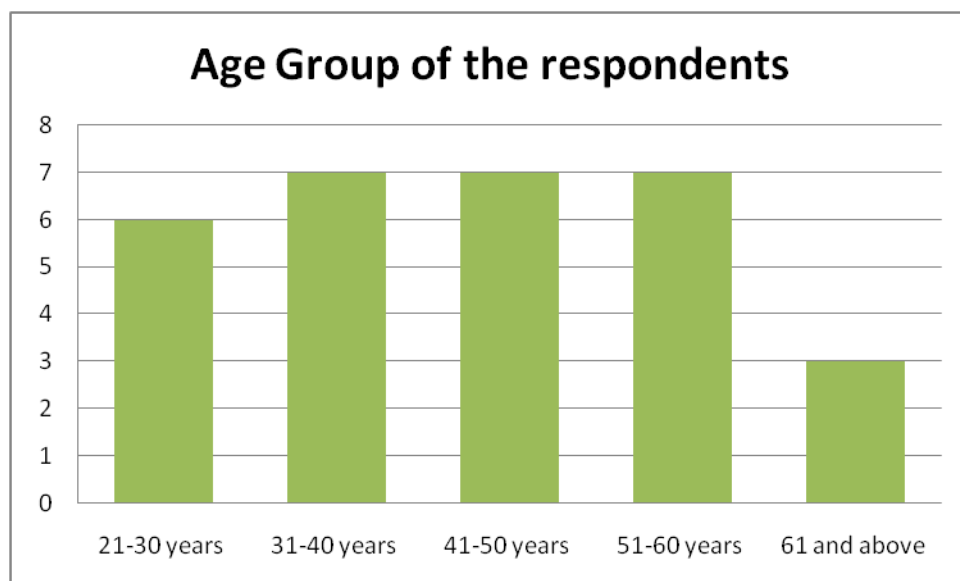
Figure 5: Graph of Age group of respondents

Another question was asked to these survey respondents related to their educational qualification and they were asked to respond on four options given to them. The responses of these respondents are as follows:

Table 4: Educational background of respondents

Education group	Numbers	Percentage	Cumulative percentage
High School	1	3.3	3.3
Bachelor's degree	3	10	13.3
Master's degree	11	36.7	50
Doctorate	15	50	100
Total	30	100	

Responses collected from the respondents upon this data table identified that majority of the respondents that took part in this survey were having a doctorate degree, while 36.7% of respondents had master's degree for finance associated education. 10% of

the respondents were also from a bachelor's degree and 1 individual also belonged to the high school education. The graphical representation of these responses is as follows:
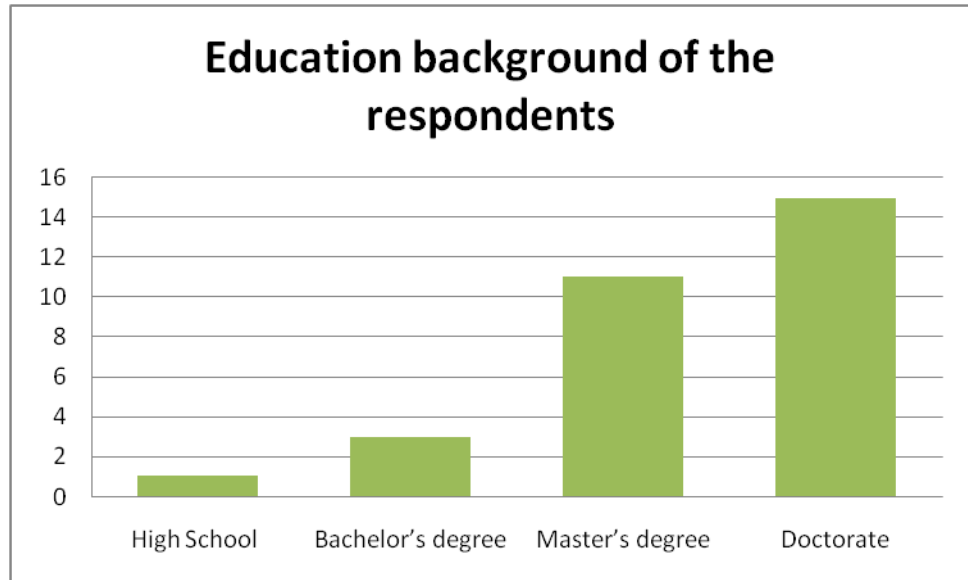
Figure 6:Educational background of respondents

The final question in this demographic detail of survey was associated with their experience of association with the financial sector of the country and it was identified that they were provided with four options to respond to. The responses collected have been provided in the following section:

Table 5: Professional experience of respondents

| Years of experience	Number of respondents	Percentage	Cumulative percentage
2 years	5	16.7	16.7
5 years	10	33.3	50
10 years	9	30	80
More than 10 years	6	20	20
Total	30	100	

Analysing this data table identified that majority of the respondents had 5 years of experience of being associated with the financial sector of their country, while 30% had 10 years of experience in a similar field. It was also identified that a total of 20% of participants were associated with their financial sector for more than 10 years.

Hence, from this demographical analysis, it could be mentioned that maximum survey respondents were associated with their finance sector for 5 years and had a degree of a doctorate degree. Therefore, it could be mentioned that their responses are significant and could help to find out the answers to the chosen research questions.

4.2.3   *Opinion regarding your agreement/disagreement to these following statements*

Under this theme, there were multiple statements asked the survey respondents so that their attitude and responses could be collected for development and analysis of this research. Upon asking the survey respondents about the importance of Cryptocurrencies in 21st century's transaction process, it was identified that more than 50% of the respondents 'strongly agreed' to the fact that Cryptocurrencies are an important transactional method in the 21st century, while only 3% 'strongly disagreed' to this statement. Thus, collectively 59% of the respondents agreed to the notion that Cryptocurrencies can be termed as an integral part of the modern transactional system. The graphical representation is as follows:
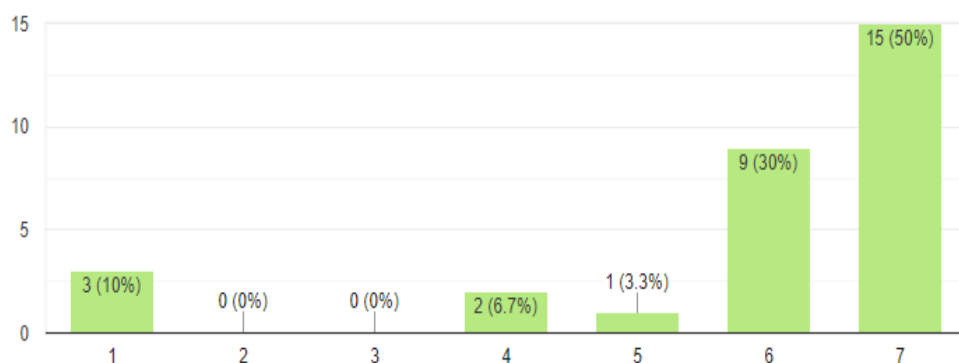
Figure 7: Importance of Cryptocurrencies in 21st century's transaction process

Similarly, upon asking the convenience associated with Cryptocurrencies in comparison with the traditional transactional method, it was identified that total 53.3% of the respondents of this survey 'strongly agreed' to this statement and only 10% 'strongly disagreed' to this statement. Therefore, if the total number of agreements associated with statement are collected, total 58.3% of the respondents agreed to the fact that Cryptocurrencies are much more convenient than the traditional transactional methods. Hence, the graphical representation of this dataset is as follows:
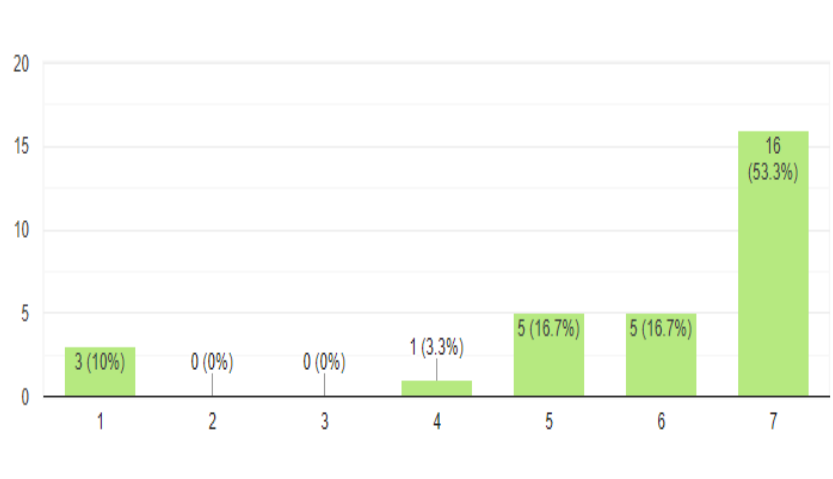
Figure 8: convenience associated with Cryptocurrencies in comparison with a traditional transactional method

Another statement was put for their response and this statement aimed to obtain their responses upon 'Cryptocurrencies and their association with money-laundering activities around the world'. Upon this statement, it was identified that a huge number of respondents (43.3% respondents) 'strongly agreed' to this notion, while 33.3% 'agreed' to this fact. Hence, total cumulative agreement with this statement is 76.6%, which is most 23 respondents from 30 individuals included in the survey. Similarly, it was identified that only 1 survey respondents disagreed to this statement and hence, a unanimous agreement on this statement was identified. the graphical interpretation of this data set is as follows:
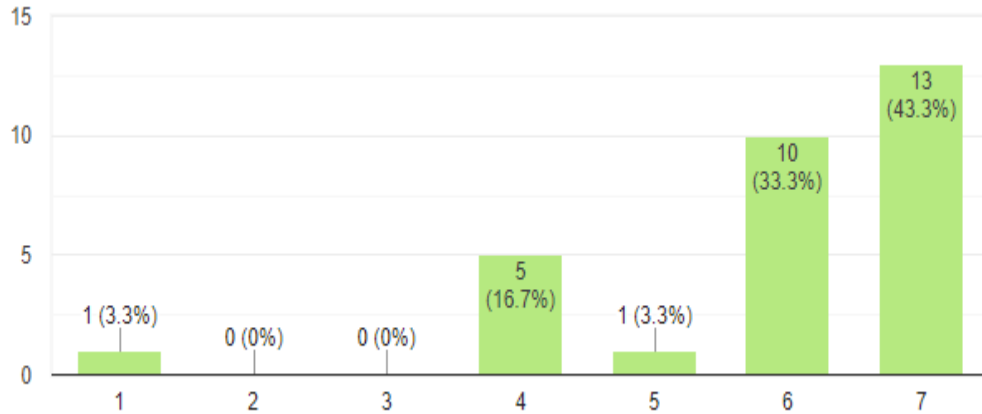
Figure 9: Cryptocurrencies association with money-laundering activities

The fourth question under this theme was associated with money laundering associated complication due to improper analysis and almost every survey respondent such as 43.3% of the survey respondents identified this statement as 'strongly agreed', while 30% of the respondents 'agreed' to this statement. However, the significant part of this response is that no respondent 'disagreed' to this statement and a total agreement could be calculated as 73.3%. Hence, unanimously, every respondent agreed to the fact that the analysis of cryptocurrency within money laundering issues is one of the primary complications in the current financial world. The graphical representation is as follows:
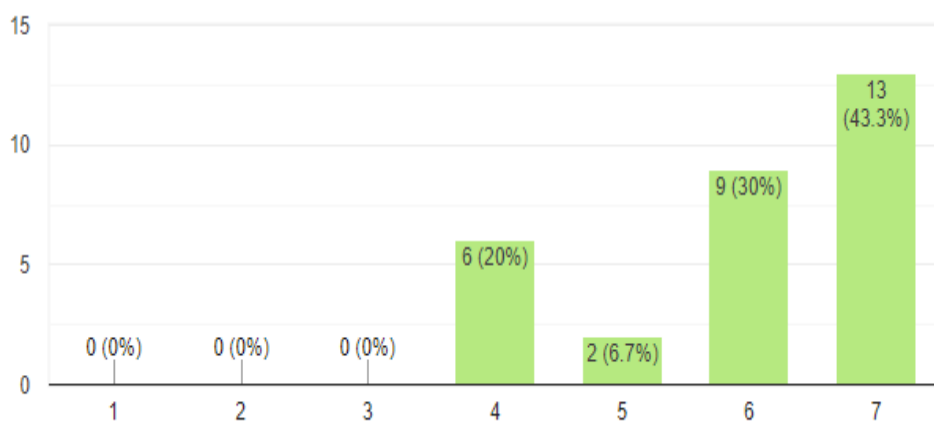
Figure 10: Money laundering associated complication due to improper analysis

The final question under this theme was associated with assessing the attitude of respondents identifying 'role of every kind of Cryptocurrencies in money laundering,

tax evasion and other financial terrorism associated activities'. It was found that more than 56.7% of the respondents 'strongly agreed' to this statement and 20% of the respondents 'agreed' to this statement. it was also identified that no respondents 'disagreed' to this statement and hence, a unanimous viewpoint of survey respondents identified the role of Cryptocurrencies in money laundering, tax evasion and other financial terrorism associated activities. The representation of this dataset is as follows:
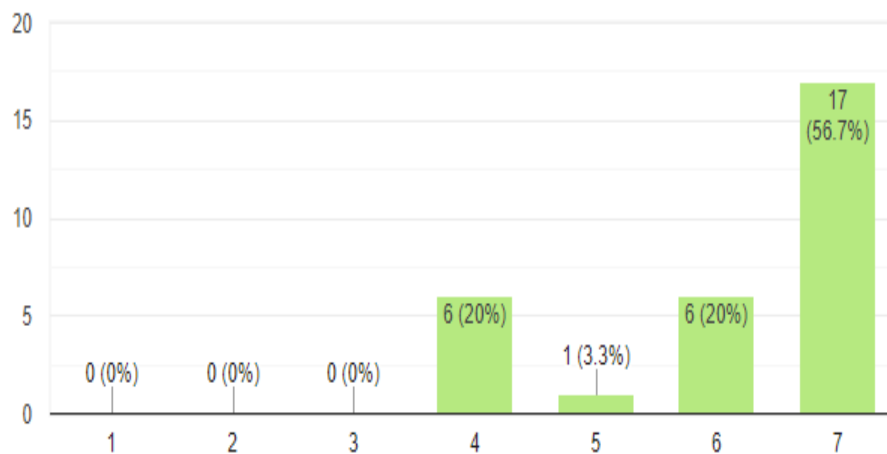
Figure 11: Role of every kind of Cryptocurrencies in money laundering, tax evasion and other financial terrorism associated activities

Therefore, all the data set in this theme identified that all the respondents unanimously identified the analysis method of Cryptocurrencies as the primary reason that associated it with complications such as tax evasion and financial terrorism.

4.2.4 *Opinion about lack of central authorities and policies for containment of money laundering using cryptocurrencies*

Under this theme, all the survey respondents were asked 8 questions directly about their viewpoint so that the illegal transactional process and involvement of cryptocurrency could be linked. They were also asked about their point upon inclusion of central authorities to control such activities in transactional processes. Hence, the first question under this theme was identifying the 'role of central authorities in the containment of money laundering through Cryptocurrencies'. On this statement, more

than 53% of the respondents 'strongly agreed' to this fact, while 30% said they 'agreed' to this fact. One significant fact of this response was no one disagreed to this statement and therefore, a total of 84% individuals showed their agreement to the fact that it is important to have a central authority for containment of money laundering through Cryptocurrencies. The graphical representation of this dataset is as follows:
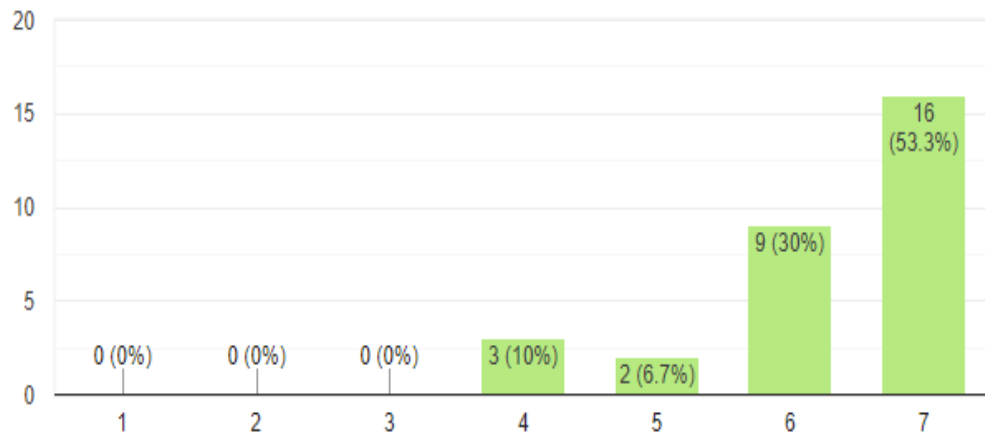
Figure 12: Illegal transactional process and involvement of cryptocurrency

After this, all the survey respondents were asked about their opinion of inclusion of governmental or non-governmental agencies as central authorities and it was found that 60% of the respondents identified their 'strong agreement' with this fact. Similarly, 30% of respondents identified that they 'agree' to the fact that central authorities could be of governmental and non-governmental agencies. However, in this response as well, no respondent identified their 'strong disagreement' with this process and hence, it could be mentioned that a huge 90% of respondents agreed to this given statement and agreed upon including governmental or non-governmental agencies as central authorities. The graphical representation of this data set is as follows:
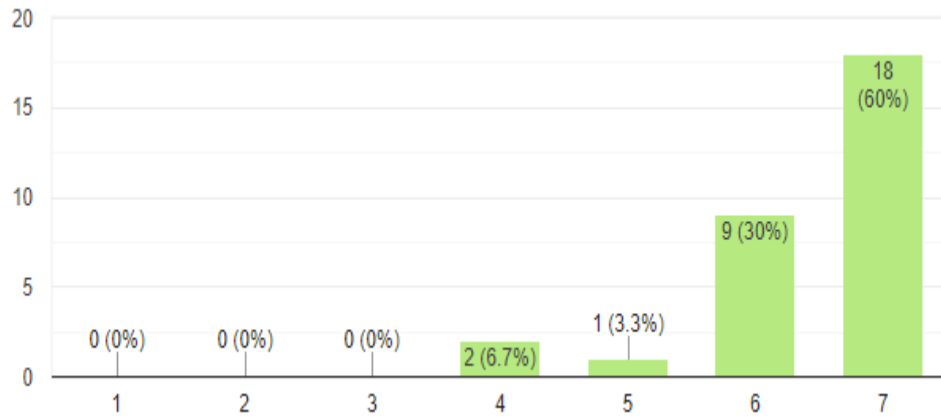
Figure 13: Opinion of inclusion of governmental or non-governmental agencies as central authorities

The third statement which was asked to these survey respondents were associated with the identification of 'central authorities ability to control the illegal process by identifying the source of the transaction. On this statement, 60% of the respondents showed their 'strong agreement' with this statement and it was identified that 23.3% responded with 'I agree' option. Similar to the previous statement, no respondent chose the option of 'strongly disagree' and hence, it could be mentioned that on a 7 Likert scale, more than 83% of the survey respondents agreed that central authorities would be a great help for controlling the illegal processes by identifying their sources. The graphical representation of this data set is as follows:
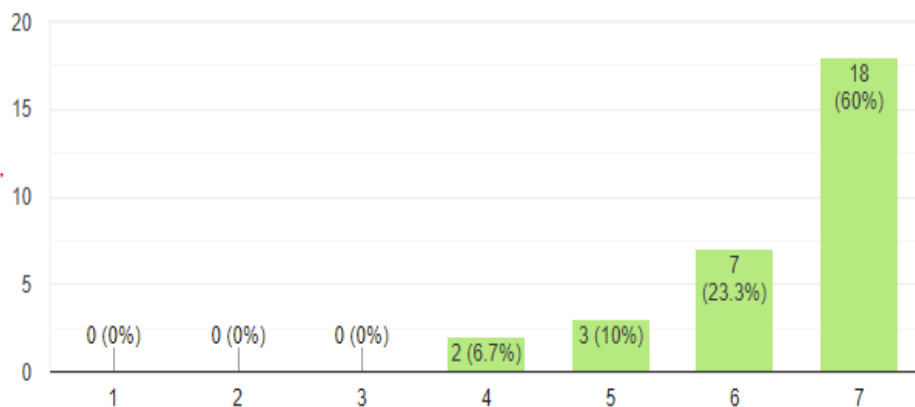
Figure 14: Central authorities ability to control the illegal process by identifying the source of transaction

Another question under this theme was asked to identify the responses or attitudes of the respondents about 'identifying the role of central authorities' in increasing the chances of tracking and tracing of channels included in money laundering processes. Upon this statement maximum respondents (66.7%) strongly agreed that central authorities do have a higher chance to track and trace for channels for money laundering. Similarly, 23.3% of respondents agreed to this statement and therefore, a total of 90% of the agreement was shown by the respondents upon this statement. Finally, not a single disagreement upon this statement was found and hence, a unanimous agreement upon this statement was found. The graphical representation is as follows:
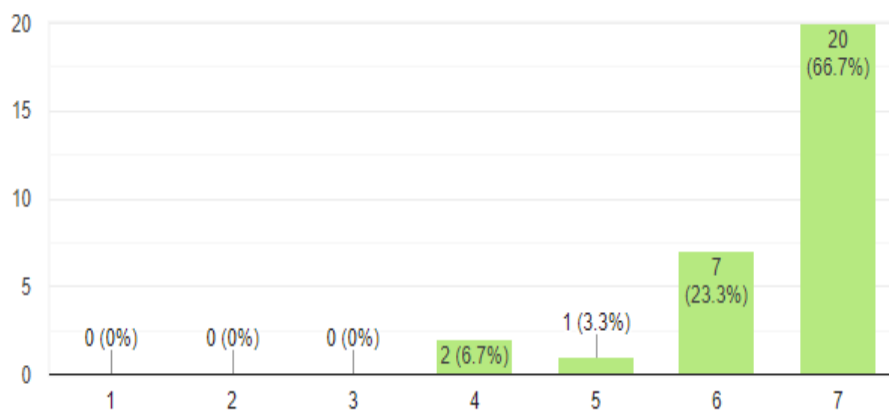
Figure 15: Identifying the role of central authorities' in increasing the chances of tracking and tracing

After this question, all the respondents were asked about the crucial role of central authorities in identifying the donor or receiver's identity involved in the system. Upon this question, 63.3% of respondents strongly agreed that central authorities play a crucial role in identifying and donor as well as receiver's identity involved within the system and it was mentioned that central authorities should be used in the identification of people involved in this system. Similarly, 23.3% of respondents also agreed to the point and therefore, total agreement on this question was found to be 86.6%, which is almost every research participant included in this study. The graphical representation of this dataset is as follows:
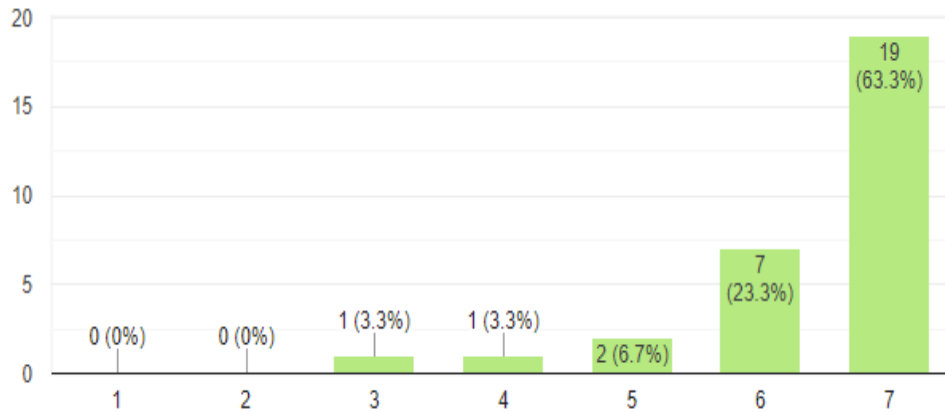
Figure 16: Crucial role of central authorities in identifying the donor or receiver's identity

After this, research participants were assessed for their agreement on the statement, 'governmental policies are outdated in controlling money laundering processes' and every respondent provided their response upon this statement. It was identified that 60% of the survey respondents strongly agreed to this statement and 20% of them responded as 'they agree'. Hence, total agreement upon this statement was 80%, which is 24 out of 30 research participants. Only 1 out of 30 respondents strongly disagreed to this statement-making disagreement percentage of 3.3%. Therefore, unanimously, every respondent identified outdated governmental policies as the complication for Cryptocurrencies involvement in money laundering policies. The graphical representation is as follows:
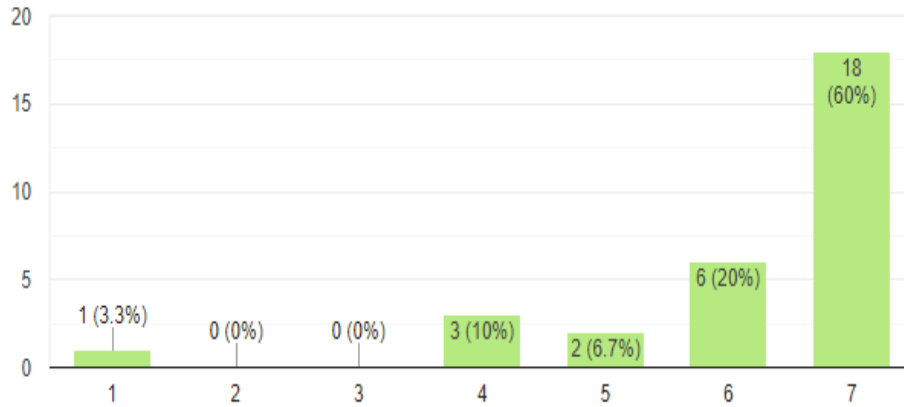
Figure 17: Governmental policies are outdated in controlling money laundering processes

Another question was asked to understand the response of survey respondents about their response upon 'Governmental policies and legislation are non-functional due to ethical considerations, anonymity and privacy of the electronic transaction methods' and upon this statement, 56.7% of respondents provided their 'strong agreement'. Similarly, 23.3% of the respondents mentioned their agreement to this statement and hence, it could be mentioned that majority of the survey respondents (80%) were agreed to the fact that ethical considerations, anonymity and privacy of the electronic transaction methods are making the governmental policies ineffective and non-functioning. The graphical representation of this dataset is as follows:
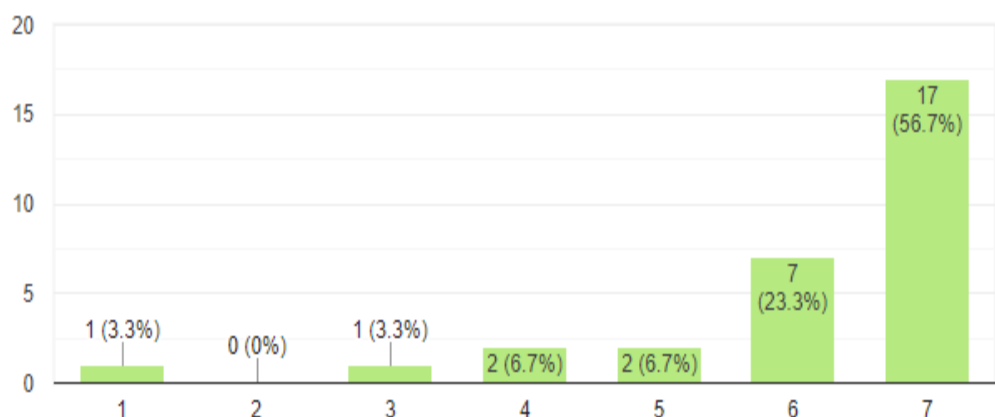
Figure 18: Governmental policies and legislation are non-functional due to ethical considerations, anonymity and privacy of the electronic transaction methods

The final statement under this theme and this survey process were associated with respondent's response upon 'Governmental policies are failed in strict surveillance of the illegal transaction with cryptocurrency's involvement'. It was identified that 73.3% of survey respondents strongly agreed to the fact that policies are failed in strict surveillance of the illegal transaction with cryptocurrency and 13.3% agreed to this same statement. Hence, huge support was obtained upon this statement as 86.6% of the survey respondents were agreed to the abovementioned statement and only 3.3% of disagreement was obtained. The graphical representation of this survey data is as follows:
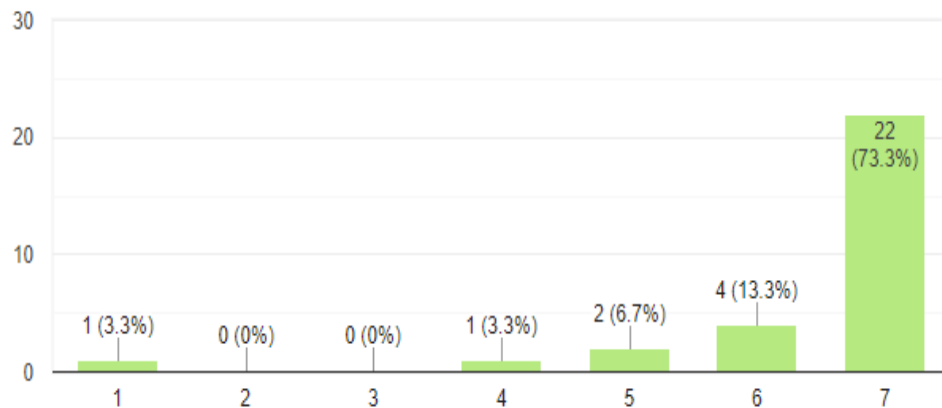
Figure 19: Governmental policies are failed in strict surveillance of the illegal transaction with cryptocurrency's involvement

4.2.5   *Hypothesis testing*

H1: Anti-money laundering policies and their complications are the primary reason for financial terrorism

Null H1: Anti-money laundering policies and their complications are not associated with financing terrorism.

This hypothesis discusses towing primary variables such as 'presence of complication in anti-money laundering policies' and 'increasing financial terrorism'. To establish a connection between this two, it was important to correlate the responses of the

survey participants given upon questions related to these. Therefore, question number 8 and question number 9 were correlated with each other.

Table 6: Pearson Coefficient of Hypothesis 1 analysis

	Question 8	Question 9
Question 8	1	0.575495623
Question 9	0.575495623	1

This Correlation co-efficient table identifies that both the data provided by survey respondents in question 8 and question 9 are positively correlated with each other and there is a linear relationship between complications of Cryptocurrencies and their involvement in illegal activities such as money laundering and financial terrorism. Hence, it could be mentioned that the correlation coefficient found are significant with each other.

Table 7: Regression Coefficient of hypothesis 1

	Coefficients	standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	2.591104	0.968471	2.675457	0.012325	0.60728	4.574927	0.60728	4.574927
Analysis of money laundering is complicated in the presence	0.59367	0.159431	3.723671	0.000877	0.26709	0.92025	0.26709	0.92025

of money laundering							

Within this regression analysis table, it was identified that the p-value for the intercept of these two data sets (question 8 and question 9) is 0.012 and the p-value of the regression coefficient was found to be 0.0008. **As the significant alpha p-value is 0.05 and both these p-values in regression analysis are less than the alpha value, the H1 is statistically significant and null H1 is rejected.**

H2: Central authorities are crucial for controlling money laundering through Cryptocurrencies

Null H2: Central authorities are crucial, but they cannot control money laundering through Cryptocurrencies

For the analysis of hypothesis two, two variables are identified 'importance of central authorities' and their role in controlling Cryptocurrencies'. Hence, the survey questions that discuss these two variables should be correlated with each other to find a direct and linear relationship between these variables. Therefore, question number 10 and 12 would be statistically correlated for the Pearson as well as the regression coefficient between these two datasets.

Table 8: Pearson Coefficient of Hypothesis 2 analysis

	Question 10	Question 12
Question 10	1	0.69538405
Question 12	0.69538405	1

The Pearson co-efficient found associated with this research identified that both these data set are strongly correlated with each other as the value is 0.695 and hence a strong, direct and linear relationship between these two data set could be identified from this correlation co-efficient analysis test.

Table 9: Regression coefficient of hypothesis 2

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	3.42823	0.98521	3.479696	0.001662	1.410119	5.44634	1.410119	5.44634
Central authorities are important for containment of money laundering through Cryptocurrencies	0.4689	0.155387	3.017617	0.005378	0.150603	0.787196	0.150603	0.787196

Upon analyzing these two data sets of question 10 and question 12 through the regression analysis process, this regression analysis table was obtained in which the p-value of the intercept between these two data sets is identified as 0.0016. Similarly, it was found that the p-value of the regression coefficient is 0.0053. In this case, it should be analysed that both thee p-values are less than the alpha value (0.05) and hence, it could be mentioned that there is a significant and positive relationship between the chosen variables. Therefore, null H2 is rejected and the H2 is accepted.

H3: There is a connection between outdated governmental policies and lack of central authorities and associated involvement of Cryptocurrencies

Null H3: There is no connection between outdated governmental policies and lack of central authorities and associated involvement of Cryptocurrencies

For the analysis of hypothesis 3, 'lack of central authorities' and 'outdated governmental policies' should be the two variables that should be correlated with each other as it is possible that due to outdated governmental policies, central authorities are not being able to work effectively to control incidences of cryptocurrency associated money laundering policies. Hence, in this case, question 15 (discusses outdated governmental policies) and question 16 (discusses the limitations of central authorities) would be correlated with each other.

Table 10: Pearson Coefficient of Hypothesis 3 analysis

	Question 15	Question 16
Question 15	1	0.688103
Question 16	0.688103	1

This Pearson co-efficient analysis identified that the correlation between these two datasets are positive and strong as the value is 0.688. This value identifies that both these responses of the respondents are linear, direct and strongly correlated with each other and hence, there is a direct relation between outdated governmental policies and limitations of central authorities.

Table 11: Regression co-efficient of hypothesis 3

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	2.97092	1.083104	2.742967	0.010498	0.752281	5.189559	0.752281	5.189559
Governmental policies	0.507418	0.171468	2.959255	0.006212	0.156181	0.858655	0.156181	0.858655

are outdated in controlling money laundering processes								

This regression analysis table identifies that the inception p-value of both the datasets is 0.010 and the o value of the complete regression analysis is 0.006. Hence, both these values are less than the alpha value for p-value and hence, there is a strong and significant relationship between the two chosen variables of this hypothesis. Therefore, depending upon these analyses, the Null H3 is rejected and the H3 is accepted.

Therefore, all these research hypotheses are proven to be true and significant depending upon the quantitative and statistical data analysis method.

4.2.6 *Thematic analysis of interview responses*

After completion of the interview session with selected five professionals, there were multiple themes of central ideas that were identified from their interview transcript. However, depending upon the survey responses, it was important to accumulate al the responses in three central themes so that effective discussion of their responses for data analysis could be identified. This is the reason; the following central themes were selected for thematic data analysis of the survey responses.

Lack of up-gradation in Cryptocurrencies

This first theme was associated with identification and analysis of lack of up-gradation of Cryptocurrencies for its improved analysis and its role in money laundering

activities. Upon asking about the lack of policies that could effectively improve or upgrade the Cryptocurrencies, respondent 1 stated: "It is very unlikely that people who are associated with such activities would actually help or allow the up-gradation of Cryptocurrencies as it would be very stupid to stop their sole source of income". Respondent 2 and 3 also supported this fact and they mentioned that Cryptocurrencies up-gradation has not been done as with changes; it could have introduced facilities to track the usage of Cryptocurrencies. Therefore, it is said that organisations that are responsible for up-gradation and development of Cryptocurrencies are not doing this work as they are not willing to add features for tracking and identification of illegal activities that are currently happening. Similar things were told by respondent 4 and 5 as they also questioned the authorities and termed it as a 'strategy to hide from critical governmental policies'. Therefore, from these responses and facts identified from the interview held that authorities and departments that are responsible for the development of new strategies should be taken under strict scrutiny so that continuous and lawful up-gradation of the Cryptocurrencies could be made possible.

Limited governmental efforts

This theme is the most widespread fact and a phrase which was used by all the interview candidates in their statement. There were three questions associated to this theme in which it was aimed to identify the complications or limitations these experts think their governmental (the UK and Irish governmental) policies have due to which; they should be termed as limited. Upon asking this question, the respondent 1 candidly said that "why are you expecting governments to create rules for this, they are not even concerned about the money laundering issues happening around!!!!". This statement directly implies that the government policies are not at all determined to help to identify the loopholes in transaction process due to which, Cryptocurrencies are being recognized as supporting strategy of money laundering issues. Respondent 2 and 4, on the other hand, thought that governmental policies are 'okay' but the people executing and using it for their own 'benefit' are not using these strategies effectively for the identification and control of money laundering through cryptocurrency. Similarly, respondent 3 and 5 were also critical about the proper execution of the governmental policies for control of money laundering issues of Cryptocurrencies.

Hence, contradictory statements in all these respondents were identified in which, two respondents said that the policies are outdated, while others thought that the execution of the policies are outdated in nature.

Lack of central authorities in a cryptocurrency transaction

This theme has also been developed after receiving multiple statements from all the interview respondents as they repeatedly mentioned the importance of central authorities to control and maintain transparency in transactional methods with Cryptocurrencies. While Respondent 1 and 4 identified the importance of central authorities to 'ethical means for every transactional steps', respondent 2 and 3 identified its importance for economic governance of all the processes. All these respondents identified the importance of governmental authorities due to which central authorities should be developed and implemented in transactional processes. This is the reason; the central authorities should be included in the cryptocurrency associated transactional processes so that they could help in the development of the ethical and transparent transactional method.

4.3 Discussion

Cryptocurrencies, being a popular transactional method have been identified as the most efficient and effective transactional method of the 21st century (Park *et al.*, 2018). However, there are instances such as a sudden drop of faith and belief in the cryptocurrency transactional process and multiple rampant scams and corruptions that have impacted the belief of organisations in this transactional method (Kaal and Calcaterra, 2018). This is the main reason for which this research has been conducted with an aim so that the importance of central authorities in transactional methods associated with cryptocurrencies should be analysed and the governmental policies that impact or governs this transactional method could be effectively discussed (Soloviev and Belinskiy, 2018). Besides this, it also aimed to identify the loopholes such as lack of central authorities as well as the inclusion of virtual Cryptocurrencies in money laundering processes due to which threat upon transitory regulations are increasing (Sun Yin *et al.*, 2019). This is the reason, in this research with identification of research participants from UK and Ireland for the survey as well as interview a

holistic questionnaire was developed so that these participants could provide their opinion on these questions and help to develop a comprehensive discussion about the chosen topic for better and improved services (Wei *et al.*, 2020). The study data (both survey and interview data) identified that there is a need of central authorities in the transactional process due to which, majority of these complications arise.

Anti-money laundering policies and their effect in controlling cryptocurrency associated scams

Recent years have observed multiple complications in the global finance and transactional methods and one among these, which has the huge impression of global economic processes, is the cryptocurrencies (Dorofeyev *et al.*, 2018) (Ford, 2018). The impression of this transactional method could be identified from the fact that the FATF has also identified the role of cryptocurrency as 'virtual currency' in developing and/or and has identified it as one of the most widely used transactional method in all primary organisations throughout the world (Dark *et al.*, 2019). Despite this, it was identified that Cryptocurrencies are involved in the money laundering processes and the legislation/regulations are unable to control this system (Bakar and Rosbi, 2018). In such condition, these digital technologies have developed or created as well as backed by legislations due to which it is difficult to regulate or control them through other governing bodies (Avdoshin and Lazarenko, 2018). In such condition, lack of central authorities is increasing the risk of illegal transactions as no government body would be able to track or trace the presence of tax evasion, money laundering or other complications (Al-Suwaidi and Nobanee, 2020). This is the reason, in this research all the survey respondents were also asked about a question that could identify the importance of anti-money laundering policies and the way they can help organisations to control the money-laundering issues (Covolo, 2019). Upon this, unanimous support was given by all the survey and interview respondents as they identified that money laundering policies are outdated and they should be modified from time to time so that controlling and tracking of the transactional system could be made possible. In this research survey, almost 84% of the survey respondents identified that central authorities is also a crucial factor which should be included in the economic and financial processes so that money laundering through cryptocurrencies could be

controlled and future prospects as such could be eliminated. Hence, it is found that anti-money laundering policies require to undergo certain reforms so that they could control the cryptocurrency associated scams in financial processes (Auer and Claessens, 2018).

Involvement of Cryptocurrencies in the money laundering process

Cryptocurrencies are not under any governmental or third-party scrutiny (Weber and Kruisbergen, 2019). Therefore, a central author that can verify each transaction for its authenticity is found to be missing in transaction methods using cryptocurrency (Weber *et al.*, 2019a). Cryptocurrencies are associated with money laundering complications and lacking a proper tracking and tracing facilities due to its widespread and inevitable anonymity creates complications for the governmental authorities that lead to its deep and crucial association with money laundering complications (Houben and Snyers, 2018). Cryptocurrencies are controlled or regulated within the European Union with financial and economic laws. However, in multiple research paper of Vandezande (2017), it was found that within the last decade, with the development and inclusion of Cryptocurrencies and Bitcoins, the EU has developed multiple legal frameworks, incorporated governing strategies through payment methods. This is the reason, it was also chosen as a theme and multiple survey and interview questions were asked to the respondents so that attitude and opinions of these professionals could be identified and used for analysis (bin Zul Kepli and Zulhuda, 2019) (PHAT, 2018). It was identified from survey and interview results that Cryptocurrencies such as Bitcoin and Ethereum increased illegal; activities such as money laundering, drug dealing and tax evasions. This research found that the inclusion of multiple themes such as enhanced anonymity, improper regulatory facilities, and governing abilities of the economic strategies are working as complications. This is the reason that majority of the governing organisations are not concerned about any of these policies that could prevent or affect the ethical rights of their consumers. This is the reason; the governmental policies are unable to control economic policies and financial terrorism is increasing in an uncontrolled fashion (Navarro, 2019) (Kruisbergen *et al.*, 2019).

Cryptocurrencies in money laundering processes and threat upon transitory regulations

Central authorities and associated transitory regulations are important for transparent and proper economic processes that could be monitored or regulated by governmental or non-governmental processes (Dalla Pellegrina *et al.*, 2020). As per Irwin and Turner (2018), researchers established through a study that with increased implementation of online transactions, limitless peer to peer financial or non-financial transactions, the requirement of governing authorities and regulatory bodies have become secondary. However, it is important that these transactional processes are regulated or controlled through the online governmental processes so that the complication track or trace the presence of tax evasion, money laundering or other complications (Parveen, 2020). Hence, it was identified that governmental bodies are unable to develop a system, which should be implemented for the regulation or control of usage of Cryptocurrencies in situations associated with illegal activities (Zoldi and Murray, 2017). To understand this and its reach in economic facilities, it was identified that experts also identified that every kind of cryptocurrencies are associated with illegal transactional activities as well as multiple financial terrorism associated activities due to which their processes were affected and thus, loopholes in the policies and legislations were found to be the foremost reason for the increasing risk of utilizing Cryptocurrencies for the money laundering processes (Bubnov and Yakhno, 2020) (Lamberty and Poddey, 2020). Further, they also identify that due to continuous development of the cryptocurrencies associated process impacted this process due to which transitory regulation imposition becomes difficult (Naheem, 2020). This is the reason that the governmental bodies are unable to implement effective mechanisms for the control or regulation of the money laundering, tax evasion and financial terrorism associated situations and the strategies associated with cryptocurrency related money laundering have not been implemented in the economic or financial regulatory system (Kethineni and Cao, 2019) (Kethineni *et al.*, 2018). Likewise, the survey and interview respondents in this research also identified this as one of the most important factors that could have impacted and contributed in the connection of cryptocurrencies with the money laundering processes (Collomb *et al.*, 2019).

4.4 Conclusion

After completion of this result and analysis section, this research identified that all the 30 survey respondents and 5 knowledgeable interview respondents identified a deep connection between lack and weakness of governmental strategies and policies in money laundering processes due to which the cryptocurrency associated illegal money laundering events remain unnoticed. It was identified through their responses that if the government implements a central authority for the continuous monitoring and analysis of the transitory methods associated with cryptocurrency related processes, the organisations will be able to control the money laundering and illegal financial terrorism associated incidences.

5   Concluding Thoughts on the Contribution of this Research, its Limitations and Suggestions for Further Research

Conclusion of this research paper should re-establish and discuss the research aims and objectives associated with this research paper and the research question should be answered within this section. While this research focused on practical methods such as conducting a survey and taking interviews of the experts, it also explores the theoretical basis, in which a thorough discussion about the inclusion of the cryptocurrencies in multiple illegal economic activities has been carried out. Therefore, with completion of this mixed-method research and thematic analysis, this research answers the research question selected during the commencement of research and the following section discusses the implication of this research effectively while discussing the answer to the research question.

5.1   Implications of Findings for the Research Questions

The findings collected from this extensive and ethically compliant and reliable research process are far-reaching as while developing and conducting every part of this research, ethical rules, regulations, and research associated guidelines have been maintained. The strategies are chosen with respect to the topic, research philosophies, approach, and design were finalised after mapping a framework of research and then data collection and analysis were conducted so that everything works properly in a synchronized format, like the research onion and its layers mentioned in the (Saunders *et al.*, 2016). Therefore, the implication of this research and its findings are relevant and far-reaching.

The research also answers the chosen research question in the most comprehensive way. It identifies that almost all types of cryptocurrencies present in economic channels could be used as a means of money laundering due to their ability to skip tracing and tracking system. Discussion and survey with experts identified three main reasons behind this stealth ability of the cryptocurrencies and virtual money. The first reason was associated with its lack of up-gradation. It was mentioned by experts included in this research that with constantly changing society and its economic and financial transitioning processes, the cryptocurrencies are not using upgraded

economic policies due to which it is difficult to trace them in financial exchanges. The second reason identified in this research was the outdated nature of governmental policies and strategies. Though a unanimous decision was lacking within this research finding, the majority of the experts claimed that governmental policies of UK and Ireland are not appropriate as these are outdated and are, therefore, unable to control the money laundering or other illegal financial activities caused by cryptocurrencies. Finally, the third reason was the lack of central authorities as this research identified that lack of governmental or non-governmental central authorities was the reason due to which, cryptocurrency was deeply involved in illegal money transferring processes.

5.2   Contributions and Limitations of the Research

This research has contributed by identifying the three primary complications such as lack of up-gradation of cryptocurrencies for its tracking and tracing, lack of central authorities and outdated governmental policies that made cryptocurrencies deeply associated with illegal money transferring and financial terrorism associated incidences. However, besides this, there were multiple limitations of this research that could impact the applicability and reliability of this process. As this research included only 30 research participants and in interview took the opinion of only 5 experts, it could not be justified to generalise the data collected from this small pool of people, to be implemented upon the entire society. Coppock (2019) also mentions the same about in their paper as for generalising survey results, it should be conducted with a large number of participants. Besides this, the presence of bias on the part of respondents also impacted the reliability and applicability of the research. Thus, these are certain limitations associated with this research.

5.3   Recommendations for Future Research

This research has wide opened multiple directions for conducting research associated with this topic so that much more clarity could be brought upon. As this research focuses upon the surveys and interviews conducted with experts of this genre that are well aware of the financial and economic policies and mechanisms of Ireland and The United Kingdom, it is possible that their responses are diplomatic and in favour of their profession. Hence, in future, the researchers could conduct study upon the three key

reasons identified for the association of cryptocurrencies with money laundering processes which will help the entire society to think about the inclusion of this transaction method in their professional and personal life. Further, to eliminate the respondents' bias, future researches could use governmental officials and their take on this matter so that a bias-free and validated opinion could be included in the research.

5.4   Final Conclusion and Reflections

Completion of this research has been one of the most significant and crucial landmarks in my educational career. In the past years, I have completed multiple crucial projects that challenged my ability to gain knowledge about the topic, but this project challenged my entire thought process, data applicability and reasoning skills. Hence, through the completion of this research, I was able to improve my understanding and was able to challenge my reasoning and questioning abilities.

In this situation, I should mention that I was able to abide by the process and strategies I developed for the completion of this research and through multiple ups and downs, I increased my confidence and knowledge that enhanced my ability to conduct this complex research process. Besides this, for the completion of this research, I also conducted interviews and surveys with multiple professionals and hence, it also improved my communication and interaction abilities.

Therefore, while concluding this research, I would mention that this research dissertation would always be one of the most crucial and significant parts of my life as it helped me try and excel in multiple sections such as application of reasoning, application of communication strategies, conducting surveys and implement statistical analysis method for data interpretation. This project also allowed me to stay influenced and focus upon my central topic, without being diverted to other sections so that I could develop a relevant research process and hence, it would remain as one of the most crucial and significant landmarks of my educational life.

References

Adom, D., Hussein, E.K. and Agyem, J.A. (2018) 'Theoretical and Conceptual Framework: Mandatory Ingredients of a Quality Research'. *International Journal of Scientific Research*, 7(1), pp. 438–441.

Albrecht, C., Duffin, K.M., Hawkins, S. and Rocha, V.M.M., 2019. The use of cryptocurrencies in the money laundering process. *Journal of Money Laundering Control*.

Al-Suwaidi, N.A. and Nobanee, H. (2020) 'Anti-Money Laundering and Anti-Terrorism Financing: A Survey of th Al-Suwaidi, N.A. and Nobanee, H., 2020. Anti-money laundering and anti-terrorism financing: a survey of the existing literature and a future research agenda. *Journal of Money Laundering Control*.

Al-Suwaidi, N.A. and Nobanee, H., 2020. Anti-money laundering and anti-terrorism financing: a survey of the existing literature and a future research agenda. *Journal of Money Laundering Control*.

Antwi, S.K. and Hamza, K. (2015) 'Qualitative and Quantitative Research Paradigms in Business Research: Antwi, S.K. and Hamza, K., 2015. Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European journal of business and management*, *7*(3), pp.217-225.

Antwi, S.K. and Hamza, K., 2015. Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European journal of business and management*, *7*(3), pp.217-225.

Auer, R. and Claessens, S., 2018. Regulating cryptocurrencies: assessing market reactions. *BIS Quarterly Review September*.

Avdoshin, S.M. and Lazarenko, A.V., 2018. Bitcoin users deanonimization methods. *Труды Института системного программирования РАН*, *30*(1).

Avella, J.R., 2016. Delphi panels: Research design, procedures, advantages, and challenges. *International Journal of Doctoral Studies*, *11*(1), pp.305-321.

Bakar, N.A. and Rosbi, S., 2018. Robust framework diagnostics of Blockchain for bitcoin transaction system: A technical analysis from Islamic Financial Technology (i-FinTech) perspective. *International Journal of Business and Management*, *2*(3), pp.22-29.

Bebris, A.V. and Mukkamala, R.R., Anti-Money Laundering and Counter-Terrorism Financing methodology for cryptocurrency exchanges in the European Union.

Booth, A., 2016. Searching for qualitative research for inclusion in systematic reviews: a structured methodological review. *Systematic reviews*, *5*(1), p.74.

Brenig, C. and Müller, G., 2015. Economic analysis of cryptocurrency backed money laundering.

Bubnov, V. and Yakhno, T., 2020. Cryptocurrency as a Threat to the Russian Financial Market Security. In *Proceeding of the International Science and Technology Conference" FarEastCon 2019"* (pp. 951-964). Springer, Singapore.

Campbell-Verduyn, M., 2018. Bitcoin, crypto-coins, and global anti-money laundering governance. *Crime, Law and Social Change*, *69*(2), pp.283-305.

Castleberry, A. and Nolen, A., 2018. Thematic analysis of qualitative research data: Is it as easy as it sounds?. *Currents in Pharmacy Teaching and Learning*, *10*(6), pp.807-815.

Caytas, J.D., 2018. Regulation of Cryptocurrencies and Initial Coin Offerings in Poland—Ambivalence at Its Best. *Includes Chapter News*, *31*(1), p.65.

Collomb, A., de Filippi, P. and Klara, S.O.K., 2019. Blockchain Technology and Financial Regulation: A Risk-Based Approach to the Regulation of ICOs. *European Journal of Risk Regulation*, *10*(2), pp.263-314.

Coppock, A., 2019. Generalizing from survey experiments conducted on Mechanical Turk: A replication approach. *Political Science Research and Methods*, *7*(3), pp.613-628.

Covolo, V., 2019. The EU Response to Criminal Misuse of Cryptocurrencies: The Young, Already Outdated 5th Anti-Money Laundering Directive. *University of Luxembourg Law Working Paper*, (2019-015).

Creswell, J.W. and Creswell, J.D., 2017. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Dark, C., Emery, D., Ma, J. and Noone, C., 2019. Cryptocurrency: Ten years on| bulletin–june quarter 2019. *Bulletin*, (June).

De Vido, S., 2019. All that Glitters Is Not Gold: the Regulation of Virtual Currencies in the New EU V Anti-Money Laundering Directive. *DPCE Online*, *38*(1).

Dorofeyev, M., Kosov, M., Ponkratov, V., Masterov, A., Karaev, A. and Vasyunina, M., 2018. Trends and prospects for the development of blockchain and cryptocurrencies in the digital economy. *European Research Studies Journal*, *21*(3), pp.429-445.

Dumay, J., Bernardi, C., Guthrie, J. and Demartini, P., 2016, September. Integrated reporting: A structured literature review. In *Accounting Forum* (Vol. 40, No. 3, pp. 166-185). No longer published by Elsevier.

Durach, C.F., Kembro, J. and Wieland, A., 2017. A new paradigm for systematic literature reviews in supply chain management. *Journal of Supply Chain Management*, *53*(4), pp.67-85.

Dyntu, V. and Dykyi, O., 2018. Cryptocurrency in the System of Money Laundering. *Baltic Journal of Economic Studies*, *4*(5), pp.75-81.

Foley, S., Karlsen, J.R. and Putniņš, T.J., 2019. Sex, drugs, and bitcoin: How much illegal activity is financed through cryptocurrencies?. *The Review of Financial Studies*, *32*(5), pp.1798-1853.

Ford, D.A., Dell Products LP, 2018. *Computing device configuration and management using a secure decentralized transaction ledger*. U.S. Patent 9,967,334.

Forgang, G., 2019. Money Laundering Through Cryptocurrencies.

Fraser, J.G. and Bouridane, A., 2017, September. Have the security flaws surrounding BITCOIN effected the currency's value?. In *2017 Seventh International Conference on Emerging Security Technologies (EST)* (pp. 50-55). IEEE.

Funkhouser, E., Vellala, K., Baltuck, C., Cacciato, R., Durand, E., McEdward, D., Sowell, E., Theisen, S.E., Gilbert, G.H. and National Dental PBRN Collaborative Group, 2017. Survey methods to optimize response rate in the National Dental Practice–Based Research Network. *Evaluation & the health professions*, *40*(3), pp.332-358.

George, S., Duran, N. and Norris, K., 2014. A systematic review of barriers and facilitators to minority research participation among African Americans, Latinos, Asian Americans, and Pacific Islanders. *American journal of public health*, *104*(2), pp.e16-e31.

Goossen, K., Tenckhoff, S., Probst, P., Grummich, K., Mihaljevic, A.L., Buechler, M.W. and Diener, M.K., 2018. Optimal literature search for systematic reviews in surgery. *Langenbeck's archives of surgery*, *403*(1), pp.119-129.

Haffke, L., Fromberger, M. and Zimmermann, P., 2019. Virtual Currencies and Anti-Money Laundering–The Shortcomings of the 5th AML Directive (EU) and How to Address Them. *Journal of Banking Regulation, Forthcoming*.

Hardigan, P.C., Popovici, I. and Carvajal, M.J., 2016. Response rate, response time, and economic costs of survey research: a randomized trial of practicing pharmacists. *Research in Social and Administrative Pharmacy*, *12*(1), pp.141-148.

Hardy, S.A., 2020. Criminal money and antiquities: An open source investigation into transnational organized cultural property crime.

Houben, R. and Snyers, A., 2018. *Cryptocurrencies and blockchain: Legal context and implications for financial crime, money laundering and tax evasion*. European Parliament.

Howell, S.T., Niessner, M. and Yermack, D., 2018. Initial coin offerings: Financing growth with cryptocurrency token sales. *The Review of Financial Studies*.

Chornous, Y., Denysenko, S., Hrudnytskyi, V., Turkot, O. and Sikorskyi, O., 2019. Legal Regulation of Cryptocurrency Turnover in Ukraine and the Eu. *Journal of Legal, Ethical and Regulatory Issues*, *22*, pp.1-6.

Irwin, A.S. and Turner, A.B., 2018. Illicit Bitcoin transactions: challenges in getting to the who, what, when and where. *Journal of Money Laundering Control*.

Kaal, W.A. and Calcaterra, C., 2018. Crypto transaction dispute resolution. *Bus. LAw.*, *73*, pp.1-37.

Kethineni, S. and Cao, Y., 2019. The rise in popularity of cryptocurrency and associated criminal activity. *International Criminal Justice Review*, p.1057567719827051.

Kethineni, S., Cao, Y. and Dodge, C., 2018. Use of bitcoin in darknet markets: Examining facilitative factors on bitcoin-related crimes. *American Journal of Criminal Justice*, *43*(2), pp.141-157.

Khan, S.N., 2014. Qualitative research method: Grounded theory. *International Journal of Business and Management*, *9*(11), pp.224-233.

Khan, S.N., 2014. Qualitative research method-phenomenology. *Asian Social Science*, *10*(21), p.298.Kivunja, C. and Kuyini, A.B. (2017) 'Understanding and Applying Research Paradigms in Educational Contexts.' *International Journal of Higher Education*, 6(5), pp. 26–41.

Kruisbergen, E.W., Leukfeldt, E.R., Kleemans, E.R. and Roks, R.A., 2019. Money talks money laundering choices of organized crime offenders in a digital age. *Journal of Crime and Justice*, *42*(5), pp.569-581.

Lamberty, R. and Poddey, A., 2020. Regulation conform DLT-operable payment adapter based on trustless-justified trust combined generalized state channels. *arXiv preprint arXiv:2007.01605*.

Matyushonok, E.G., Staheiko, K.S. and Drozdova, S.S., 2018. What is cryptocurrency: 21st-century nonsense—or the money of the future?.

Mbiyavanga, S., 2019. Cryptolaundering: Anti-Money Laundering Regulation of Virtual Currency Exchanges. *JACL*, *3*, p.1.

Mekpor, E.S., 2019. Anti-money laundering and combating the financing of terrorism compliance. *Journal of Money Laundering Control*.

Moritz, A. and Block, J.H., 2016. Crowdfunding: A literature review and research directions. In *Crowdfunding in Europe* (pp. 25-53). Springer, Cham.

Naheem, M.A., 2017. Legitimacy of the summer 2017 GCC crisis and Qatar's AML framework. *Journal of Money Laundering Control*.

Naheem, M.A., 2020. Presenting a legal and regulatory analysis of the United Arab Emirates' past, present and future legislation on combating money laundering (ML) and terrorist financing (TF). *Journal of Money Laundering Control*.

Nakano, S.M., 2018. Cryptocurrency and Blockchain Blueprint for Beginners: All You Need to Know about Bitcoin, Ethereum, Ripple, Litecoin and other Popular Cryptocurrencies.

Nardi, P.M., 2015. *Doing survey research*. Routledge.

Navarro, R.R., 2019. *Preventative Fraud Measures for Cryptocurrency Exchanges: Mitigating the Risk of Cryptocurrency Scams* (Doctoral dissertation, Utica College).

Newington, L. and Metcalfe, A., 2014. Factors influencing recruitment to research: qualitative study of the experiences and perceptions of research teams. *BMC medical research methodology*, *14*(1), p.10.

Ngai, K., 2014. *Regulating cryptocurrency to prevent fraud and money laundering* (Doctoral dissertation, Utica College).

Nowell, L.S., Norris, J.M., White, D.E. and Moules, N.J., 2017. Thematic analysis: Striving to meet the trustworthiness criteria. *International journal of qualitative methods*, *16*(1), p.1609406917733847.

Oleiwi, R.A., 2019. Analytical Study of the Phenomenon of Money Laundering and its Impact on the Iraqi Banking Sector. *Journal of University of Babylon for Pure and Applied Sciences*, *27*(2), pp.178-188.

Omotayo, T. and Kulatunga, U., 2015. The research methodology for the development of a kaizen costing framework suitable for indigenous construction firms in Lagos, Nigeria.

Ritchie, J., Lewis, J., Nicholls, C.M. and Ormston, R. eds., 2013. *Qualitative research practice: A guide for social science students and researchers*. sage.

Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N. and Hoagwood, K., 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and policy in mental health and mental health services research*, *42*(5), pp.533-544.

Paraskevopoulos, I., 2017. The threat of money laundering in intermediated securities systems and bitcoin transactions.

Park, L.W., Lee, S. and Chang, H., 2018. A sustainable home energy prosumer-chain methodology with energy tags over the blockchain. *Sustainability*, *10*(3), p.658.

Parveen, R., 2020. Impact of anti-money laundering legislation in the United Kingdom and European Union. *International Journal of Economics and Management Systems*, *5*.

dalla Pellegrina, L., Di Maio, G., Masciandaro, D. and Saraceno, M., 2020. Organized crime, suspicious transaction reporting and anti-money laundering regulation. *Regional Studies*, pp.1-15.

Peters, G., Panayi, E. and Chapelle, A., 2015. Trends in cryptocurrencies and blockchain technologies: A monetary theory and regulation perspective. *Journal of Financial Perspectives*, *3*(3).

PHAT, P., 2018. *Anti-money laundering in Cambodia should Cambodia regulate or ban cryptocurrencies* (Doctoral dissertation, KDI School).

Ponto, J., 2015. Understanding and evaluating survey research. *Journal of the advanced practitioner in oncology*, *6*(2), p.168.

Rahi, S., 2017. Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), pp.1-5.

Ravitch, S.M. and Riggan, M., 2016. *Reason & rigor: How conceptual frameworks guide research*. Sage Publications.

Rea, L.M. and Parker, R.A., 2014. *Designing and conducting survey research: A comprehensive guide*. John Wiley & Sons.

Reynolds, P. and Irwin, A.S., 2017. Tracking digital footprints: anonymity within the bitcoin system. *Journal of Money Laundering Control*.

Richter, C., Kraus, S. and Bouncken, R.B., 2015. Virtual currencies like Bitcoin as a paradigm shift in the field of transactions. *International Business & Economics Research Journal (IBER)*, *14*(4), pp.575-586.

Roberts, L.D. and Allen, P.J., 2015. Exploring ethical issues associated with using online surveys in educational research. *Educational Research and Evaluation*, *21*(2), pp.95-108.

RODIMA-TAYLOR, D.A.I.V.I. and Grimes, W.W., 2019. Virtualizing diaspora: new digital technologies in the emerging transnational space. *Global Networks*, *19*(3), pp.349-370.

Roller, M.R. and Lavrakas, P.J., 2015. *Applied qualitative research design: A total quality framework approach*. Guilford Publications.

Ruel, E., Wagner III, W.E. and Gillespie, B.J., 2015. *The practice of survey research: Theory and applications*. Sage Publications.

Saleh, A. and Bista, K., 2017. Examining Factors Impacting Online Survey Response Rates in Educational Research: Perceptions of Graduate Students. *Online Submission*, *13*(2), pp.63-74.

Saunders, M., Lewis, P. and Thornhill, A., 2009. *Research methods for business students*. Pearson education.

Schmidt, Frank L. "Statistical significance testing and cumulative knowledge in psychology: Implications for training of researchers." In *Annual Convention of the American Psychological Association, 102nd, Aug, 1994, Los Angeles, CA, US; An earlier version of this article was presented as the presidential address to the Division of Evaluation, Measurement and Statistics (Division 5 of the American Psychological Association) at the aforementioned convention.* American Psychological Association, 2016.

Soloviev, V.N. and Belinskiy, A., 2018, May. Complex systems theory and crashes of cryptocurrency market. In *International Conference on Information and*

Communication Technologies in Education, Research, and Industrial Applications (pp. 276-297). Springer, Cham.

Sun Yin, H.H., Langenheldt, K., Harlev, M., Mukkamala, R.R. and Vatrapu, R., 2019. Regulating cryptocurrencies: a supervised machine learning approach to de-anonymizing the bitcoin blockchain. *Journal of Management Information Systems*, *36*(1), pp.37-73.

Taherdoost, H., 2016. Validity and reliability of the research instrument; how to test the validation of a questionnaire/survey in a research. *How to Test the Validation of a Questionnaire/Survey in a Research (August 10, 2016)*.

Terry, G., Hayfield, N., Clarke, V. and Braun, V., 2017. Thematic analysis. *The Sage handbook of qualitative research in psychology*, pp.17-37.

Thomas, D.R., 2017. Feedback from research participants: are member checks useful in qualitative research?. *Qualitative Research in Psychology*, *14*(1), pp.23-41.

Thompson, C., Schabrun, S., Romero, R., Bialocerkowski, A., van Dieen, J. and Marshall, P., 2018. Factors contributing to chronic ankle instability: a systematic review and meta-analysis of systematic reviews. *Sports Medicine*, *48*(1), pp.189-205.

Van Mieghem, A., Verschueren, K., Petry, K. and Struyf, E., 2020. An analysis of research on inclusive education: a systematic search and meta review. *International Journal of Inclusive Education*, *24*(6), pp.675-689.

Vandezande, N., 2017. Virtual currencies under EU anti-money laundering law. *Computer law & security review*, *33*(3), pp.341-353.

Wang, Y., Wang, L., Rastegar-Mojarad, M., Moon, S., Shen, F., Afzal, N., Liu, S., Zeng, Y., Mehrabi, S., Sohn, S. and Liu, H., 2018. Clinical information extraction applications: a literature review. *Journal of biomedical informatics*, *77*, pp.34-49.

Watson, R., 2015. Quantitative research. *Nursing Standard*, *29*(31).

Weber, J. and Kruisbergen, E.W., 2019. Criminal markets: the dark web, money laundering and counterstrategies-An overview of the 10th Research Conference on Organized Crime. *Trends in Organized Crime*, *22*(3), pp.346-356.

Weber, M., Domeniconi, G., Chen, J., Weidele, D.K.I., Bellei, C., Robinson, T. and Leiserson, C.E., 2019. Anti-money laundering in bitcoin: Experimenting with graph convolutional networks for financial forensics. *arXiv preprint arXiv:1908.02591*.

Weber, M., Domeniconi, G., Chen, J., Weidele, D.K.I., Bellei, C., Robinson, T. and Leiserson, C.E., 2019. Anti-money laundering in bitcoin: Experimenting with graph convolutional networks for financial forensics. *arXiv preprint arXiv:1908.02591*.

Wei, W., Zhang, Q. and Liu, L., 2020. Bitcoin Transaction Forecasting with Deep Network Representation Learning. *IEEE Transactions on Emerging Topics in Computing*.

Wohlin, C. and Aurum, A., 2015. Towards a decision-making structure for selecting a research design in empirical software engineering. *Empirical Software Engineering*, *20*(6), pp.1427-1455.

Yeoh, P., 2019. Banks' vulnerabilities to money laundering activities. *Journal of Money Laundering Control*.

Zoldi, S.M. and Murray, J.F., Fair Isaac Corp, 2017. *Advanced Learning System for Detection and Prevention of Money Laundering*. U.S. Patent Application 15/074,977.

bin Zul Kepli, M.Y. and Zulhuda, S., 2019. Cryptocurrencies and Anti-money Laundering Laws: The Need for an Integrated Approach. In *Emerging Issues in Islamic Finance Law and Practice in Malaysia*. Emerald Publishing Limited.

Appendices

Appendix A – (Research Questionnaire)

<u>**Personal identification questions:**</u>

1. What is your gender?

   o Male

   o Female

2. What is your age?

   o 22-27

   o 28-33

   o 34-38

   o Above 38

3. What is your highest qualification?

   o High school

   o Bachelor's degree

   o Master's degree

   o Doctorate

4. How long have you been associated with financial sector of your country?

   o 2 years

   o 5 years

   o 10 years

   o more than 10 years

Opinion regarding your agreement/disagreement to these following statements

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly agree
Cryptocurrencies are important for transactional processes in 21st century							
Cryptocurrencies are more convenient and important than traditional transaction methods							
Cryptocurrencies are associated with money laundering activities							
Analysis of money laundering is complicated in the presence of money							

laundering							
Every kind of Cryptocurrencies are included in money laundering, tax evasion and other financial terrorism associated activities							

Opinion about lack of central authorities and policies for containment of money laundering using cryptocurrency

	Strongly disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Strongly agree
Central authorities are important for containment of money laundering through Cryptocurrencies							
Central authorities could be of governmental or							

non-governmental agencies						
Central authorities help to control the illegal process by identifying the source						
Central authorities increases the chance of tracking and tracing of channels included in money laundering						
Central authorities are also crucial to identify the donor or accepters identity, involved in the system						
Governmental policies are						

outdated in controlling money laundering processes			E			
Governmental policies and legislations are non functional due to ethical considerations, anonymity and privacy of the electronic transaction methods						
Governmental policies are failed in strict surveillance of the illegal transaction with cryptocurrency's involvement						

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Appendix B – (Interview Questions)

Questions for Interview

1. What is your take on the involvement of cryptocurrencies in major scams, corruption events and money laundering activities of recent time?

2. Do you think governments, central authorities, economic governing bodies have failed to contain this crime within their territories?

3. What is your opinion on the policies and the continuously upgrading cryptocurrency system?

4. Do you think, with implementation of governing body for such transactions, money laundering issues would be controlled?

5. Would you support the fact that government's efforts to limit these activities are enough?

Appendix C – (Transcript of Interview)

1. ***What is your take on the involvement of cryptocurrencies in major scams, corruption events and money laundering activities of recent time?***

Respondent 1: "Yes!! It is true. I have seen multiple cases of huge money laundering cases in cryptocurrencies. Remember few years back there was a case of scam of South Korea, which was associated with this cryptocurrency transactional process".

Respondent 2: "yes, as per my knowledge and experience, it is possible to involve cryptocurrency in majority of the scams, corruption events and money laundering activities of recent time".

Respondent 3: "I think I will support this statement as cryptocurrencies are involved in money laundering or any other illegal processes, but isn't is possible with every transactional method?"

Respondent 4: "Yes, 100%. All these virtual money transfer methods circulating here and there are suspicious; they are illegal and must be stopped".

Respondent 5: "Your Question is very important. Only if our governments can understand the crucial nature of it and implement strategies to overcome it".

2. ***Do you think governments, central authorities, economic governing bodies have failed to contain this crime within their territories?***

Respondent 1: "Yes, they should develop strategies to contain this crime but I feel they are doing their best to trace and track such activities as this transactional method is used by transparent organisations too. But, it is very unlikely that people who are associated with such activities would actually help or allow the upgradation of Cryptocurrencies as it would be very stupid to stop their sole source of income".

Respondent 2: "Yes, they are failed. They should develop strategies to tackle such activities more frequently".

Respondent 3: "Yes big time!! I told you in my previous answer only that governments, central authorities, economic governing bodies are failed but they will not do anything".

Respondent 4: "They should develop strategies, but that doesn't mean they are completely failed. We are discussing about it and that denotes that they have identified few incidences due to which you are conducting this research".

Respondent 5: "Yes you are right. They are failed."

3. *What is your opinion about the policies and the continuously upgrading cryptocurrency system?*

Respondent 1: "Policies are always outdated. They should review it after every upgrade in the system as it will make it progressive and important. Why are you expecting governments to create rules for this, they are not even concerned about the money laundering issues happening around!!!!".

Respondent 2: "Policies are old, ineffective and lacks ability to track and trace situations associated with illegal activities".

Respondent 3: "What to say, do we really have any policy for that? I Mean government is not at all concerned about these illegal activities".

Respondent 4: "Governmental policies are okay, but it needs upgradation. I wish government upgrades it every 10 years."

Respondent 5: I agree your point, continuous upgradation is required for identification of illegal activities of cryptocurrencies.

4. *Do you think, with implementation of governing body for such transactions, money laundering issues would be controlled?*

Respondent 1: "Yes, with implementation of governing body for such transactions, money laundering issues would be controlled, I support it".

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Respondent 2: "Yes, it is possible, it can make improvement".

Respondent 3: "Yes, but this should be known to out governmental bodies, and it can make changes".

Respondent 4: "Yes, but it cannot guarantee that money laundering will stop, can you say this?"

Respondent 5: "Yes, there is a possibility with this".

5. ***Would you support the fact that government's efforts to limit these activities are enough?***

Respondent 1: "It is neither satisfactory, nor dissatisfactory".

Respondent 2: "No, it's not".

Respondent 3: "Government has not even taking any action, there is no effort".

Respondent 4: "I feel they are doing good, but there is a scope of improvement in every field, isn't it?"

Respondent 5: "No No…..They should take more actions to contain it."