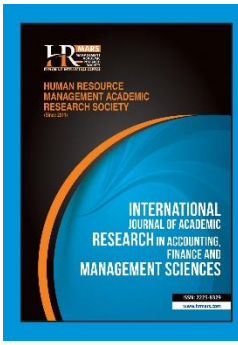
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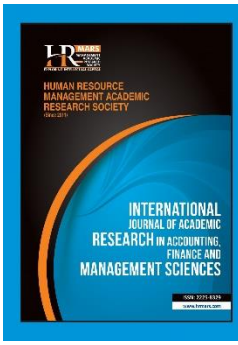
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Blockchain Technology a Structural Shifts in Banking Sector: Consumer-Oriented Measures

Wan Liza Md Amin[1], Syuhaeda Aeni Mat Ali[2], Syukrina Alini Mat Ali[3], Nur Shima Jusoh[4], Mawwadah Munirah Zulfakar[5]

Law faculty, University Teknologi MARA (UiTM)

Corresponding Author's Email: syuha497@uitm.edu.my

Abstract

This study reflects on the possibilities of banking institutions using blockchain technology, focusing on empowering the position of consumers and market players in Malaysia the banking sector. The technology advantages, risks and limitations are critically reviewed in order to understand how the technology works, but also how the technology provides the added values for consumer and other stakeholders in banking sector. While still an experimental technology, scholars and bankers argued that using blockchain could enhance innovations in the operational and delivery. Among the challenges of blockchain technology includes disparities and ambiguities in present fintech regulations and other policies warrant the analysis on current blockchain practices in banking delivery, cybersecurity challenges and the potential for fraudulent and criminal activities throughout blockchain. This study employed purely doctrinal research and qualitative analysis. The overall studies involved analysis of blockchain technology in terms of speed, functionality, security and accessibility. This study also explored the approach adopted by UK and US and approach to ensure blockchain technology are consumer –oriented and cyber securities concerns to address blockchain shortcomings and potential challenges to financial consumer welfare and other related policies. The findings revealed that blockchain is a promising financial technology that could eliminate plausible fraud transactions by making the transactions immutable, verifiable and traceable. However, this disruptive innovation shows several disruptions in banking traditional delivery system for example fluctuate costs, ambiguous decentralization structure vulnerable to anti–competitive practices under competition law and create risks to money laundering activities.

Keywords: Blockchain, Banking, Disruptive Innovation, Fintech and Consumer-oriented

Introduction

This study presents a gap analysis in blockchain technology (BT) in Malaysian banking digital services to stakeholders. The examination adopts systematic review BT features and mechanism offers as value added to enhance efficiencies and welfare. Hence this paper provides the BT features , its traceability , accountability and transparency features that would be able to address existing gap in the digital banking service system. This article

further corroborates the necessity with literatures traditional and Islamic banking services system. The World Economic forum predicts that by 2027, 10% of the world's gross domestic product will be stored on some form of blockchain technology (World Econ, 2015). According to TechCrunch, at least $1.3 billion was invested globally in 2018 into blockchain-developing companies (TechCrunch, 2018). According to Annual Report 2021 released by Securities Commission of Malaysia, the trading value of the digital asset and cryptocurrencies market in Malaysia rose to RM21bil in 2021(New Straits Time, 2022). Many countries have already started to adopt changes to their regulatory framework to address blockchain norms in commercial activities in all sectors. The surge of the internet, brought about blockchain technology. It is a technology that represents, in the simplest terms, a new infrastructure for communication, data storage, and management. Current data shows many automatically associate block chains with Bitcoin or other cryptocurrencies, yet the essential idea behind block chain is much more engaging (Swan, 2015; Underwood,2016; Rauchs et al., 2018; UN, 2018).

Literature Review

Blockchain is a database, a foundation, on which a platform, software, or application can operate. Blockchain brings a new opportunity to create new system that will be able to function without central administrator.

The uncertainty of competition and changes of the market, customer demand is becoming increasing random. The banking industry is experiencing a cultural shift, from overwhelming changes of traditional financial methods, towards a common jargon; 'Fintech'. Fintech refer to financial technology (Fintech) to describe the new tech that seeks to improve and automate the delivery and use of financial services. In 2021, this delivery revealed financial technologies are the key in the banking system, a shift to a more consumers- oriented services and therefore a more consumer –oriented application.

Blockchain has the potentials to significantly extend the horizons of the digital economy and society by bringing openness, sharing, and security to a whole new level (UN, 2018; Zhao et al., 2017). Blockchain becomes one of the latest technologies applied in the context of financial intermediation (Hassani, Huang, and Silva 2018), as it may be applied in many areas of the banking businesses: transaction processing, information collection and networking, cash management, commercial bank ledger administration, and clearing and settlement of financial assets (Peters and Panayi, 2016).

However, there are still concerns regarding blockchain and its application. (Tang, Y et al., 2020). It is undeniable that blockchain technology facilitates an entirely new architecture for money and payments, for establishing ownership and storing value, for making contracts and recording data and facts. However, this demands for legal and regulatory frameworks, tax models and economic policy settings which are not designed for this technology to be adapted (De Filippi and Wright, 2018).

A disruptive innovation (DI) theory is a process that assists a new organization to introduce a new business model. According to Christensen and Overdorf, DI describe a process where a new organization enters a sector, bringing a new model, creating a new market by which a new product or new service is introduced, and is inferior in quality by the standards of performance metrics, they are simpler, convenient, and less expensive. Eventually the product or services takes centre stage and competes with established products in the market (Christensen & Overdorf, 2000). The innovation in banking products is usually categorized as incremental or disruptive.

Thus, the need for academic research on emergence of blockchain technology as incremental or disruptive innovation in banking delivery becomes apparent. This study will examine on whether blockchain technology is a consumer-oriented delivery system that generate efficiency, innovations and also emphasize blockchains challenges in the banking sector. This study also aims to evaluate blockchain in Malaysian banking policy sector by analysing incremental and disruptive innovation policies.

Method

This study adopts qualitative analysis whereby the thematic analysis analyses the of blockchain technology structural framework in terms of speed, functionality, security and accessibility. This study is undertaken to address the gap analysis where currently Malaysia do have not formulate a national digital governance in blockchain and its value added in banking digital services. The examination further analyses the blockchain values on the recent practices in banking and Islamic banking blockchain innovations. The examination gauge the disruptive issues employing systematic review of several primary sources of Consumer Protection Act 2019, Competition Act 2010, Financial Technology regulation and Counter Terrorism Act 2001 as well as the discussions in commentaries, newspapers, journals and official documents. Doctrinal analysis main sources applied in the discussion of Shariah law and Islamic jurist's fatwa's in Islamic banking blockchain fintech. This study also explored the approach adopted by UK and US approach to ensure blockchain technology are consumer –oriented based and safeguards to address this disruptive innovation shortcomings. The findings that blockchain traceability, accountability and transparency are the novelty in the banking transaction needed in current practice to enhance digital banking services and the analysis are further collaborated with Malaysia experience as a case study in this article.

Results and Discussion

Understanding Blockchain Structure

Blockchain is a database shared across network of computers spanning the world centralised party (Beck & Christopher Muller-Bloch, 2017). This means, it encompasses of unlimited number of computers across the world, where each computer is connected to all other computers. Each computer on the network is known as a node.

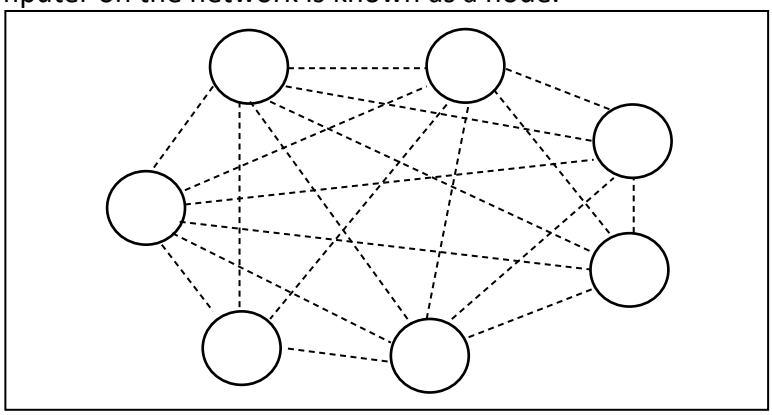
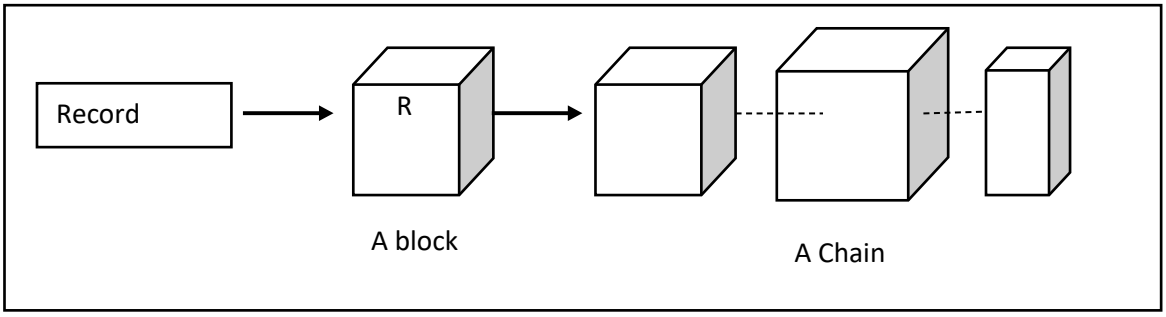


Figure 1: Blockchain network nodes and connection

Each computer has the same copy of the database, and there are some computers that check that database remains identical (Andhov, 2020). Everyone can have his or her copy of the database and trust that all copies remain the same, even without central administrator.

The database consists of three key components: (i) the record, (ii) the block, and (iii) the chain. The **record** can be information, data, contract, money, or almost anything else. The block is a bundle of records that is later linked to other blocks thereby creating a chain, as shown in the following figure 2 (Murray, 2018)

Figure 2: Elements of the chain



Once a record with a transaction is created, it is checked by the nodes. These nodes check the details of the transactions to make sure it is valid. Nodes in the blockchain are in constant communication with each other in order to remain synchronized. Depending on the type of blockchain, and the content transaction, the nodes will carry out different operations. Once the record is checked, the network accept it and adds it to a block. Each block contains its own unique fingerprint, or hash, as well as the hash of the previous block in the chain, and a timestamp.

Once, a block is created and checked by the network, it is added to the chain. The timestamp cannot be tampered with after being added thereby solving problems of data tracking, and information security (Haber & Stornetta, 1991).

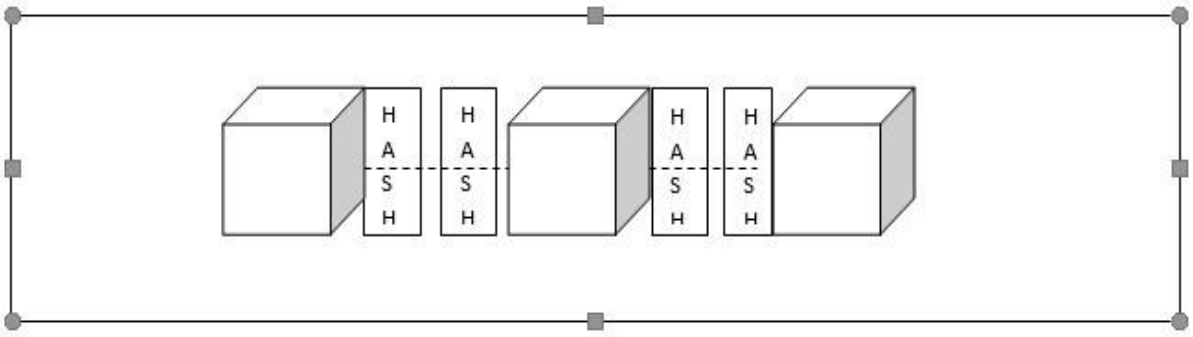


Figure 3: Creating a chain

A hash is generated by using standard, cryptographic hashing functions invented by the U.S National Institute Standards and Technology (NIST) and the U.S. National Security Agency (NSA). The hash takes the digital information from the block and generates a unique string of letters and numbers from that information, which is then uniquely associated with the blocks transaction (Murray, 2018). The challenge for hashing algorithm is to be make the hash almost impossible to decipher. One way in which it accomplishes this is by taking an input string of any length and releasing an output string of fixed length, as seen in the following example.

Input **Hash**

Wan Syuhaeada	9jphgfps56
Revolving loan	5wwwsss8t
Luxor cryptocurrency	ger766as

The output string is always of the same length, which makes it difficult to decode the type of information represented by the hash. Generating a hash for any given block is difficult. The hash is created by using a mathematical guessing game called a proof work (Judmayer et al., 2017). Nodes must engage in work by solving a computational puzzle. The computational puzzle is merely a game of trial and error, which is also called mining, and it uses a lot of computing power (as well as electricity). The computers that are involved in mining are themselves trying to solve the mathematical guessing game. The first computer to succeed creates the hash and can be rewarded for its works. The more nodes on the network that are attempting to solve the puzzle, the harder it becomes to generate a valid hash. In the case of bitcoin blockchain, the reward is Bitcoin tokens. An alternative of mining, offered by some cryptocurrencies through which a hash can be generated, is proof of stake. Proof of stake allows a person to mine or validate block transactions according to how many coins he or she holds. This concept allows those with more coins to have mining power.
Once a node finds a valid hash for a block, the node broadcasts the solution to the rest of the network. Upon receiving the broadcast, other nodes in the network runs a simple calculation to make sure that the resulting hash meets the protocol requirement. This process is known as consensus. The protocol states that if the calculations shows that the hash is valid, then the block can be added to the blockchain. Subsequently, a new blockchain is generated across the network and stored on the nodes. This process, introduced by Satoshi Nakamoto, aimed to preserve the security and integrity of the information on the blockchain. The consensus mechanism makes it difficult and costly for any party to unilaterally remove or modify the data stored on a blockchain. It also helps a blockchain –based network periodically reach agreement as to the current state of the shared database, even its members do not know each other or trust one another. Primavera De filippi and AAron Wright compare the Bitcoin blockchain or tamper –resistant “book” with identical copies stored on “millions of computers across the world (Fillipi & Wright, 2018). Unlike a book, however, blockchains, are not organised by pages, but by blocks. These blocks are inked together by an underlying protocol based on “a sequential time stamped chain”, and “each block also contains a header used to organise the shared database” and keep order among the blocks on the chain. The main component of the block’s header being the unique hash, which binds together “all transactions contained in that block, along with timestamp and …. The hash of the previous block.”

Banking and Blockchain Technology

The change in today’s world due to technology is unavoidable, especially in the financial sector. To date, efficiency and time saving are key consideration in the decision of the organisation to employs practical theory of disruptive innovations technologies into the perspective of advantage in the financial sector. The implications of the bank to adapt or change the operational model is the idea of expanding the competitiveness in the market. Indeed, blockchain technology seems to fit the desired criteria of new innovation in banking fintech delivery system. The technology are favourable as opposed to traditional and other fintech application because the application of blockchain in the banking delivery system can be divided into two namely:-

i) 'bank-to-customer' relationship – that refers to all interactions between a banking group and its customers
ii) 'Bank-to-bank'- relationship– which refers to the application of blockchain in the interactions between two or more banking groups.

Blockchain has the potential to significantly increase security and protection in banking transactions. Each activity is recorded on the Blockchain and data is available and cannot be changed or deleted by every member in this Blockchain. The results of this recording give durability, and confidence to the Blockchain (Belotti et al., 2019; Ozili, 2019).

Blockchain and Islamic Banking

Recent studies have indicated that Blockchain in Islamic Finance and use of cryptocurrency amongst Islamic financial institutions are still at very infancy stage. Some jurists' sanction the legality or lawfulness of cryptocurrency, while others do not (Ahmed, 2018). Many theorists have been predicting that the financial services will be disrupted using blockchain technology in the coming future (Hassan et al., 2020). It was argued that Shariah law and blockchain have more convergence than divergence. Blockchain technology platform perfectly embedded with Islamic values of trust, honesty, transparency and efficiency into banking and financial transactions, promoting the true spirit of the Shariah. Blockchain technology is also a useful tool by Islamic finance institutions for complex financing contracts and Shariah-compliant transactions, as well as to drive innovation in the industry and improve transparency and traceability of financial transactions.

Blockchain Limitations

Despite the efficacy of this technology, the system has its limitations as the following:-

1. Reports shows that Blockchain in the banking delivery system involved in distributed ledger technology (DLT) applications are exposed to novel types of disputes as traditional disputes, hence this disputes are complicated by involvement with DLT (Bright Norton, 2018).
2. Banks must seek to enumerate and then mitigate risks of engaging with DLT, using robust dispute resolution mechanisms and frameworks such as governed blockchains.
3. **Speed**. Bitcoin blockchain has extremely slow updates, which take place every ten minute.
4. In addition to the issues of speed, existing blockchains are **not as powerful** as data management technologies (Scalin, 2020).
5. **Cost** for developing blockchain technology is far from simple or cheap. Based on literatures, developing a new blockchain corporate solution include, at the minimum, the following parts: (i) infrastructure,(ii) storage space, (iii) network speed, (iv) P2P network, (v) encryption, (iv) smart contract, and (vii) user- friendly front –end.
6. **Hacking**. Anyone willing to modify even a single record in the blockchain would have to go through the computationally expensive task of generating new hashes for every subsequent block in the blockchain. The more transactions that occur on the network and the more blocks appended to the blockchain, the harder it becomes to retroactively modify previously recorded transactions.
7. Ultimately, there continue to be cybersecurity challenges and the potential for fraudulent and criminal activities throughout blockchain, whether it is a Bitcoin Blockchain or any other. For that reason, it is important to realise that blockchain is still immature.

Innovation vs Disruption

The banks have adopted blockchain technology and invested on the innovation products and services to secure cost –effective and increase efficiency to stay relevant and competitive in digital economy. The new services and products structural designed to be customer –oriented. These innovation known as disruption. This section highlights issues in this blockchain disruptive in banking system.

The blockchain technology application requires investments in new hardware and software needed for information networking (collection and sharing). The adoption of these new technologies may even change or transform current organisational sets (Mendling et al., 2018). When there is a high level of uncertainty related to the potential benefit – also due to a scarce knowledge of the process – supporting the introduction of an organisational strategy with a blockchain solution in the areas of performance, scalability, and integration with other systems is not an easy task (Hughes et al., 2019). Certainly, adopting the blockchain technology requires new roles, responsibilities, and expertise in order to tackle all the related issues. A further obstacle in the adopting blockchain is the limited availability of personnel skilled in developing and managing these innovative technological solutions. The skepticism is also due to the immaturity of this technology (Beck & Muller-Bloch, 2017). Furthermore, this technology is prone to criminal threats such as money laundering, a critical issue in banking that deserves and is receiving an increasing attention by regulators with Anti Money Laundering policies. Likewise, the legality of blockchain and cryptocurrency is subject of intense public confusion and government scrutiny.

The regulatory framework on blockchain and crypto currencies are still evolving. Hence, the overall regulatory environment remains unsettled. Further, technology cost incurred, illegal use such as terrorism, drug trade, cyber-crimes, etc. The issues of lack of standardization and the potential lack of interoperability with other blockchains are still unresolved. Inflexibility of smart contract technology in comparison to traditional contracts and the issue of its enforceability in a court of law is unclear.

New roles, responsibility and expertise means operational cost and increase in sunk cost, which must ne be transferred to customers and other related consumers. This also affect consumer protection Act 2019, as there are hidden charges will be transferred all users of the blockchain network by banks institution. In addition, security is the main concern in blockchain technology, it is noted this technology disruptive innovations offers several blockchain innovation namely cryptocurrency, retail and personal blocks network services and products and operational transaction between local and international members. Exclusivity in particular blocks need to be manage as it could create digital oligopolistic problems in the market. These raises concerns anti –competitive conducts this is because the blockchain implementation are not limited to bank and consumers, the innovation include other market players for example developer of blockchain companies, gatekeepers of the technology and smart contracts. To maintain, fair level playing field and competitive process, regulators of Competition Act 2010 and provisions need to have regulatory capture on this technology abuses. Presently regulatory capture are limited to investment bodies, securities commission and national bank unit.

Despite the authorities cited above on Blockchain in Islamic banking , the potentials of the technology have raised one important issue, which is its Shariah governance, so that the transactions could be not only fair and transparent but must be within the Shariah compliant (Mohammad, 2018). It is pertinent to highlight that the general rule of Shariah governing

business dealings that every transaction is permitted unless there is express and clear authority that prohibits such a transaction. Accordingly, innovations in business transactions are regarded as permitted. Therefore, fintech innovations would only be considered impermissible when there is a clear rule of Shariah as the authority that such innovations contradict. (Othman Abdullah, 2018) In this regard, the application of fintech would be made to abide by Shariah principles that stipulate the avoidance of certain prohibited aspects of business transactions. These prohibitions include interest or usury, gambling or speculation, fraud or cheating, harm and uncertainty among others, as in traditional practice of Islamic finance.

Advantages of Blockchain in Banking Delivery System

The possibility of adopting blockchain procedures to enhance security in banks is a critical aspect of the future digital banking model (Maiya, 2017). Specifically, in the financial sector, according to Treleaven et al (2017), 'blockchain technology can simplify business processes while creating safe, trustworthy records of agreements and transactions'. Moreover, the decentralised structure of blockchain makes them more resilient against network-wide cyber-attacks or tampering. Furthermore, the lack of information on customers which leads to difficulties in monitoring the creditworthiness of potential borrowers and granting credit can be resolved by "*A know-yourcustomer" (*KYC) procedure based on blockchain as it may help to share information about the identification and verification of customers, safeguarding the anonymity of data and also reducing the costs of data collection by credit agencies.

The impact of blockchain on lending activity can be twofold. First, it can make bank's lending process faster by reducing, inter-alia, the timing needed for the creditworthiness assessment, which in turn allows higher transparency and less risk. Furthermore, blockchain can support the peer-to-peer lending activity for allowing people to borrow and lend money each other using a lean funding scheme, characterised by direct intermediation and low transaction costs. In such a scenario, the higher the competition, the higher the quality of services that banks need to ensure to their customers. Cocco et al (2017) viewed that blockchain may help banks to reduce the administrative costs of compliance departments. Furthermore, Tapscott and Tapscott (2016) argue that settlement times are reduced to minutes or seconds via blockchain technology. Wu and Liang (2017), describing the application of blockchain in China Foreign Exchange Trade System, demonstrated the inter-bank application, based on blockchain, to ensure secure and consistent trade and transactions. Thus, the technological progress has the potential to improve several financial activities from trade finance to payments, securities settlement, and regulatory compliance (Cocco et al., 2017). One of the ways in which banks can increase their productivity and profitability is by automating the clearing and settlement of transactions (Ikeda and Hamid, 2018). A key prerequisite for achieving such an interconnected system is the realisation of a standard way of implementing blockchain technology. The idea that the adoption of blockchain on traditional banking process can improve the overall efficiency of the system, allowing cost and time savings, thanks to standardisation of the processes, which minimises the operational risk of banks and, as a consequence, banks can free up capital.

Blockchain Technology in Banking System

Blockchain in Letter of Credit (LC)

Bank of America, Merrill Lynch HSBC and the Infocomm Development Authority of Singapore

(IDA) has developed a new prototype solution in 2016 and brings the paper-intensive letter of credit (LC) transactions onto the blockchain (Parker, 2016). An LC or Documentary Credit represents a guarantee by a bank that a seller will receive payment from a buyer once certain conditions are fulfilled. Using blockchains, all parties involved in an LC transaction can view all actions in real-time, such as when the seller has shipped the buyer's goods. Each action in the workflow is captured in a permissioned distributed ledger, giving transparency to authorised participants whilst encrypting confidential data. This application can improve security by reducing errors, making companies' working capital more predictable and increase convenience for all parties through mobile interaction.

(Parker, 2016).The advantages of blockchain in Trade finance are as follows: (Deloitte n.d)

i) Real-time review: Financial documents linked and accessible through blockchain are reviewed and approved in real time, reducing the time it takes to initiate shipment.
ii) Disintermediation: Banks facilitating trade finance through blockchain do not require a trusted intermediary to assume risk, eliminating the need for correspondent banks.
iii) Reduced counterparty risk: Bills of lading are tracked through blockchain, eliminating the potential for double spending.
iv) Decentralised contract execution: As contract terms are met, status is updated on blockchain in real time, reducing the time and headcount required to monitor the delivery of goods.
v) Proof of ownership: The title available within blockchain provides transparency into the location and ownership of the goods.
vi) Automated settlement and reduced transaction fees: Contract terms executed via smart contract eliminate the need for correspondent banks and additional transaction fees.
vii) Regulatory transparency: Regulators are provided with a real-time view of essential documents to assist in enforcement and Anti Money Laundering activities.

Case study of Malaysian banking system

The banking structure is part of every country's financial machinery and is vital for economic progress. The dual banking systems that are common in Malaysia are the conventional (that is based on western financial system) and the Islamic (which follows the Shariah law) banking system. Both categories of banks are fully backed by the Malaysian government by ways of providing conducive financial ecosystem, establishing an efficient financial and legal infrastructure, as well as supplying human capital and resources (Kassim et al., 2009). In Malaysia, the financial institutions are governed by the Central Bank of the country, Bank Negara

Malaysia (BNM), while the money markets are governed by the Securities Commission ('SC'), except for offshore markets which fall under the supervision of Labuan Financial Services Authority.

The changing landscape of financial industry in Malaysia is very much affected by trade liberalization (globalization) and the rapid advancement of technology. Malaysia is one Islamic finance jurisdictions where the blockchain technology manifests its presence and formal initiatives are taken to explore and tap into the resultant opportunities. Malaysian government views digital assets, as well as its underlying blockchain technologies, as having the potential to bring about innovation in both old and new industries (The Star, 2019).

The central bank of the country, Bank Negara Malaysia (BNM) has declared that digital assets such as bitcoin are not considered as legal tender in Malaysia (BNM, 2014).

Furthermore, BNM emphasizes that it does not have any immediate plans to issue Central Bank Digital Currency (CBDC) in Malaysia. Nonetheless, the threat of competition from global players in fintech technology has driven BNM and capital market regulator, Securities Commission of Malaysia (SC) to issue guidelines to regulate the blockchain-based transactions within the ambit of extant finance and capital market laws.

BNM established Fintech Regulatory Sandbox Framework on 18 October 2016 which offers regulatory versatility to Fintech companies and banking institutions in Malaysia to experiment with Fintech solutions in a live controlled setting for a limited period. The goal of the Sandbox Framework is to provide a setting that is beneficial for the development of financial technology and to encourage innovations and growth of Malaysia's financial sector. BNM introduced Anti-Money Laundering and Counter Financing of Terrorism rules in terms of money service businesses, which entail endorsed remittance business that provides online and/or mobile remittance services to implement electronic know-your-customer (e-KYC) system for their on boarding process; and any individual who provides services to exchange digital currencies either from or to fiat money or from or to another digital currency shall be subjected to requirements as a "reporting institution" under the First Schedule of the Anti-Money Laundering, Proceeds of Unlawful Activities Act 2001, and Anti-Terrorism Financing. BNM allotted a policy document on Publishing Open Data using Open Application

Programming Interface (Open API) in January 2019, The policy document details BNM's procedures on the expansion of Open API for open data, i.e., publicly available and usable data, encompassing financial product information (i.e., important information on a financial product such as those provided in product disclosure sheets, which helps customers in making valid decisions) that banking businesses can be made available to third parties via the Open API. The goal of this policy is to disrupt financial institutions' control on customer data, ensure the playing field is fair for Fintech companies, and promote the use of technology to leverage the supply and use of financial products.

Similarly, with the advent of innovation in technology, the SC aware a growing interest in the use cases of blockchain, blockchain-based digital assets and investing in such digital assets, both domestically and globally. Thus, the SC issued its much anticipated framework for crypto exchanges namely the Capital Markets and Services (Prescription of Securities) (Digital Currency and Digital Token) Order 2019 (PO) which comes into force on 15 January 2019. Digital currencies and digital tokens were outlined in the PO as agreed as securities for securities laws and would be controlled by the SC. Furthermore, The SC has revised its Guidelines on Recognized Markets on 31 January 2019 to incorporate a new standard for electronic platforms that facilitate the trading of digital assets.It is pertinent to highlight that Malaysia became the first ASEAN (The Association of Southeast Asian Nations) country to introduce a legal framework on equity crowdfunding (ECF) when the SC released its ECF regulatory framework in February 2015. In June 2015, the SC announced the approval of seven ECF operators in the country as "recognised market operators". In August 2016, the SC followed up with a legal framework on peer-to-peer debt financing (P2P).

Subsequently, SC announced six registered P2P financing platforms at the Synergy and Crowdfunding Forum (SCxSC) in November 2016. In May 2017, SC launched a regulatory framework for Digital Investment Management (DIM) that details the licensing and operational guidelines for the offering of digital investment management and robo-advisory portfolio services to investors. Thus, paving the way for affordable automated discretionary portfolio management services to be offered to Malaysian investors.

Meanwhile, the Malaysia Digital Economy Corp (MDEC), a governmental agency for digitising the Malaysian economy, has its mandated updated and realigned in 2011 towards the blockchain-based innovations in addition to other fintech-related dealings. (Samburaj Das, 2017)

In November 2019, BNM introduced Framework for Electronic Trading Platforms, which outlined BNM's conditions and prospects on market participants who provide services of electronic trading platforms within the Malaysian wholesale financial markets, explicitly money and foreign exchange markets. Qualified platform operators must obtain the BNM's approval before offering their services in Malaysia.

Banking Consumer –Oriented Blockchain Delivery: A Proposal

Blockchain Innovation and Value added in Structural Shifts

There are certainly several components of customer –oriented measures that can contribute to greater banking delivery system including transparency records of transactions, greater access information, and simpler banking mechanisms. Blockchain technology could provide a transparent overview of validation or ownership in transaction. Transaction ownership would also become more transparent. Blockchain technology architecture need to represent a solution for corruptions, other cybersecurity crimes and fair competitive practices. Blockchain does not directly affects the truthfulness or materiality of the information, but it allows customers to easily acquire information and, at the same time, monitor transactions and decisions, and recognise possible breaches.

Furthermore, blockchain could support customer's long-term incentive plan that provides incentives to both customers and bank to bank relationship. In regard, to security blockchain , "algorithms that control the communication (between customers and banks) use cryptography to ensure that only the proper computers are making the decisions, that the blockchain does not record any improper transactions, and that past transactions are safe from being corrupted" (Young, 2018). Manipulation, like backdating the transfer money, payments, loan facilities, stocks and investments, would become impossible because rewriting the transactions and their corresponding timestamps on the blockchain is almost impossible.

The value added of this technology will also benefits Islamic banking system. As requirements of Shariah, the blockchain's inherent disclosure, transparency and enhancement of trust in transfers and exchange transactions can be considered particularly beneficial in that regard. The blockchain can serve in enforcing the rules of exchange in cash transactions for currency and/or lawful commodities (Abu-Bakar, 2017). Thus, Shariah compliance can be undoubtedly programmed into the smart contract for any Islamic finance transaction (Muneeza and Mustapha, 2019).The implementation of blockchain technology in Islamic finance would transform the nature of the classical contracts used in Islamic finance into the form of a smart contract. This innovation would contribute to greater transparency, and with the right architecture, they could change the values on which bank institution are built.

Conclusions

The finding in this study harmonise and affirmed that blockchain is a very promising financial technology in the banking and Islamic banking delivery. This article revealed the blockchain structure several innovations; cryptocurrency, retails and personal banking block and operational blockchain networks between bankers catered to domestic and international

members, yet blockchain it is still emerging and thus immature in comparison to other technologies. This disruptive innovation shows several disruptive in banking traditional delivery namely fluctuate costs, high electricity consumption, lack of centralization or ambiguous decentralization structure vulnerable to anti–competitive practices under competition law, lack of good governance , create risks to money laundering activities, entry and exit barrier to consumers are among the most relevant. However, all these impediments, are manageable and overregulated by market player i.e. bankers and governments. Furthermore, over the next years, can substantially change and a different mechanism of "proof" could be developed. Moreover, implementation of transparent overview ownership, support access information, provide more consumer –oriented delivery system, and support competitive and digital banking market policy and reinforce existing all stakeholders welfare . To recapitulates, as the technology matures and continues to be accepted by more jurisdiction, blockchain could accelerate a structural shift of power. Blockchain technology could be a phenomenon structural shift in banking delivery. Depositors, customer's shareholders and institutional investors could benefit from being able to access transaction records, transfers information, and verify. Optimistically, we can conclude that the market will first decide whether blockchain innovations prove cost-effective and efficient, and only then would blockchain become the technological norms of banking and other financial institution.

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