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RESEARCH METHODOLOGY

INDIVIDUAL ASSIGNMENT

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2. Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld.

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Aurum, Cryptocurrencies, and the Blockchain in this Digital Age: An Exploratory Study on Perceived Monetary Usage from Malaysian Academics

Chapter 1: Introduction

1.0 Introduction
This first chapter explains the background of study. The background of gold, cryptocurrencies, and the blockchain are briefly given. Statements of the problems that the aforementioned can assist with are given too. Further research questions that can be discussed with Malaysian Academics are listed. Why this study is significant is explained too. The scope and limitations of this study are included. Finally, definitions of terms used in this study are stated.

1.1 Background

1.1.1 Gold Background

Figure 1: US President Herbert Hoover Quote

"WE HAVE GOLD BECAUSE WE CANNOT TRUST OUR GOVERNMENTS."
US PRESIDENT HERBERT HOOVER, 1933

Figure 2: Prominent New York Banker, J.P. Morgan Quote

"Gold is money. Everything else is credit."
- J.P. Morgan, 1912
Historically, the most recognized kind of commodity money has been based on bimetallism—gold and silver—in the form of coins. Gold and silver are commodities that are durable, portable and readily divisible into smaller amounts. According to Jaffar et al (2017), for thousands of years, gold has been considered as the best instrument for preserving wealth by functioning as a store of value. For over 5,000 years, only gold and silver have maintained their purchasing power. There have been thousands of different fiat currencies. These currencies are not backed by gold or silver and they have all gone to zero purchasing power. It is a 100% failure rate (Maloney, 2013)

From 1871 to 1914, the gold standard was the dominant money system in the world. Under the classical gold standard, governments agreed to exchange their currencies for a fixed amount of gold and then set a fixed price, where their gold could be bought and sold. This means a nation couldn’t have more money in circulation than it had in gold supplies (Truthloader, 2014). According to Belke & Volz (2015), when US President Nixon announced the end of the gold convertibility of the US dollar in 1971, he ended the last vestiges of the gold standard and from that day onward, all world currencies became fiat currencies.

As Mike Maloney (2008), mentions, fiat currencies are designed to lose value, their very purpose is to confiscate your wealth and transfer it to the government. Once a government has switched to fiat, paper, currency they then expand the currency supply through deficit spending and through credit creation based on fractional reserve banking (Maloney, 2008) (See figures 3-6).

The problem is the more of a currency that's in a system, the more the prices rise because they are chasing the same amount of goods and service. This in turn leads to inflation and the value of that currency going down (Truthloader, 2014).
"By a continuing process of inflation, government can confiscate, secretly and unobserved, an important part of the wealth of their citizens."

John Maynard Keynes

Figure 3: Famed Economist, John Maynard Keynes Quote

"By this means government may secretly and unobserved, confiscate the wealth of the people, and not one man in a million will detect the theft."

JOHN MAYNARD KEYNES

Figure 4: Famed Economist, John Maynard Keynes Quote
In order to curb inflation, end deficit spending and end fractional reserve banking, gold must be reintroduced as money again. A new, innovative, way to reintroduce gold as legal tender again will be thru Aurum (See Figures 7-8). According to the Valaurum (2017) website, “Aurum is the smallest precise, verifiable unit of gold available on the world market today”. This Aurum protects an exact amount of gold between layers of durable polyester, thereby making gold more convenient, affordable, versatile, and trustworthy than ever before (Valaurum, 2017).
1.1.2 Cryptocurrencies Background

Cryptocurrencies were developed because of the frustration felt globally after poor monetary policies from central banks such as the Federal Reserve. Commercial banks and hedge funds also contributed to this frustration. As mentioned in ColdFusion (2017), with traditional fiat currency, both in paper and digital form, there is no telling how much money is circulating and on one knows...
if the banks will start creating more. People wanted another way to independently control their own money again.

Cryptocurrencies derive their name from the form of mathematics they used called cryptography. This allows participants to have a unique address, a wallet, sort of like a bank account but only the individual has access to their wallet. This wallet is the person’s digital address and can be cryptographically checked for accuracy but cannot be altered or modified (ColdFusion, 2017).

Bitcoin is currently the most popular cryptocurrency (See Figure 9). The rapid Bitcoin price rise is a testament to its popularity. If you bought one Bitcoin last November 2016 the price would have been around $700 USD, now in November 2017, one Bitcoin sells for over $7,000 USD—a 10-fold increase (See Figure 10)! According to Max Keiser, “Bitcoin is essentially digital gold” (Truthloader, 2014). There is a finite supply of Bitcoin just like gold at 21 million coins. There is also a predictable rate at which Bitcoin are mined similar to the somewhat predictable rate gold is mined (Truthloader, 2014). Figure 11 explains how a Bitcoin transaction is processed. Mining for Bitcoin takes significant electricity and computational power to do. Therefore, Bitcoin is seen as a real electronic unit of work by some analyst (ColdFusion, 2017).
Bitcoin is the most widely supported cryptocurrency among participating exchanges, wallets and payment companies.

**Figure 9: Bitcoin Popularity**

Source: https://www.worldcoinindex.com/coin/bitcoin

**Figure 10: Bitcoin Price**
1.1.3 Blockchain Background

Blockchain (BC) is the tamper-resistant distributed ledger technology (DLT) that underlies cryptocurrencies like Bitcoin. According to Masse (2017), the protocols that govern blockchain guarantee security, transparency, authenticity, and credibility—trust is built into this “machine”. BC can be used for recording and transferring data and underlying assets such as financial transactions and real estate titles, all through the Internet without needing intermediaries (Swan 2017).

According to Swan (2017), a ledger is basically a file that keeps track of who owns what and distributed ledgers (DL) have the following characteristics:

1) shared transaction database among network members
2) updated by consensus
3) records timestamped with a unique cryptographic signature
4) in a tamper-proof auditable history of all transactions

Source: Economist.com (02.05.2016)

Figure 11: How a Bitcoin Transaction is processed
A blockchain uses DLT to confirm and validate batches of transactions that are held in blocks. These blocks are then linked, “chained”, in tamper-resistant append-only chain which starts with an original block and then subsequent blocks contain a hash of the prior block in the chain (Swan 2017). Figure 12 highlight the differences between current centralized ledger technology and distributed ledger technology used in a blockchain. Blockchain technology makes transactions streamlined (See Figure 13).

Source: (Etwaru, 2017)

Figure 12: Current Centralized Ledger Technology vs. Distributed Ledger Technology
According to Treleaven, Brown & Yang (2017), a smart contract (SC) constitutes the rules that participants have collectively agreed upon to govern the evolution of “facts” in the distributed ledger. When SCs are combined with a blockchain that records asset ownership, a SC can handle automatic transactions that move values and execute the contract’s terms (Treleaven, Brown &
Yang, 2017). The benefits of utilizing smart contracts versus traditional contracts are shown in figure 14.

![Diagram of Traditional vs Smart Contracts]

*Source: (Masse, 2017)*

**Figure 14: Traditional versus Smart Contract**

### 1.2 Problem Statement

**Topic**

Gold use as legal tender will promote a sound monetary system with low to no inflation, no deficit spending and honest commerce between countries. Cryptocurrencies, a digital currency based upon gold, will promote more confidence in electronic commerce with much lower fees, lower processing time and trusted transactions. Blockchain Technology, will benefit many fields because it will fill the “trust gap” in transaction records.

**Educational Issues**

Many researchers and economists explain that the problem of inflation and currency instability occurs today because of how the monetary system is implemented, which is no longer based on a valuable commodity or gold as in the gold standard of previous eras (Yaacob & Ahmad, 2014). The problem with normal fiat currencies are the middlemen that usually aggregate power and aid
in wealth inequality (ColdFusion, 2017). As Etwaru (2017) mentions, the trust gap today is rapidly increasing because people are transacting in more ways than ever before.

Evidence for the Issue
As mentioned by Mike Maloney (2016), the problem with the gold standard is because it’s fiat national currencies that are supposedly backed by some mythical gold that’s in a vault somewhere. Gold standards opens the door for the whole fiat currency scam to start again. Cryptocurrencies are decentralized money, no central entity regulates or controls them so there is no middleman; no bank, government, or any other company is involved. (ColdFusion, 2017). The trust gap today is increasing because “now you not only transact with human beings but with machines thru smart devices and all these things need to be trusted” (Etwaru, 2017).

Deficiencies in the Evidence
However, there still exists some ambiguity from past research on how to properly use gold today in a practical and reliable manner in this digital age as legal tender. Additionally, since cryptocurrencies and blockchain technologies are so new, their still exists some ambiguity about possible monetary usage for these technologies. Therefore, insightful advice from experts needs to be gained about perceived monetary usage with respect to gold / Aurum, cryptocurrencies and blockchain technologies.

What Remediing the Deficiencies Will Do for the Select Audiences?
As stated on the Valaurum (2017) site, “Aurum makes possible the true democratization of Gold.”. According to Chris Martenson (2015), what’s really great about Aurum is that it’s not a claim note as you would have with a gold standard, instead with Aurum technology the note itself is the precious metal. Utilizing Aurum, will result in honest commerce, eliminate deficit spending and potentially eliminate inflation for all customers, consumers, and clients. Harwick (2016) mentions that even though Bitcoin cannot yet be spent at the grocery store, a significant and increasing number of online merchants do accept them. Large Bitcoin exchanges are accessible online so Bitcoins can be bought and sold almost instantly at the market exchange rate from anywhere that has Internet access (Harwick, 2016). Cryptocurrencies will promote greater e-commerce because transactions will be much more trusted. Etwaru (2017) claims, “what
blockchain is going to change, it's just going to change the way we trust, not just how we trust each other but more specifically how we trust in business.”. Future Thinkers (2017), mentions 18 areas where blockchain technology can be applied. Basically, any industry that deals with data or transactions of any kind is a good candidate for blockchain technology (Future Thinkers, 2017). Utilizing blockchain technology will eliminate unneeded middlemen and fill the trust gap so apparent in many transactions today in a multitude of industries.

1.3 Purpose of the Study
The author of this research paper aims to gain insight from Malaysian University professors on a wide variety of topics. How to re-educate the public, especially university students, on the value of using gold as legal tender again will be examined. The benefits, challenges, opportunities and threats of using Aurum, as an innovative way to re-introduce gold as legal tender, will also be discussed. Utilization of the Technology Acceptance Model (TAM) for Aurum and cryptocurrency technology adoption will be discussed. Advice from professors on how to popularize cryptocurrencies such as Bitcoin will be gained. In addition, strategies on how to replace credit card usage with gold and cryptocurrencies instead will be examined. Insight on other possible applications of cryptocurrencies will be gained. The Fraud, Intermediary, Throughput, and Stable data (FITS) Model will be utilized in discussing possible application areas for blockchain technology. The author hopes to interview the best experts in the areas of gold, cryptocurrency and blockchain technology.

1.4 Research Questions
The two-primary research questions are:

1) **What is the current knowledge level that Malaysian Academics have with respect to gold, cryptocurrencies and blockchain technology for monetary usage?**

2) **How do Malaysian Academics perceive the monetary usage of gold, cryptocurrencies and blockchain technology?**

Additionally, there are sub-questions under the two-primary research questions:
1) What is the current knowledge level that Malaysian Academics have with respect to gold, cryptocurrencies and blockchain technology for monetary usage?
   1. What is the difference between money and fiat currency?
   2. What causes inflation? What causes prices to eventually rise in time?
   3. What is deficit spending? What is fractional reserve banking?
   4. What are the benefits of using gold as legal tender again?
   5. What are cryptocurrencies?
   6. What is blockchain technology?
   7. What areas can the FITS model for blockchain technology be applied?

2) How do Malaysian Academics perceive the monetary usage of gold / Aurum, cryptocurrencies and blockchain technology?
   1. How can gold be reintroduced as legal tender again using Aurum?
   2. What are the key benefits, challenges, opportunities and threats of using Aurum?
   3. Please explain your TAM survey responses for Aurum and cryptocurrency technology adoption?
   4. How can cryptocurrencies such as Bitcoin gain mainstream adoption?
   5. How can credit card usage be replaced with gold and cryptocurrencies instead?
   6. Which brands, using blockchain technology, in your opinion can be built & made more relevant through immutable trust, security, transparency, authenticity and credibility?
   7. Where can Smart Contracts be the most useful?

1.5 Significance of Research
This research is significant because every national currency used in the world right now is fiat based since the last vestiges of the gold standard was abandoned in 1971. Today, our current fiat based monetary system is stealing buying power from the general population through inflation, deficit spending, and the fractional reserve banking system. The trust gap people today have with all sorts of intermediaries and devices is rapidly increasing because we are transacting in more innovative ways than ever before.

Now is a great time to conduct this research because the value of cryptocurrencies such as Bitcoin are booming. In addition, the underlying technology behind cryptocurrencies, the blockchain,
holds tremendous potential to build trust in many types of transactions and eliminate unnecessary middleman that unfairly take a cut and slow processes down. Primarily, people that will benefit from this study are current innovators in the field of gold usage, cryptocurrencies and the blockchain. However, anyone who uses fiat currency or credit cards for the purchase of goods or services will also benefit from this study.

1.6 Scope
Since the author is a graduate student of Asia Pacific University, a private university in Malaysia, the scope will be narrowed down to a convenient research population. University professors at Asia Pacific University will be the main research population. If it becomes possible to interview professors at other universities then they might be included in the research population as well. Each university professor will individually be interviewed by the author using a semi-structured interview format. The first few interviews will be with past lecturers of the author and those referred by the author’s supervisor for experts in the field of gold usage, cryptocurrencies, and blockchain technology. Additional interview referrals will be asked for during the interview process. By this methodology, insights from the leading experts in the field of gold usage, cryptocurrencies and blockchain technology can be gained. The top 10 most informative interviews will be qualitatively analyzed in this study.

1.7 Limitations
There are some limitations to this study. First of all, due to lack of funds for international travel, only Malaysian academics, university professors, will be interviewed. Furthermore, for convenience and to save on costs, Asia Pacific University will be the prime interview location. Other, nearby universities might be considered as well if appointments with professors in those universities are easy to schedule and transportation for the author are easy to arrange. Secondly, due to time constraints, only 12-15 university professors will be interviewed with the top 10-12 best interviews being focused on for this study. Finally, the actual interview time will be relatively short, maybe 30 to 60 minutes in duration, because university professors, especially leading experts, are usually very busy. This time limit might affect the quality of results obtained because full in-depth probing will not always be possible to accomplish.
1.8 Definition of Terms

1.8.1 Gold / Aurum Related Terms

**Aurum**
According to the Valaurum (2017) website, Aurum is a thin layer of gold or other precious metals sandwiched between layers of protective polyester.

Using a proprietary process, very thin and precise quantities of gold are gathered between layers of polyester film. On a standard 1/10-gram Aurum, the gold is 390nm thick, approximately 1% of the width of a human hair (Valaurum, 2017).

**Bond**
When the government issues a bond, an I.O.U., it steals prosperity out of the future so that it can spend it today (Maloney, 2013).

Every time a government issues a bond, a promise to make its citizens pay tax in the future is created (Maloney, 2013).

**Deficit Spending**
When a government spends more money than it makes, resulting in more government debt. (Investopedia, 2017)

Government bonds, IOUs, are used to finance government deficits by the sale of public securities. Countries worldwide are experiencing a massive bond bubble because their governments are buried in too much debt.

**Fiat Currency**
This is a system where currencies have a value given to them by governments rather than linked to gold. Governments give these currencies value by making it law that they must be accepted as
forms of payments by making it a requirement that taxes must be paid with these currencies (Truthloader, 2014).

Today national currencies like the US dollar, Euro, and British Pounds are all fiat currencies (Truthloader, 2014).

**Fractional Reserve Banking**

The banks are allowed to reserve only a fraction of your deposit and loan the rest out. (Maloney, 2014)

Jaffar et al (2017) gives an example, if the reserve ratio is 1%, this means that the banks can theoretically loan out 99 times more than their real held cash. This is where the vast majority of our currency supply comes from. In fact, 92-96% of all currency in existence today is created not by the government but instead in the banking system (Maloney, 2014).

**Gold Standard**

As mentioned in White (2013), before 1974, U.S. dollars were backed by gold. This meant that the federal government could not print more money than it could redeem for gold.

Thanks to the banks, a gold standard means that people don’t have to carry around bags of gold coins. Anyone who finds paper, fiat, currency and checking accounts more convenient can use those instead. (White, 2013)

**Inflation / Deflation**

Mike Maloney (2008) defines inflation and deflation as the expansion or contraction respectively, of the currency supply

The result of monetary inflation or deflation is rising or falling prices. Because of inflation, everything gets more valuable except currency (Maloney, 2008).

**Money**
Unlike currency, money has intrinsic value (Maloney, 2008).

Money is always a currency because it can be used to purchase other items that have value, but currency is not always money because it doesn’t have intrinsic value (Maloney, 2008).

1.8.2 Cryptocurrency & Blockchain Related Terms

**Bitcoin**

As Raymaekers (2015) mentions, Bitcoin is a digital representation of value not issued by a central bank, but accepted by businesses and people as a method of payment which, can be traded, stored and sent electronically.

According to Arsov (2016), Bitcoins compared to most currencies or online payment services, like PayPal, are highly liquid, have low transaction costs, and can be used to make micropayments.

**Blockchain**

Masse (2017) defines a blockchain to be a distributed ledger and database utilized to maintain a continuously expanding list of records, stored in blocks that are secure from tampering and revision.

In this decentralized peer-to-peer system millions of computers agree on a worldwide ledger of the history of all transactions that have ever taken place in the system (ColdFusion, 2017).

**Blockchain Technology**

The protocols that control how data is encrypted, packetized, addressed, transmitted, verified, routed and to be stored on a blockchain (Masse, 2017).

The blockchain is designed to behave as an automatic auditor and accuracy checker throughout the whole system. Thereby, trust is actually built into the system (ColdFusion, 2017).
Cryptocurrency (Cryptos)
According to Harwick (2016), a cryptocurrency is a method of constituting virtual “coins” and providing for their secure ownership and transaction using a cryptographic problem.

This problem is designed to be easy to verify but computationally difficult to arrive at a solution (Harwick, 2016).

Digital Currency
A balance of money stored on the blockchain (Masse, 2017).

Digital currency is not under control of any one central national government (Masse, 2017).

Disruptive Technology
Masse (2017) says that a disruptive technology is a technology that attacks a traditional business model with lower-cost, higher value propositions and can overtake incumbent businesses quickly.

Cryptocurrencies with their underlying blockchain technology are considered by many as disruptive technologies.

Distributed Ledger
Treleaven, Brown & Yang (2017) define a distributed ledger as a decentralized, shared, replicated, and synchronized record of transactions between contracting parties secured by cryptographic sealing.

Distributed ledgers can also be used as distributed databases.

Intermediaries
As Etwaru (2017) mentions, intermediaries are middlemen that are responsible for keeping a centralized copy of the ledgers in all of commerce and they facilitate the brokering of the relationship between those who are looking to trust and those who are looking to be trusted.
Examples of intermediaries are things like banks, a Department of Motor Vehicles, mortgage title companies, and credit reporting agencies. These are all intermediaries (Etwaru, 2017).

**Miners**
In ColdFusion (2017), miners are defined as the computers that are looking after the ledgers and keep the system running are called miners.

In return for solving the complex algorithms that verify transactions, they are awarded freshly-minted, predetermined amounts of digital currency (Masse, 2017).

**Smart Contracts**
Masse (2017) define Smart Contracts as contracts that can be programmed directly onto the blockchain and automatically executed as terms are met.

Simply put, smart contracts actually program trust, translating it into use for specific business circumstances (Masse, 2017).
Chapter 2: Literature Review

2.0 Literature Review

2.1 Introduction
This chapter reviews the literature and past research in the areas of new technology adoption, gold use as legal tender, cryptocurrency usage and blockchain technology utilization. Popular theories on new technology adoption will be examined. Historical information about gold use as legal tender and the theoretical benefits of doing so will be presented. Current and possible future trends for cryptocurrency usage will be evaluated. Prospective areas for blockchain technology utilization based on sound models will also be analyzed. Based on the information, theories, and trends gathered from this literature review, comprehensive questions can be compiled to ask probing questions from leading experts in the area of gold usage, cryptocurrencies, and blockchain technology utilization.

2.2 New Technology Adoption Theories

Source: Bala and Venkatesh (2008)
Figure 15: Technology Acceptance Model

Probably one of the most popular new technology adoption theories is the Technology Acceptance Model Theory (TAM1) that was proposed by Fred D. Davis (1985). According to TAM a potential
user’s attitude towards using a particular system is theorized to be a major determinant of whether or not the person actually uses it. Attitude toward using is composed of two major beliefs, which are perceived usefulness (PU) and perceived ease of use (PEOU). Additionally, PEOU has a casual effect on PU. PU is defined as "the degree to which an individual believes that using a particular system would enhance his or her job performance." (Davis, 1985). PEOU is defined as "the degree to which an individual believes that using a particular system would be free of physical and mental effort." (Davis, 1985). PEOU is theorized to have a significant direct effect on PU because a system which is easier to use will correspondingly result in increased job performance, greater usefulness, for the user. Since some time of the user’s overall job contentment is devoted to actually using the system, if the user becomes more productive during this time by greater ease of use, then he will become more productive overall (Davis, 1985). Therefore, characteristics of the system may indirectly influence PU by affecting PEOU. Design features, directly influence PU and PEOU. Since design features are a type of external variables, they are not theorized to have a direct effect on attitude or behavior but instead only affect these variables indirectly through both PU and PEOU.

Bala and Venkatesh (2008), state there are 4 types of external variables. First, individual difference variables include personality and / or demographics, such as traits or states of individuals, gender, and age, which can influence a person’s perceptions of PU and PEOU. Second, system characteristics are those prominent features of a system regarding the PU and PEOU of a system. Third, social influence encompasses various social procedures and mechanism that guide people to create perceptions of various aspects of an information technology. Forth, are facilitating conditions that represent organizational support that aids with the use of an information technology.
Davis and Venkatesh (1996) conducted a study on the antecedents of PEOU (See Figure 15). In this study, they determined three main things. First, general computer self-efficacy of a user will strongly determine their perceptions of ease of use about a specific system. Second, the objective usability of a system does not have a significant impact on determining PEOU of a system before direct hands-on experience with the system. Lastly, the objective usability of a specific system will have a significant impact in determining PEOU of a system after direct hands-on experience with the system.
Source: (Davis & Venkatesh, 2000)

Figure 17: TAM2

The duo, Davis and Venkatesh (2000), again created a version 2 of TAM (See Figure 16). Using TAM as a basis, TAM2 incorporates social influence processes: subjective norm, voluntariness, and image. TAM2 also incorporates cognitive instrumental processes: job relevance, output quality, result demonstrability, and perceived ease of use. Table 1 briefly summarizes each TAM2 instrumental determinant.
2.3 Gold Use as Legal Tender: Historical Perspectives and Current Theories

Mike Maloney (2013), in his Hidden Secrets of Money Episode 1, reveals that the whole world has been fooled into using currency instead of real money. According to Maloney (2013), people do not understand the difference between currency and money (See figure 17), “Currency is a unit of account because there are numbers printed on it. It’s somewhat durable. Currency is portable and divisible because you can make change. It’s also fungible because one dollar buys the same amount no matter who’s pocket it comes from. However, since government’s can print unlimited amounts of currency, it’s not a store of value because the value of the currency supply can be diluted”. As stated by Truthloader (2014), over the past century, the purchasing power of the US dollar has fallen by 98 percent (See figure 18).
Mike Maloney (2008), mentions that societies start with high value commodity money such as gold and silver. The government then gets greedy and aims to spend more and more beyond its means. Slowly, the government fools the population into accepting fiat currency by issuing paper
receipts that are redeemable in gold and silver. Great empires such as Greece, Rome, and the US now are performing the same currency debasement. Mike Maloney (2013) defines seven stages of empire that repeat throughout history until today (See figure 19). Simply put, it’s a societal pendulum that swings from quality money towards quantity currency and then back again to quality money that is backed by gold and silver.

![7 Stages of Empire](image)

**Source:** (Maloney, 2013)

**Figure 20: 7 Stages of Empire**

Studies conducted by Yaacob & Ahmad (2014) comparing time periods on a gold standard and off, reveal that the rate of inflation and the value of gold are much lower and stable during gold standard periods. Currency exchange rates also were more stable and predictable. However, as Mike Maloney (2013) mentions that if we have gold standard then we are going to get scammed again because it opens the door for the government to start printing more receipts, currency, then they have actual gold.

Many critics say that you can’t use gold and silver today as legal tender because they are too heavy and bulky but they are completely wrong. With today’s technology, you can put gold in a vault
and make payments by transferring ownership of ounces or even nanograms of gold from one person’s account to another by means of a check, credit card or even your smart phone (Maloney 2013).

Another criticism of gold ownership is that if you ever needed to use it to transact, it’s just not very practical because a one ounce gold coin is too expensive. This is why Aurum, with its 1/10 gram or 1/20 gram denominations of gold is so practical and lightweight too. According to the Valaurum (2017) website, an Aurum has a very precise amount of gold that can be trusted across hundreds of thousands of Aurums that’s uniform. Determining veracity is simpler to assess because the gold atoms are spread so thin that an adulterated metal cannot be put in between the layers of polyester.

### 2.4 Cryptocurrencies: Current and Proposed Usage

Today there are two rival schools in economics, the Austrian school versus the Keynesian school (Table 2). The Austrian economic philosophy believes that money printing is a form of legalized theft by inflation because more currency lessens it’s purchasing power. However, the Keynesian economic philosophy actually thinks that inflation is desirable. The problem is today, most central bankers follow the Keynesian philosophy. Instead of focusing on GDP growth and wealth creation, they instead have inflation targets. They actually desire a steady inflation of 2% annually (ColdFusion, 2017). The problem with using traditional fiat currency, both paper and digital, which Keynesians promote is that there is no way to tell how much money is circulating and no one knows if the central bankers will decide to start printing more. Cryptocurrencies such as Bitcoin in contrast are deflationary because there is a fixed amount, thereby making increase its value thru time (ColdFusion, 2017).

#### Table 2: Austrian vs. Keynesian Economics

<table>
<thead>
<tr>
<th>Austrian</th>
<th>Keynesian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free-markets</td>
<td>Government Intervention</td>
</tr>
<tr>
<td>Sound money under a gold standard</td>
<td>Fiat currency</td>
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<tr>
<td>Savings</td>
<td>Debt</td>
</tr>
<tr>
<td>Investment</td>
<td>Consumption</td>
</tr>
<tr>
<td>deflation is good</td>
<td>deflation is bad</td>
</tr>
<tr>
<td>Let the inefficient corporations fail</td>
<td>Bailouts</td>
</tr>
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</table>
However, using gold as legal tender has weaknesses according to Arsov (2016) who believes using cryptocurrencies such as Bitcoin has advantages over using gold as legal tender in the following areas: Divisibility, Malleability, Counterfeit-adversity, and fungibility. Table 3 summarizes each of these advantages.

**Table 3: Cryptocurrencies Advantages Over Gold Usage**

<table>
<thead>
<tr>
<th>Advantage Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divisibility</td>
<td>Separating gold into smaller chunks is not very easy at all, and keeping the pieces uniform in size is nearly impossible. Bitcoin is easily divisible down to 100,000,000 perfectly uniform pieces, making it child’s play to pay for anything down to any size with it.</td>
</tr>
<tr>
<td>Malleability</td>
<td>Got a bunch of tiny gold pieces you want to re-combine back into a bigger coin or even brick? Go fire up the furnace and break out the wrought iron casts... Meanwhile bitcoins all fit back into your wallet and automatically account for themselves back to your full balance with any thought on your part whatsoever.</td>
</tr>
<tr>
<td>Counterfeit-Adversity</td>
<td>Yes, you can counterfeit a gold bar or coin by wrapping a layer of gold outside with a thick core of Tungsten. Meanwhile bitcoin is famously counterfeite-adverse, because we all can have a copy of the ledger and basically can see everyone else’s’ bitcoins if they try to lie about them.</td>
</tr>
<tr>
<td>Fungibility</td>
<td>Last but not least, and some might say the most important criteria of all. Fungibility is the quality of all parts being easily judged equal to all other parts of the same denomination. Gold is notoriously poor at this, because the purity of the gold is not easily judged, and there is no standard accounting size either that is fair such as an atom count. How can you tell if one gold coin that looks similar to another is truly worth that other coin? You cannot without a lab. Meanwhile, bitcoins are all simply ledger entries, so there is nothing different about them on an atomic level.</td>
</tr>
</tbody>
</table>

With so many advantages of using cryptocurrencies over gold, it understandable why many people believe that Bitcoin could ultimately replace gold in terms of value. However, as mentioned by Arsov (2016), there are reasons why this won’t likely occur. Primarily, Bitcoin still poses a great deal of financial risk, it frequently experiences violate price fluctuation. Another reason, gold still has many other uses besides being “money” as it’s used in industry, science, jewelry making and many other areas—it has intrinsic value as a commodity.
Nevertheless, researches such as Raymaeker (2015), believe there are 5 main uses of cryptocurrencies such as Bitcoin: Micropayments, Online Purchases, Payments at Point of Sale, Domestic money transfers, and International money transfers. Table 4 summarizes each of these use cases.

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Micropayments</td>
<td>Very small payments, such as paying to view a web page or read an article online, are a challenge for conventional payment methods, in terms of cost efficiency and speed.</td>
</tr>
<tr>
<td>Online Purchases</td>
<td>Today, mainly credit cards, online bank account schemes such as iDEAL in The Netherlands, third-party online payment solutions such as Alipay in China, and electronic wallets such as PayPal, are used to buy goods and services from a website.</td>
</tr>
<tr>
<td>Payments at Point of Sale</td>
<td>Many alternatives exist, from cash to debit/credit cards, mobile payments, to electronic wallets and NFC devices.</td>
</tr>
<tr>
<td>Domestic Money Transfers</td>
<td>Many alternatives to Bitcoin exist in this space.</td>
</tr>
<tr>
<td>International Money Transfers</td>
<td>Again, many alternatives exist.</td>
</tr>
</tbody>
</table>

Another major advantage of using cryptocurrencies is that there’s a low barrier to entry. As mentioned by ColdFusion (2017), anyone can join, you don’t need a bank account or permission from a government or any other organization or even have to pay a fee. All you need to use cryptocurrencies is an Internet connection and the software that can be on your smartphone (See Figure 20). Therefore, people in financially oppressed, “unbanked”, countries can get their money out without being tracked.
2.5 Blockchain Technology: Viable Models for Application

Etwaru (2017), mentions that history has many technological revolutions that shaped entire eras (See Figure 21). In the 1400s, the knowledge gap was filled by the printing press. During the 1800s, the engine filled the energy gap. Prior to the engine, all we had was man power, slavery, and colonialism but the engine helped to eliminate those things. The Internet started about 40 years ago and it current fills the distance gap. Today you can transact just about with anyone in world at any distance away. Nowadays, the big gap is with respect to trust. It’s estimated that by 2020 there will be 7 times more smart devices than we have people in the world. About 50 billion devices will transact and people will have to trust all those devices so this trust gap is definitely expanding (Etwaru, 2017).
According to Masse (2017), “The most empowering characteristic of the blockchain is immutable trust and it is built on the characteristics of security, transparency, authenticity and credibility.”. Consider, the banking and financial services industry, BLT can simplify business process while simultaneously promoting safe, trustworthy records of agreements and transactions (Treleaven, Gendal, & Yang, 2017). According to Treleaven, Gendal & Yang (2017), as BLT evolves and we discover more uses of it, it will join other disruptive technologies such as the “Internet of Things”, big data, artificial intelligence, and self-driving vehicles to create great opportunities but also have potential unintended social consequences.

Dr. Adrianne McCallaugh, a blockchain lawyer with a PhD in IT security envisions the best places to use BLT are environments with high possibilities of fraud, intermediary involvement, high throughput and stable data requirements—the FITS model (ColdFusion, 2017) (See Table 5).
However, there are some investment risks associated with BLT as Swan (2017) mentions. First, there is infrastructure risk as the blockchain network infrastructure is still immature. Second, “Visa Class” processing is not yet available with Bitcoin or other cryptocurrencies. Nevertheless, as Etwaru (2017) firmly believes, blockchain technology will create trust companies that will replace about every company in the world.

### 2.6 Literature Review Summary

Great insight was gleamed from this literature review. First with respect to new technology adoption theories, the Technology Acceptance model with the 4 types of external variables combining the antecedents of perceived ease of use and instrumental determinants of perceived usefulness can be used as a comprehensive model. This model can be used to create deep, “probing”, questions for the acceptance of cryptocurrencies and blockchain technology.

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
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<tbody>
<tr>
<td>(F)raud Prevalent</td>
<td>If you are in an environment where there is a history, a propensity, a likelihood of fraud involved in various transactions then the blockchain can assist in reducing the likelihood of fraud actually occurring. This is why blockchain is being used for international finance transactions.</td>
</tr>
<tr>
<td>(I)ntermediary Involvement</td>
<td>If you have an environment where there are intermediaries involved then you may be able to disintermediate those parties if they really don't provide value. We can get average transaction settlement times from two days down to 15 minutes by taking away middlemen.</td>
</tr>
<tr>
<td>(T)hroughput Requirements</td>
<td>Throughput or number of transactions per second is another consideration it turns out that Bitcoin can only do ten transactions per second while MasterCard and Visa can do about eighty thousand but researchers are currently looking into increasing the throughput.</td>
</tr>
<tr>
<td>(S)table Data</td>
<td>The stability of data for a blockchain application. You don't want volatile data. You want things that are going to stay the same for at least a while things such as land ownership titles and personal information so that's the theory about what systems you should look for in regards to using blockchain applications.</td>
</tr>
</tbody>
</table>
Second with respect to gold use a legal tender, Mike Maloney gives a good model of what constitutes “money” versus “fiat” current. He also gives a “7 Stages of Empire” model, basically a societal “pendulum” where society’s start with quality money toward quantity currency and then back to quality money that is backed by gold and silver. Studies also revealed time periods on a gold standard didn’t experience inflation. Though, Mike Maloney warns of being “scammed” again if gold standards are used. Critics of gold usage were also answered by today’s technology that allows for micro-amounts of gold to be used in transactions.

Third with respect to current and proposed usage of cryptocurrencies, it was revealed that Keynesian economic philosophy is promoting “legalized” theft via inflation. In contrast using cryptocurrencies such as Bitcoin are actually deflationary. Arsov also revealed the advantages of using Bitcoin as legal tender over gold though explained why cryptocurrencies will not be able to replace gold because of it has intrinsic value as a commodity. However, as Raymaekers mentions, cryptocurrencies have 5 main potential uses along with a low barrier for usage.

Lastly with respect to viable models for blockchain technology, Etwaru explained how blockchain technology can fill the “trust gap” that is growing more nowadays. This is due to its immutability empowering characteristic as mentioned by Masse. According to Treleaven, Gendal & Yang, blockchain technology is a disruptive technology. Dr. Adrian McCallaugh reveals the best places to use blockchain technology are environments where the FITS model can be applied. However, as Swan mentions there are still some investment risks associated with blockchain technology though it has the potential to replace many non-BLT based companies with new trust companies as mentioned by Etwaru.
Chapter 3: Research Methodology

3.0 Introduction / Research Design

This study will be based on basic research instead of applied research. According to Saunders, Lewis and Thornbill (2012), basic research is used to expand the knowledge of processes of business and management. In addition, basic research leads to findings of significance and value to society in general. The author aims to improve the understanding of perceived monetary usage with respect to gold / Aurum, cryptocurrencies and blockchain technologies from Malaysian University academics. Results of this research will be valuable to innovators in the fields of gold usage, cryptocurrency usage and blockchain technology applications.

Figure 23: Basic Research and Applied Research

Source: Saunders, Lewis & Thornbill, 2012

Figure 1.1 Basic and applied research
Source: Authors’ experience; Easterby-Smith et al. (2012); Hedrick et al. (1993)
3.1 Research Philosophy

According Saunders, Lewis and Thornbill (2012) there are 5 major philosophy with respect to business and management: positivism, critical realism, interpretivism, postmodernism and pragmatism. The primary guiding philosophy will be that of pragmatism. Secondarily, the interpretivism philosophy will used. Both philosophies have their strengths that will be relevant to this study.

As Saunders, Lewis and Thornbill (2012) mention pragmatism emphasizes practical solutions and outcomes. The author aims to gleam practical solutions from experts in the fields of gold, cryptocurrencies and blockchain technology in order to combat the problems of inflation, deficit spending, and fractional reserve banking that is so prevalent in the world today. Since there are many types of “practical” solutions, no single solution will completely solve the problem so multiple problem-solving strategies must be gained and attempted.

The interpretivism philosophy is also appropriate for this study. As Saunders, Lewis and Thornbill (2012) mention, for interpretivism based research, the researcher interpretations are key to the contribution. The focus of the interviews will be on experts’ narratives, stories, perceptions, and interpretations. This research is also value-bound and the researcher must be reflexive. Also, the sample size is small in order to allow for deep probing investigations using qualitative methods of analysis.

3.2 Research Classification and Approach

There are 5 main types of research purpose: exploratory, descriptive, explanatory, evaluation and combined. Saunders, Lewis and Thornbill (2012) define an exploratory study to be “research that aims to seek new insights into phenomena, to ask questions, and to assess the phenomena in a new light”. An exploratory approach will be the most appropriate for this study because insights will be gained from many current leading experts in the areas of gold usage, cryptocurrency usage, and blockchain technology application so these areas will all be assessed in a comprehensive new way. Open-ended question will be used for this research in line with an exploratory study. Interviews with experts will also be semi-structured and flexible to change because new data, new insights, might change the researcher’s direction.
According to Saunders, Lewis and Thornbill (2012) there are two main research approaches: deductive and inductive. In this study, the inductive research approach will be more appropriate. As mentioned by Saunders, Lewis and Thornbill (2012), inductive approaches allow meanings to emerge from data collected in order to identify patterns and relations leading to a theory. However, the researcher must be aware of existing theories, such as TAM, 7 Stages of Empire and the FITS model, in order to commence the research. The researcher should be also aware of past and current trends from literature review in order to ask appropriate questions that can lead to explanations.

3.3 Research Strategy

According to Saunders, Lewis and Thornbill (2012), a research strategy is a plan of how a researcher will go about answering his / her research questions. It’s the methodology of how the data will be collected and analyzed. The research strategy is guided by the researcher’s questions and objectives, the amount of existing knowledge, the amount of time and other available resources, plus the researchers own philosophical beliefs.

Saunders, Lewis and Thornbill (2012) state that there are 7 research strategies: experiment, survey, case study, action research, grounded theory, ethnography and archival studies. The most appropriate research strategy for this study will be based on the case study research strategy. However, some basic survey data will be collected as well with regards to demographic data (age, sex, nationality, education level, etc.), the preliminary assessment of knowledge and TAM analysis for Aurum and cryptocurrency technology usage. Based on preliminary assessment of knowledge with regards to gold usage, cryptocurrencies usage, and blockchain technology application—the interviewer will ask deeper probing questions based on the interviewees area of expertise.

The case study research strategy is the most appropriate for this study because of many reasons. As Saunders, Lewis and Thornbill (2012) state, a case study is an in-depth inquiry into a topic or phenomenon within its real-life setting. The specific ‘case’ will be based on the group of Malaysian University Academics. Using a case study strategy will lead to insights from the phenomenon of Aurum, cryptocurrency, and blockchain technology that can lead to great insights on perceived monetary usage. Deep probing questions will provide an in-depth inquiry to identify
what is happening in terms of gold usage, cryptocurrencies and blockchain technology and why, and maybe to understand the repercussions of the situation and implications to merit action. Case studies can gain such insights because it can use quantitative or qualitative data and frequently uses mixed methodologies, which this study will do, in order to fully understand the dynamics of the perceived monetary usage of gold / Aurum, cryptocurrencies and blockchain technology.

### 3.4 Research Choices

According to Saunders, Lewis and Thornbill (2012) quantitative research is mainly used for numerical data collection to be analyzed. However, qualitative research is mainly used for non-numerical data collection that tends to be subjective. From the aforementioned discussion, this study will be mainly qualitative since the data collected will come from video recorded interviews. However, some quantitative data will be collected for basic demographic information, TAM assessment and as a preliminary assessment of the interviewee’s strongest areas of expertise to facilitate deep probing questions. As Creswell (2014) mentions, in a qualitative study, interviewers state research question, not objectives or hypothesis and these research questions assume two forms: a central question and associated sub-questions. This will be the format of the semi-structured questions asked of the interviewees.

### 3.5 Time Horizon

Saunders, Lewis and Thornbill (2012) state that there are two-types of time horizons for research: cross-sectional and longitudinal. Cross-sectional time horizons are taken at a particular time akin to a “snapshot”. In contrast, longitudinal time horizons are akin to a “diary” because they are a series of snapshots taken over a given period of time. Since, the research for this study is constrained to only one semester at Asia Pacific University, it will be based on the cross-section time horizon. A basic quantitative survey will be given and qualitative questions will be asked from interviewees within a span of one semester.

### 3.6 Data

As Saunders, Lewis and Thornbill (2012) mention, there are two-types of data collection techniques: primary data and secondary data. Primary data comes directly from the researcher through observations, interviews, and questionnaires. Alternatively, secondary data is data that
has already collected for another purpose and perhaps processed and stored afterwards. Examples of secondary data are documentaries, surveys, statistics that can come from multiple sources. For this study, primary data will be collected via video recorded interviews and a simple paper survey. In this exploratory research, the data collected will enable the researcher to compile many perceived uses of gold / Aurum, cryptocurrencies and blockchain technology and derive theories on the most feasible use cases from leading experts.

3.7 Instrumentation / Questionnaire
The questionnaire used in this study will be mostly original, except for the parts related to the Technology Acceptance Model, whereby the used metrics will be measured using a 5-Point Likert scale. The preliminary survey will ask basic demographic data, perform a preliminarily assessment of knowledge with respect to gold use, cryptocurrency use, and blockchain technology application. Furthermore, the survey will be used in TAM assessment as previously mentioned. Based on the preliminary survey results, deep probing questions will be asked of the interviewee with the first questions based on the area of highest expertise. A pilot test will be done to check for the clarity and appropriateness of the intended survey and questionnaire by the researcher with the assistance of his supervisor. To see an initial draft version of the survey and questionnaire, please refer to Appendix A and Appendix B.

3.8 Administration of Questionnaire / Sources of Data collection (Interview / Internet)
In this study, primary data will be collected from video recorded interviews of Malaysian Academics, initially University Professors at Asia Pacific University. The researcher will start with his previous lecturer and his supervisor’s recommendations on potentially good interviewees for gold usage, cryptocurrency usage and blockchain technology application. Interviews will be conducted sitting down and face to face. Potential interviewee candidates will be contacted via email, phone or directly face to face if the opportunities arise. Data will be collected with a paper survey and video recorded interviews. As Creswell (2014) mentions, interviews allow the researcher control over the line of questioning but a limitation is that the researcher’s presence may bias responses. The researcher’s personal biases will strongly be considered in the interpretation of the qualitative data gathered.
3.9 Sampling (Type, Population, Frame, Size)

The study population for this research are Malaysian Academics, which encompass professors and students at Malaysian Universities. Since, this study is based on qualitative research, the sample size will be relatively small. At least, 12-15 professors will be interviewed but only the top 10-12 interviews will be included in the study. This is the recommended sample size for qualitative interviews as mentioned by Creswell (2014). The reason not all interviews will be counted is that the first few interviewees might not necessarily be experts in the area of gold / Aurum usage, cryptocurrencies usage and blockchain technology application. However, more references will be obtained for even better experts in these areas so subsequent interviews are more likely to be valuable. Initially convenience sampling will be used as the researcher will interview his past lecturers. However, as additional references are gained, purposive sampling will be used because the researcher will be able to select interviewees that will be the best able to answer his research questions.

3.10 Data Preparation / Processing

Since the retrieved preliminary assessment survey data will be small in size, maybe 12-15 records, instead of using SPSS, Excel can be used to log the survey data. Afterwards, simple demographic and TAM metric analysis can be performed on the survey data. The recorded video interviews will be stored both on the researcher’s external hard drive and cloud hard drive in order to provide a backup recording. Interviews will be meticulously analyzed for the degree in which they subjectively answer the research questions and if there are any common themes, theories, concerns or questions asked.

3.11 Data Analysis

As mentioned by Creswell (2014), in qualitative data analysis, the text and image data are so dense and rich, especially with regards to interviews, that not all the information can be used in a qualitative study. Therefore, researches need to filter the data by focusing only on the most relevant data to the research questions. The goal in qualitative research is to aggregate data into a small number of themes, maybe five to seven themes (Creswell, 2014).
3.12 Ethical Considerations
As Saunders, Lewis and Thornbill (2012) mention, potential ethical issues should be recognized and considered from the beginning of the research and is one of the criteria where the research is evaluated. The questions used for the initially survey assessment and interview questions are technical in nature so there should not be any offensive language that can emotional harm interviewees. However, in order to make sure all questions asked are ethically sound, pilot tests will be performed with the researcher’s supervisor to check for soundness.
4.0 References


Appendix A: Preliminary Survey / Assessment Draft

### Demographic Data

<table>
<thead>
<tr>
<th>Name:</th>
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</thead>
<tbody>
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<td>I grew up in a wealthy lifestyle.</td>
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<td>I grew up in a hi-tech environment.</td>
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Knowledge of blockchain technology

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<td>Job Relevance</td>
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<td>Overall Perceived Ease of Use</td>
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Cryptocurrency / Bitcoin

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**Antecedents**

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Appendix B: Proposed Interview Questions

Introduction

Professor, thank you for allowing me to interview today for my dissertation on Aurum, Cryptocurrencies, and the Blockchain.

First of all, can you please briefly introduce yourself and area of expertise?

1) What is the current knowledge level that Malaysian Academics have with respect to gold, cryptocurrencies and blockchain technology for monetary usage?
   1. (Gold Medium) What is the difference between money and fiat currency?
   2. (Gold Low) What causes inflation? What causes prices to eventually rise in time?
   3. (Gold Medium) What is deficit spending? What is fractional reserve banking?
   4. (Gold Medium) What are the benefits of using gold as legal tender again?
   5. (Crypto Medium) What are cryptocurrencies?
   6. (BLT Medium) What is blockchain technology?
   7. (BLT Medium) What areas can the FITS model for blockchain technology be applied?

2) How do Malaysian Academics perceive the monetary usage of gold / Aurum, cryptocurrencies and blockchain technology?
   1. (Gold Low) How can gold be reintroduced as legal tender again using Aurum?
   2. (Gold Low) What are the key benefits, challenges, opportunities and threats of using Aurum?
   3. (All) Please explain your TAM survey responses for Aurum, and cryptocurrency adoption?
   4. (Crypto Medium) How can cryptocurrencies such as Bitcoin gain mainstream adoption?
   5. (Crypto Medium) How can credit card usage be replaced with gold and cryptocurrencies instead?
   6. (BLT Medium) Which brands, using blockchain technology, in your opinion can be built & made more relevant through immutable trust, security, transparency, authenticity and credibility?
   7. (BLT High) Where can Smart Contracts be the most useful?