CHAPTER 7

Digital Smart Contracts: Legal and Shari'ah Issues

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Abstract This chapter seeks to examine recent issues that pervade digital contracts also known as smart contracts. Discussions and analysis will be made to understand smart contracts, its key features and applicability in modern commerce as well as its application in Islamic finance. Examples and reference will be made to contemporary smart contract and its symbiosis with blockchain technology and how smart contract has revolutionized the traditional concept of contract. Finally, the author will juxtapose the key legal characteristics of smart contract against the cardinal principles of Islamic finance governing Islamic commerce and the relevant Malaysian legislations and discuss the issues surrounding them.

Keywords Digital • Smart contract • Law • Shari'ah • Jurisdiction

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Introduction

And it all began with Szabo. According to Szabo (1994), a smart contract is a computerized transaction algorithm, which performs the terms of the contract. In other words, it is but an agreement whose execution is automated. Alexander Savelyev (2016), a critique, was quick to quip that this definition hardly distinguishes a smart contract from a well-known device implementing automated performance, for example the ubiquitous vending machine.

Perhaps, to better understand the proper features of a smart contract, reference may be made to another definition by Greenspan (2016) that '[A] smart contract is a piece of code which is stored on a blockchain, triggered by blockchain transactions, and which reads and writes data in that blockchain database.'

By this definition, it implies that blockchain is the bedrock of a smart contract. It is one of the defining features of a smart contract. Alexander Savelyev (2016) opinions that blockchain is inherently significant in smart contract due to the fact that 'it allows to automate the process of performance contractual process of both parties', thus, debunking the vending machine analogy as it relates to automatic performance of only one party in the likes of coin insertion or application of a banking card.

In addition, Alexander Savelyev (2016) further notes that another important feature of blockchain based contract is that 'it allows not only to automate the performance of the contract but also a process of its conclusion; it can be concluded by electronic agents employed by the parties.'

Advantages and Characteristics

Efficiency

It is clear that the implementation of smart contracts would bring about greater efficiency in particular when the contract or agreement depends on big data with repeatable coding execution automated. As the codes are binaries, they will only be viewed by parties to the contract to the exclusion of others.

Transparency

It is also abundantly clear that since the terms of the agreement, they are to be mutually agreed and consented to in advance. In a way, there would

not be any variations, amendments or supplements introduced subsequent to the consummation of the smart contract.

Distributable

Another salient feature of blockchain is that it is 'distributable', that is, the output of the contract is distributed to everyone in the network, and by consequent it promotes transparency. This is because the whole participants of the digital shared ledger are able to see all transactions recorded.

Immutable

It is also said that a smart contract is permanent or 'immutable' as it precludes the possibility of changes or tampering. The smart contract is thus cast in stone.

Application of Digital Contracts/Smart Contract

Smart contract presents a whole gamut of opportunity to support a spectrum of Islamic financial product ranging from sukuk, Islamic wealth management, for example, Islamic banking, crowdfunding and takaful industry (automated claims or renewal of general takaful products).

There are several notable examples where smart contract is used to underpin and support financial product transactions. For instance, in a crowdfunding scenario, smart contract may be utilized to create pool of resources and consequent to an agreed premise, allocate them accordingly.

Thus, in a crowdfunding exercise as alluded to earlier, smart contract serves to identify the flow of funds submitted to a specific crowdfunding project, and upon attaining the targeted threshold, the fund is transferred to the project promoter. Any amount exceeding the targeted threshold shall be remitted back to investors. And with all the terms of the agreement whose execution is automated.

In similar light, another crowdfunding platform to consider would be the Investment Account Platform (IAP), a platform to facilitate channelling funds from investors to finance viable ventures and projects which is backed by Islamic banking institutions via the offering of investment account (IA) to the investors. Through this platform, Islamic banking institutions will facilitate matching of investments by the investors with the identified ventures or projects that are in need of funding. The flow of funds to the Islamic banks and ultimately the channelling of the funds to identifiable ventures or projects may be executed via smart contract.

It is clear from the snapshot given further, the same sequences reflected in the chart earlier may be replicated in the IAP. In this context, the investors either individual, corporate or institutional investors would channel the funds to identified ventures via the conduits of Islamic banks based on pre-determined triggering events.

The Shariah and Legal Issues

As alluded to earlier, smart contract is used to describe a computer programme code capable of executing and ensuring the terms and performance of contract using blockchain technology. By way of iteration, the whole process is automated and enforceability.

Important Shariah Precepts Relevant to SMART Contract

Written Contract

Islam enjoins its followers to reduce contracts into writing in order to achieve fairness and accountability. It extols the virtues of ethical business practices—imbued with concepts of trust and fairness.

> O ye who believe! When ye deal with each other, in transactions involving future obligations in a fixed period of time, reduce them to writing. Let a scribe write down faithfully as between the parties: let not the scribe refuse to write: as Allah Has taught him, so let him write. (Al Baqarah: 282)

This principle sets out the paramount need for the terms of the contract to be exact and precise where fairness and accountability are being upheld. And in the context of a smart contract, nothing is more precise than a set of protocols specific triggering event(s) upon which both parties have agreed upon.

Free of Gharar

Gharar is an important precept in Islamic financial system. Gharar exist when there is element of uncertainty in a contract. The consequences of having Gharar or uncertainty element in the contract will be vitiated and thus renders it null and void.

> Narrated by Hakim ibn Hizam Hakim asked the Prophet: Apostle O Allah, a man comes to me and wants me to sell him something which is not in my

> possession. Should I buy it for him from the market? He replied: Do not sell what you do not possess.

It is clear that *Gharar* is unjust as it leads to uncertainty in the contract and thus ipso facto renders the contract void.

(See: The Prohibition of Riba, Gharar & Maysir in Islamic Banking. Source: docuworks)

It is submitted that smart contract has features that preclude elements of uncertainty in regard to terms and/or execution of contracts. Smart contract negates elements of *gharar* not only in relation to the terms but also as to the implementation of the contract. For instance, in an Islamic crowdfunding structure, the smart contract is based on self-executing digital, with electronically coded contractual terms, such terms will only be executed only if conditions are fulfilled.

Islamic Fatwa on Smart Contract

At the time of writing neither the Shariah Advisory Council of Bank Negara Malaysia nor the Shariah Advisory Council of Securities Commission has issued any fatwa and or guidelines on smart contract.

The Mejella

It is interesting to note that maxims of Islamic Jurisprudence contained in the Mejella may be relevant in considering the status and validity of smart contracts. They include:

43. A matter recognised by custom is regarded as though it were a contractual obligation.
44. A matter recognised by merchants is regarded as being a contractual obligation between them.
45. A matter established by custom is like a matter established by law.

It is submitted that the Mejella has presciently provided the planks to consider and decide on the validity of smart contracts. As the practice of adopting smart contract continues to gain acceptance and increasingly accepted by the stakeholders in any Islamic financial product, for example by banks/financial institutions, takaful, venture capitals and the likes, smart contracts would invariably and consequently be held to be valid not only under the precepts of custom but also under the law.

Legal Issues and Challenges

Is smart contract a contract in a traditional contract law sense?

Raskin (2016, p. 13) argues that smart contract is a form of self-help because the absence of recourse to a court of law is needed for the machine to execute the agreement.

Alexander Savelyev (2016) further posits that the following features of smart contract are to be regarded as a legally binding agreement:

(a) It governs legal and commercial relations between parties similar to the traditional law of contract.[1]
(b) The transfer of digital blockchain-based asset either on chain asset, for example, digital currency or off chain asset, for example, stocks tantamounts to 'legal effect,' an inherent concept of a contract.
(c) Although smart contract's performance is automated, it still requires the presence of will of both parties—manifested by the fact when the parties decide to enter into such agreement as per the terms.
(d) It is reinforced by the (1) action of signifying consent[2] to the terms of the contract and (2) mode of the contract's execution, at the time of entering the contract.

He further crystallized and discussed the important features of smart contract to the following:

1. Solely electronic nature
   whilst traditional contract may be in oral or written form, smart contract exists only in electronic form.
2. Software centric
   smart contract computer code is the contractual terms. It is also possible to argue that smart contract vide its nature is also a com-

[1] See: Malaysian Contracts Act 1950 (Act 136) (Revised 1976), section 10: 'All agreements are contract if they are made by the free consent of parties competent to contract, for a lawful consideration and with a lawful object, and are not hereby expressly declared to be void.'

[2] See: Malaysian Contracts Act 1950, section 13: 'Two or more persons are said to consent when they agree upon the same thing in the same sense.'

puter programme as per intellectual property law.[3] Arguably, smart contract has a dual nature under the law, that is, as a 'document' governing the relationship of parties as well as being an object of IP law.

3. Enhanced certainty

   there is no room for interpretation under a smart contract as it is based on software codes or computer languages as compared to traditional contract which is subject to interpretation rules which bring in elements of uncertainty.

4. Conditional nature

   as alluded to above, smart contract is based on computer languages. It is based on conditional statements. For instance, 'if 'x' then 'y' which is in harmony with and akin to contractual terms and conditions.

   Raskin (2016) posits, 'the enforcement of contract is nothing more than the running of a circumstances through conditional statement.'

   In contrast, the Section 8 of the Malaysian Contracts Act 1950 provides 'Performance of the condition of a proposal, or the acceptance of any consideration for a reciprocal promise which may be offered with a proposal, is an acceptance of the proposal'.

5. Self-enforcement

   once smart contract is concluded, its further execution is no longer dependent on the will of its parties or third parties. It no longer requires approval or actions anymore. It thus binds the parties. There is no more room for human intervention.

6. Self-sufficiency

   Smart contract does not require any legal institution, legal enforcement or corpus of legal rules to supplement it; unlike the traditional contracts.

[3] See: Malaysian Copyrights Act 1987 (Act 332) section 3: 'computer program' means an expression, in any language, code or notation, of a set of instructions (whether with or without related information) intended to cause a device having an information processing capability to perform a particular function either directly or after either or both of the following:

(a) conversion to another language, code or notation; *(b)* reproduction in a different material form.

Can a Smart Contract Satisfy the Elements of a Contract Under the Malaysian Contracts Act 1950?

Offer or 'Proposal'

Generally, Salleh Abbas FJ in the Federal Court decision of *Preston Corporation Sdn Bhd v Edward Leong & Ors [1982] 2 MLJ*, FC held that '[A]n offer is an intimation or willingness by an offeror to enter into a legally binding contract. Its terms either expressly or impliedly must indicate that it is to become binding on the offeror as soon as it has been accepted by the offeree.'

The Malaysian Contracts Act 1950 (Act 136) (Revised 1976) ('CA') instead utilises the word 'proposal' which means:

> 1(a) when one person signifies to another his willingness to do or to abstain from doing anything, with a view to obtaining the assent of that other to the act or abstinence, he is said to make a proposal;

The effect proposal is only effective when it is communicated. Thus, Section 4 stipulates that an offer is only effective when it is communicated.

It is argued that the smart contract code made available on a distributed ledger may constitute an offer if the other counter party is able to interact and execute the code. By way of example, according to Scholz (2017) in the well-established context of algorithmic trading, parties use algorithms as 'negotiators' before contract is formed, allowing the parties to choose the order terms to the market.[4]

Acceptance

Another important element of a legally binding contract is acceptance. The context of 'acceptance' under the Contracts Act 1950 is clarified under section 2(b) thus:

[4]Scholz, L (2017). Algorithmic Contracts 20 Stanford Technology Law Review 128 (Smart Contract: Is the Law Ready, Chamber of Digital Alliance. Retrived from https://www.digitalchambers.org/smart contracts-white papers).

2(b) when the person to whom the proposal is made signifies his assent thereto, the proposal is said to be accepted: a proposal, when accepted, becomes a promise.

According to Sinnadurai (2011, p. 50), under the Contract Act 1950, the only person who can accept the offer is the person to whom the proposal was made. Thus, when the person signifies his assent to the proposal, the offeree is said to have accepted the offer, resulting with the offeror being bound by the contract proposed by him.

It is often observed that in the case of a smart contract, the offeree may signify acceptance through signing the transaction by a private key. Alternatively, parties may use computerized algorithms to negotiate the terms of a smart contract.

Consideration

Consideration is another fundamental element of a valid contract. Section 2(d) of Contracts Act 1950 defines 'consideration' to mean:

> when, at the desire of the promisor, the promisee or any other person has done or abstained from doing, or does or abstains from doing, or promises to do or to abstain from doing, something, such act or abstinence or promise is called a consideration for the promise.

In practice, a smart contract parlayed in the distributed ledger would constitute an offer. In consequence, the offeree may indicate acceptance by signing and signifying acceptance to the transaction by signing in the private key.

Consideration is reflected by the exchange of value or performance of the contract or a promise to pay or perform at a future time.

In addition, Section 26 of the Contracts Act 1950 amplifies the importance of consideration by emphasizing that an agreement without consideration is void unless it falls within the exceptions contained therein in the following terms.

It states:

> An agreement made without consideration is void, unless—
> it is in writing and registered

> (a) it is expressed in writing and registered under the law (if any) for the time being in force for the registration of such documents, and is made on account of natural love and affection between parties standing in a near relation to each other;
>
> or is a promise to compensate for something done
>
> (b) it is a promise to compensate, wholly or in part, a person who has already voluntarily done something for the promisor, or something which the promisor was legally compellable to do; or
>
> or is a promise to pay a debt barred by limitation law
>
> (c) it is a promise, made in writing and signed by the person to be charged therewith, or by his agent generally or specially authorized in that behalf, to pay wholly or in part a debt of which the creditor might have enforced payment but for the law for the limitation of suits.
>
> In any of these cases, such an agreement is a contract.

It is submitted that if and when each of all the elements are satisfied, that is, proposal/offer, acceptance, and consideration are satisfied them ipso facto, a smart contract is thus validly constituted and becomes legally binding under Malaysian law.

Contract by Electronic Means

Contracts Entered into by Electronic Means

Ancillary to the discussion given before of a smart contract, it is submitted that Malaysia has to a large extent made efforts to provide a legislative framework to govern contracts by electronic means. Arguably a smart contract fulfils the legal requirements of transactions using electronic means.

Recourse, discussion and guidance may be made to the Malaysian Electronic Commerce Act 2006 (ECA) which governs formation of contracts, communication of offer made through electronic means, and the place the contract is concluded.

Specifically, the Preamble reads:

> An Act to provide for legal recognition of electronic messages in commercial transactions, the use of the electronic messages to fulfill legal requirements and to enable and facilitate commercial transactions through the use of electronic means and other matters connected therewith.

Application of ECA

Section 2 provides:

(1) Subject to section 3, this Act shall apply to any commercial transaction conducted through electronic means including commercial transactions by the Federal and State Governments.
(2) This Act shall not apply to the transactions or documents specified in the Schedule.

Note that 'transactions' excluded are power of attorney, wills and codicils, creation of trusts, and negotiable instruments.

Consent Requirements Under the ECA

Consent as one of the cardinal elements of a commercial transaction or a contract is covered in section 3(2) of ECA. The section states:

(2) A person's consent to use, provide or accept any electronic message in any commercial transaction may be inferred from the person's conduct.

Note that 'commercial transactions' means a single communication or multiple communications of a commercial nature, whether contractual or not, which includes any matters relating to the supply or exchange of goods or services, agency, investments, financing, banking, and insurance.

Legal Recognition of Electronic Message

ECA expressly recognizes the legal effect of electronic message. Section 6 states:

(1) Any information shall not be denied legal effect, validity or enforceability on the ground that it is wholly or partly in an electronic form.
(2) Any information shall not be denied legal effect, validity or enforceability on the ground that the information is not contained in the electronic message that gives rise to such legal effect, but is merely referred to in that electronic message, provided that the information being referred to is accessible to the person against whom the referred information might be used.

Formation and Validity of Contract

The formation and validity of contract are reinforced by sections 7(1) and (2) of ECA:

(1) In the formation of a contract, the communication of proposals, acceptance of proposals, and revocation of proposals and acceptances or any related communication may be expressed by an electronic message.
(2) A contract shall not be denied legal effect, validity or enforceability on the ground that an electronic message is used in its formation.

In *Yam Kong Seng & Anor v Yee Weng Kai [2014] 4 MLJ 478,* the Federal Court of Malaysia considered Section 8 of the Electronic Commerce Act 2006 ('ECA').

> Section 8—Writing: 'Where any law requires information to be in writing, the requirement of the law is fulfilled if the information is contained in an electronic message that is accessible and intelligible so as to be usable for subsequent reference.'

Suriyadi Halim, FCJ (in delivering judgement of the court), held that where any law requires information to be in writing, the requirement of the law is fulfilled if the information is contained in an electronic message that is accessible and intelligible so as to be usable for subsequent reference. Accordingly, a message from an SMS, with all the attributes of Section 8 being present, viz, accessibility, intelligible and extractable for subsequent reference, such an electronic message is as good as in writing.

The Federal Court further held that signatures need not be written. Suffice if there be any mark, written or not, which identifies the act of the party, perhaps in the form of mark or by some distinguishing feature peculiar only to that person, then the acknowledgement has been signed. Analogically, the conventional paper is substituted by the mobile phone, which holds features that can preserve information or transmissions in the like of the SMS, with the telephone number representing the caller or the sender of some message. The legal requirement for a signature was fulfilled as the sender was adequately identified let alone admitted by him.

At the time of writing, there is no decided case yet discussing a smart contract transaction by the Malaysian courts.

The Way Forward: Conclusion

Whilst we wait for a deliberate discussion on smart contract, some viewpoints may be had as to the issues as to the validity of bitcoin (note that at the time of writing there has yet to be a deliberate discussion on the Islamic perspectives of smart contract).

This can be seen from the view offered by Dato' Seri Zulkifli bin Mohamad Al Bakri (2019). He is of the opinion that bitcoin does not fulfil Shariah requirements due to its inconsistency and the fear that this may harm the consumers in the future. Apart from that, the absence of any legal authorities to effectively regulate this digital transaction will muddle the official banking system of a country. He further emphasized that the banning of bitcoin is necessary on the principle of *Sadd al-Zarai* (to prevent harm).

It is clear at least from the 'bitcoin experience,' debates are still raging on the Shariah traditional front on the issue of Shariah compliance.

At the other end of spectrum, the civil and conventional laws appear to be more receptive and remains fluid as to the validity and enforceability of smart contracts albeit the absence of a comprehensive legislation governing such contracts. Some legal planks may be utilized to justify smart contract as having some semblance of legal characteristics often associated with common law jurisprudence.

As was alluded to earlier, some jurisprudential debates are still actively being carried out amongst scholars and practitioners alike although the writer is of the opinion that the sheer weight of usage, acceptance, and purpose of smart contract shall outweigh its legal and Shariah conundrum.

Conclusion

In sum, the writer has attempted to paint a broad-brush approach to discuss smart contract and its application and juxtapose them to Islamic Finance precepts and arrive to an unmistakable conclusion that contemporary smart contract legal characteristics are aligned with the cardinal principles of Islamic finance governing Islamic financial products.

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