
JULY 19, 2018
THE FUTURE OF CURRENCY
-DISTRIBUTED LEDGERS-
BITCOIN
RECOMMENDATION 1
Uses of QR Codes and International Exchanges
RECOMMENDATION 2
Use of Biometrics for Advanced Security.
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Table of Contents

Introduction ……..……..… 4

Prediction ……..…...…….... 4

Bitcoin - Trading, Hedge Funds, Application of Crypto on Unbanked Populations

4-6

Alternatives to Centralized Bank/Distributed Vs. Centralized Banking ……....…... 4-5

Bitcoin ……. 5

Trading ……..... 5-6

Hedge Funds …… 6

Applications of Cryptocurrency on Unbanked Population ……..……..... 6

Currency QR Codes ……..... 6-9

The Problem of International Currency Exchange ……...……. 6

Currency QR Codes ……..... 6-7

How Currency QR Codes Work …… 7-8

Impact ……..…… 7-8

Biometric Systems and Distributed Ledgers ……..……..... 10-12

The Problem of User Account Security ……...……..... 10

Integration of Emerging Technologies ……..……... 10

Biometrics ……...……. 10-11

Distributed Ledger ……...……. 11

Conclusion ……...……..... 12

Appendix ……..…. 13

Bibliography ……...…….…..... 13-14

Introduction

The concept of currency has progressed from the barter system of cattle, to the gold standard, and finally to the present-day paper money backed by citizen confidence. Today, history takes yet another turn towards digital transactions. Different mobile payments and Satoshi Nakamoto's idea of blockchain, bitcoin, and cryptocurrencies induce the transition from credit cards to cryptocurrencies. Its full impact has yet to be realized across all age demographics including youths under 18 and seniors over 65. Market-driven changes will solve for security, accessibility, and convenience by incorporating currency QR codes, biometrics and distributed ledger technology.

Prediction

The need for technology that allows for generational financial inclusion is necessary as 70% of present day Generation Z will adopt online payment forms and 68% will utilize blockchain technology. Only 8% of money exists as physical cash, showing how the world has become increasingly reliant on electronic currencies and transactions[1].

With the growing variety of financial institution investment options such as Bitcoin and cryptocurrency, there is a greater need for accessible and reliable features that are financially inclusive on a generational standpoint - especially for youths under 18 and seniors over 65.

Alternatives to Centralized Banking, distributed vs centralized banking, Bitcoin – Trading, Hedge funds, applications of crypto on unbanked population

[1] Garden, Home. 2003. "How Currency Works". *Howstuffworks*. Accessed July 19 2018.

Distributed Vs. Centralized & Alternatives to Central Banking

Central banks are responsible for managing the nation's money supply through implementing monetary policy such as reserve requirements as well as acting as a lender to the banking sector during times of bank insolvency or financial crisis. In terms of transaction speeds, centralized banking is quicker than that of a distributive system due to its trust left to brokers of a firm[2].

Decentralized banking provides an alternative to third party financial institutions. A more specific type of decentralized banking- cryptocurrency, particularly in the form of Bitcoin generated by an open source algorithm, may be an even better bet. As Professor Hopkins states: "Bitcoins fulfills the needs of the complex system... because it has no owner, no authority that can decide on its fate. It is owned by the crowd, its users…"[3] Therefore, with this complex ownership title it is difficult to hack a system or create a monopoly of dominance from any party.

Bitcoin

Bitcoin is the first decentralized digital cryptocurrency, with a finite supply of 21 million coins, where an individual pays for a particular product or service, miners and nodes, a part of distributed consensus system, verify transactions as a decentralized unit[4]. None of the institutions can control the entire process of one's cash flow[5].

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[2] "future", Nassim, Bitcoin trends, DCLeaks operatives, Beyond theories, and Bitcoin Governance. 2018. "Nassim Nicholas Taleb On Bitcoin: "Insurance Policy Against An Orwellian Future" - Crypto Insider". *Crypto Insider*. Accessed July 19 2018.

[3]"future", Nassim, Bitcoin trends, DCLeaks operatives, Beyond theories, and Bitcoin Governance. 2018. "Nassim Nicholas Taleb On Bitcoin: "Insurance Policy Against An Orwellian Future" - Crypto Insider". *Crypto Insider*. Accessed July 18 2018.

[4] Prableen Bajpai, CFA (ICFAI). 2016. "Bitcoin Vs Ethereum: Driven By Different Purposes". *Investopedia*. Accessed July 19 2018.

[5] Prableen Bajpai, CFA (ICFAI). 2016. "Bitcoin Vs Ethereum: Driven By Different Purposes".

Trading

Trading is one type of method that the users can be take advantage of it. Bitcoin investors buy and hold coins for a long run as they believe will the technology and concept of it, in addition to the ultimate rise of prices[6]. Many may be prone to this investment due to its fluctuating economic stance and 24/7 open markets[7].

Hedge Funds

Hedge funds are investment partnerships which aim to minimize losses through high risk, high gain investments where only 'accredited investors' —— people who have net worth of more than $1 million or an annual income of $200,000 —— can invest.[8] In addition, it has a unique fee structure known as the 2-20 fee with a 2% charged fee of asset management and 20% cuts on any gains in performance is implemented. Notable hedge funds to invest in include biometrics and distributed ledgers of blockchain, both considered fresh ideas that have promising paybacks.

Applications of Crypto on The Unbanked Population

Two billion people face the issue of being the unbanked population of the world, plaguing mainly countries with developing economies. The inability to transact money leads to a missing sector in international markets and an endless cycle of poverty.

Blockchain in tandem with cryptocurrency creates fiscal alternatives in a more feasible manner, promoting financial inclusion internationally to the unbanked population.

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[6] Beigel, Ofir. 2018. "Bitcoin Trading Guide For Beginners + Examples And 5 Common Mistakes". *99 Bitcoins*. Accessed July 19 2018.
[7] Beigel, Ofir. 2018. "Bitcoin Trading Guide For Beginners + Examples And 5 Common Mistakes". *99 Bitcoins*.
[8] Staff, Investopedia. 2003. "Accredited Investor". *Investopedia*. Accessed July 18 2018.

Currency QR Codes

The Problem of International Currency Exchange

With considerable development in advancing technology, exchanging information, and transportation, the world has become smaller: some even note it as a "Global Village". However, the problem arrives when people travel to another country, because with 180 different types of currency in circulation[9], the process of exchanging currency is often a difficult one. In addition, exchange rates are typically unstable due to a variety of factors including domestic economic fluctuations, governments of emerging market, and the demand and supply of a specific market.

Likewise, the greatest obstacle in the global financial payment industry is currency exchange. Despite current efforts, the process is still tedious. Youths under the age of 18 and seniors over 65 are then excluded from international markets due to their lack of spending power [10]. This represents a missed opportunity of growth for businesses and institutions, because they are often considered as the ages of most impulsive buying behavior.

Alipay, a third-party mobile payment platform, solicits to increase the accessibility of currency exchange through point of purchase currency transactions. When a consumer from China withholding the Chinese yuan wants to spend money in the United States, Alipay requests a conversion of currency to the linked credit or debit card for that distinct purchase (shown in Figure 3). However, because of its complex features, it is often inaccessible to those who are not accustomed to the digital space, its high vocabulary, and complex processes.

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[9] Currencies, Everything, and Current currencies. 2018. "Everything You Need To Know About 180 Currencies". *Travelex.Com*. Accessed July 19 2018.
[10] "How Anxiety Toys With Your Emotions". 2018. *Calmclinic.Com*. Accessed July 19 2018.

This inefficiency is nonetheless prevalent in many other online payment systems, such as PayPal and Mpesa. The methods to exchange domestic to foreign currency still needs improvement for all age groups.

Currency QR Codes

With a greater popularity (or acceptance) in China, QR codes have established their reputation in the finance industry. Currency QR codes will allow more efficient process to be executed in a seamless manner without the need to understand how these existing platforms function. These established barcodes have already been featured on many global financial payment company applications. It is seen as an added feature or asset, rather than an entirely new application.

How Currency QR Codes Work

Blockchain can be applied to Currency QR Codes in step 3 when a request is sent to the credit card company. A decentralized system can be implemented where a variety of systems must verify the transaction before the request is processed to the company.

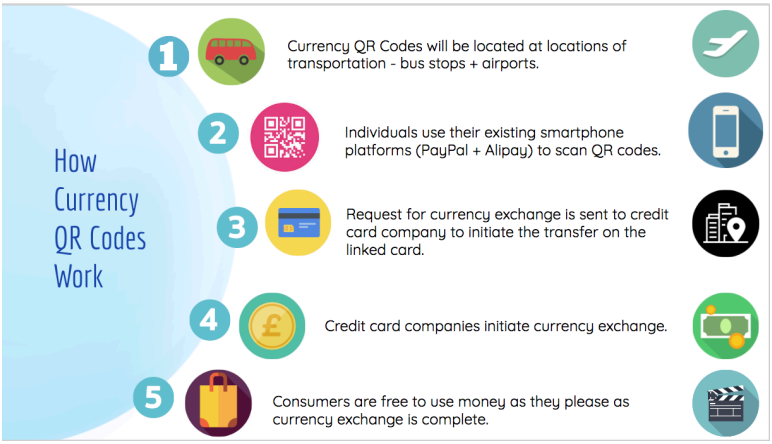


Figure 1: How currency QR codes work

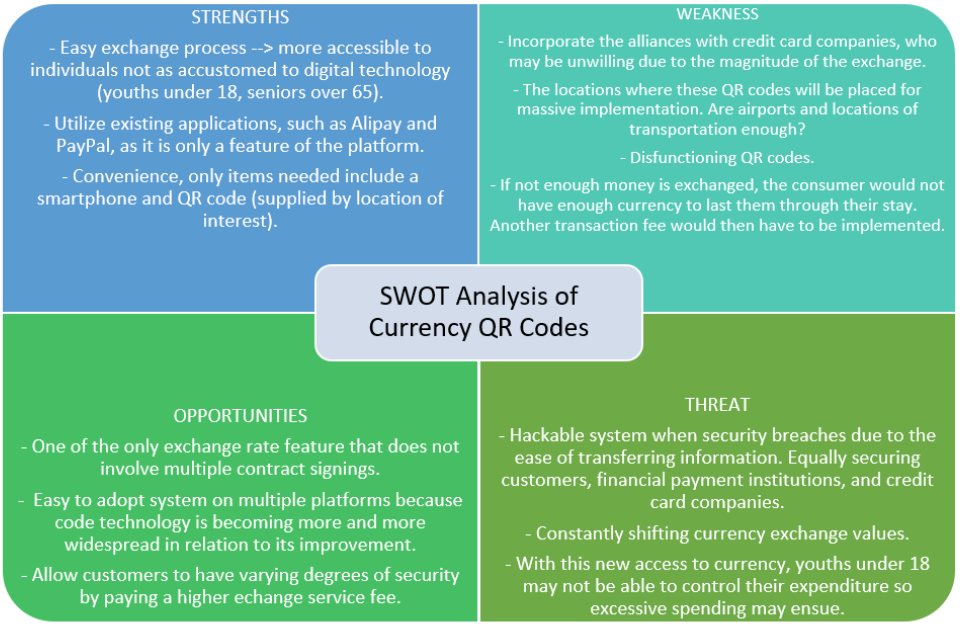


Figure 2: SWOT Analysis for Currency QR Codes

Impact

Currency QR codes will aid in financial inclusion as they becomes a more accessible and digitized way of processing transactions. Youths under the age of 18 and seniors over the age of 65 now have a method that they are familiar with to conduct currency exchange. With this market inclusion, the consumer spending will inevitably rise allowing for prosperous countries, in addition to a growing travel and tourism industry (shown in Figure 5.4) for those in the hedge funds market.

In order to transfer from the threats of the QR codes to opportunities we believe that currency QR codes should be placed not only in airports and locations of transportation, but also in hotels and shopping malls where visitors and tourists live, shop, and eat in. As the bar chart shows, tourists spend more 127 dollars than those who live in the country; therefore, companies should capitalize on these tendencies. If currency QR codes are implemented, many will experience the freedom of buying goods and services without worrying.

Biometric Systems and Distributed Ledgers

The Problem of User Account Security

WeChat, the largest social media application in China, has a payment feature that is one of the largest payment functions aside from Alipay. It eliminates the need for a credit card or bank account and allows direct transactions from WeChat pay's wallet making it a decentralized transaction system. This feature greatly increases financial inclusion and enables a faster, simpler

method of payment for the young and senior populations.Of the minor flaws is security, however, where user accounts are frequently hacked, and money is stolen.

Integration of Emerging Technologies

In order to solve this major problem, we propose the integration of biometrics and—to a certain extent—distributed ledgers technology into financial applications that deal with transactions. Utilizing biometrics as a feature, it is important to note that this recommendation will apply to users under 18 and over 65 using smartphones.

Biometrics

Biometrics are a type of biological technology used to identify individuals. This technology is currently applied in smartphone Touch IDs and can be used to unlock phones instantly by pressing your chosen finger on the home button (refer to Figure 3 in appendix).

The financial application that we propose should integrate a similar function of biometrics through adding a new way of confirming and securing your account fingerprint verification. In other words, fingerprints would replace the average password as the new ‘key’ to everything related to your financial account as it far more secure. A fingerprint cannot be decrypted, whereas, a hashed out private key can.

Distributed Ledger

Distributed ledger is a database that is shared across multiple geographies, making more records thus increasing security and making hacking relatively difficult[11]. However, ledgers consume excessive amounts of computing power and electricity, negatively impacting the environment. Bitcoin itself yields 32 billion kwh of energy, which is 35% of the global electric

[11] Prableen Bajpai, CFA (ICFAI). 2016. "Distributed Ledgers ". *Investopedia*. Accessed July 18 2018.

use[12]. Distributed ledgers utilizing only two or three nodes will increase efficiency and reduce electricity consumption.

How would this work? Refer to the subsection *Biometrics* for an example of how biometrics would be integrated together with distributed ledger technology. To add onto that, the fingerprint key, like a typical password, will be stored in the same database as all the other user information. Now if a hacker attempts to hack into the recorded history of the database and tries to make a transaction, it will ask for a fingerprint which is, unlike a password, essentially uncrackable. If the hacker tries to access the database for the fingerprint information, a direct message will be sent to the user's account privately asking for verification using the fingerprint.

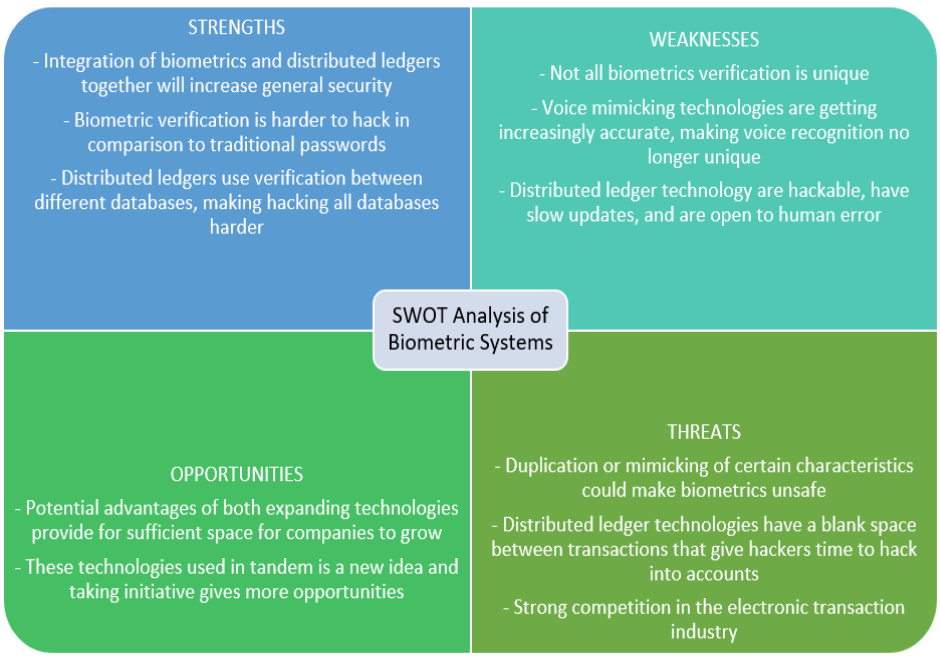


Figure 3: SWOT Analysis of Biometric Systems

Conclusion

Electronic transactions have revolutionized the way monetary exchange works and functions. With the growth of electronic transaction markets, increased Cryptocurrencies, decentralized systems and other technologies such as QR codes and biometrics integrated together will work well to increase financial inclusion to even those under 18 and over 65 years

[12] Kamil Agi

in age. The combination of these technologies together will also help increase general security of accounts through using verification methods that are much harder to access while the QR codes solve for more convenient and efficient currency exchange.

Appendix



Figure 3 - An individual holding up their smartphone with the Alipay app open to scan the QR code as a method to pay for their purchased good or service.

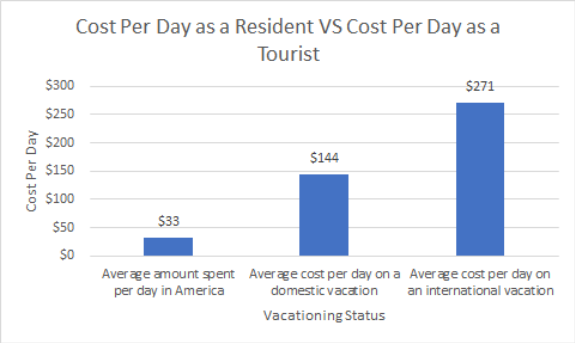


Figure 4 - Data regarding the day cost of a resident in the United States in comparison to the cost per day of a tourist in the United States or an international country.

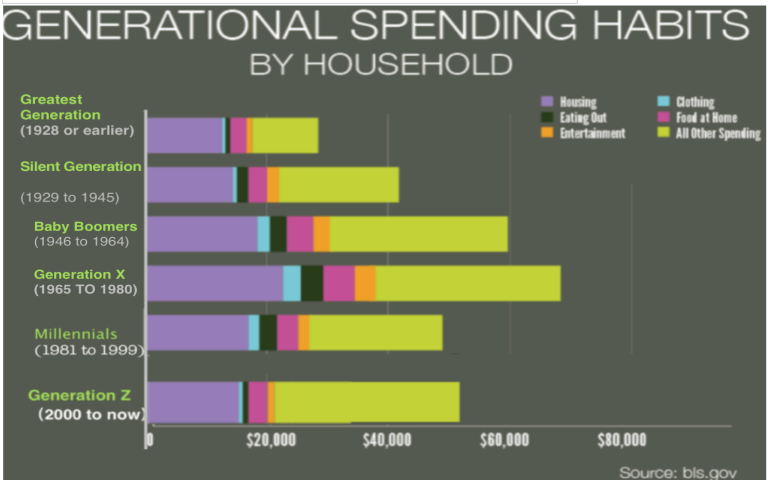


Figure 5 - Showcases the generational spending habits. As shown in this graph, Generation Z is one of the most impulsive age group buyers.

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