SAHULAT
A Journal of Interest Free Microfinance
Vol. 7 No. 1, pp 9-26
ISSN (P) 2319-2941
ISSN (O) 2582-2349
http://www.sahulatjournal.com/

Application of Blockchain Technology in Crowdfunding to Fuel the Rise of the Rest Globally

Dr Aishath Muneeza [1]
Zakariya Mustapha [2]

Abstract

Technology has advanced with the spread of internet services. Statistics by the United States have estimated that internet facilities have been made available to over a third of the total world population and, in the same vein, access to mobile phones has been rendered to about 85 percent of the population. Crowdfunding finds widespread support via internet platforms and is gaining momentum as a means to empower people and businesses hitherto unable to access banking or access limited facilities therefrom. Today, it has become a mechanism for raising funds to build multi-billion-dollar industries. It is said that the difficulties encountered while struggling to source funds by newly-formed businesses following the 2018 global financial meltdown led to the emergence of crowdfunding. The objective of this research is to present a discourse on how crowdfunding can be facilitated leveraging on blockchain technology. This is a qualitative research where data from literature on the subject matter is analysed and conclusions derived. Outcome of this research revealed that integrating blockchain technology with crowdfunding is possible and benefits all parties involved in the transaction. This integration reduces transaction cost and, from governance perspective, provides certainty and trust to the system and mitigates risk for the parties.

Keywords: Blockchain Technology; Crowdfunding; Islamic Finance

[1]Associate Professor at International Centre for Education in Islamic Finance (INCEIF), Kuala Lumpur, Malaysia
[2]Research Scholar at University of Malaya, Kuala Lumpur, Malaysia

1. Introduction

Crowdfunding can be described as a method of raising funds for a designated enterprise or a business venture with little amounts of money acquired from a large number of people through an internet-based platform. According to an estimate by the World Bank (2013), the amount of money raised from crowdfunding could typically be from about US$1,000 to US$1 million. This sum is normally gathered as an investment or a form of donation from many persons. Crowdfunding is viewed as a novel form of capital formation that emerged as a response to the 2008 financial crisis encountered by newly-formed businesses in struggling to source funds.

As it becomes popular, crowdfunding is gaining support of national governments and regulators as a source of funds, especially for start-ups. With six registered and fully operational Equity Crowdfunding (ECF) platforms as far back as 2016, Malaysia became the first country from Southeast Asia to introduce a regulatory framework in 2015 which facilitates ECF. These platforms have come to be identified as a formidable alternative to traditional ways of sourcing funds for innovative businesses as well as SMEs.

According to the official website of the Securities Commission (SC), up to June 2018, RM 38.36 million had been raised via ECF and the success rate was 89% with 40 successful campaigns. Non-technology based issuers are 40% while 60% crowdfunding platforms are technology based. 88% of the investors are local individual investors and 48% raised are RM 500,000 and below. As for age demography of investors, it was revealed that 38% of investors are 35 years and below while 34% of the investors are between the ages of 35 to 45. Only 15% of them are between the ages of 45 to 55 and 8% are above 55. These statistics prove that crowdfunding is a platform that provides financial inclusion.

Through an initiative known as Alliance of Fintech Community (aFINity) which was facilitated by the Malaysian SC, a regulatory sandbox session was introduced on 21st December 2017 under the SC's fintech innovation lab. In this regulatory sandbox, interested parties applied and established Alternative Trading System (ATS). The regulatory sandbox provides an opportunity where imposition of regulation is staggered and/or done in stages in accordance with the complexity of products and market growth. At the same time, the Lab has enabled the SC to engage in discussions and provides feedback to new and innovative business thoughts, concepts and ideas as well as exploring proof of solution devised to address particular needs of the industry, pertaining to crowdfunding and related schemes. This research work examined the relevance of blockchain technology to crowdfunding and in doing so, qualitative research approach was employed in analysing relevant literature and arriving at conclusions.

This paper is divided into four parts. Following this introduction, the second part sheds light on crowdfunding and the third discusses integrating blockchain with crowdfunding. The final part of the paper is the conclusion.

2. Crowdfunding

According to Bijkerk (2014), crowdfunding refers to raising of funds with small sums from several people or organisations via a web-based or online channel for the purpose of establishing a business or project . There are various crowdfunding models in different parts of the world. Four such models can be identified and they are donation crowdfunding, reward crowdfunding, lending crowdfunding and equity crowdfunding (Nesta, 2012). Chart 1 describes these types by illustrating form of contribution, form of return and motivation of funder.

Chart 1: Comparative Description of Crowdfunding Models

	Form of contribution	Form of return	Motivation of funder
Donation Crowdfunding	Donation	Intangible benefits.	Intrinsic and social motivation.
Reward Crowdfunding	Donation/ Pre-purchase	Rewards but also intangible benefits	Combination of intrinsic and social motivation and desire for reward.
Lending Crowdfunding	Loan	Repayment of loan with interest. Some socially motivated lending is interest free.	Combination of intrinsic, social and financial motivation.
Equity Crowdfunding	Investment	Return on investment in time if the business does well. Rewards also offered sometimes. Intangible benefits another factor for many investors.	Combination of intrinsic, social and financial motivation.

Source: Nesta (2012)

Bijkerk also states that IOSCO Research Department has divided crowdfunding into four sub-categories. Reward crowdfunding and social donation/lending crowdfunding under one category are designated as community crowdfunding. Then, there is P2P lending and equity crowdfunding under a category designated as crowdfunding for financial return.

The World Bank (2013) has divided crowdfunding models into donation and investing. This classification is provided in detail in Chart 2 ahead.

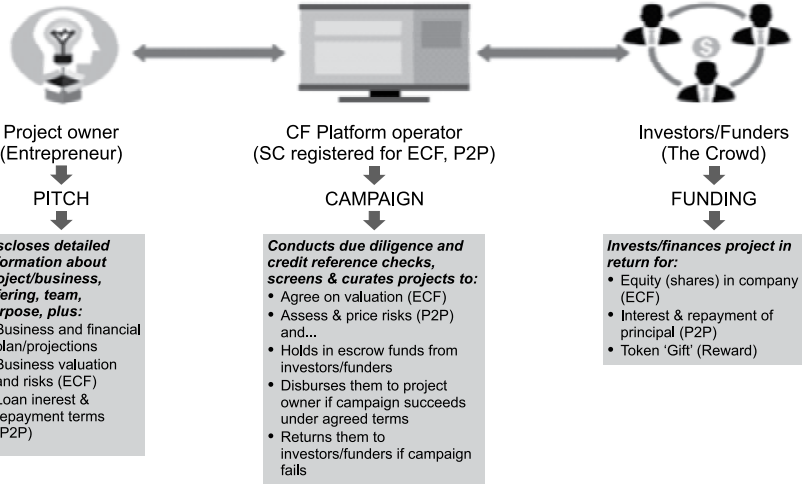
Chart 2: World Bank Classification of Crowdfunding Models and their Characteristics				
Crowdfunding model	**Business Model**	**Features**	**Pros**	**Cons**
Donation	Donation-based	Philanthropic: funders donate without expecting monetary compensation.	No Risk	Donors do not acquire security interest. Entrepreneurs have difficulty raising substantial capital.
	Reward-based	Funders receive a token gift of appreciation or pre-purchase of a service or product. This model is evolving into a marketplace of its own, with firms raising considerable sums through pre-sales.	Low risk (primarily fulfillment and fraud risk). No real potential for financial return.	Potential return is small. No security is acquired, and there is no accountability mechanism. Most entrepreneurs may have difficulty raising substantial capital without a product with mass appeal to sell.
Investing	Equity-based	Funders receive equity instruments or profit sharing arrangements.	Potential to share in the profitability of the venture. Unlimited potential for financial gain. May attract relatively large numbers of investors.	Potential loss of investment. Equity holders are subordinate to creditors in the event of bankruptcy. Securities laws related to crowdfund investing may be complex.
	Lending-based	Funders receive a debt instrument that pays a fixed rate of interest and returns principal on a specified schedule.	Pre-determined rate of return agreed upon between lender and borrower. Debt holders are senior to equity holders in case of bankruptcy. Secured status may make it easier for entrepreneurs to raise capital.	May be subordinate to senior creditors. Start-ups' high-failure rate presents similar risk of loss as an equity investment, but with capped potential returns. Requires a business already generating cash flow. Existing/established, cash flow positive businesses may consider this option because they can offer a more structured exit opportunity than typical equity offerings.
	Royalty-based	Less common than the other models. Funders receive a share in a unit trust, which acquires a royalty interest in the intellectual property of the fundraising company. A percentage of revenue is paid out over a period of time. The payout varies depending on the periodic revenue.	Potential gain is unlimited, but the rate of gain is predetermined by the interest rate. Investment presents less risk or return than an equity investment, but more than a debt instrument.	Potential loss of investment. Risk of loss comparable to that of an equity investment, but investment offers lower potential returns than equity. The business could cease paying royalties if it chose to operate without the intellectual property in question. These instruments generally attract smaller pools of investors than other CFI models, so entrepreneurs may find it more difficult to raise capital with this model.

Source: The World Bank (2013)

Currently, crowdfunding is brought about using technology enhanced electronic platforms, unlike the earlier times where people reached out only to family or friends when in need. A crowdfunding platform is a designated website that hosts projects and facilitates the collection of funds. The users of these platforms are classified into creators and funders. While creators secure funding through crowdfunding platforms, funders spend money on products and experiences therein. Funders are typically known as investors in the projects.

Crowdfunding mechanisms in modern times involve three stages. The first stage is where the pitching is made; the second is a campaigning stage and the final involves the funding. The following figure illustrates the crowdfunding mechanism in a nutshell.

Figure 1: Crowdfunding Mechanism in a Nutshell



Source: Asian Institute of Finance (2017)

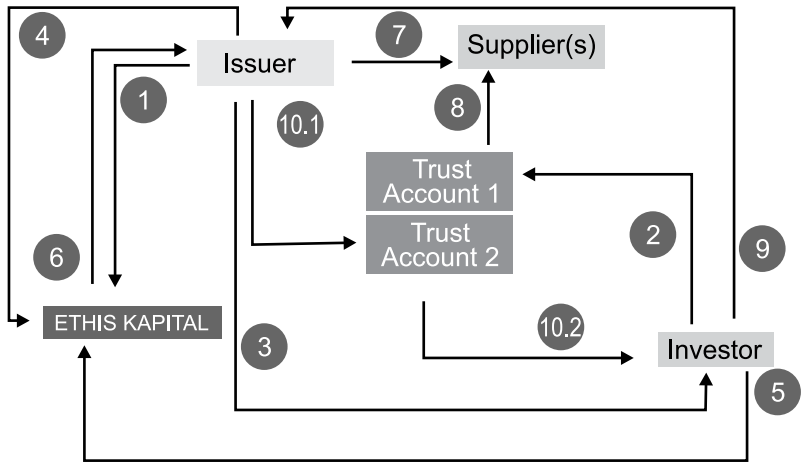
In Malaysia, as at the time of this research, there were seven ECF providers and six Peer-to-Peer Financing (P2P) providers approved by the SC. Subsequent parts of this work will discuss how crowdfunding, ECF and P2P crowdfunding work based on specific practices of some of those approved entities.

The world's first equity crowdfunding platform known as Eureeca was launched in 2013. It operates a network of investors that comprises of institutional, casual as well as angel investors. Eureeca's platform assesses businesses that are eligible with access to capital while at the same time allowing its members to purchase shares in certain businesses that are growth-oriented. Eureeca has been granted

operating license by capital market regulators in several countries including the UK, Malaysia, the Netherlands and Dubai, which in fact makes it a multi-regulated ECF platform.

Speaking of Islamic capital market, a similar development was championed by Nusa Kapital (NuKap) based in Malaysia who, in 2017, launched the world's first Shariah-compliant P2P crowdfunding platform regulated by the SC. It is owned and managed by Ethis Kapital Sdn Bhd, which is a recognized market operator licensed by the SC. Their aim is to complement the growing global awareness of Islamic finance with technology to ensure seamless transactions between funding businesses and making returns on investment. With NuKap, SMEs will have fewer restrictions upon gaining access to funding while investors will have an alternative method to get higher returns on their investments. The official website of NuKap provides two financing models based on Murabahah and Mudharabah which is explained below in Figure 2 and 3.

Figure 2: Murabahah P2P model of NuKap



Explanations:

1. For the purpose of raising funds under the facility, the Issuer will appoint Ethis Kapital as its agent with fees (Wakalah bil ujrah) in the Principle Wakalah agreement to raise the Commitment Amount from the Investor Group and remit the same to Trust Account 1 for the purpose of investing in the designated Project.

The Parties agree that Ethis Kapital service fee (Wakalah fee) shall be paid based on a percentage (determined by the risk score) of the Commitment Amount. The payment shall be deducted from the Commitment Amount once it has been successfully raised and remitted to Ethis Kapital from the Trustee Account 1.

2. Upon acceptance of the Murabahah Facility Letter and for the purpose of collection of the Asset Purchase Price, Ethis Kapital shall direct and instruct the Investor to promptly remit the Financing Amount into Trust Account 2.

3. Once the Commitment Amount is fully raised, the Issuer shall make the Purchase Request to the Group of Investors pursuant to the terms of the Murabahah Facility Letter.

   In the Purchase Request, the Issuer will request the Group of Investors to purchase the Asset and the Issuer will, under the Principle of Wa'd Mulzim, irrevocably and unconditionally undertake to purchase the Asset from the Group of Investors at the Asset Sale Price upon the Group of Investors having purchased the Asset from the supplier.

4. In order to facilitate the financing exercise, the Issuer will appoint Ethis Kapital as its agent (Wakeel) without fees to enter/execute the Murabahah Sale Contract on behalf of the Issuer pursuant to the terms of the Wakalah Letter 1.

5. The Group of Investors shall appoint Ethis Kapital as its agent pursuant to the terms of the Wakalah Letter 2 to undertake the specific tasks as detailed out in the Murabahah Facility Letter, including to conclude the purchase of the Asset from the supplier and to enter/execute the Murabahah Sale Contract on behalf of the Group of Investors.

6. For the purpose of purchasing the Asset, Ethis Kapital will appoint the Issuer as its sub-agent pursuant to the terms of the Wakalah Letter 3 to purchase the Asset from the supplier at the total Asset Purchase Price (equivalent to the Commitment Amount).

7. By virtue of Wakalah Letter 3, the Issuer shall, on behalf of Ethis Kapital, purchase the Asset at total Asset Purchase Price (equivalent to the Commitment Amount) from the supplier resulting in beneficial ownership to the Group of Investors.

8. For purpose of Item 7, the Trustee, being the operator of Trust Account 1, shall release the total Asset Purchase Price (Commitment Amount) to the supplier upon instruction of Ethis Kapital.

9. The Group of Investors will then sell and the Issuer shall purchase the Asset by executing the Murabahah Sale Contract at the Total Asset Sale

Price on deferred payment terms subject to the terms and conditions of the Murabahah Facility Letter. Pursuant to the appointment of agency, Ethis Kapital will act as the agent for the Group of Investors and the Issuer, and will conclude the Murabahah Sale Contract on behalf of both parties.

10.1 The payment of the Total Asset Sale Price shall be made by the Issuer to the Group of Investors via Trust Account 2.

10.2 Upon instruction by Ethis Kapital, the Trustee shall distribute the Total Asset Sale Price (including compensation, if any) to the Group of Investors from Trust Account 2.

Upon Maturity or Early Redemption of the project - a final account notice will be issued to the investors and issuers whereby any disagreement needs to be notified to EK in writing within 7 days from the notification date.

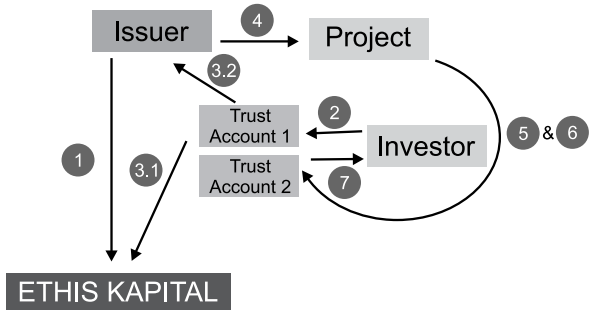
Upon default: The investors will be notified via email within 7 days from the default date to vote on the options as per the "Default Recovery Process".

Please note:

1. For clarity purposes, there will be a separate sub-account for each Issuer within the Trust Account 1.
2. For clarity purposes, there will be a separate sub-account for each Issuer within the Trust Account 2.

Source: Official Website of NuKap

Figure 3: Mudharabah P2P model of NuKap



Explanations:

1. In order to facilitate the financing exercise under the terms of the Mudharabah Agreement, the Issuer will appoint Ethis Kapital as its agent with fees (Wakalah bil ujrah) under the terms of the Wakalah Letter to raise funds from the Investor Group and remit the same to the

Trust Account 1 for the purpose of investing in the designated Project. Ethis Kapital shall host the Project on the platform.

2. Ethis Kapital shall direct and instruct the Investor Group to invest the Total Project Funding Amount in the Issuer's Project by remitting the Total Project Funding Amount into Trust Account 1.

3.1 The Parties agree that the Ethis Kapital service fee (Wakalah fee) shall be paid based on x % (a certain percentage depending on individual transaction) of Total Project Funding Amount. The payment shall be deducted from the Project once the Total Project Funding Amount has been successfully raised and remitted to Ethis Kapital from the Trust Account 1.

3.2 The Trustee, being the operator of Trust Account 1, shall release the balance of the Total Project Funding Amount to the Issuer once the Project is fully funded.

4. The Issuer uses the Total Project Funding Amount on Mudharabah Muqayyadah (restricted investment profit-and-loss sharing) basis for the Project.

5. The Mudharabah Profit from the Project shall be split between the Issuer and Investor based on the pre-agreed ratios of profit/loss sharing for Mudharabah.

6. The Issuer shall remit the Mudharabah Profit from the Project to Trust Account 2.

7. Upon instruction by Ethis Kapital, the Mudharabah Profit from the Project shall be remitted by the Trustee, as the operator of Trust Account 2, to the Investor Group.

Upon Maturity or Early Redemption of the project - a final account notice will be issued to the investors and issuers whereby any disagreement needs to be notified to EK in writing within 7 days from the notification date

Upon default: The investors will be notified via email within 7 days from the default date to vote on the options as per the "Default Recovery Process".

Please note:

1. For clarity purposes, there will be a separate sub-account for each Issuer within the Trust Account 1.

2. For clarity purposes, there will be a separate sub-account for each Issuer within the Trust Account 2.

Source: Official Website of NuKap

There are three successful campaigns concluded by NuKap. They are SSM Corporate merchandising project (RM 22,210 is raised); pre-development of affordable homes (RM 310,000 is raised) and corporate merchandising (RM 9,230 is raised).

There are certain risks that can be identified while implementing crowdfunding. According to IOSCO (2017), there are five risks identified as common to both P2P lending and ECF platforms. They are risks pertaining to unlicensed activities or conducting general solicitation including that of disclosure, cross-border issues, malpractice or fraud by the platform, and of collapse and fraud by the platform users. Two more risks have been identified which are borrower's defaulting risk and lack of secondary market liquidity or risk of liquidity for the loans. Risks more specific to ECF identified again by IOSCO (2017) are that of issuer's bankruptcy and lack of secondary market liquidity or liquidity risk for the investments.

3. INTERGRATING BLOCKCHAIN WITH CROWDFUNDING

As evident from the foregoing discussion, crowdfunding has several risks. This part of the paper aims to show how each of the risks identified by IOSCO (2017) in crowdfunding could be mitigated using blockchain. Chart 3 illustrates the risk, details of the risk as explained by IOSCO (2017) and how blockchain can mitigate them will be discussed subsequently.

Chart 3: Risks Faced in Crowdfunding

Risk	Specific to which type	Details
Risk pertaining to unlicensed activities or conducting general solicitation.	Common to ECF and P2P.	ECF and P2P entities may contend engaging controlled or regulated operations as they provide for subscription services that are for execution only, services related to information or matching services. Such operations include securities advice, general soliciting, activities pertaining to dealer/broker or collective investing arrangements. The way such operations are carried out, more often than not, suggest reasons to believe that those entities have crossed the borderline into regulated operations or activities. This is due to the fact that the entities and their products/services are accessible widely; they are offering series of facilities to investors with compensation for the same purpose, among other reasons. Notwithstanding, there are considerable differences among countries with respect to the regulatory extent of borderline and those concepts as well as investor protection regime.

Risk of Disclosure	Common to ECF and P2P	In contrast to public markets securities, the investment plans and propositions on ECF and P2P channels may not provide enough details and/or have requisite standardization. For instance, not all ECF and P2P channels disclose concise and comparably enough data about loan portfolios. Again, the requirement as to disclosure practice is different when it comes to ECF. A start-up company might be capable of offering just inadequate information on its business proposal and operations due to the fact that it does not have a long history or developed operations that will warrant offering adequate disclosure. Nonetheless, it cannot be said of such information as either misleading or inadequate for the reason that it is not standardized or detailed. Accordingly, it remains the case, adequacy or otherwise of disclosure always depends on surrounding circumstances and some specific facts of the offering and the issuer as it is generally known.
Cross-border risk	Common to ECF and P2P.	Some ECF and P2P channels are beginning to go into activities that cross borders into other jurisdictions than the one they are licensed to operate in. Such channels or platforms disburse securities or loans of firms and individuals from one jurisdiction to investors and lenders in another jurisdiction. More often than not, it is not certain under jurisdiction's law whether the investor or lender can claim to seek compensation in the event of bankruptcy and/or default.
Risk of collapse, malpractice or fraud by platform.	Common to ECF and P2P.	A response was elicited to the question of what ECF and P2P platforms saw as biggest risk ahead of growth to the market by a collaborative study between NESTA and Cambridge University. The response that was highest in ranking was the envisaged possibility of collapse of popular platforms as a result of malpractice. Recently, cases of fraud in certain platforms have been confirmed.
Risk of fraud by platform users.	Common to ECF and P2P.	Besides by operator of the platform, fraud can be committed by persons selling and buying securities on same platform. Anonymity is a prominent feature of the digital and online world. Without rigorous checking on the users of the platform by the operator, fraud is obvious and is a risk for investors.

Borrower's Defaulting risk	More specific to P2P lending	There is a risk exposure to investor when a borrower fails in making timely repayment of loan and interest in a loan granted on a P2P platform. Borrowers may fail to pay back anything at all in some cases and this causes loss of the whole investment. Even though certain platforms used to set aside funds in order to cover, the amount of such funds differs from one platform to the other. Again, P2P lending channels often lack comparable and publishable data on portfolio of their loans. Moreover, P2P lending channels lack the experience of going thorough full economic cycle of contraction and expansion, therefore they lack cyclically adjusted default percentage. Thus, when economic growth fluctuates or interest rate goes higher, there is the implication of average default rate being higher than the anticipated one.
Lack of secondary market or risk of liquidity for the loans.	More specific to P2P lending	Some P2P channels enable investors to have their loan investment sold off before its repayment. This depends on other investors having interest in this loan investment. Thus, where the borrower is undergoing some financial difficulties, it would be difficult for investors to sell their loans. For instance, unfavourable report or news or history of repeated late payment record. Certain P2P lending channels may have to resort to suspending sales of loans in order to protect new investors against investing in loans that have unsettled issues.
Risk of bankruptcy of the issuer	More specific to ECF	With all the differences among extant statistics, it is estimated that there is a failure rates ranging between 50 to 90 percent among early-stage enterprises or start-ups. In sharp contrast to investing in a matured venture with proven track record on income and revenue, start-ups mostly depend on developing a new service or product whose market may be uncertain. Again, probability of failure is increased further by the very long investment horizons.
Lack of secondary market or risk of liquidity for the equity investments	More specific to ECF	Securities bought via ECF channels suffer limitation with respect to liquidity in secondary market. Start-ups and small enterprises often get funding through ECF that have not made up listing requirements to be approved to go for IPO. This is a limiting factor to the exit of investors. In contrast, listed securities offer greater opportunities for investors to exit thier investments.

Source: IOSCO (2017, p.16-17)

Blockchain is a technology that uses a Mutual Distributed Ledger (MDL). A distributed ledger can be described as a shared database where records are stored in multiple locations, in such a way that no organisation or entity has

control over it, and therefore cannot modify or change it. In a classical non-blockchain scenario, databases are handled by a single organisation. Blockchain can definitely enhance the classical crowdfunding platforms.

For instance, the crowdfunding platform will have the record of the amounts raised from investors. If someone were able to hack the system and modify the database, the amount of money raised can be changed and the investors would not know what actually has happened to their money or whether the full amount was raised or not; they will have to rely on the information displayed by the crowdfunding platform controller.

However, if this was to be put in blockchain, all the investors who join the platform in contributing/investing the money in a specific project will have the same information and no single person including the platform controller or manager can change the information. In this sense, a distributed ledger, accessible by all investors, would enhance transparency, efficiency and reliability while accessing information contained in the process. The hiccup in the current crowdfunding system is that only the platform controller or the manager will have full information and the contributors or investors will have no idea what is happening and will have to trust and rely on the information provided by the platform controller or manager.

IOSCO (2017) states that some crowdfunding channels are opening up to utilize blockchain technology to track ownership of private securities. Moreover, integrating this technology with crowdfunding channels could possibly lessen the costs linked with the underwriting process and tracking of ownership as well as corporate activities.

As such, it is essential to integrate blockchain technology to crowdfunding as it can boost the level of confidence of contributors and investors. This will increase the number of contributors and investors and make crowdfunding more appealing. From the perspective of governance, this would indeed be a favourable change. The above described way works without using cryptocurrency.

Another way in which blockchain can be integrated with crowdfunding is by using smart contracts and cryptocurrency. A smart contract is a digitized contract that is stored on the blockchain. Cryptocurrency is a token that will especially be designed using blockchain technology to replace the fiat money used in the transaction. This process can be explained in a simple manner but can crop up issues during implementation if the regulatory authorities in the respective

jurisdiction do not acknowledge it as a permissible medium of exchange. Through Initial Coin Offering (ICO), the cryptocurrency can be introduced by the crowdfunding platform and then the subsequent exchange of it could yield profit to the coin holders. This process is known as tokenisation (the process of digitally representing an asset or ownership of an asset).

Chart 4: Stages of ICOs

 **Stage A** Pre-announcement	 **Stage B** Offer	 **Stage C** Marketing Campaign	 **Stage D** Token Sale
Description The first step for project and start-ups is to spread the word about the ICO to attract as many potential investors as possible. Usually announcements are made on relevant cryptocurrency for UMS (Bitcointalk, Reddit etc.). The announcement contains an executive summary of the project goals and ambitions. Additional information, such as notable and unique features of the project as well as the acting team members and their previous experience and track record are helpful to attract potential investors. The team then receives and analyzes feedback to gauge interest and to tweak and adjust the business model. The first stage ends with the final business model and a written, detailed offer on the ICO.	The offer lays out the essential terms of the ICO and covers all the nuances of the project, specifies the desired investment to be targeted as well as deadline for the ICO. The token that is available as part of the ICO is specified in each offer. After selecting a financial instrument (the token), the offer covers all the rights that the token possesses. After signing the offer, the start date for the sale of tokens is announced, and the issuing company carries out an active PR campaign.	Since the start-up conducting the ICO is usually not well known, the marketing campaign plays an important role in a successful ICO. Specialized agencies may be hired to present at various conferences, conduct road shows etc. The campaign tends to last up to a month on average, with the target audience being institutional and smaller investors. Participants in crowdfunding programmes tend to be the main segment. At the end of the marketing campaign, the process of selling and buying tokens begins.	After the marketing phase, the ICO is triggered and the respective tokens are released. Depending on the start-up strategy tokens are distributed immediately and free for trading or released after a product or platform was initiated in order to ensure a return on investment for ICO participants.

Source: Monitor Deloitte (N/A)

Chart 4 above illustrates the stages of ICOs where it shows the four stages of ICOs which are pre-announcement stage, offer stage, marketing campaign stage and the token sale stage. Though ICOs were initially not regulated and were therefore neither controlled nor supervised by regulatory bodies, they are now being

regulated by several countries. According to the official website of IOSCO, under the heading of Regulators' Statements on Initial Coin Offerings, it is found that the following countries have issued statements and guidelines on the matter: Argentina, Andorra, Australia, Austria, Brazil, Belgium, China, Canada, Denmark, France, Gibraltar, Germany, Guernsey, Hong Kong, Isle of Man, Ireland, Israel, Jersey, Japan, Kuwait, Kenya, Liechtenstein, Macau, Malaysia, Malta, Mexico, Netherlands, New Zealand, Portugal, Poland, Saudi Arabia, Slovenia, Singapore, Spain, Thailand, Switzerland, UAE, the UK and the US. One instance in which this kind of blockchain has been integrated with crowdfunding is made by Revain.

The Revain crowdfunding and corresponding process is handled by smart contracts which are based on Ethereum (Revain, 2018). The users who want to be associated with the projects can lend support by sending cryptocurrencies or tokens from other projects to Revain wallets. The fund shall be sent after the beginning of the crowdfunding process. Twelve different cryptocurrencies are accepted by Revain.

During the crowdfunding R tokens will be made available for purchase at a fixed price. The total amount of R tokens issued will be 1,000,000,000 tokens. 70% of these tokens will be available during crowdfunding and they plan to acquire 8,000 BTC. The cost of 1 token is calculated as per the following formula:

Token price = 8,000 BTC/ 7,00,000,000 R token = 0,000011 BTC per R token

Of the remaining 30%, 20% will be divided between the members of the Revain teams and used to support functioning of the platform. The remaining 10% will be split up amongst advisors and members of their big bounty programme. R tokens are based on the Ethereum platform and the standard token interface is designated as ERC20. ERC, which stands for ‘Ethereum Request for Comments’ is the official protocol responsible for proposing certain enhancements to the Ethereum Network. The number ‘20’ in ‘ERC20’ signifies the unique proposal ID. ERC20 is the outcome of an effort to offer a common set of features and interfaces for token contracts in Ethereum. It enables wallets to give token balances for hundreds of different tokens and create a means for exchanges to list more tokens by providing just the address of the token’s contract. An ERC20 token contract can be understood by the address of the contract as well as by the total supply of tokens available to it. There is a number of optional items that are usually offered so as to provide additional particulars to users.

According to Zhu and Zho (2016), many issues detected in crowdfunding can be resolved by using blockchain technology and this is illustrated in the following Chart 5.

Chart 5: Issues in Crowdfunding and the Potential of Blockchain in resolving these issues

No	Issues in Crowdfunding	Potential of Blockchain Technology
1	Registration and confirmation of shareholders of a crowdfunded company	Blockchain's decentralized management of data, coupled with storage of information in distrusted ledger, tamper-proof as well as forgery-proof features, all ensure better security than traditional paper-based documents.
2	Difficulties in equity transaction and transfer	Blockchain-based ECF is robust and offers better alternatives to having regional trading centres. Blockchain is an anti-forgery and anti-tampering mechanism that provides unprecedented security of data with integrity and transparency through a distributed ledger.
3	Double payment issue	Solved by ensuring the uniqueness of equity transaction and transfer.
4	The security of fund management and compliance issues	Blockchain technology is used to achieve point-to-point direct money transfer between users.

Source: Zhu and Zho (2016)

Dean (2015) states that payments, tokens and crypto-equity is possible in crowdfunding via integration of blockchain technology and he states that the advantages of using blockchain technology are low fees, easy to issue tradable tokens and transparency rules and accounting. According to Palychata, the product manager of BNP Paribas believes blockchain technology is capable of addressing the major obstacles encountered during crowdfunding. Firstly, by creating standardisation, blockchain makes it easier to manage and register crowdfunded shares and, secondly, it increases transparency and reliability in the market.

4. CONCLUSION

It is found that integrating blockchain technology with crowdfunding is possible and it provides benefit to the parties involved in the transaction by not only reducing the cost but from the perspective of governance, there is certainty and trust provided to the system by all the parties involved in it. It is understood from this paper that there are two ways in which blockchain technology can be integrated with crowdfunding, with and without cryptocurrency. It is essential to note that to facilitate the technology, it is critical to create a cyber ecosystem where not only the cyber security risks are focused upon but investor literacy and awareness is also being promoted. Financial innovation and evolution is a must and it is crucial for the regulators to realise this and facilitate the process so that financial sectors can take advantage of them. Definitely, integrating blockchain technology to crowdfunding will mitigate the risks facing it in the present day and will assist in boosting the confidence of investors leading to an increase in the number of investors.

REFERENCES

1. Asian Institute of Finance (2017). Crowdfunding Malaysia's Sharing Economy (2018, August 13). Retrieved from https://www.aif.org.my/clients/aif_d01/assets/multimediaMS/publication/AIF_ResearchReport_Crowdfunding.pdf
2. Bijkerk, W. (2014). Risks and Benefits of Crowdfunding. (2018, August 13). Retrieved from https://www.iosco.org/research/pdf/20140410-Risks-and-Benefits-of-Crowdfunding.pdf
3. Dean, S. W. (2015). Blockchain Crowdfunding: How to use Bitcoin & More to Crowdfund Anything. (2018, August 13). Retrieved from http://cryptorials.io/blockchain-crowdfunding-bitcoin-crowdfund/
4. IOSCO (2017). IOSCO Research Report on Financial Technologies (Fintech) (2018, August 13). Retrieved from http://www.iosco.org/library/pubdocs/pdf/ IOSCOPD554.pdf
5. Monitor Deloitte (N/A). ICOs – The New IPOs? How to Fund Innovation in the Crypto Age (2018, August 13). Retrieved from https://www2.deloitte.com/content/ dam/Deloitte/de/Documents/Innovation/ICOs-the-new-IPOs.pdf
6. Nesta (2012). An Introduction to Crowdfunding. (2018, August 13). Retrieved from https://www.em-a.eu/fileadmin/content/REALISE_IT_2/REALISE_IT_3/ Intro To Crowdfunding.pdf
7. Revain (2018). Revain Full Whitepaper. (2018, August 13). Retrieved from https://revain.org/pdf/wp/en-wp.pdf
8. Rizzo, Pete (2016). BNP Sees 3 Reasons Why Crowdfunding Could Benefit from Blockchain. (2018, August 13). Retrieved from https://www.coindesk.com/bnp-three-reasons-crowdfunding-blockchain/

9. Securities Commission (2018). Preliminary Crowdfunding Statistics. (2018, August 13). Retrieved from https://www.sc.com.my/wp-content/uploads/eng/html/ digital/ Crowdfunding% 20Monitor_%20Issue%2015_%20180618.pdf

10. The World Bank (2013). Crowdfunding's Potential for the Developing World (2018, August 13). Retrieved from http://www.infodev.org/infodev-files/wb_crowdfundingreport-v12.pdf

11. Zhu and Zhou, Z. Z. (2016). Analysis and Outlook of Applications of Blockchain Technology to Equity Crowdfunding in China. (2018, August 13). Retrieved from https://jfin-swufe.springeropen.com/articles/10.1186/s40854-016-0044-7