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Model Dinar and Dirham Digital Currency for Islamic Commercial Transaction

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Abstract
Cryptocurrency is predicted to have a bright future as a new form of money becomes more popu- lar. This research analyses the potential disruption of cryptocurrency from an Islamic perspective. However, this promising Islamic cryptocurrency has shifted from non-asset backed to physical asset- backed of cryptocurrencies. We proposed design implementation the most straightforward way of the transaction with cashless wireless payments using one device through Distributed Ledger Technology (DLT) of blockchain technology. We use digital currency with underlying asset Dinar and Dirham for a commercial transaction. However, the disruption of cryptocurrencies may adapt Dinar and Dirham tokenization in exchanging services in the conversion of fiat money into cryptocurrency that complies with Islamic. Except comply with Islam, it also needs a Special Purpose Vehicle (SPV) as a party who guarantees the existence of assets. It concludes that the intermediation function of third parties such a bank will be disrupted in the profound shift of digital money based on Islamic cryptocurrency.

Keywords: *cryptocurrencies, dinar dirham, digital currency, gold, Islam*

1. Introduction

This research is built on the basis of two main issues. First, the way of a commercial transaction was changed parallel with the emerging of the peer-to-peer platform like blockchain technology and sharing economy(Hawlitschek, Notheisen, & Teubner, 2018). Moreover, theory-based empirical research on blockchain related the phenomena is generally rare and mainly design with the intention to provide conceptual and design-oriented research, particularly prototypes, and analytical investigation. While, one of the conceptual frameworks is focused on user interaction and the adoption of the blockchain itself(Risius & Spohrer, 2017). Therefore, blockchain technology must be able to provide solutions in the development of peer-to-peer platforms such as payment channels, which implies a dramatic redefinition of business process or re-modeling of payment that simplifies of the transaction without trusted mediation - such as banks(Nakamoto, 2008), (Dahlberg, 2016).

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Second, cryptocurrency made a new kind of money that can make a new non-cash payment instrument (Swan, 2019). In line with that, the emergence of Bitcoin is a new kind of old-fashioned payment with gold as a new place to store value(Popper, 2016). But the contradiction of Islamic scholar in the previous research of cryptocurrency that mentions about disadvantages rather than the benefit one(Nurhisam, 2017), but the other side mention about the complying of Islamic law. It can harmonize with the prohibition of interest (Riba) and combine the principle of Mashlaha (public interest) and collective risk sharing(Evans, 2015). Furthermore, the execution of cryptocurrencies can run in the blockchain technology requires real asset-backed that comply with the Islamic perspective of money that can stored value (Shodiq, 2018).

The aim of this research is to make the present state of the art of cryptocurrency of Dinar and Dirham for a commercial transaction and made a multi-stage factor of decision-making to analyze the potential disruption. First, we analyse the value proposition canvas such services of "Noorcoin" whom that claim The First Shariah Token in the World Certified by World Shariah Advisory Committee in March 2018 (Noorcoin, 2018)and OneGram whom claim Islamic cryptocurrency by backing each coin/token with one gram of gold (OneGram, 2017). We compare both pain, gain, and product and services and designing new value proposition of Islamic Cryptocurrency. After that, we analyze a qualitative decision-making mix method to see the potential disruption of Dinar and Dirham as an asset-backed of Islamic cryptocurrency as a payment instrument.

2. Materials and Methods

We design of this research with mix method that gathered during a one-year field study. First, we specified using a value proposition canvas to reach out the set of benefits that may attract cryptocurrencies users. The value proposition canvas will portray the advantage users can require of the product and services(Osterwalder, Pigneur, Bernarda, & Smith, 2014) (SeeFig 1). We assessed both value map of Noorcoin and OneGram with five people of the Founder of Islamic Start-up Fintech Community and one people founder of Indonesia School of Commerce Transaction.

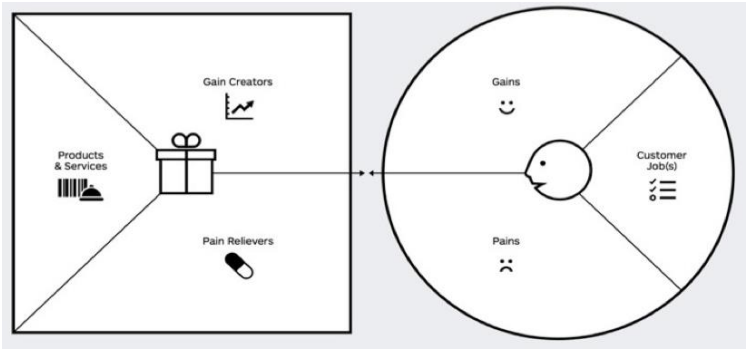

Fig. 1 Value Proposition Canvas**.**

After we found the new value proposition, the second method that we used decision-making analysis, it recommended that a disruption innovation process comprises of the six following stages(Rafii & Kampas, 2002) (SeeFig 2): (1) Foothold market entry, (2) Main market entry, (3) Customer attraction, (4) Customer switching, (5) Incumbent retaliation, and (6) Incumbent displacement 21. This method goes for scoring and diagramming the disruptiveness behavior

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profile with its disabling and enabling forces. To evaluate the aspect of disruption we discuss in open and semi-open questions on the cryptocurrency market with over ten experts from the different community such as Academician, Indonesian Muslim Entrepreneurs Community, Islamic Banker, ex-Banker (Entrepreneurs).

Finally, we design implementation with Islamic jurisprudence adaptation on how the Dinar and Dirham currency can be recognized as a digital currency and used for commercial transactions.

3. Materials and Methods

Every day the company's design product and services to improve customers live. But 72% of new product and service innovation fails to deliver on expectation, and It means that customers don't care when 7 out of 10 product introduction to the market(Simon-Kucher & Partners, 2014). However, the package value of products and services reach customers to complete either functional, social, or emotional jobs or solve them satisfy basic needs. Our first approaches are to design a value map to describes the benefits customers can expect from products and services of Noorcoin and OneGram. As an illustration, Noorcoin will start of operation in quarter 3 2018, and in quarter four they begin to Alpha-testing and then released the website and mobile apps with basic features. While OneGram was worth estimated a crowd sale initial coin offering (ICO) over $500 million between May 21st and September 22nd, 2017 and at first Ramadhan 1439 H they had celebrated thousands of followers, supporters, and well-wishers from across the globe.

3.1 Noorcoin Vs. One Gram Value Map

Our expert tries to evaluate Noorcoin whitepaper to design their value map to see their gain creators, pain relievers, and product and services. The interviewee from the founder of Islamic Fintech start-up and founder of Indonesia School of Commerce Transaction assert that Noorcoin product and services have in common with the other cryptocurrencies. Their bundle products and services only supporting customer functionally to use cryptocurrency in their transaction (SeeFig 3). If we know the list products and services, Noorcoin positioning going through as a trusted-intermediary financial institution when they provide system integrated between with Hotel Restaurant and Catering (HoReCa), offline and on- line store with their mobile payment. While OneGram products and services (SeeFig3) also offer to their customer to be redeemed a backing gold of their token/coin with supporting of licensed Dubai Airport Free Zone (DAFZ) to trade gold. Moreover, the physical gold stored in protection from theft and damage and also the gold their purchased is being guarded with the expert of supply chain management.

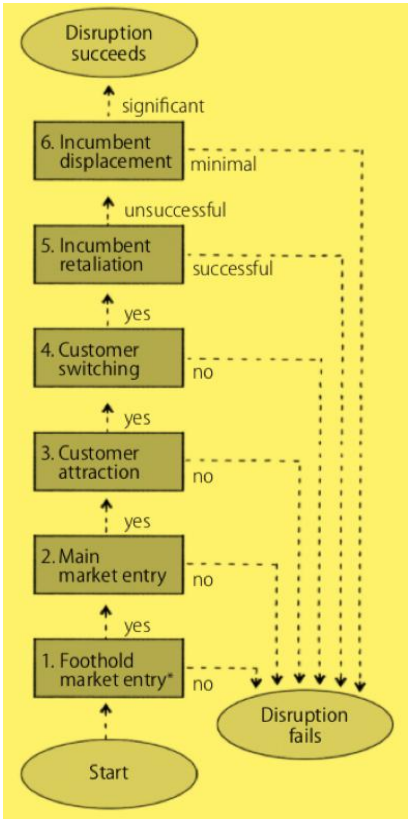

Fig 2 Stage of Disruption

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There is one fundamental difference between both. Functionally, Noorcoin tries to complete jobs of the customer as an intermediator, whereas, the promise of blockchain technology is made a disintermediated digital transaction with a decentralized ledger. While OneGram promises an emotional approach with the backing each coin with one gram gold. Even, they did not claim as Islamic cryptocurrency, OneGram tends to comply with Islam with real asset-backed. Next, we discuss the Islamic compliance about Islamic jurisprudence adaptation to design its implementation for a commercial transaction.

One of three critical insight into the future strategic business value is endorsed to the commercial application (Carson, Romanelli, Walsh, & Zhumaev, 2018). However, the specific customer pains that will be alleviated in the presence of Noorcoin is the world certified by World Shariah Advisory Committee who obtained(Noorcoin, 2018). Noorcoin also will relieve customer pain by adopting Zilliqa platform. The capability of their technology to generate 2500 transaction per second will increase the possibility for mass adoption. Furthermore, in the short term, they use merchant and customer rating as the strategic value for more increasing mass adoption. In contrast with Noorcoin, OneGram was preparing a commercial application to integrated with Mastercard debit card and Yalapay as a payment gateway for fiat conversion and other features that follow (SeeFig 4).

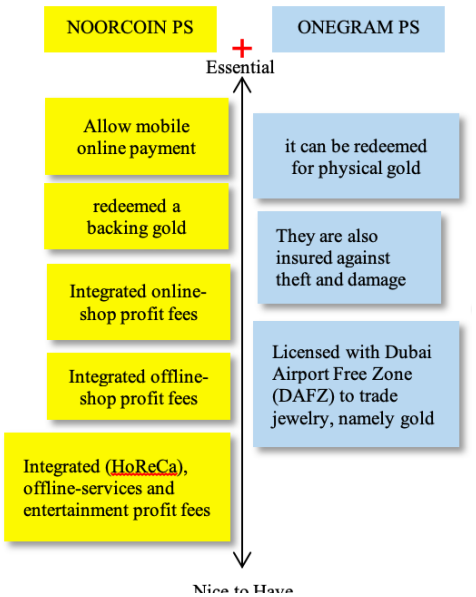

Fig 3 Noorcoin Vs. One Gram Product and Service (PS)

Meanwhile, one side of blockchain is the activity around the exchange of value. It is expected to allow individuals to exchange currencies and another asset with each other without depending on an intermediator to deal with the transactions (Mulligan, Scott, Warren, & Rangaswami, 2018). Surprisingly, something specific that customer looking for in term of cryptocurrency is exchanging them to fiat money and low-cost fee. Noorcoin offers a "gain creator" to exchange NCO to preferred fiat money in the retail merchant and will charge a 1,5% every payment from the merchant (see Fig 5). Therefore, OneGram gain creator attempt to offer backing real gold-asset, and the price is always used the spot price of gold. Whereas, the low cost of transaction fee over 1 % each transaction will be split to be increasing the growth of real gold-asset (SeeFig 5).

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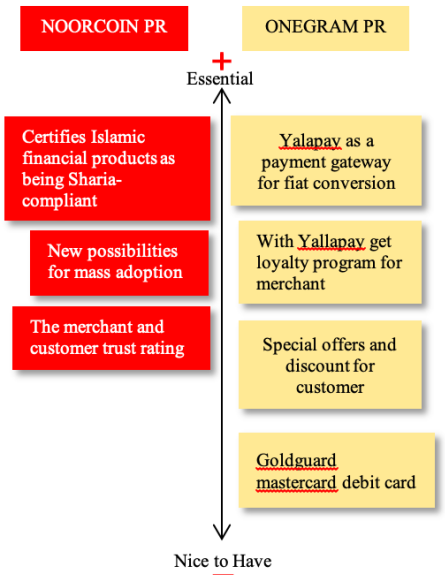

Fig 4 Noorcoin Vs. One Gram Pain Relivers (PR)

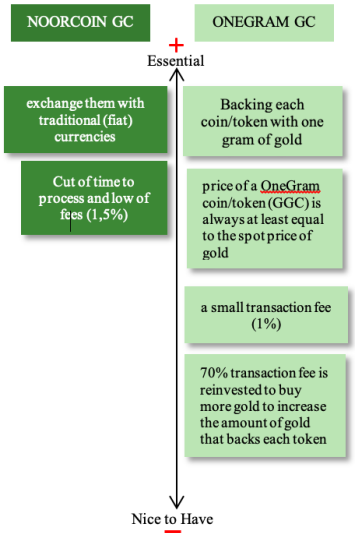

Fig 5 Noorcoin Vs. One Gram Gain Creator (GC)

3.2 Disruption Analysis: Shifting from Non-Asset Backed to real Asset-Backed of Each Token/Coin

All the interviewee mention about the new value map that shifting non-asset backed to real asset-backed will create unique things that can create new opportunity to disrupt incumbent. So, we try to go back to the past 1971 years when Nixon - president of USA - stop to use the gold standard and he never allowed the FED to reclaim dollars with gold. If we go back again in the history of 1913-1929, The Federal Reserves has stopped accepting money, which is guaranteed by gold (Ridyasmara, 2005). The interviewees also mention removing the intermediaries function as the fundamental disruption of Islamic cryptocurrencies development.

Today research, the rise of cryptocurrencies made a question about how cryptocurrencies can effectively meet the monetary regulated as a medium of exchange 2. The anonym author of Bitcoin also envisioned from the beginning is global digital coins as a new monetary system with old gold20. However, non-asset backed of cryptocurrencieswould probably disappear to be replaced by real asset-backed, which could be easily embedded inalmost any mobile device with mobile apps.

The novelty value map of this research is about *at taukilfilba'i*or contract between userand cryptocurrency platform. This contract confirms the cryptocurrency platform as a representative of platform users. Under the supervision of dual control between Sharia Supervisory Board as a trusted party that functionally make sure to, and SPV as the other party whom to assure the asset-backed (SeeFig 6). In the end, the novelty product and services of hedge and pay can easily be loved with the customer.

Although it could be an eventually, the potential disruption of asset-backed does not mean that non-asset backed will be wholly lost to leave the ecosystem of cryptocurrencies. We found so

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much cryptocurrencies provider, but unrealistic to review 1000 cryptocurrencies in the ecosystem. After the presence of non-real backed asset of cryptocurrencies, the niche market of real asset-backed will rise transparency and liquidity in the ecosystem market. Based on new value map above, we proposed disruption scenarios in the second stageof this research.

Next, after we finished with the value maps, we used decision-making methodology to measure how likely a radical innovation will move through all phases and ruin the incumbent's business(Rafii & Kampas, 2002).

Stage 1: Foothold market entry

The desire of replacing fiat money to gold dinar not only become a topic debate even has been try in many small communities. Wikipedia recorded 9 (nine) countries whom currently used Dinar and also 9 (nine) countries which have previously used Dinar. The weight of 10 Dirhams was equivalent to 7 Dinar or in other words Dinar (gold coins weighing 4.25 g of gold), and Dirham (silver coins weighing 2.975 g of silver) has been used before Islam 11. All of the interviewees assess rather than a gold bar as an asset-backed can be easy-adopted and profitable (hedge money) to use Dinar and Dirham at least three mainreasons. First is the history will be repeats, Dinar and Dirham is not only part of the golden history of Islam but as a part of faith even as a guide to Zakat calculation. The Second reason is impairment of fiat money when a small amount of bank deposit is backed by genuine cash and available for withdrawal (fractional-reserve banking system) (SeeTable1).

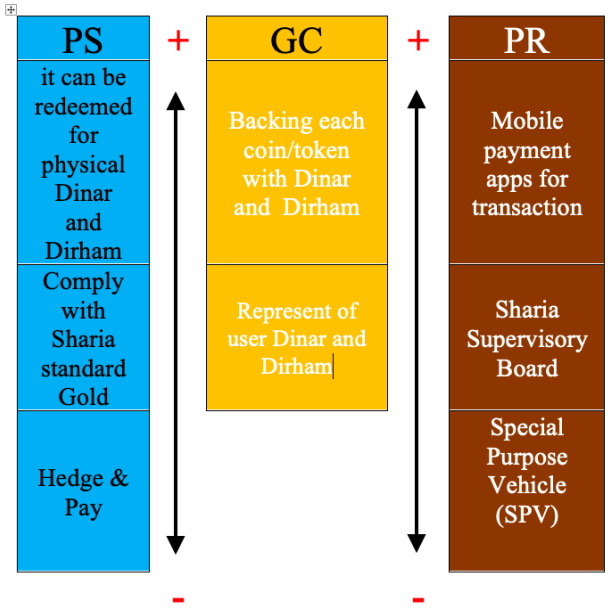

Fig 6 Value Map of Islamic Cryptocurrencies

Meanwhile, The non-asset backed of cryptocurrencies have shortcomings in high volatility and barriers to entry. It is decreasing dramatically year-on-year market cap from Q1 2017- Q2 2018 and at similar levels from Q1 ended to Q2 ended 2018(CoinGecko, 2018a). The last Dinar and Dirham has a function as a store value or hedge the money. When we look one Dinar today can buy one sheep, and we compared to prove it with the hadith 1400 years ago that narrated from 'Urwah Al-Bariqi that "The Prophet (Peace be upon Him) gave him a Dinar to buy him a sheep, and he bought two sheep for him, then he sold one of them for a Dinar, and bought a Dinar

and a sheep to the Prophet (Peace be upon Him). The Messenger of Allah (Peace be upon Him) prayed for the blessing for him"(Sunnah.com, 2018).

Stage 2. Main market entry

The asset-backed cryptocurrencies at least need to face obstacles, including sharia compliance, practical, and financial. Some academician and Muslim Entrepreneurs mentioned that Dinar and Dirham have equal treatment of Islamic Jurisprudence with gold and silver (SeeTable 1). It is usurious goods as a mentioned in the hadith from Allah's Messenger (peace be upon Him) "forbidding the sale of gold by gold, and silver by silver, and wheat by wheat, and barley by barley, and dates by dates, and salt by salt, except like for like and equal for equal. So he who made an addition or who accepted an addition (sinned taking) interest" (Muslim, 2005). However, to reach out to the primary market, sharia compliance certificates should be fulfilled before starting to operate thoroughly. It would be impossible to get trust from users, merchants, and investors even as a practically and financially the technology ready to work.

Stage 3. Customer attraction

The envision of the peer-to-peer transaction is eliminating the bank intermediation function. A crucial issue with non-asset backed schemes today is a fee per transaction. Even though to be dis-intermediator may create value to attract customers and is the key to the success of this stage. The essential benefit for customers is free of transaction that requires no intermediary function. The decentralized ledger allows the customer to send and receive money with free of charge, fast, and borderless payment.

While the platform user representative contract (*at taukilfilba'i* contract) can be an income for the platform owner instead of service revenue per transaction, revenue from platform user representative services seems cheaper than services per transaction (SeeTable 1).

Stage 4. Customer Switching

A compelling value that can use comfortably for the customer to switch from incumbent to disruptor is a low price to enter and exit (SeeTable 1). The convenience of this process is a critical factor to success. Concerning the cost of the token/coin today, almost of incumbent price have decreased and depreciation in Q2 2018(CoinGecko, 2018b).

Table 1 Decision of Disruption

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STAGE	FORCES DISABLING DISRUPTION	Evaluation	FORCES ENABLING DISRUPTION
Foothold market entry			Easy adopted : part of faith Hedge of money and non-fractional reserve system
Main market entry	Comply with Sharia Standard of Gold		Non-asset backed has a sharia compliance certificates
Customer attraction	Payment fee per transaction		No payment fee per transaction
Customer switching	Expensive to enter and potential loss when exit		Low price to enter and exit
Incumbent retaliation	Over 30% infrastructure mature		Have to test and measure Technology architecture Need SPV
Incumbent displacement	The usability for speculation may replace by insurgent		The desirability of hedge and pay can be threating

Stage 5. Incumbent Retaliation

The incumbent start-ups who play in Distributed Ledger Technology (DLT) has significantly grown up 108% over 201410. The majority start-ups focusing on infrastructuredevelopment, and over 50% of start-ups provide a universal DLT platform or framework. The maturity of blockchain technology split into three elements of computing: (1) Storage, (2) Processing, and (3) Communications (McConaghy, 2017).Meanwhile, All interviewee mention about the regulation and security of asset-backed (tokenization) need to design a kind of Special Purpose Vehicle (SPV) as trusted parties that are responsible for guaranteeing whereabouts asset (SeeTable 1).

Stage 6. Incumbent Displacement

All the interviewee consider the asset-backed of cryptocurrencies value proposition should consider the desirability of technology that will be focusing on human-centered design. They also mentioned about two main customer jobs that found through two questions about: (1) What is the problem they are going to solve? And (2) What is need they are trying to satisfy?. The answer to the first question is the hedge of their funds. The untrusty of fiat money that can store value was made people think about how can their money stable and excellent as a medium of exchange, while non-asset-backed of cryptocurrencies tends to be used speculation.

The highest profit of bank comes from fee per transaction where the average cost per transaction for sending money about 7.68% (Nakamoto, 2008), (Simon-Kucher & Partners, 2014),(CBN, 2018). Therefore, the second answer is to pay for everything and anything. Whether non-asset backed can't pay everything and anything? Not only. But interviewee said if asset-backed of cryptocurrencies was comply with

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Islamic law, trust SPV was settling, and infrastructure technology was supported. It can be treated with both a combination of hedge and pay everything and anything with the value of Islam (SeeTable 1).

3.3 Islamic Jurisprudence Adaptation and Design Implementation

The main issue from the Islamic perspective when Dinar and Dirham (gold coin) become an asset-backed for Islamic cryptocurrencies is forbidden to purchase gold even Dinarand Dirham via online. Purchasing gold has two terms and condition following (1) cash trans- action and (2) handover directly. It was narrated that Muslim bin Yasar and ’Abdullah bin ’Atik said"Ubadah bin As-Samit and Muawiyah met at a stopping place on the road. ’Ubadah told them: ’The Messenger of Allah forbade selling gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates"’- one of them said: ’salt for salt,"’ but the other did not say it-"unless it was like for like, hand to hand. And he commanded us to sell gold for silver and silver for gold, and wheat for barley and barley for wheat, and to hand, however, we wanted."’ And one of them said: "Whoever gives more or ask for more has engaged in Riba."’(Muslim, 2005).

To comply with Islam, interviewees proposed two to scheme to purchase gold ingots. First is Sharia Standard no 57 on Gold and its Trading Controls point 3/4 Sale of Gold Ingots for Currencies"When gold ingots are exchange for currencies, the counter-values must be exchanged during the contracting session. Possession of the ingot by the buyer, or his agent, is realized either physically or constructively. Constructive possession is realized by allocation of theingot and by enabling the buyer to dispose of it, or by holding a certificate that represents ownership of a specified ingot that is distinguishable (an allocated ingot) from others, by serial numbers or other distinct marks from other ingots, provided the certificate is issued the day the contract is concluded [Trade Date "T+0"], by officially or customarily recognized agencies, enabling the buyer to take physical possession of the purchased ingot at his request” (AAOIFI, 2016).

The interviewees mentioned based on international sharia standard of gold above, the constructive possession or Qabd of asset-backed enable cryptographic code to represents ownership of Dinar and Dirham ingots. What can be done today is cryptographic code only attached the ingots as a digital certificate to identify the owner of the ingots. In the future, the cryptographic code may be embedded in Dinar and Dirham ingots and will become a new thing that can create a new digital exchange. If mass adoption of the new digital exchange happened, it is also can create the opportunity to disrupt fiat money or other digital money.

The second scheme is buyer appoint an agent to buy the ingots Dinar and Dirham and make possession or *Qabd* with the seller. This scheme knows by *at taukilfilba’i* (use a system of representation in buying and selling or *wakalah* contract). The ingots will be saved in deposit box which keeps by cryptocurrencies provider and buyer will receive the cryptographic code in the mobile payment system. It can be used to buy goods and services at the merchant and also can be redeemed anytime.

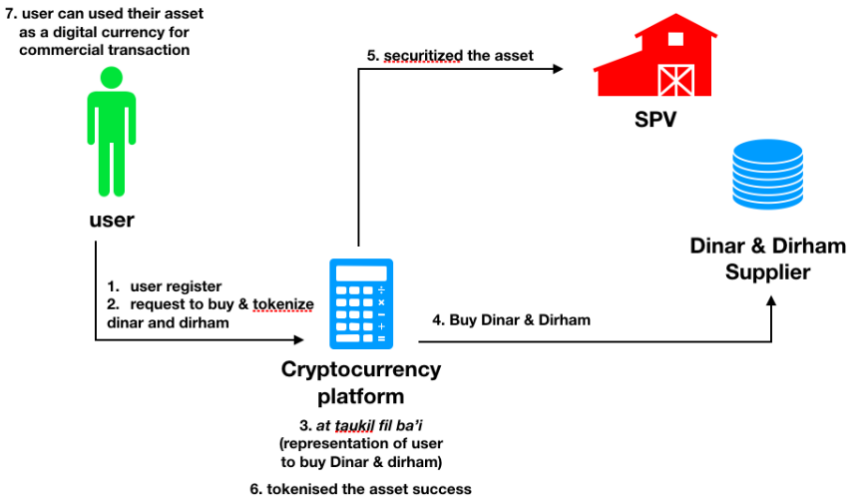

Fig 7 Design Implementation

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