European International University, EIU-Paris

Doctoral Thesis

Title:

Analysis of the Relation between Prices of Gold and Crude Oil

Submitted by:

[WIRANYA SUTTHIKUN]

[EIU ID351023]

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[Ky. Col. Prof. Dr. Edward Roy Krishnan]

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Abstract

The paper analyses the relation between the prices crude oil and gold prices. The purpose of the paper is to establish the determinants, co-movement, and the character existing between the two prices. The paper looks through the crude oil and gold prices traded in different regions for the past twenty years (1987 – 2017). The relation existing between the price levels of gold and oil is analyzed using the gold to oil ratio, which is calculated as part of the price of gold to the price level of crude oil about time. Further, a correlation analysis test is adopted which establishes the strength of the gold and crude price relationship.

Keywords : Price relationship, crude oil, gold

Introduction

Interconnectivity trend is prevalent in the commodity market with crude oil and gold playing a crucial role. Gold is the oldest and precious metal that is known to man, which is valued as a global currency, object of beauty, investment, and a commodity. Besides, crude oil is considered the mother of all other commodities because it is essential in the manufacture of extensive materials. The interconnection between the two commodities started in 1933, as the crude oil producers from the Middle East were demanding gold in exchange for crude oil (Fratzscher, Schneider, & Robays, 2014). Both crude oil and gold are quoted in US dollars. A quantitative and theoretical analysis present an overview of the relation between the prices of crude oil and gold. The primary characteristics of the products in diverse scenarios alongside the factors influencing the products in the markets are presented in the paper. The correlation analysis test and the gold to oil ratio are employed to establish the relation between the prices of crude oil and gold prices.

Overview of Crude oil and Gold Trade

Gold is the oldest international currency in the world, which has been an essential element of the international monetary reserve. India is the world largest market for jewelry and a major driver of global demand for gold. Households in India possess more gold than other households across the globe. Two-thirds of demanding gold is obtained from rural areas in which jewelry is considered a traditional store wealth among people with limited access to the systems of conventional banking. In light of this, Sovereign Gold Bonds Scheme was approved alongside Gold Monetization Scheme in the Union (Sumner, Johnson, & Soenen, 2010). Schemes were created to ensure the monetization of the gold that was idle in the economy as well as satisfy the increased demand for gold without the need for retaining the physical gold. The decision of the government to launch the schemes is useful for translating the gold savings into economic investments alongside making the precious metal a crucial part of the financial system.

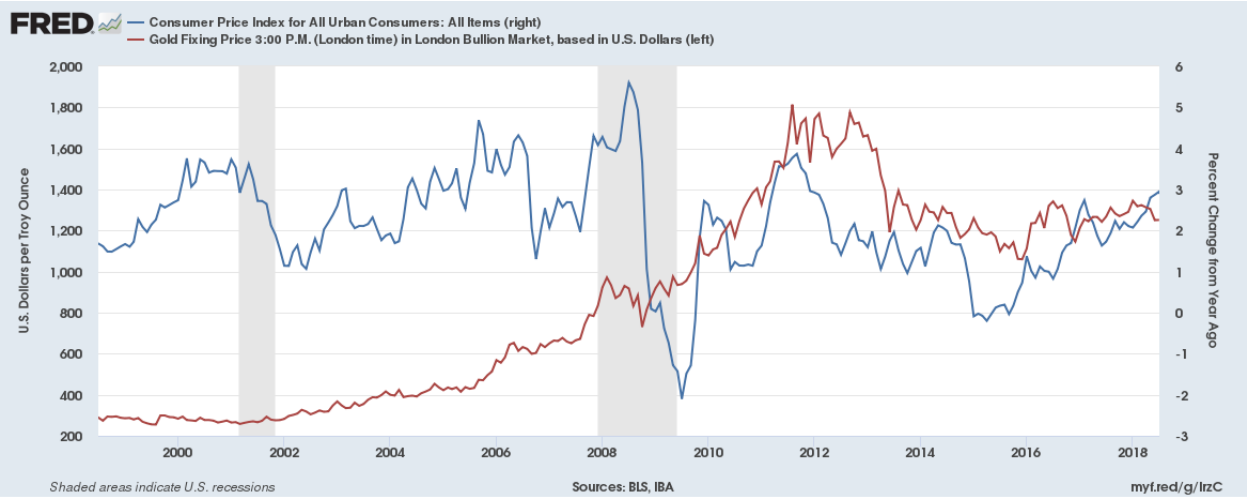
Throughout the history, gold has been a major monetary standard. States and empires have been rising and falling with a single fiat currency that has been in a position to sponsor governments. Gold was the standard by which currencies obtained a judgment, as it was considered the only real money. Based on its high value, gold is highly sought after internationally. However, gold is scarce in the nature that makes its supply challenging.

Crude oil is a mixture of various hydrocarbons, which are found in upper parts of the crust. Typically, crude oil is referred to as the father of nations as it is essential for making diverse commodities. Crude is essential for producing fuel used for trains, airplanes, buses, and cars. Besides, it is utilized for making products such as plastic for toys, asphalt for roads, bottles, and lubricants. Presently, India is among the leading importers of crude oil alongside China and the United States. For instance, in 2015, oil imports were valued at the price of US $7357.47 (Wang, Wang, & Huang, 2010). Almost every product consumed across the globe is transported using oil-powered aeroplanes, ships, trucks, and trains. Thus, in the absence of oil, most of the commodities utilized internationally would be unavailable, making it difficult to sustain global trade.

Characteristics of Crude Oil and Gold

Compared to other assets the evaluation of gold is very difficult. Gold is similar to currencies such as Euro and US dollar because it is portable, durable, widely accepted and uniform across the globe. Different from other currencies, the support for gold is realized from companies and infrastructure. Moreover, gold is considered to be similar to maize or even oil because it is obtained from the ground and has different characteristics.

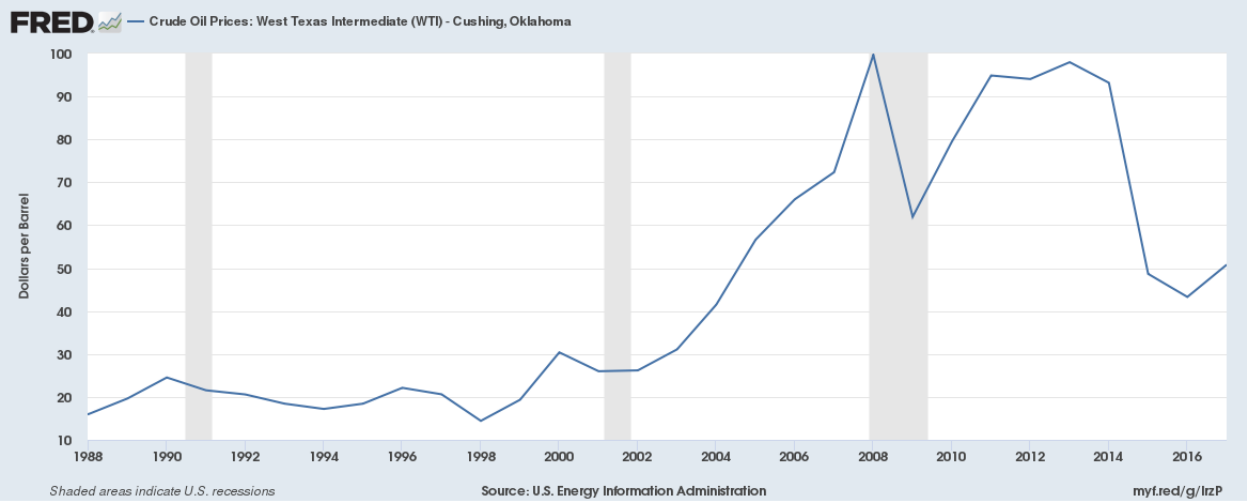
Figure 1: Gold prices in 1987 - 2017



Source: Federal Reserve Economic Data

In addition, different from the other commodities, the pricing level for gold normally fluctuates without being affected by levels of supply and demand. Over 10% of the world's gold is utilized by industries, especially in electronics based on its anticorrosive and conductivity. Apart from this, gold is used for jewelry and investments.

Figure 2: Oil prices in 1987 - 2017



Source: Federal Reserve Economic Data

There are various types of crude oil produced across the globe. These types vary based on their quality and their characteristics. The crude oil types primarily utilized are Brent and West Texas Intermediate. The Petroleum and crude oil are international commodities that make their prices dependent on the factors of supply and demand. The pricing level of crude oil is a vital factor that influences the pricing levels of all the petroleum products which the most important currency is USD, most oil trading conducted and through USD. There is an indirect correlation between dollar and oil prices. As a result, the costs of transportation increases which in return raises the costs of manufacturing as well as distribution. Thus, the final price level of the product is affected, that in its turn adds up to inflationary pressure. The forces of supply and demand influence the price levels of crude oil across the globe. The decision for the supply of crude oil lies in the hands of the OPEC nations, which makes the supply of oil limited. From figure 2 show the oil price collapse in 1988, oil prices has fallen since the end of November 1987 lower as $18 per barrel. Oxford Institute for Energy Studies (1998) said the reason for this fallen price fluctuation crisis is the over production in 1997 and early 1998 destroyed the balance of supply demand fundamentals. Also in 2002 there is apparent instability during the period of earthquake and hurricanes when the production capabilities are limited.

The Link between Gold and Oil Markets

The prices of gold and crude oil develop in a similar path. If the valuation of the US dollar drops, the price levels of gold remain intact all over the world but in the US market, more money is paid for gold purchased. Differently, if the same dollar falls, the price level of oil in the United States rises oddly, but it falls in other nations, based on the fact that crude oil trading's currency is the US dollar. Moreover, oil is utilized for excavating as well as refining gold; hence, increased prices on oil correspond to increased prices of gold (Narayan, Narayan, & Zheng, 2010). Besides,

the recent increase in oil prices has made it impossible for the movement of crude oil and gold to be in tandem.

Further, when the participants and the hedgers make demands using Euros, then the fall becomes pronounced as the impact of price on the valuable metal increases. This can be linked to the situation of excess cash flow being placed on limited goods. Other than, the lag between the price of gold and the movement of the dollar in the short run does not affect the relation between the two in the long run. In the case where the price of oil increases and there is a diversification in demand for the dollar, then more dollar on oil is used on gold.

Nevertheless, the gold to oil ratio is utilized for expressing the relationship between the two commodities that are crucial for forming the foundation of the entire economy. The gold to oil ratio is considered valuable as it shows the expression of the complicated relationship between crucial global commodities (Mollick & Assefa, 2013). The ratio makes it possible to notice when the prices of gold or oil are high and bring in the possibility of reversion. The prices of gold and crude oil fall and rise depending on each other as the purchases of oil were performed using gold. Besides, in the current market, the revenue accumulated from oil is used to make investments in gold. On that account, as the prices of oil increase, more revenue to be invested in gold is obtained. High prices attached to crude oil increase inflation pressure, which is essential for boosting the appeal for gold. This indicates that crude oil and gold prices obtaining a positive correlation.

Studies on the Relation between the prices of Gold and Crude Oil

Caballero, Farhi, and Gourinchas (2008) utilized the GARCH and the ARCH modes to determine the relation between gold and oil markets using the channel of export revenue. The results of their study revealed that when the price levels of oil increased the revenue resulting from the exportation of oil increased which directly affected the price levels of gold. Further et al., (2008) concluded that the price level of crude oil variations alongside the timing of making supplies vary based on the premium of gold in its future prices, which were seen to depend on its conditional variance on spot prices. The GARCH model presents a context in real life and focuses on predicting the rates and prices of various financial instruments. Moreover, it defines the conditional variance of the relationship between gold and crude oil prices as being a linear function. Lastly, GARCH and ARCH models soften the linear restriction that may be imposed on the dynamics of conditional variance.

Kang and Yoon (2013) determined the long run relation existing between oil and gold future and spot markets using different periods and the structural break cointegration test. They outlined that the rise in the prices of oil influences an increase in the rate of inflation, resulting in increased prices of gold. This means that investors utilize the gold market as the hedger of inflation, using the oil market to make predictions on the prices of gold in the market. Additionally, Masih, Peters, and De Mello (2011) established a cointegration relation between the gold market and the

crude oil market. This means that the volatility of the crude oil prices is higher than that of gold, which brings about a long-term relation in its equilibrium.

According to Chkili, Hammoudeh, and Nguyen (2014), variations in political conflicts and changes in the prices of crude oil are major determinants of the price rate assigned to gold. A bidirectional causality was identified as the long-term relation between oil and gold. In the presence of some common factors, Fratzscher (2009) indicates that future prices of all the energy commodities brings about the correlation between the prices of oil and gold. Gaur and Bansal (2010) analyzed the causality between oil and gold prices and established that a consistency in the trends of gold and oil prices as they adopted a positive correlation. The dynamics of the price of oil are linearly Granger leading to the volatility of the gold prices. Other than that, Le and Chang (2012) analyzed the gold-oil dependence structure utilizing a copula approach between 2000 and 2011 after which they established an important and interdependent relation between gold and crude oil.

Data Sourcing and Empirical Findings

Correlation analysis

Correlation analysis represents a statistical tool, which is utilized to present the description of the degree to which one of the variables is related to other linearly (1997 - 2017).

We using equation of correlation coefficient

$$\mathbf{r} = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_i (x_i - \bar{x})^2}\sqrt{\sum_i (y_i - \bar{y})^2}}$$

Result Details & Calculation

X: Gold Values

Y: Crude Oil Values

Mx: Mean of Gold Values

My: Mean of Crude Oil Values

X - Mx & Y - My: Deviation scores

$(X - Mx)^2$ & $(Y - My)^2$: Deviation Squared

(X - Mx)(Y - My): Product of Deviation Scores

X Values

∑ = 20453.06

Mean = 681.769

$\sum(X - Mx)^2 = SSx = 5581944.819$

Y Values

∑ = 1345.15

Mean = 44.838

$\sum(Y - My)^2 = SSy = 24873.566$

X and Y Combined

N = 30

$\sum(X - Mx)(Y - My) = 315897.77$

R Calculation

$$r = \frac{\sum((X - My)(Y - Mx))}{\sqrt{(SSx)(SSy)}}$$

$$r = \frac{315897.77}{\sqrt{(5581944.819)(24873.566)}}$$

Meta Numerics (cross-check)

r = 0.8478

	Price of Crude Oil WTI in USD	Price of Gold in USD
Price of Crude Oil	0.84	1
Price of Gold	1	0.84

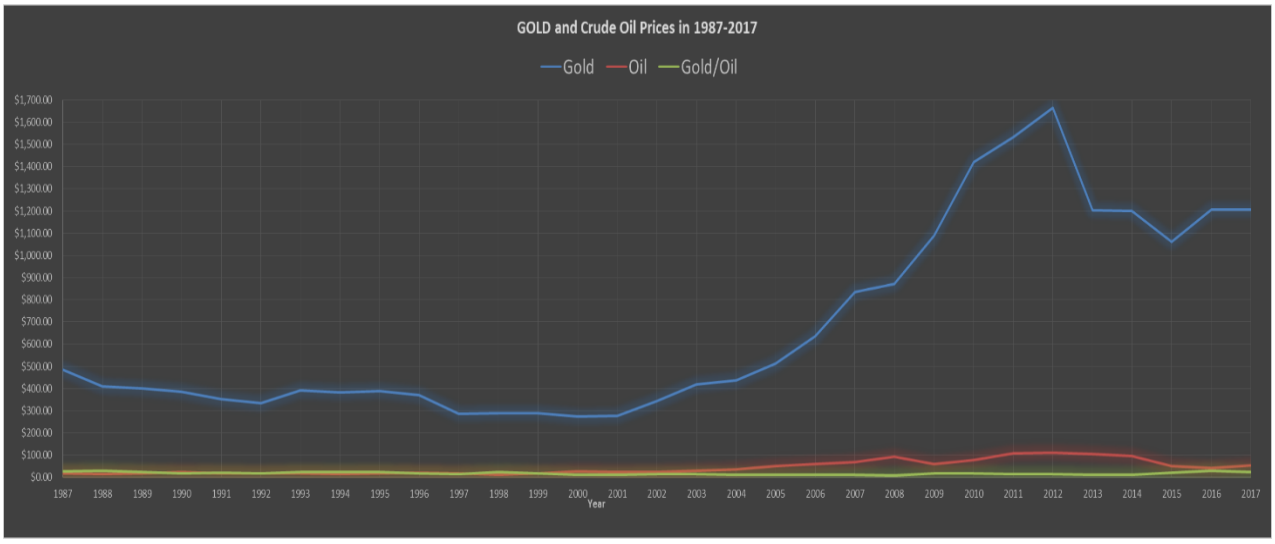
Source: author's calculations

It is evident from the table that the degree of correlation is 0.8478 on positive. Hence, the statement that both crude oil and gold shows a linear relationship. This relationship can be analyzed utilizing the Gold to Oil ratio.

Gold to Oil Ratio

As indicated above, the gold to oil ratio represents the barrels of crude oil required to purchase around ten grams of gold. If the ratio is rising, it implies that more of the oil barrels are required to purchase ten grams of gold (Gilmore, McManus, & Sharma, 2009). In the case where the ratio is decreasing, in a relative sense, it implies that oil is becoming more expensive to gold. By coming up with a measure for the price level of oil against the price level of gold, a valuable perspective regarding the actual values of gold and crude oil against the currency in which they are priced can be used. The gold to oil ratio is calculated by dividing the price of ten grams of gold by the price level of crude oil in a single barrel. This ratio measures "how many barrels of oil one can buy with an ounce of gold" and is calculated as:

Gold-Oil Ratio = Price of Gold (per oz.) / Price of Crude Oil (per barrel)



Source: author's calculations

The chart indicates sharp falls and rises of oil prices that can be seen in black line, which are accompanied by significant changes in the price of gold in gold line. The interaction of two commodity prices shows that there is an inverse relation between the prices of gold and crude oil and the green line represents the US dollar.

Oil prices are influenced by stock markets, trade, and gold weighted USD exchange rates. Future prices of oil influence the prices of oil. On the other hand, the prices of gold are based on the variations in oil, stock markets, and the US dollar and depend on the default premium and the United States oil imports. The exchange rate of the US dollar is highly affected by the stock market, gold, and oil prices.

Nevertheless, with the financial process in the commodity markets, gold, crude oil, and stock prices, the US dollar adopts diverse properties (Ewing & Malik, 2013). A positive correlation is realized in their relationship based on the international business cycle. Thus, the price dynamics of gold and crude oil are vital indicators of the expectations in the market on the state of the world investments and the economy.

Conclusion

Based on the analysis conducted, the general thought is that the price levels of crude oil and gold have a correlation that is positive. The inter-relationship between the two is caused by the valuation of their levels in US dollars. Crude oil and gold are quoted in dollars across the global markets. In the case where Dollars should weaken against currencies such as the Rupee, then all imported items such as gold and oil end up costing more in Dollars, which indicates the inter-relation between the prices of crude oil and those of gold.

Regarding the return analysis, the conclusion is that the current return influences the previous return of gold and crude oil. Investors are supposed to be keen and make analysis of the return and previous prices imposed on gold and crude oil for them to be in a position to determine the strategies to adopt while running investments on the future market of the two commodities. Nevertheless, there are some gaps in the relationship between the return prices of oil and that of gold. However, the volatility of the analysis of the price return indicates that the volatility of the gold price return influences the volatility of crude oil price returns. With its establishment, investors are in a position to monitor the variations of the price return of gold through being keen on the volatility of the price return of crude oil.

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Acceptance Letter

December 9, 2018

Title: The Relationship between Prices of Crude Oil and Gold

Dear Wiranya Sutthikun,

Faculty of Business Administration and Management, Ubon Ratchatani Rajabhat University

On conclusion of the peer-reviewed process, we are pleased to inform you that your proposal is accepted for Oral Presentation at the Universal Academic Cluster International Winter Conference in Okinawa to be held in Naha, Okinawa, Japan on 2-4 February 2019. The exact time of your presentation session will be specified in the Conference Program on 21 January 2019 by email to you. The goal of this international conference is to provide opportunities for professors, academics researchers and students from all over the world to come together and learn from each other.

We are inviting you to participate in this conference and to discuss with us. We look forward to your participation in Universal Academic Cluster International Winter Conference in Okinawa.

Sincerely,

Conference Chair

UAC International Winter Conference in Okinawa

http://www.universal-conferences.org/february/okinawa

Conference Venue

Naha City Traditional Arts and Craft Center, 2nd floor, Tenbusu Naha, Makishi, Naha, Okinawa, Japan

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The Relationship between Prices of Crude Oil and Gold

Wiranya Sutthikun

Ubon Ratchatani Rajabhat University, Thailand

Abstract

The paper analyses the relation between the prices crude oil and gold prices. The purpose of the paper is to establish the determinants, co-movement, and the character existing between the two prices. The paper looks through the crude oil and gold prices traded in different regions for the past twenty years. The relation existing between the price levels of gold and oil is analyzed using the gold to oil ratio, which is calculated as part of the price of gold to the price level of crude oil about time. Further, a correlation analysis test is adopted which establishes the positive strength of the gold and crude price relationship.

Cryptocurrency: A New Challenge from Digital World

Abstract

Cryptocurrencies such as Bitcoin are a popular issue in the financial industry. Bitcoin is particularly disruptive cryptocurrencies looking to leverage blockchain technology to drive innovation across many industries. The purpose of this paper aims to emphasize (1) the challenges that cryptocurrencies must overcome to achieve globally accepted, (2) a comparison basis between the cryptocurrency and the traditional currency, (3) the more fundamental and issues cryptocurrencies must solve and (4) the prospect of cryptocurrency use in the entertainment industry.

Keywords: Cryptocurrency, blockchain technology, bitcoin

1. Emerging of Cryptocurrency

The cryptocurrency market has developed erratically and at unparalleled speed over the course of its short lifespan. Satoshi Nakamoto introduced Bitcoin in 2008 via e-mail to cryptography experts and enthusiast and after first becoming operational in January 2009. Nakamoto initially participated with developers on what has been called a revolutionizing innovation, his participation ended in mid-2010. Since then blockchain is a cryptographically secured database of data record that is allocation by all parties participating in initiated network of computers known as distributed ledger technology (DLT).

This paper will provide detailed information on the introduction of cryptography and cryptocurrency with the primary focus being on bitcoin. The term "cryptography" comes from two Greek, 'Kryptos' which means 'secret' and 'Graphein' which stands for 'Writing' By definition, Dannen, (2017) defines cryptography as the sending of data or information in an encrypted manner and can only be read or decoded by a specific unique algorithm or key that can unlock its content.

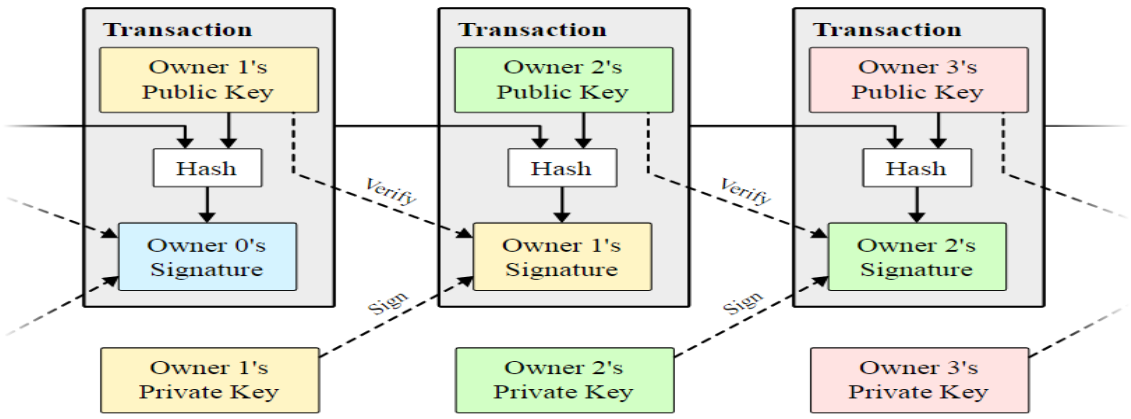
The Ledger*:* The journal of cryptocurrency and blockchain technology research (2016) explains that Blockchain indulges in the distribution of ledgers where every single transaction is not sent to a specific person, but to the entire ledger. When in the public ledger, only the person with the correct encryption can be able to view the content. Because of the use of encryption keys, neither the sender nor the intended receiver is known. Cryptography therefore uses the idea of blockchains functionality in that is hides the information using a digital signature and a hash. The digital signature is used by the sender to sign the ledger to specify the ownership and the intended receiver. (Dannen, 2017).The hash acts as the holder of the information. It functions by taking a long data and randomly converts it into words, letters and numbers. The information contained in the hash is wallet balance, how the transaction will be executed, and also gives a clue on how the

miner will solve, verify and get rewards whenever possible. There are several types of Cryptocurrencies. The common one being bitcoin and Ethereum which have become very popular in the support of peer-to-peer architecture (Reed, 2016). They are decentralized, secure and anonymous and because of this nature, they have made the transferring of funds and other digital assets possible without the intervention of a central authority.

2. Mechanics of bitcoins

Tumber (2015) explains that a bitcoin is a peer-to-peer virtual decentralization of the cryptocurrency. The decentralization nature means that there is no intervening institute such as bank or government to control the transaction. However, there are strict rules which are used for control the transfer of the bitcoins. In the bitcoin systems, there are two types of algorithms known as asymmetric and symmetric algorithms. Asymmetric algorithms functions by generating two keys, one is referred to as a public key and the other one is the private key. The message to be sent is first encrypted by the public key, and only its associated private key can be used to decrypt it. According to White (2018) when in use, the sender can publish their public key to the world but keep their private key to themselves. The use of public and private key is possible because of two key factors; non-repudiation and confidentiality. The non-repudiation concept works when a private key is used to decrypt a message created and encrypted by a public key.

Figure 1: Cryptocurrency transaction procedure



Source: Nakamoto, 2008

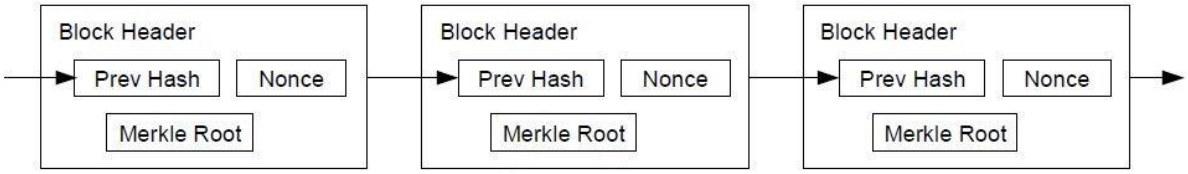
Figure 1, for example owner 1's signs a message using his public key. Decrypting the message using his private key will verify that the message indeed was from owner 1's. The confidentiality concept works when a message is sent from one person to another. For instance, when owner 1's wants to send a message to owner 2's, he has to sign the message using owner 2's public key. This is only way owner 2's will be able to decrypt it because he is the only person with the private key

(White, 2018).When it comes to money, every user should have some form of identity which is used for validation purposes. In bitcoin transactions, the users usually create many identities, in terms of accounts. It is easier to create numerous accounts because neither proof nor documentation is required. What they actually use are the bitcoin address. The bitcoin address is used to identify a transaction. To receive payment from the buyer all they provide is their bitcoin address to the specified payer. The users keep their main bitcoin account address private and uses the other ones to receive payments. Before a transaction gets into a network, it has to be verified. The verification is done by adhering to the rules specified in the script. The scripts contain digital verification procedures and instructions which are used by a user to verify that they are the owner of the bitcoins and allowed to spend it (White, 2018).

Like every user has inputs and output. The inputs are the bitcoins which they have received previously whereas the output are the bitcoins which they have spent. The difference between the input and the output represent the unspent bitcoins which belong to a particular user. When sending bitcoins, such as when paying for a service, output bitcoins has accompanying instruction. The receiver has to adhere to the instruction and the bitcoins will change ownership once the validation is completed.

Law Library of Congress (U.S.) (2018) states that blocks are the verified transactions in the bitcoin universe. For the blocks to be accepted and appended to the existing blocks, mathematical puzzles or proof of works has to be solved by miners. Miners provide computational resources which enable the solving of the mathematical puzzles. The puzzles have their own set of rules which need to be solved. First of all, a challenge is provided which exist as a nonce, a random value with a length of 4 bytes (Gomzin, 2016).

Figure 2: Hash Chaining



Source: Nakamoto, 2008

From figure 2, the nonce is appended together with the challenge to provide the hashing algorithm. The challenge require that the Merkle root of the current block is derived by calculation and the Merkle tree is paired with the transaction ID from a block and produces a single hash. A unique hash is eventually created and the current block yields the Merkle root. The first miner to successfully solve the mathematical puzzle is rewarded the bitcoins. In other words, bitcoins are created out of thin air whenever new blocks are generated. Known as Coinbase records, the first

transactions which these bitcoins take part is when the miner reword themselves. Another win for the miners is the setting of the transaction fees for every transaction in the current blocks, which is set by either the user or the payer. According to Vandezande et al., (2018). Bitcoin started to exist in January 2009. Then, a single Coinbase was equivalent to 50 bitcoins. The maximum value of bitcoin is set at 21 million. After every four years, the value of the Coinbase is halved, signifying that, based on the number of bitcoins generated every year, the bitcoin generation will be halted between 2100 and 2140, when the 21 million mark is reached. When the maximum value reaches, miners will no longer benefit from the Coinbase records but will be benefiting from the transaction fees.

3. Comparing cryptocurrency and the tradition currency

Online transactions have made cryptocurrency to be accepted currency in the digital world. However, this does not mean that the use traditional currency has been abandoned. Its difference with the traditional currency is what has made it to stand out.

First and foremost. Girasa (2018) describes that the used of cryptocurrency are completely anonymous, whereas with the traditional currency, every transaction has the personal information of the user. In transacting using the cryptocurrency, no personal information is attached to the transaction, unless the user decides to. Because of the anonymity nature of the use of cryptocurrency for purchasing purposes, identity theft is impossible. However, transaction using the traditional currency, say using their debit or credit card, generates personal information which can be tracked by either the governments, businesses and banks. Hackers can therefore use such information for their own agendas (Girasa, 2018).

Another key difference between cryptocurrency and traditional currency is in the accounts which holds the currency. In the traditional currency, the accounts can either be garnished or frozen by the bank, or the government when they have found a reason to do so. However, this is not possible for the cryptocurrency accounts since no one can access a cryptocurrency accounts unless they have the decryption keys. The committing of fraud is only possible in the traditional currency, but not the case in the cryptocurrency. This is because the traditional currency and be counterfeited and reversed arbitrary by the sender, such as the card charge-backs. However, in the cryptocurrency, counterfeiting is impossible because the keys are required to either send or receive bitcoins.

The fees involved in transaction between the traditional currency and cryptocurrency are significantly different. As for the traditional banks, the processing of the transaction requires the payment of transaction cost, such as the bank charges fees. However, the only transaction fees which is paid for using bitcoins is the transaction fees paid to the miners. The transaction fees are

like the taxes we pay in the traditional currency. However, it is easier to evade the traditional taxes than the cryptocurrency charges (Raftery, 2018).

Table 1: Comparison between traditional digital currency transaction and cryptocurrency transactions

	Traditional digital currency transaction	**Cryptocurrency (Bitcoin) transaction**
Definition	Money in any form in actual use or circulation as a money for exchange, especially circulating banknotes and coins. Money is government-issued currencies.	Digital currency in which encryption techniques are used to regulate the generation of units of currency. Types of currency that is non-physical, of which no banknotes and coins exist, and which can only be transmitted via electronic means, typically allowing for instantaneous transactions and borderless transfer of ownership.
Example	Two monetary systems: fiat money and commodity money	Virtual currencies and cryptocurrencies
Verification	The transaction using code from financial institution	A transaction using a digital signature that represented by a code that is generated by algorithm.
Transaction path	The transaction path is monitored by trusted third part	Ledgers in blockchain monitor the transaction path. This ledger is open for public access and maintain by users.
Transaction cost	There is transaction cost	Minimal transaction cost that lower compared to traditional money transfer method
Volatility	Price of exchange rate fluctuates according to economic condition.	Price of bitcoin is based on supply and demand. The exchange rate of cryptocurrency fluctuates widely depending on the news.

Source: Nashirah et al, 2017

More people have access to the cryptocurrency than they have access to the traditional currency. This is because, one only needs an access to the internet and a device capable of connecting to the internet. As for the traditional exchange, you need to open a bank account to access the money. Lastly, the other traditional currencies have to centrally be managed, such as the central bank. As for the bitcoins, there is no central authority. Furthermore, every transaction in the cryptocurrency market is listed in the public ledger, whereas not all transactions are recorded for the traditional currencies.

4. Issues of cryptocurrency

Cryptocurrency has several fundamental issues which have prevented it from achieving widespread recognition. When these issues are resolved, the cryptocurrency would become the effective mode of transaction, as compared to the other types of currencies. The most significant issue facing the cryptocurrency market is the excessive volatility.

Table 2 Advantages and disadvantages of Cryptocurrency transactions

Advantages	Disadvantages
Quick transaction process.	Cryptocurrency can be difficult to understand since it's a new currency based on blockchain technology.
Anonymity, no restriction on transaction, user can send currency anytime anywhere.	The anonymity of cryptocurrency makes it attractive to money launderers and to the black market.
No transaction fees.	User cannot reverse the payment once it is done. You can't rollback the transaction any cost.
A government can't De-monetize.	Government haven't given any official approval for cryptocurrency transaction. Government can ban or illegalize the transactions since they can't control the cryptocurrencies.
Cryptocurrency transactions do not use any identity of users.	If user forget cryptocurrency password (wallet key) then it is not possible to revive the lost data.
No Inflation	Deflation can happen, in case of bitcoin if user holds bitcoin for long time, it gradually reduces the supply rate.

Source: Gupta, 2018

Over a short period of time, the prices of the cryptocurrencies can dramatically fluctuate. An asset which can drop in value by more than 45% in less than a day makes the market to be highly volatile. Even though many factors contribute to the highly volatile nature of the cryptocurrency market, the greatest contributor are the whales' activities. Whales are the individuals who possess the largest amounts of cryptocurrency. They can therefore be able to manipulate the prices of the cryptocurrency by selling and buying "walls." When someone buys a wall, they buy a position worth of millions of dollars. When the regular investors notice the big buy position, they interpret it as an imminent increase in price. As a result, the price of the cryptocurrency eventually rises up. There are some competition among cryptocurrencies in the world of virtual currencies. Investopedia 2018 has rank the largest cryptocurrencies by market capitalization of mid July 2018 which are: Bitcoin is the world top currency with a price per coin in excess of $7,305 USD. Ethereum comes in second of the list with a trading price of more than $500 per token and the Ripple with total market capitalization exceeding to $19.8 billion.

Lee & Low (2018) clarifies that another key issue is the pump and dump Initial Coin Offering (ICO) schemes. Because the cryptocurrency market is decentralized, the ICOs have been introduced to control and regulate the market. Investors now have to buy the tokens and be given fiat money in exchange. However, the pump and dump schemes have been a challenge in the market because there is no regulation whatsoever. An entrepreneur who sells the token will make the prices increases, eventually attracting investors. When this happens, they cash out, leaving the investors with coins which have little to no values (Lee & Low, 2018). For example PayCoin launched in 2014, it's becoming one of the biggest cryptocurrencies in the world. It begins with GAW Miners started on 2014 to generate bitcoin they must 'mine' the coins individually, the cycle

went until there were more than 10,000 investors and then they were running out of funds to pay the investors. They need money to keep the scheme going. The CEO of GAW Miners, Josh Garza came up with an idea of PayCoin. He quickly converted PayCoin in to generic altcoin clone so he can force it into the market. Unfortunately GAW Miners keep failing and it is shutting down in 2015, one of them being the infamous $20 PayCoin Floor when PayCoin hit rock bottom (forexNewsNow, 2017).

The next issue is caused by the anonymous nature of the transactions involving cryptocurrency. Cybercriminal are using this inception for their own gains, and as at now, cryptocurrency hacks has been reported to have resulted in millions of dollars being stolen. Those who pay the price are the traders and investors because once they have lost their fortune, their online business and platform crumbles down. The result of the cybercriminal activities has caused the value of cryptocurrencies to drop considerably. To combat such activities, traders have come up with precautionary measures such as creating bottlenecks in the cryptocurrency trading process. The countermeasures have caused a trade-off between security and efficiency, such as storing their cryptocurrencies in offline wallets. The inefficiency problem is when the trader wishes to make an online trade and has to first move his bitcoins from offline and online storage Law Library of (Congress (U.S.), 2018). For example Decentralized Autonomous Organization (DAO) the first digital decentralized investment fund based on Ethereum-Blockchain. DAO started to uses ‘smart contract’ on 2016 to managing the crowdfunds, later on June 17th hacker took benefit from some of the code of DAO’s smart contract and sneak 3.6 million Ether or about 50 million USD on that time (Futurism, 2016).

Lastly, the lack of price uniformity has been another challenge in the cryptocurrency market. Because of the variations in the different exchange platforms, carrying out an investment analysis becomes a problem. Combining these inconsistencies between difference platforms and the volatility in the market has driven away individuals not to depend on cryptocurrencies for their activities.

5. The prospect of cryptocurrency use in entertainment industry

Out of the several cryptocurrencies which exist, the bitcoin is mostly recognized. However, there are other considerable alternatives which have made their way into the digital currency such as the Ethereum, Ripple, Dash and others. The Initial Coin Offerings (ICO) have come into play in the cryptocurrency market so as to convert the legitimacy cryptocurrencies (Lee & Low, 2018). A new protocol has been developed, known as TRON, which has been playing a vital role in converting the cryptocurrencies. TRON was originally designed so as it can be used by the digital entertainment industry so as the various types of entertainment can be offered using blockchain and peer-to-peer technologies (Vo et al., 2017).

Girasa (2018) describes the developers of TRON, have a plan on the way they will regulate the cryptocurrencies. According to their plan which goes as far as 2027, several stages have been put in place. The first two stages have been completed in 2017, but two more stages of the plan are scheduled in 2023. Significant stages which TRON announced are as follows:

1. Exodus is the initial stage which primary purpose is to provide a P2P platform so as it can distribute and share content in the entertainment industry.

2. Odyssey, the second stage of TRON which aims at putting economic incentives in their appropriate places so as to encourage the entertainment creators.

3. Great Voyage in this stage, the issues which are significant in the cryptocurrency markets such as the management of dividend, income payment, and the management of the devoted supporters.

4. Apollo, the main objective of the Apollo would be to adding to the Great Voyage phase, by launching personalized tokens which can be used in the decentralization of the trade. It is scheduled to conclude in 2023.

5. Star Trek stage is similar to the technology used in the gaming platform Augur. It is expected that when this stage succeeds as expected, the capitalization for TRON will be secure.

6. Eternity the last stage of TRON would be to offer the opportunity for developers to be able to create their own online games and also contribute to fundraising events.

Conclusion

In the modern world, technology is proving to develop day in day out with the current trends in the money market. Currencies have different values which are determined by the strengths of the various economic backgrounds. Some currencies are more valuable than others and this is reflected when using the currency exchange rate. The particular rates reflect the value of different countries and it is evident when comparing two currencies from different economies. With cryptocurrencies some people have changed their tactic and are now using the knowledge of cryptocurrencies to carry out the evil missions (Schaupp and Festa, 2018). cryptocurrency can achieve the required of popularity then it can be one of the most preferred media of exchange since its value would be a uniform all across the globe.

Suggestion

Above summary bitcoin and blockchain technology is still new. The success of bitcoin was spectacular, the challenges of utilizing cryptocurrencies have inspired a new wave of blockchain innovation. This can be complemented to the study on a blockchain-based land registry whether

can cure a number of problems eminent domain in the traditional registry including slow registration processes, corruption and fraud in the international markets. The blockchain technology presents opportunities for entrepreneurs to empower the developing world, to reach a wider innovator and build a better future for all.

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Acceptance Letter

March 15, 2019

Title: A New Challenge from Digital World

Dear Wiranya Sutthikun,

Ubon Ratchatani Rajabhat University, Thailand

On conclusion of the peer-reviewed process, we are pleased to inform you that your proposal is accepted for Oral Presentation at the Universal Academic Cluster International Spring Conference in Sapporo and Hakodate to be held in Sapporo and Hakodate, Hokkaido, Japan on 28 April – 4 May 2019. The exact time of your presentation session will be specified in the Conference Program on 2 April 2019 by email to you. The goal of this international conference is to provide opportunities for professors, academics researchers and students from all over the world to come together and learn from each other.

We are inviting you to participate in this conference and to discuss with us. We look forward to your participation in Universal Academic Cluster International Spring Conference in Sapporo and Hakodate.

Sincerely,

Conference Chair

UAC International Spring Conference in Sapporo and Hakodate

http://www.universal-conferences.org/april/sapporo-and-hakodate

Conference Venue

5th floor, Sapporo Cafe, 5 Chome-2-3 Kita 8 Jonishi Kita Ward, Sapporo, Hokkaido, Japan

Hotel New Ohte, 8-8 Wakamatsucho, Hakodate, Hokkaido 040-0063, Japan

Accounting in the Cloud

Abstract

In the current financial crisis and being challenged by the impact of globalization, the wide spread of internet based application, the world has come to rely on technology. A new concept of cloud accounting has become as a revolution to information technology (IT) provision, management and security. In this article authors focuses on the impact of cloud computing, benefits and challenges of the software and comparison on traditional accounting software vs cloud accounting software.

Key Words: Cloud accounting, information technology, accounting software

Background

Information Technology develop instantly as for reciprocating to customers demand (Weiß and Leimeister, 2012). Moreover from business perspective firms acknowledge the fact that technology may support process optimization in term of costs, time and resources. From study (Avni, et al , 2010, Alama, et al, 2011; Burinskienė et al.,2010; Bressler et al, 2006; Gatautis, et al.,2008c, Etro, 2009) the investigated showed globalization impact on the information technology which affect market structure that will cost structure and production possibilities. So enterprises have to develop their technology to obtain advantage by offering value to their customers. Companies forced to find new efficient solution to improve the efficiency and profitability of their business (Christauskas & Miseviciene, 2012). The system plays a vital role in delivering the financial information for decision-making within the corporation (Butkevicius, 2009; Kalcinskaite, 2009). Today concept of cloud computing or real time reporting is a dream of computing utility that has potential to transform Information Technology Industry. From the research of KPMG one of the Big Four auditors has indicated that many are ready and willing to move finance and accounting systems to the cloud (KPMG, 2012).

Cloud accounting is an accounting software that runs on a remote server (s) rather than a localized computing gadget such as the desktop (Dimitriu, & Matei, 2015). The software sends information to the cloud for processing and then returned to the user. Users can access data in the hosted application using any internet-enabled device; can be accessed off-site and without desktop application. Using the software has its share of benefits and challenges to the business. According to Saasu (2013) cloud accounting referred to online accounting that perform same function as accounting software, run through servers and access by using web browser over the internet.

The SAGE Australian group has a report on “The Practice of Now” based on 3000 accountants responses the study said that 45% of small enterprises, 57% of midsize enterprises and 58% of large enterprises choose cloud accounting over the desktop alternatives(SAGE,2018). Xero the leading cloud accounting software provider exceed quarter of million subscribers has announces existing partnerships in the United Kingdom with HSBC and Banco Santander to deliver banking services on Xero cloud accounting platform for bookkeepers and accountants to run their entire back office (Xero, 2017). Having data or application in the cloud can contribute anytime from anywhere access especially financial data, users can work together with CPAs and clients.

Benefits of Cloud Accounting

Advantage

The main advantage of cloud accounting is its ability to store large amounts of data and provide readily accessible and recoverable historic information contained in backups (Pacurari & Nechita, 2013). The information in the cloud is stored in multiple servers; data is saved in many places, making it easier to access backed up data whenever paper files are lost during an emergency. Loss of critical data in emergency situations such as earthquakes can have damaging consequences on a business that uses traditional accounting software whose servers are in-house whereas a business that operates cloud accounting system can return to normal operations quickly with the use of data backups. Unlike traditional methods, cloud accounting provides improved system accessibility which in turn improves efficiency. For instance, there are no limitations as to when or where users can access information using the internet connection and a variety of devices (Dimitriu & Matei, 2015). Employers and employees can both work outside the office and still manage their teams and collaborate with their personnel more effectively. Moreover, the program's ability to provide real-time access to critical accounting data speeds up the decision-making process thus enhancing efficiency. Forbes predict 83% of United State small businesses will entirely adopt cloud computing system by 2020 which the present percentage is 63 (Forbes, 2018). Stripe is the online payment company that aims to be a top spot on 2017 Cloud 100 list, followed by Dropbox the file storage and sharing company, Slack Company, DocuSign the e-signature and digital transactions company and the top five lists is Dutch online-payments company Adyen (Forbes, 2017). CSA and ISACA association's survey report on Cloud computing maturity study 2012 perceived by 252 participants from cloud computing users, service providers, integrators and consultants from 48 countries address that enterprises seem to be attracted by increase productivity, cost reducing, the agility and flexibility of the service.

A cloud accounting software can be essential savings tools. To begin with, the company does not need to acquire computer equipment and IT staff members since the provider is responsible for managing data backup (Dimitriu, & Matei, 2014). The business does not need to incur capital expenditures as the cost of the software is paid periodically, monthly, which also offers an opportunity to change software if not satisfied and eliminates the risk of losing capital investment in case of short-term business failure. The periodical payments help ease the organization's cash flows which would not happen if payments were made in bulk. Moreover, the software provider is responsible for maintaining and upgrading the software hence saving the business such overheads.

Disadvantage

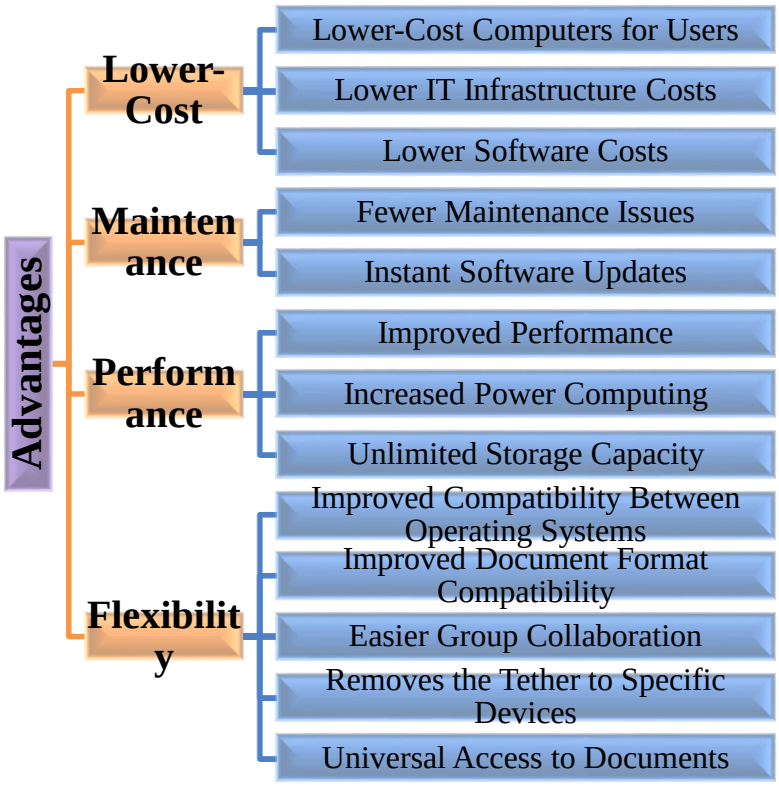
Processed and stored data such as general ledger, payroll database, and sales data based, the secure data in cloud accounting once storage center being damaged the consequences will be unbearable. Cloud accounting could make business dependent on reliability of Internet connection. The New York Times (2011) writes "Thinking about Moving to the Cloud? There Are Trade-Offs" Sonya Weisshappel founder of Seriatim company has moved to the cloud, she believed that everything could be accessible to anyone. She had been running $20,000 custom designed data based application to look after marketing until now Ms.Weisshappel switched to QuickBase

database service which is a cloud-based inventory application that she use to designing her own home inventory system. She said she anticipate to deliver better access and help her clients stay away from losing their inventory in flood or fire for example that destroy their computer. The drawback is that you could become reliability of your Internet connection. Mr.DeGarmo had the most reliable cloud services which even fail on drop calls cloud-based phones service occasion. Ms. Eddy the financial manager said many of her older clients don't want their data in the cloud because they are nervous about it. The bottom line is "If you are not reliance to anyone but yourself then the cloud may take you out of your comfort zone".

Table 1 Cloud computing advantages and disadvantages

Advantages	Disadvantages
Lower-Cost Computers for Users	Requires a Constant Internet Connection
Improved Performance	Doesn't Work Well with Low-Speed Connections
Lower IT Infrastructure Costs	Can Be Slow
Fewer Maintenance Issues	Features Might Be Limited
Lower Software Costs	Stored Data Might Not Be Secure
Instant Software Updates	If the Cloud Loses Your Data, You're ruined
Increased Computing Power	
Unlimited Storage Capacity	
Increased Data Safety	
Improved Compatibility Between Operating Systems	
Improved Document Format Compatibility	
Easier Group Collaboration	
Removes the Tether to Specific Devices	
Universal Access to Documents	

(Source: MILLER, 2009)



Picture 1 Cloud computing advantages

Traditional Accounting Software vs Cloud Accounting Software

The cloud accounting software has similar functionality to traditional accounting software in that they are both accounting software. However, each of these programs varies greatly in other aspects. For the traditional program, the company needs a dedicated hard drive for installation of the software and storage of financial data (Wyslocka & Jelonek, 2015). Users of the program cannot use any other device or network other than a desktop application to access the data from a specific location which restricts mobility and schedule. However, with cloud accounting, remote servers, connected to the software using the internet are used. With the cloud, the end user can access financial information while working through the web-based interface using any compatible device; no need to install a desktop application. Additionally, cloud accounting provides real-time data updates and redundancy through backups whereas the traditional method requires the company to create manual information updates in every location where data is present.

In traditional accounting, the organization is responsible for maintenance of servers, purchasing new servers to increase capacity, and bearing the costs of software updates (Brandas, Megan & Didraga, 2015). However, with cloud computing, the company does not incur hardware associated overheads since all information is stored on a remote server. The costs of associated with changing server storage capacity needs and automatic software updates are covered in the periodic subscription fee.

Unlike cloud accounting, scalability is an issue with traditional software. For every new user in the traditional system, software installation and granting access is a necessity. Cloud

accounting, however, is not influenced by the storage capacity, or devices that the company can afford the purchase and maintain. The method supports business growth needs as it includes multi-user and multi-role management platform to meet the increasing business needs as required (Ionescu et al., 2013).

Table 2. Traditional accounting software vs cloud accounting software

	Traditional software	**Cloud accounting software**
Software license	Company is the owner	Company is the tenant
System location	Chosen by company	Cloud
Hardware	Provided by the company	included
Operating system	Provided by the company	included
Maintenance costs	Separated	included
IT resources	Provided by the company	Not necessary
Number of users	Limited	Limitless

(Source: Christauskas & Miseviciene, 2012:17)

Challenges of Cloud Accounting

Despite the various benefits provided by the adoption of cloud accounting program, the system presents the business with a variety of challenges. The main problem with the software is data confidentiality and data safety (Ionescu et al., 2013). Cloud accounting requires companies to share sensitive data with a third party. As the company has no control over the actions of third parties who have absolute control over data storage, these parties can take advantage and use the information to pursue their business interests. Cloud data could be housed in a different state or country and can be accessed by the government for reviewing and auditing the organization's financial performance. Program providers cannot guarantee data safety and security from hackers. Due to increased accessibility, the risk of hackers gaining illegal access to sensitive company data increases. Hackers may steal or destroy crucial data or use it to blackmail the company thereby tainting its public image.

The software may present the organization with application restrictions due to lack of compatibility with existing applications that are essential to business operations. The service providers can only avail of what they have and as such cloud accounting software may not provide the business with required applications. Restricted use may be problematic as it may result in duplication of efforts, confusion, loss of important data, and other inefficiencies. Lastly, the majority of the cloud accounting software fail to provide users with systems or facilities for backing up data in private computers. As such, the business is at risk of losing vital information that was already entered in the retired software or incur additional payments to continue using own data.

Conclusion

Technology is rapidly grow the cloud accounting concept is still in a progress of transformation many enterprises have not heard about this solution. The article shows how cloud accounting benefits and support the need of information technology as a real time accounting. Article showed, all challenges that impact the organizations which are looking for better ways to do business. Cloud accounting program could be your answer to help enterprises with numerous

advantages from time saving, low costs to ease of access, efficiency, big storage data provider. However, the concept is not without challenges which include requires a constant internet connection and security threat.

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Research Articles

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A Using Face Detection to Study Students' Emotion in Classroom Teaching
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Development of Communicative Chinese Learning Through Task-Based Learning of Thai Students Studying in Chengdu University, PR China
Chaphiporn Kiatkachatharn and Chulaluck Chopngam



Household Financial Management in Rural Village of Thailand during Pandemic Crisis Based on Sufficiency Economy Philosophy

Abstract

Household accounting is an important aspect of financial sustainability. Every family must be accountable for their finances and ensure proper bookkeeping tendencies for several reasons. The objectives of this research were: 1) to study household accounting according to sufficiency economy philosophy in rural village, northeastern region of Thailand. 2) to study the correlation between personal factors and household financial based on sufficiency economy philosophy. The sample group was 173 people from the village. The research instrument was questionnaire, data analysis tools were descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (T-test and one-way ANOVA). The study shown household financial management could help surviving through economic crisis (during covid-19 pandemic) aspect was at high level with the highest mean score. Followed by fundamental of sustainability aspect and knowledge in household accounting aspect was at middle level with the lowest mean score at statistically significant 0.5, the population with different factors in age, occupation, education, and family member had impact on household accounting according to sufficiency economic philosophy. The population with different factors in gender and marital status had no impact on household accounting.

Keyword: household accounting, sufficiency economic philosophy, rural village

Introduction

Poverty has been rooted in Thailand and has been becoming major problem in national level. Most of population in Thailand have uncertain income that was not enough to meet their basic needs. They have been suffering from inequality and lack of potential to improve their quality of life that forcing them to stay below any social standard and have negative impact to country development. Poverty has 2 root causes; one is individual factor, and another is external factor. Major individual factors are including lack of knowledge in operation and strategy, improper way of live, over consumption, capitalism, norms, etc. (Busaba Aree, 2014). Needs are necessities that must be there while wants are things that the family can do without. Household accounting will help differentiate these two areas and be able to spend money more wisely. With rising rates of household income inequality in the US as a result of marriage patterns and labor earnings (Larrimore, 2014), households must be more accountable for their finances. Also, household accounting is important because of the unreliability of the modern employment setup. The recent pandemic ushered in an unprecedented tenure of labile employment policies, which do not protect the employee. Millions globally lost employment during that period, as social distancing rules were rolled out. One important lesson that was taught was the need for financial household accounting (Prasetyo, 2020). It gives you an upper hand when times of adversity come knocking. Always bookkeep for such moments when every single finances matter most.

For rural villagers, household accounting makes even more sense given the economic setting in the rural areas. According to research, despite the general knowledge about financing, rural villagers are poorly informed about credit management, which explains the poor financial sustainability in those areas (Murari, 2019). That justifies the need for heightened surveillance as far as household accounting and bookkeeping in rural setups is concerned. Also, the fact that the sources of income for rural villagers are in stark contrast with that of their urban counterparts, the need for household accounting is even more justified. Rural villagers earn their income mainly from informal jobs such as agriculture, which lack the proper framework of financial accountability. Urban people earn their income from professional white and blue-collar jobs, which are equipped with accountability frameworks such as financial records of earnings and the breakdown of each earning. That makes it easy for accountability, as opposed to crude earnings from the rural setups which are prone to misuse. The impact of bookkeeping in rural setups has been illustrated through research, highlighting how bookkeeping practices through accounting agencies are crucial in assisting rural farmers in bookkeeping practices and the overall increased productivity as a result (Hendrikx & Gelderblom, 2020).

The development of the people is the main aim of emphasizing household accounting. That is also what forms the pillar of the sustainable economy philosophy, an innovative approach meant to ensure maximum benefit for all stakeholders as opposed to shareholder profits. It is anchored on three main components of moderation, reasonableness, and prudence (Nacaskul et al., 2015). It aims to ensure that sustainable development is achieved through the integration of physical, social, and even spiritual dimensions. It is the same aspect of sustainability that household accounting aims to achieve. With mainstream economics being a major cause of inflations and economic disturbances, sufficient economy philosophy aims to eradicate this through moral behavior and moderation in financial decision-making (Mongsawad & Thongpakde, 2016). It is through such holistic practices that a sustainable economic model for the community can be generated. There is a solution that people of Thailand can rely on, it is sufficiency economic. Sufficiency economic is the philosophy that emphasizes self-reliance, self-knowledge, and self-awareness. It was introduced by His Majesty King Bhumibol Adulyadej the Great (King Rama IX) who realized how important of self-immunity. Reminding the people of Thailand to live responsibly, especially in financial aspect which is one important factor in their life. People could be encouraged by government sectors to gain knowledge in accounting and to use that knowledge to improve themselves in both household level and community level. Leading to proper plan for their future expense (Kasem Wattanachai, 2007).

Ban Pak Haed is a rural village in Kham Khuean Kaeo District, Yasothon province. It has total population of 303 people from 93 household. This village had abundant natural resources that most of the people in village relying on and using it for their agriculture. Since they haven't been familiar with household accounting, they could not acquire a notion of any financial plan. Even they could earn a few incomes, they did not know how to manage it. Household accounting can encourage and show benefits of saving and financial strategy to them. Government agencies had coordinated with community leaders to educate people about an Income and Expenditure Account as a guideline to sufficiency economic that will improve their quality of life in community.

Therefore, researchers aimed to study the behavior of household accounting according to sufficiency economic philosophy of Ban Pak Haed Village, Na Kham Subdistrict, Kham Khuean Kaeo district, Yasothon province. This can create a guideline for people in community and

encourage them to do an income and expenditure accounting that will illustrate their amount of debt or saving. This can also support students to utilize their knowledge in accounting to serve people in the community that both student and people could acquire the most benefit.

Research Objectives

1. To study household accounting according to sufficiency economy philosophy.
2. To study correlation between personal factors and household accounting according to sufficiency economy philosophy.

Hypothesis

Population with different personal factors in gender, age, marital status, occupation, education, and family member has different aspects in household accounting.

Research Methodology

Population was 303 people from Ban Pak Haed Village in Yasothon province, Thailand that had household accounting. Sample group was conducted by Taro Yamane formula with the total of 173 samples. Independent variables were containing:

1. Personal factors including gender, age, marital status, occupation, education, and family member.
2. Factors of income, expense, and household accounting including family income, family expense, debt, saving, period of time, source, and intention of accounting.

Dependent variable was household accounting according to sufficiency economic philosophy.

This research used questionnaire as research instrument to collect data with 5 level of rating scale according to Linkert Scale method divided into 4 parts.

Part1) contain questions about personal factors of participants including gender, age, marital status, occupation, education, and family member.

Part2) contain questions about income, expense, and household accounting of participants including check lists of family income, family expense, debt, saving, period of time, source, and intention of accounting.

Part3) contain information of household accounting according to sufficiency economic.

Part4) contain open end question in general suggestion about behaviors of household accounting according to sufficiency economic of people in Ban Pak Haed Village.

Data Analysis using Descriptive Statistics such as frequency, percentage, mean, and standard deviation were used to collect and analyze data as per below:

1. Personal information of participants in checklist type was analyzed by frequency and percentage.
2. Information of income, expense, and household accounting of participants in checklist type was analyzed by frequency and percentage.
3. Information of household accounting according to sufficiency economic in 5 levels of Likert Scale was analyzed by frequency, percentage, and standard deviation.
4. Analyzing gender differences and household accounting according to sufficiency economic by t-test.
5. Analyzing differences in age, marital status, occupation, education, and family member with household accounting according to sufficiency economic by one-way analysis of variance (ANOVA).

Research Result

Personal information showed that most of population were female, aged more than 45 years, married, agricultural occupation, education level mostly lower than high school, and had 4-6 family members. As shown in table 1.

Table 1: Personal Information

Personal Information	Amount (people)	Percentage
Gender		
Male	79	45.7
Female	94	54.3
Age		
Less than 25 years	22	12.7
25 - 35 years	47	27.2
36 - 45 years	49	28.3
More than 45 years	55	31.8
Marital status		
Single	55	31.8
Married	107	61.8
Widowed	11	6.4
Occupation		
General employee	24	13.9
Agriculture	99	57.2
Merchant	8	4.6
Government employee	8	4.6
State enterprise employee	3	1.7
Company employee	1	0.6
Freelance	15	8.7
Others	15	8.7
Education		
Lower than high school	109	63.0
High school	42	24.3
Diploma	9	5.2
Bachelor's degree	12	6.9
Higher than bachelor's degree	1	0.6
Family member		
1 – 3 people	18	10.4
4 – 6 people	138	79.8
More than 6 people	17	9.8

Information about income, expense, and household accounting showed that most of family had monthly income more than 15000 THB, monthly expense 5000-10000 THB, family debt was less than 10000 THB from their vehicle, monthly balance less than 5000 THB, and monthly saving less than 1000 THB. They did household accounting 1-2 times a week for 2-3 years. Mostly knew household accounting from community leader. Most of them are conducting household accounting according to sufficient economy and wanted to secure their future. As shown in table 2.

Table 2: Information on income, expense, and household accounting (1$=36.5 THB, July 2022)

Information about income, expense, and household accounting	**Amount (people)**	**Percentage**
Total income of family (monthly)		
Less than 5,000 THB	5	2.9
5,000 - 10,000 THB	61	35.3
10,001 - 15,000 THB	23	13.3
More than 15,000 THB	84	48.5
Total expense of family (monthly)		
Less than 5,000 THB	29	16.8
5,000 - 10,000 THB	72	41.6
10,001 - 15,000 THB	19	11.0
More than 15,000 THB	53	30.6
Total current debt of family		
Less than 10,000 THB	100	57.8
10,000 - 50,000 THB	20	11.6
50,001 - 100,000 THB	8	4.6
More than 100,000 THB	45	26.0
Sources of debt		
Consuming products	48	27.7
Equipment and tools	70	40.5
Vehicles	97	56.1
Mortgage	21	12.1
Others	27	15.6
Total balance (monthly)		
Less than 5,000 THB	77	44.5
5,000 - 10,000 THB	45	26.0
10,001 - 15,000 THB	10	5.8
More than 15,000 THB	41	23.7

Saving (monthly)		
Less than 1,000 THB	58	33.5
1,000 - 5,000 THB	54	31.2
5,001 - 10,000 THB	24	13.9
More than 10,000 THB	37	21.4
Frequency of household accounting		
1 - 2 times per week	85	49.1
3 - 4 times per week	36	20.8
5 - 6 times per week	8	4.6
Everyday	44	25.5
Period of household accounting		
Less than 6 months	33	19.1
6 - 12 months	47	27.2
2 - 3 years	59	34.1
More 3 years	34	19.6
Where did you learn about household accounting?		
Self-learning	83	48.0
Government agencies	36	20.8
Leader of community	114	65.9
Educational organization	15	8.7
Television	16	9.2
Others	1	0.6
Are you conducting household accounting according to sufficiency economy?		
Conducting	148	85.5
Used to conduct	25	14.5
Objectives of household accounting according to sufficiency economy philosophy		
To secure the future	140	80.9
To follow policies of government agencies	9	5.2
To control family expense	9	5.2
To know income and expense of family	84	48.6
Others	1	0.6

Information about household accounting according to sufficiency economic showed that participants were at high level ($\bar{x}$= 3.69, S.D.= .495). Considering on each aspect, household accounting helps surviving economic crisis (during covid-19 pandemic) aspect was at high level ($\bar{x}$= 3.95, S.D.= .830). Following by household accounting establishes sustainability life aspect at high level ($\bar{x}$= 3.82, S.D.= .729) and level of understanding in household accounting according to sufficiency economic aspect was at medium level ($\bar{x}$= 3.41, S.D.= .842). As shown in table 3.

Table 3: Household accounting based on sufficiency economic philosophy.

Household accounting based on sufficiency economic philosophy	**Mean**	**S.D.**	**Interpretation**
Level of understanding in household accounting according to sufficiency economic	3.41	.842	Medium
Household accounting helps controlling purchase behavior	3.57	.717	High
Household accounting helps eliminating unnecessary expense	3.76	.799	High
Summary of purchase behavior helps eliminating unnecessary expense	3.77	.734	High
Household accounting creates strong foundation in family	3.73	.738	High
Household accounting creates balance life	3.82	.729	High
Household accounting reduces debt crisis by balancing income and expense	3.74	.679	High
Household accounting helps surviving economic crisis (during pandemic)	3.95	.830	High
Household accounting leads to moderate practice	3.42	.786	Medium
Household accounting establishes sustainability life	3.64	.714	High
Household accounting helps preparing for changes	3.79	.695	High
Total	**3.69**	**.495**	High

The study showed that at statistically significant 0.5, population with different factors in age, occupation, education, and family member had impacted household accounting according to sufficiency economic. Population with different factors in gender and marital status had not impacted household accounting according to sufficiency economic. As shown in table 4-9.

Table 4: Correlation between gender and household accounting based on sufficiency economic philosophy.

Gender	**Amount**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Male	79	3.69	.55	.06
Female	94	3.69	.44	.05

Independent Samples Test					
	F	**Sig.**	**t**	**df**	

					Sig. (2-tailed)
Equal variances assumed	8.28	.005	-.01	171	.99
Equal variances not assumed			-.01	148.82	.99

Table 4 shows that different gender had not influenced household financial.

Table 5: Correlation between age and household accounting according to sufficiency economic philosophy.

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	2.18	3	.73	3.07	.03*
Within group	39.95	169	.24		
Total	**42.13**	**172**			

*Statistical significance at 0.05

Table 5 shows that different age had influenced household accounting according to sufficiency economic at statistical significance 0.05.

Table 6: Correlation between marital status and household accounting

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	.06	2	.03	.12	.89
Within group	42.07	170	.25		
Total	**42.13**	**172**			

Table 6 shows that different marital status had not influenced household accounting.

Table 7: Correlation between occupation and household accounting based on sufficiency economic philosophy.

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	4	7	.57	2.47	.02*
Within group	38.13	165	.23		
Total	**42.13**	**172**			

*Statistical significance at 0.05

Table 7 shows that different occupation had influenced household accounting according to sufficiency economic at statistical significance 0.05.

Table 8: Correlation between education and household accounting based on sufficiency economic philosophy.

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	3.94	4	.97	4.34	.002**
Within group	38.19	168	.23		
Total	**42.13**	**172**			

** Statistical significance at 0.01

Table 8 shows that different level of education had influenced household accounting according to sufficiency economic at statistical significance 0.01.

Table 9: Correlation between family member and household accounting according to sufficiency economic

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	7.13	2	3.56	17.31	.000**
Within group	35	170	.21		
Total	**42.13**	**172**			

** Statistical significance at 0.01

Table 9 shows that different amount of family member had influenced household accounting according to sufficiency economic at statistical significance 0.01.

Discussion

The general information showed that most of participants were female, aged more than 45 years, married, work in agriculture field, level of education in high school, and had 4-6 members in family. Information on income, expense, and household accounting aspect showed that most of participants had income more than 15000 THB per month, household expense about 5000-10000 THB per month, source of debt mostly from vehicle, monthly balance less than 5000 THB, monthly saving less than 1000 THB, they committed household accounting 1-2 times a week for 2-3 years. Most of participants knew about household accounting from community's leader. They were conducting household accounting based on sufficiency economy philosophy to secure their future. Information on conduction of household accounting according to sufficiency economy showed that participants had high level. Considering on each aspect, household accounting helps surviving economic crisis (during pandemic) at high level followed by household accounting creates balance life aspect, level of understanding in household accounting according to sufficiency economic aspect was at medium level with the least mean score. The correlation between personal factors and household accounting according to sufficiency economy philosophy at statistical significance 0.05, it showed that different age, occupation, education, and family member had different factors while different gender and marital status has no significant.

Suggestion

1. Thai the rural villagers cannot conduct household accounting regularly. The leader of community must encourage them to improve their financial discipline and increase their saving.
2. Household financial management helps surviving during pandemic economic crisis, building sustainable foundation, and preparing for any changes.

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Thai Restaurant Opportunity in Phnom Penh

Abstract

The objective of this research was to study factors and marketing opportunity for Thai restaurant in Phnom Penh. Qualitative research collected by in-depth interview. This paper collected data and analyzed from Thai restaurant entrepreneurs. Most of restaurants entrepreneurs saw a trend towards Thai foods which are becoming well accepted in Phnom Penh. Nevertheless, the popularity of Thai cuisine were found as an alternative part of leisure dining. From the study result, it was found that the external environmental factor on economic condition had an influence on restaurant business and lesson of customers. Internal environmental factor on marketing, it was found that restaurants had variety of menu, some of restaurants had delivery service, most of the prices were pretty high but acceptable.

Keywords: Marketing opportunity, entrepreneur, Thai restaurant

1. Introduction

Thailand is rich in food resources and has a highly-talented workforce in the food industry. The abundance of raw materials has led to the development of many restaurants, including street joints that offer different delicacies. The development of the international market from a globalization perspective has necessitated different restaurants in Thailand to explore other markets (Lunchaprasith & Macleod, 2018). For a Thai restaurant to succeed in an international market, it has to consider certain key elements in the micro and macro environment in which it operates (Pimpa, 2009). This paper considers Thai restaurant opportunities in Cambodia and its chances of success. It analyzes the economic changes in Cambodia, Thai food in globalization and cultural flows, the spread of Thai restaurant, and consumer attitudes and perception toward Thai cuisine. Through the implementation of advanced technologies and the achievement of international food standards, Thai restaurants are considering offering their quality foods in the Cambodian market.

Agriculture is the backbone of Cambodia's economy, with rice being the most grown cash crop. It is the country's staple food that has sustained its Gross Domestic Product, especially through exportation. The Cambodian economy has grown from the worst to a rather stable condition due to changes in governance. The worst economic times were characterized by wars and political revolutions that made it difficult for businesses to thrive. However, overtime the country has had a rather stable economic growth due to political stability that fosters peace and the conduction of business.

This saw the modernization of agriculture through the use of modern equipment to enhance the country's economic growth based on increased yields of agricultural products. On the other hand, the country revamped its industrial production in textiles, chemicals, and construction. The Cambodian government owned about 65% of the manufacturing output, but it increased

privatization in the agricultural sector (Chechelski, 2010). The services sector also started to experience rapid expansion. These combined factors opened the country's economy to Foreign Direct Investment (FDI), which has since attracted most foreign countries. The food industry also opened up to FDI, especially due to the importation and exportation of agricultural products (Arnold & Han Shih, 2010). This creates a conducive environment for Thai restaurants to open shop in Cambodia and explores the potential market for Thai food. Although a few limitations on economic policies exists for foreign investors that have been made worse with high levels of corruption, the country has a promising economic development provided governance is improved for the promotion and preservation of robust economic factors. Therefore, the research team saw the opportunity and importance in studying about "marketing opportunity for Thai restaurant in Phnom Penh" in order explore other market successful as follow:

1. Business environmental opportunities regarding Thai culture, Cambodian food consumption.
2. Cambodia's economic continued growth influence Cambodians to have more purchasing power.
3. There are continuously increasing tourists in Phnom Penh which is good for restaurant business.
4. Promoting Thai kitchen world concept is a value strategy considered from promote Thai tourism through Thai kitchens in neighboring countries

From this reason, the research team believes that conducting this research will be a beneficial to help Thai restaurant business entrepreneurs to see an investment opportunities in Phnom Penh.

2. Literature

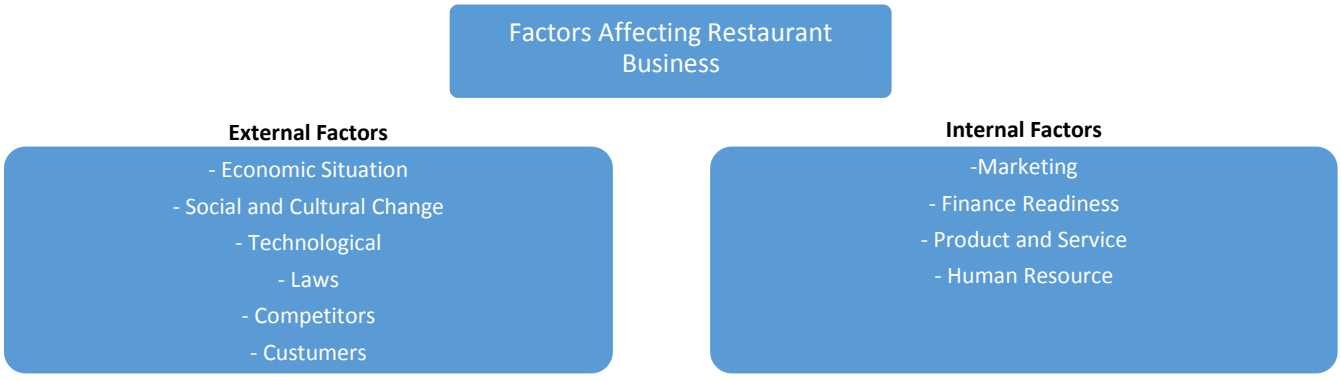
Thai foods from a globalization context are considered to be trendy and widely acceptable in different countries. These foods are used for leisure dining in other countries, as most culture in Southeast Asia consider its food as superior to that of other cultures (Giorda, 2016). Thai restaurants offering Thai cuisine have a widespread presence in many countries. This popularity emerges from the government's initiative of the promotion of Thai food in the international food environment. In particular, the number of Thai restaurants in Cambodia is on the rise, which is based on a number of factors. To begin with, the advancement of the hospitality industry in Cambodia has attracted Thai restaurants (Ong & Smith, 2013). In addition, free-market policies across Cambodia have encouraged the widespread of Thai restaurants in the country. Moreover, the spread of tourist attraction sites in the country has necessitated the development of Thai restaurants, which increases the spread. Subsequently, the high numbers of tourists have resulted into the construction of high quality Thai restaurants. This ensures that the tastes and preferences of these tourists are accommodated by the restaurants to maximize their food experience and comfort (Pawson, D'Arcy, & Richardson, 2016). Moreover, there is an increased number of both local and foreign investors interested in Thai restaurants. This has led to an increase in the identification and development of different locations suitable to put up Thai restaurants. The effect is an increase in the spread of the restaurants provided that there is a conducive environment for the conduction of business. Such an environment could only be guaranteed by the stability of the Cambodian government. Reduced levels of conflict, corruption, and regressive leaders could

further advance the spread of Thai restaurants in the country. The cooperation between Thailand and Cambodian governments could instill confidence to potential investors of Thai restaurants (Visetnoi, 2019). However, the current situation is favorable enough to attract more local and foreign investors to advance Thai cuisine throughout Cambodia.

Thai food has been well received all over the world, especially in Cambodia. Although some individuals raise concerns over the large amount of spices, most people in Cambodia are used to it. In addition, people perceive the food as being of high quality. Some people actually consider some soups to be of medical significance, which advances the foods' quality (Sukalakamala & Boyce, 2007). Subsequently, Thai cuisine is considered a health delicacy. Its low levels of cholesterol and other substances are considered to be harmful to the human body, which really increases its perception among the Cambodian people regarding the healthiness of the cuisine. Most Cambodians have high affinity for health foods and Thai cuisines have proved to be of high nutritional value (Binkley, 2018). Moreover, the presentation of the Thai cuisines leads to the consumer perception that the service provided is of high quality. This makes most people, especially tourists to find the need to experiment on the cuisines. The ultimate satisfaction that consumers of Thai cuisines receive gives them the impression that the proper cooking procedures were undertaken in the preparation of the meals (Bridges, 2017). In addition, it creates a positive consumer attitude towards the food given the high levels of satiety and benefits with a low intake of the actual food. However, different Thai restaurants have different ways of food preparation and presentation; thus, depending on the consumer's tastes and preferences the attitude and perception of Thai cuisines varies (Costell, Tárrega & Bayarri, 2009). Some individuals may prefer one kind of restaurant over another simply because of the style of doing business.

3. Study Design

The researcher developed a qualitative research method while conducting research on a phenomenon of abusive supervision approach in depth interview with Thai restaurant entrepreneurs in Phnom Penh. The question were designed in an interactive way to be elicit and developed a relaxing and friendly atmosphere to obtain high quality information during the interview.



Source: Dimensions of Business Environment

Prior to actual data collection all identified restaurant entrepreneur were contacted to acquire their willingness to participate in the research study. All of the operators are available for an interview. The date, time for an interview were arranged based on the convenience of the entrepreneur with the permission of each restaurants. Then developing the main data interview form, and conducting in-depth interviews with 10 of Thai restaurant operators in Phnom Penh.

4. Analyses and result

Restaurant Profiles

10 restaurants participated in the study were among the most popular one in Phnom Penh. All of them have been in business for more than 3 years with 6 - 70 staffs. All restaurant have incorporated most of the popular Thai dishes on the menu.

External Environment Factors

External environments elements are affecting factors outside and under no control of the restaurant. The key informants mentioned external factors as follow:

Economic Situation

"The current economic and technological conditions affect business operations. The number of tourists who come to eat are getting less."

" The current economic situation affect business operations. As seen, the number of customers has decreased. When the price of ingredient are increasing and we have to set more expensive price."

"Consumers decreased in the past 3 years and yes Cambodia economy has an impact on us"

Social and cultural change

"The social and cultural change in Phnom Penh have a positive impact. Cambodians prefer to eat Thai food."

"Cambodian nowadays prefer to eat Thai food compared to the past period. Because they love to watch several of Thai drama series"

"Nowadays, the number of tourists came to eat Thai food are increasing, as for the number of Cambodian customers are less than 5 years ago."

Technological

"Advertising is a huge part of promoting Thai restaurant business in Phnom Penh, because it helps customers know our restaurant, and also helps our business to progress and gain an advantage over competitors. For our restaurant, there is no advertising yet but we are planning to do it by the 3 next months. Our restaurant has used the service of Trip Advisor and Pay Paid. Trip Advisor is an application that help foreign customers to know Thai restaurant. Pay Paid is an application that is used to pay the bill which customers can pay by phone and make it more convenient."

"Technological changes have a positive effect, because technology helps create benefits for humans in many forms. Talking about the restaurant business, technology has good results such as in advertising and various communications. For example advertising of restaurants through the internet has made everyone inside and outside the country know our restaurant"

"Technology helps in advertising and communicating with people. For example, our restaurant has advertised through the internet which makes foreign tourists know more about our restaurant."

Laws

"We have law on inspection, cleanliness and safety standards which the government will come to check 2 or 3 times a year."

"Yes, we have law on food safety. The inspector came to check if the food servers are neat, tidy and healthy also the cleanliness of entire restaurant."

"The inspector came once a year to make sure that the restaurant has strict policies regarding the proper of tools and food preparation area."

Competitors

"The current competitive situation is at the middle level. As we can see, there are more Thai restaurants in Phnom Penh."

"At present, competition is not violent."

"Low competition."

Customers

"Cambodians and foreigners prefer to eat Thai food. It's healthy and refreshing"

"Consumers of Thai foods in Phnom Penh came from different countries. They love spicy foods and herb smell."

"In our restaurant, there are many foreigners from China and Thailand. Thai foods becoming more popular for healthy choice of foods."

The result regarding of the external environmental factors including economy situation, society and culture, technology, laws, competitors and customers considered to have an impact on Thai restaurant business.

Internal Environment Factors

Internal environment factor refer to anything within the restaurant and under the control of the restaurant no matter they are tangible or intangible. These factors include after being figured out are grouped into strengths and weaknesses. The key informants mention as follow:

Marketing

"Our restaurant serves various dishes of both Thai and Cambodian menus. We have delivery service but our restaurant has not done any advertising yet, but we are planning to do it by 3 months ahead."

"Our restaurant has a variety of food, such as Thai, Cambodian, Chinese, French food etc. We will improve more of the food flavors. The food price of our restaurant is reasonable. The selling price is different according to each country's menu and ingredient. For example, we will set the price of Thai food more expensive than Cambodian food. Chinese food is more expensive than Thai and French dish. We are advertised on the internet, Candy travel magazine, and restaurant guide book in Siem Reap."

"Our restaurant has variety of foods. The price is reasonable, not expensive not very cheap. We have no delivery."

Finance Readiness

"We have no interest in investing."

"We are happy what we are now maybe not expand the restaurant."

"We are not interest in expanding the business"

Product and Service

"We have raw materials and most of our food ingredients are ordered directly from Thailand. My mother go to Thailand for buying ingredients 2 or 3 times a month. We have 59 tables 300 seats with Thai style decoration."

"We have raw materials readiness and most of our cooking materials are purchased from Thailand. We have a beautiful space with 70 tables. There are many rooms with various types of services as customer need such as recreation rooms, meeting rooms, etc."

"We have fresh ingredients and some of them shipped from Thailand. Our restaurant is divided into 3 sections including household, customer service and servers both inside and outside restaurants. We have a beautiful Thai style decorated place."

Human resource

"Our restaurant has a total of 70 employees and divided their responsibility by division. We provide a short-term training for 3 months before taking actual work."

"Aside from the kitchen we have 68 service providers which 20 of them work in the kitchen, 20 hosts and waiters and the rest will help on each sections. A short-term training provide a month before an actual work."

"*We have 10 employees which are 5 servers, 2 chefs and 3 cashiers."*

The result regarding of the internal environmental factors including marketing, finance readiness, product and service and human resource considered to have an impact on Thai restaurant business.

5. Discussions

This study found the external change with social and cultural make Thai foods became marketable. However, most restaurants have problems with sale decreased which reflects Cambodia economic. Most customers decide to eat in the restaurant that decorate and address Thai identity which identified that the Thai restaurant business in Phnom Penh was successful, due to reflecting the Thai way of consumption of people in Cambodian society. The business strategy used in Thai restaurants in Phnom Penh is the focus strategy. It is different from the study of Kim Mi Hye (2018), which has studied differentiated strategies for service businesses that affect the decision to use Korean style restaurants in Vietnam. Most consumers choosing Thai restaurants in Phnom Penh give priority to cleanliness, flavor and food quality which is consistent with the study of Gisèle Yasmeen (2010) that was found as followed. Sukalakamala & Boyce (2007) has studied the quality of Thai restaurants in recognition of foreign tourists. It was found that the quality of interior and exterior has impact on costumer's decision. In addition, referring to Stuart G. Burgh (2007)'s research refer that restaurant successful consist of a systematic internal store management, maintain a unique secret ingredients, creative food menus, a design of restaurant, taste of food and fast service has positive influence on consumers decision.

6. Conclusion

Thai restaurant has a high chance of success in Cambodia. However, the economic changes in the country have been rapid with both positive and negative outcomes. This in conjunction with stable political conditions could advance the prosperity of Thai restaurants in Cambodia. Thai cuisines have a relatively good reception all over the globe, especially in Cambodia. This is majorly attributed towards cultural similarities and differences that work in favor of the spread of Thai restaurants in the country. The restaurants have a fair distribution in Cambodia, which is majorly related to high number of tourists in the country. The government's efforts to directly influence an influx of tourists in Cambodia has contributed majorly towards the acceptance of Thai cuisines in the Cambodia.

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Obligation in Developing Accounting Knowledge of Personnel in Provincial Administrative Organization in Ubon Ratchatani, Thailand

Abstract

This research aimed to study an obligation in developing accounting knowledge of personnel in Provincial Administrative Organization (PAO), Ubon Ratchathani province and to study correlation of the obligation in developing accounting knowledge of personnel in Provincial Administrative Organization, Ubon Ratchathani province and personal factors. Population of this research was personnel from Provincial Administrative Organization, Ubon Ratchathani province. Sample group consisted of 62 people using specific sampling method. Research instruments were open-ended and closed-ended questionnaires with 5-level scale. Research instruments had reliability value at .99. Data analysis was using Percentage, Mean, Standard Deviation, t-Test, and Anova as statistical tools. Research showed that 1) Most of participants from PAO, Ubon Ratchathani province were female, aged between 25-35 years, had bachelor's degree, were senior finance technical officer, and experienced more than 10 years. They had been working in major PAO and requiring crucial development in accounting knowledge. 2) Obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province was at high level on every aspect. Recording aspect, registration aspect, and report preparation aspect were at high level at mean values of 3.62, 3.64, and 3.67, respectively. 3) Participants with different age and experience had different level of obligation in developing accounting knowledge at statistically significant value less than 0.05. Participants with different gender, education, and position had no different level at statistically significant value higher than 0.05.

Keywords: Accounting knowledge, Provincial Administrative Organization (PAO)

Introduction

This is modern era of evolving social and economic together with advancement in technology that greatly affects operations of both public and private sectors. Management in accordance with this change in current situation requires effective development in human resources to ensure that personnel will work efficiently. While organizations have chosen personnel with proper knowledge and ability for their work. They might begin with enthusiasm and dedication at first, but those behaviors can be declined over time. Since competence of personnel is a key factor in competitive advantage, therefore executives have duty to maintain personnel with knowledge and abilities in organizations. Especially for government agencies that are notorious for working without any motivation.

Provincial Administrative Organization (PAO) which is a form of local government currently in use has been modified and evolved accordingly. The first provincial council was established in 1933 according to the Municipal Organizing Act (1933). The position of the provincial council at that time was characterized as an organization that representing people [4]. To give advice and recommendation to the provincial committee. It had not been a juristic person

that was separated from provincial government yet and had not been any local government agency under the law. Until the Public Administration Act was promulgated in 1952 that assign the provincial governor to be the head of government to command civil servants and to be responsible for the administration of provincial governments including ministries, bureaus, and departments directly instead of former provincial committee. As a result of this Act, the provincial council had a position as the advisory council of the provincial governor.

Literature review showed that personal factors in age, gender, education, and experience had affected their knowledge, skill, moral, and value in their vocations [1], [2],[5]. This had positive correlation with accounting performance in accuracy aspect, completeness aspect, and reliability aspect [6], [7]. Accounting personnel had high level of understanding in government accounting standards. Accounting personnel should emphasize on their potentials to enhance their operational success and should develop their skills to increase other relevant competencies that can be applied in their practice. This can lead them to success in their upcoming operation.

According to above study and information, researchers want to study obligation in developing accounting knowledge of personnel in Provincial Administrative Organization (PAO), Ubon Ratchathani province to utilize data as guidelines for developing personnel in PAO, Ubon Ratchathani province.

Research objectives

1. To study obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province.
2. To study correlation of the obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province and personal factors.

Hypothesis

Different personal factors including gender, age, and education, field of study, work position, and work experience have different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province.

Research methodology

Population

Population of this research was 86 personnel from PAO, Ubon Ratchathani province. Consisting of 19 people from division of finance, 20 people from division of planning and budgeting, 16 people from division of supplies and property, 15 people from division of commerce, 9 people from division of social welfare, and 7 people from internal audit unit.

Sample group

Sample group of this research was 86 personnel from PAO, Ubon Ratchathani province since population was finite and in small number. Researchers collected data from sample group of 62 people since 8 set of questionnaires had been damaged.

Variables of this research

1. Independent variables were personal factors consisting of gender, age, education, field of study, work position, and work experience.
2. Dependent variables were obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province consisting of recording aspect, registration aspect, report preparation aspect, and other aspect.

Research instrument

This research used open-ended and closed-ended questionnaires as data colleting tools to study obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province.

Part 1) General information of participants with 6 topics.

Part 2) Information of obligation in developing accounting knowledge consisting of 3 aspects; recording aspect, registration aspect, and report preparation aspect with 44 topics.

Part 3) Information of obligation in developing other knowledge, methods, period of time, and reason with 6 topics.

Part 4) Suggestions of obligation in developing accounting knowledge with 3 open-ended questions.

Data analysis

1. Descriptive Statistics that used for data analysis were
   1.1 Percentage was used with variables with group measure level that were personal factors including gender, age, education, field of study, work position, and work experience.
   1.2 Frequency, Mean, and Standard Deviation (SD.) were used with variables with group measure level that were information about obligation of developing accounting knowledge in recording aspect, registration aspect, report preparation aspect, and other aspect
2. Inferential statistics that used for data analysis were
   2.1 T-test was used to measure obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province according to gender.
   2.2 One-Way Analysis of Variance: One-Way ANOVA was used to measure obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province according to age, education, and field of study, work position, and work experience.

Research results

Data analysis had showed the results of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani province research as per below:

1. Study of demographic characteristics showed that most of participants were female, age 25-38 years, had bachelor's degree, studied in other fields, had work position in academic operating officer, and had more than 10 years of work experience. PAO that they were working for was major SAO. Most of participants had high level of obligation in developing accounting knowledge as illustrated in table 1.1

Table 1.1: Percentage of personal factors

Personal factors	Variables	Amont (people)	Percentage
Gender	Male	18	31.0
	Female	40	69.0
Total		58	100.00
Education	Less than bachelor's degree	7	12.1
	Bachelor's degree	41	70.7
	Master's degree	10	17.2
Total		**58**	**100.0**
Age	Less than 25 years	13	22.4
	25 – 35 years	21	36.2
	36 - 45 years	15	25.9
	More than 45 years	9	15.5
Total		**58**	**100.0**
Field of study	Accounting	13	22.4
	Finance	7	12.1
	General management	11	19.0
	Human resource management	2	3.4
	Information technology	6	10.3
	Marketing	3	5.2
	Others (please specify)	16	27.6
Total		**58**	**100.0**
Current position	Management team	2	3.4
	Division chief	3	5.2
	Subdivision chief	6	10.3
	Technical officer	18	31.0
	Operational officer	18	31.0
	Others (please specify)	11	19.0
Total		**58**	**100.0**
Work experience	Less than 3 years	12	20.7
	4 – 6 years	18	31.0
	7 – 9 years	3	5.2
	More than 10 years	25	43.1
Total		**58**	**100.0**

2. Study of participants' opinions about obligation in developing accounting knowledge according to recording aspect, registration aspect, and report preparation aspect was showed in table 1.2

Table 1.2: Obligation in developing accounting knowledge according to recording aspect, registration aspect, and report preparation aspect

Obligation in developing accounting knowledge	mean	SD.	Result
1. recording aspect	3.62	0.796	Highest
2. registration aspect	3.64	0.822	Highest
3. report preparation aspect	3.67	0.960	Highest
Total	3.64	0.859	Highest

When considered on each aspect, it had showed that every aspect had the highest level. Obligation in developing accounting knowledge according to recording aspect, registration aspect, and report preparation aspect had mean at 3.62, 3.64, and 3.67 respectively.

3. When considering on other aspects, it showed that most of participants had obligation in developing knowledge in accounting applications, computer skills, accounting IT, accounting standard, English skill, budget management, and related laws, respectively.

Analysis of inferential data for testing

Results of correlation comparison between obligation in developing accounting knowledge and personal factors (gender, age, education, field of study, work position, and work experience)

Hypothesis 1.1: Different gender had different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province according to recording aspect, registration aspect, and report preparation aspect. It was not different since Sig value had been more than 0.05.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
A	Equal variances assumed	0.031	0.860	1.142	56	0.258
	Equal variances not assumed			1.113	30.955	0.274
B	Equal variances assumed	0.097	0.756	0.672	56	0.504
	Equal variances not assumed			0.658	31.255	0.515

C	Equal variances assumed	0.285	0.595	0.951	56	0.345
	Equal variances not assumed			0.970	34.394	0.339

Hypothesis 1.2: Different education had different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province according to recording aspect, registration aspect, and report preparation aspect. It was not different since Sig value had been more than 0.05.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
A	Between Groups	0.921	2	0.461	0.719	0.492
	Within Groups	35.230	55	0.641		
	Total	36.151	57			
B	Between Groups	1.637	2	0.818	1.218	0.304
	Within Groups	36.943	55	0.672		
	Total	38.580	57			
C	Between Groups	2.963	2	1.482	1.641	0.203
	Within Groups	49.670	55	0.903		
	Total	52.633	57			

Hypothesis 1.3: Different age had different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province according to recording aspect, registration aspect, and report preparation aspect. It was different since Sig value had been less than 0.05.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
A	Between Groups	7.205	3	2.402	4.480	0.007
	Within Groups	28.946	54	0.536		
	Total	36.151	57			
B	Between Groups	7.661	3	2.554	4.460	0.007
	Within Groups	30.919	54	0.573		
	Total	38.580	57			
C	Between Groups	10.907	3	3.636	4.705	0.005
	Within Groups	41.726	54	0.773		
	Total	52.633	57			

Hypothesis 1.4: Different field of study had different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province according to recording

aspect, registration aspect, and report preparation aspect. It was not different since Sig value had been more than 0.05.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
A	Between Groups	2.329	6	0.388	0.585	0.740
	Within Groups	33.822	51	0.663		
	Total	36.151	57			
B	Between Groups	4.450	6	0.742	1.108	0.371
	Within Groups	34.129	51	0.669		
	Total	38.580	57			
C	Between Groups	4.904	6	0.817	0.873	0.521
	Within Groups	47.729	51	0.936		
	Total	52.633	57			

Hypothesis 1.5: Different work position had different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province. It was different in recording aspect since Sig value had been less than 0.05. Though it was not different in registration aspect and report preparation aspect since Sig value had been more than 0.05.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
A	Between Groups	7.095	5	1.419	2.540	0.039
	Within Groups	29.056	52	0.559		
	Total	36.151	57			
B	Between Groups	6.578	5	1.316	2.138	0.075
	Within Groups	32.002	52	0.615		
	Total	38.580	57			
C	Between Groups	9.286	5	1.857	2.228	0.065
	Within Groups	43.347	52	0.834		
	Total	52.633	57			

Hypothesis 1.6: Different work position had different level of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province. It was different in recording aspect and report preparation aspect since Sig value had been less than 0.05. Though it was not different in registration aspect since Sig value had been more than 0.05.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
A	Between Groups	5.233	3	1.744	3.047	0.036
	Within Groups	30.918	54	0.573		
	Total	36.151	57			
B	Between Groups	5.232	3	1.744	2.824	0.047
	Within Groups	33.348	54	0.618		
	Total	38.580	57			
C	Between Groups	6.074	3	2.025	2.348	0.083
	Within Groups	46.560	54	0.862		
	Total	52.633	57			

Discussion

There are few topics that researchers would like to discuss according to study of obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province.

1. Most of personnel in PAO, Ubon Ratchathani Province had high level of obligation in developing accounting knowledge in every aspect which demonstrated their need to improve work efficiency. Consistent with Nipaphan D. and Priyanat Y. (2019), [3] studied on expected competence and expected accounting capabilities for accountants of government organizations in Nakhon Ratchasima province. Accountants in accounting and financial field in Nakhon Ratchasima Province agreed that every accountant should have 3 primary competence which were personal skill, accounting knowledge, and operational skill. The expected accounting capabilities for accountants of government organizations in Nakhon Ratchasima province were ethics in accounting profession, professional skill, and relates proficiency. The total performance of accountants of government organizations was at moderate level though.

2. Personnel with different work position and work experience had different level of obligation in developing accounting knowledge. There was not different in other aspects though. Consistent with Wilawan Saejeng (2018),[7] studied the needs and necessities of self-improvement of personnel in the Treasury Department, King Mongkut's University of Technology North Bangkok. 1) The needs and necessities of self-improvement of personnel in the Treasury Department, King Mongkut's University of Technology North Bangkok were at high level. Area with the highest average score were training, followed by education, field trip, and self-learning, respectively. 2) Personnel with different age had different level of needs and necessities of self-improvement at statistically significant level 0.05. Personnel with different gender and status had same level of needs and necessities of self-improvement though.

Suggestions

Researchers would like to suggest a guideline for human resource development in PAO, Ubon Ratchathani Province as per following details.

1. Regularly providing seminars to personnel in PAO, Ubon Ratchathani Province for at least 3 days per time during office hours (Monday to Friday). This will encourage them to have better understanding of operations and acknowledge dynamic regulations.
2. Related government agencies should contain policies that encourage personnel in PAO, Ubon Ratchathani Province in training and provide sufficient fund.
3. Conducting meeting between divisions that will encourage personnel to exchange knowledge and work experience with each other. This will strengthen their unity in professional circle.

Suggestion for next research

1. Next research should study on other correlations that can affect obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province. The result can be used for creating guideline in developing accounting knowledge in the future.
2. Studying factors affecting affect obligation in developing accounting knowledge of personnel in PAO, Ubon Ratchathani Province by comparison with PAO in other provinces. The result can be used for creating more effectiveness in developing accounting knowledge in the future.

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The Rise of China-Africa Relations

Abstract

The late 19th century China venture into the African continent. The inadequacy of resources and monetary funds in Africa created a gap for external investment and a relationship that still exists at present. Notable investments by the People's Republic of China into the African continent started in the 1980s. Despite this early onset of China on African nations, the assets in Africa primarily grew from 2000. Economic ties between the African countries and the People's Republic of China grew strong due to numerous loans given to the African nations by China. These funds improved the existing and built new modern infrastructures and African economies. The millennium has seen the Chinese government pump billions into several infrastructures and technological advancements into the African continent. This paper overview on background China-Africa relations**,** model development in Africa, technology transportation, trade between China-Africa and major challenge for them.

Keywords: China-Africa Relations, model development, technology transportation

Introduction

The earliest form of China-Africa trade relations dates to 202 BC and 220 AD. In the 7th century, the initial contact between the African and Chinese people was made possible by the Indian Ocean route (Shinn, 2008). Cultural exchanges and trades between the African and Chinese people thus set off. In the 15th century, a renowned navigator from China visited present-day Kenya and Somalia coastlines. Several envoys were present, and they became aware of the existence of the African continent. Both China and the African continent were victims of colonial acts, slavery, and invasions. Shinn (2008) notes that the year 1949 marked the birth of New China and subsequently the Sino-African relations, which gave way to the era of development.

During the 1990s, trades amongst the African nations and China grew by 700% (Cisse, 2012). In 2013, more than a million Chinese citizens had set up homes within various African countries, and approximately 200,000 Africans were residing and working in China by the year 2017 (Oqubay & Lin, 2019). The establishment of the Forum on China-Africa Cooperation (FOCAC) in 2000, as a designated body that oversees the relations between the two parties, made Africa a giant trading partner with China. China's venture into Africa dates back to the mid-19th century. At the time, different nations were getting about their colonial freedom, and the Chinese government subsequently offered full support to various African Liberation movements. The initial notion by China was oriented to ousting the colonialists and giving back freedom to the African countries. However, a change of ideology was set in the 1980s, when China focused on 'Opening up and Reform Policy.' Economic interests became paramount in the China-Africa relations. Changes in the intensity of the links became visible as China's hunger for power, financial dominance, and resources increased. African countries were going through numerous crises and economic mishaps due to conflicts and mismanagement (Large, 2008). The complex Western and European loan policies limited Africa's access to loans. Unlike the donors, the procedures by China were not frustrating and African countries readily accepted China as an alternative lender.

Table 1. Forum on China-Africa Cooperation (FOCAC) summary table

Forum	Year	Location	Significant results
1st summit	2000	Beijing, China	Beijing Declaration of the Forum on China-Africa cooperation in economic and social development.
2nd summit	2003	Addis Ababa, Ethiopia	Addis Ababa Action Plan, openness to political dialogue, security, and social and economic development.
3rd summit	2006	Beijing, China	US$5 billion in the form of concessionary loans rolled out by Chinese President Hu Jintao to African countries; Creation of the China-Africa Development Fund.
4th summit	2009	Sharm elSheikh, Egypt	US$10 billion preferential loans to African countries; Special US$1 billion loan for African SMEs wired by China; Food security, agriculture and infrastructure plans.
5th summit	2012	Beijing, China	A further US$20 billion in loans to African countries announced; Beijing Declaration, promoting strategic partnerships and mutual benefits of economic cooperation and trade.
6th summit	2015	Johannesburg, South Africa	Infrastructure development agreements through public private partnerships and build-operate-transfer projects; Ocean Economy: 21st Century Maritime Silk Road; Access to Satellite TV for 10,000 African villages.
7th summit	2018	Beijing, China	Belt and Road Initiative (BRI) intended link for trade and sustainable development. Plan for Nigeria's economic recovery and growth plan.

Source: Crisafulli 2018.

The 2021 Forum on China-Africa Cooperation (FOCAC) saw various African heads of state present. Forty-two heads of state from the African continent elicited numerous reactions from the global community, a move that presented a significant strength in the relationship between the People's Republic of China and the African continent (Cisse, 2012). Notably, FOCAC gives African countries and China an open platform to shape the relationship to serve a long-term purpose (Large, 2008). Numerous claims perceive the presence of China in Africa to be opportunistic. Notably, the Chinese company in African countries disregards the tranquility of a nation, and they thread in regions ignored by other world powers. Such global scrutiny is a hurdle to China and Africa relations. China-Africa relations date back ages, but the current state raises debates on how both parties benefit and the possible outcomes of this dependency.

China Model Development in Africa

The African Continent is slowly becoming economically viable on the global scene because of the development loans from China. Investments are lining up within every African country with better infrastructure and technological systems. The infrastructure development in Africa is rapidly improving. The need to modernize and adopt a more industrially advanced feel creates a void that China fills. Oqubay and Lin (2019) note that inadequate funds and resources limit African countries' economic growth. Donor nations thus become a conduit to succeeding with these infrastructural changes. In 2009, China was the undisputed winner of Africa trading partners. Since the 2000s, the growth of China and Africa trade volumes has topped $200 billion, year to year caps (Cisse, 2012). At present, close to 10,000 corporations have set camps in various African nations, with the value of such Chinese operations clocking $2 trillion. This indulgence in the African realm by the Chinese is at a high rate. Incredibly, it is at a high of 40% annual growth and 15% larger when compared with the international frontier (Oqubay & Lin, 2019). The role of China in the current African infrastructure is second to none.

Table 2 Washington versus Beijing consensus for achieving economic development

Washington consensus	Beijing consensus
In economic term 1. Free markets and an important role for the private sector 2. Loans, but under strict conditions 3. Projects: use local companies to create employment 4. Transfer of technology, knowledge and experience (capacity building)	1. Important role for the government in the economy 2. No conditions for soft loans 3. Use Chinese companies, employment and technology 4. No transfer of knowledge and experience

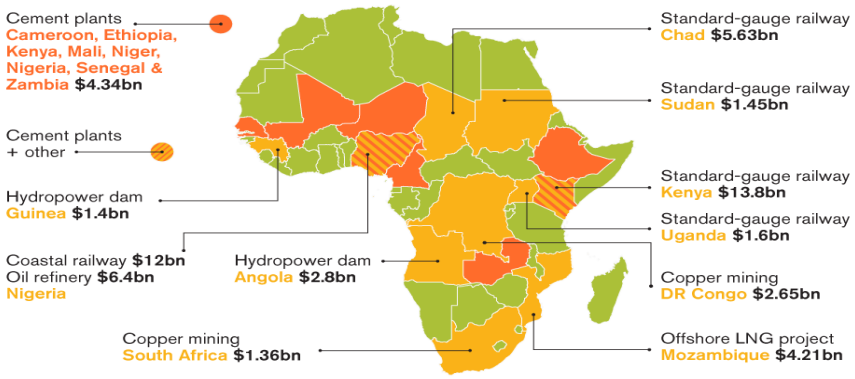
Source: Alden, C., Large, D. and Soares de Oliveira, R. (eds, 2008)

The two approaches are very different concerning while Chinese companies in Africa are less interest in transferring knowledge and experience when Chinese using their own Chinese labor. On the other hand China demonstrates Africa on how to developing country and too see the benefit from globalization.

Roads and Infrastructure

The Chinese government has sanctioned over 700 engineering projects within several African nations. Ideally, China provides total funding for these infrastructural facilities at low-interest rates, making more African countries seek help from China. Notable infrastructural developments include the Tanzania-Zambia railway line, stretching to 1860 kilometers (Oqubay & Lin, 2019). The railway line dubbed 'the road to freedom' was commissioned in 1975. Its importance in the economic value is second to none in both nations' growth. Being a landlocked country, Zambia opened its borders through the rail line and massively increased its importation and exportation of goods.

Figure 1 China infrastructure in Africa



Source: Khanh Tran Thah, Seth Cooks (2017)

From figure 1 the infographics showed how China is a big player in Africa's infrastructure building. The current infrastructural loans in Africa are from the Chinese government. A few decades back, China was struggling economically, with a global GDP of 2% annually; however, the industrious nature of the country was its turnaround (Alden et al., 2008). The infrastructural development propelled the country to a global economic powerhouse with close to 29,000 kilometers of railroads spanning its soils and expressways, clocking hundreds of thousands of kilometers, hundreds of airports, and urban houses. Such developments highlighted the nation as a globally dominant force. China's selfless acts on bringing in its infrastructure within the African continent are slowly setting on its economic growth.

The infrastructural development became a concise symbol of the Africa-China relations and put China on the global map of power (Oqubay & Lin, 2019). Various expressways were set up or are under development because of the development loans to Africa. Different African heads of state have increased the visits to the People's Republic of China to sell their ideas to the global superpower. China gives them an ear and offers the funds and a lower interest compared to other able countries like the U.S. Mainly focusing on infrastructural growth, China's approach has vastly improved the continent's economic growth. Under the Belt Road initiative, several train lines were set up in Africa. China's Belt Road Initiative (BRI) had set apart $1 billion to fund various infrastructures across the continent (Mlambo et al., 2014). The building of new roads and developing different rails were meant to improve the trade routes across the nations. In 2017, more than 50% of infrastructural developments in the African continent were given to the Chinese firms operating across Africa (Mlambo et al., 2014). China would consequently pledge $100 billion towards further infrastructure development and any related developments.

Digital Silk Road

A recent venture by the Peoples Republic of China president, Xi Jinping, has earmarked the nation into the global space-the Digital Silk Road yearns to rewrite the global Chinese presence into a global power. China seeks to conquer the space and ocean floor in digital essence. Already commanding close to 90% data supply globally, the nation is slowly emerging as the sole winner at the stage (Oqubay & Lin, 2019). The Digital Silk Road could shape the finances, data flow, and communication across the globe.

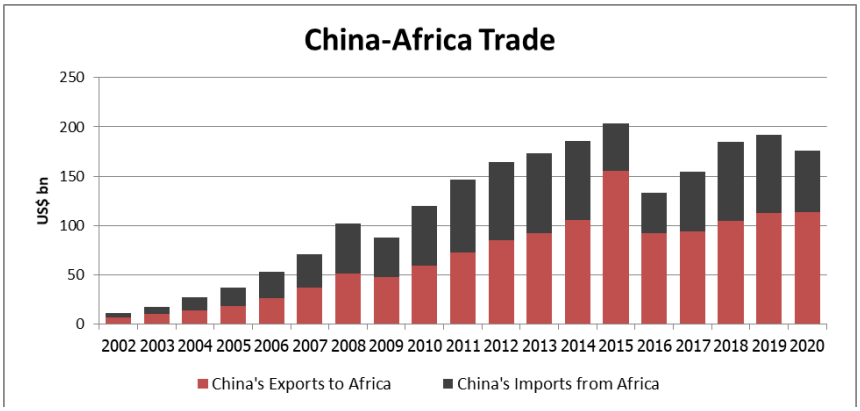
Africa and China relations make the latter a first proponent of the Digital Silk Road. Under the leadership of a South African business mogul, Iqbal Surve, the new Belt, and Road to Africa fund set aside $1 billion (Mlambo et al., 2014). Its launch was in the recent World Economic Forum (WEF). The Silk Road funds will target the development and improvement of several African roads, technology, artificial intelligence, and empowering the resource industries across Africa. Iqbal also added that the Silk Road was imperative in the China-Africa business relations. Trade route mapping eases access and connectivity for both Africa and China.

Technologies

Chinese firms such as Huawei and ZTE have set up operations within African borders. Various technological improvements done in African states are contracted to these firms, thus increasing the Chinese presence and influence in Africa (Chun, 2014). Notably, recent Zambia move to enable the rollout of the 'pilot' 5G network across the nations; in coordination with the Zambia service provider, MTN signifies the reliance of Chinese technology by the African continent (Chun, 2014). The African and China relations are also strengthening with various visits from Chinese envoys. Huawei and ZTE have already established their footprints within the African tech market. China's selfless nature makes the nation a friendly aid to Africa.

China-Africa Trade Relations

China and Africa's trade ties solidify as both parties develop connections. FOCAC meeting recently improved the relationship with African in regards to trading. China pledges to increase imports from Africa, and 95% of product tariffs were eliminated. The African Continental Free Trade Agreement (AfCFTA) was imperative in ensuring sourcing companies across the nations consolidated into a singular unit; the African Special economic Zone (Geda & Yimer, 2019).



Source: UN comtrade, (2020)

The Zone allows the importation of duty-free products from China to finalize a product before getting exported back to the Peoples Republic of China. As a result of this initiative, the China-Africa trades are at a high of 38% (Geda & Yimer, 2019). China aims to reach $300 billion in imports. China also seeks to set up green lanes for agricultural produce and fund the projects to connect trade between Africa and China.

Medical and Health Supplies

The onset of COVID-19 globally left many nations in economic crisis. Africa and China were not left behind; however, both parties handled the outbreak differently due to different financial margins (Loembé & Nkengasong, 2020). With the emergence of the vaccine, various African nations are seeking to vaccinate their people. China further sought to administer the vaccine to Africa's target, 60% of the population. A billion vaccine doses, 600 million through donorship, and 400million in local production by both parties, will be supplied to the African people. China also pledges to help on several health projects and provide personnel to run the projects. China offers military assistance to various nations of Africa. According to Leslie (2016), the African Union is dependent on military aid to ensure that peace in volatile countries is maintained. China also assists in adding to combating terrorism and joint peacekeeping measures. In the words of Cyril Ramapahosa, "The inception of FOCAC has been an engine of progress, a valuable platform for dialogue and amplifying the African Voice globally" (Oqubay & Lin, 2019, p.29). Chinas commitment to Africa is significant in adding value to the African economy while also sourcing labor from the continent.

Primary Measures and Achievement

The economic essence of China-Africa relations is visible by the significant exports outside Africa and imports from China. During the 1980s, trade volumes culminated to $1 billion; in 1999, the volumes recorded a high of $6.5 billion (Mlambo et al., 2014). Consequent years exhibited an increase in trade volumes amongst the two parties; $10 billion in 2000, $39.7 billion in 2005, and $55 billion in 2006 (Mlambo et al., 2014). As of 2021, $139.1 billion trade volumes were on record. It made Africa the biggest trade partner with China (Chun, 2014). Several billion U.S. dollars make their way into African governments to support the economic and infrastructural growth of the nations.

The Chinese infrastructure in Africa has covered 35 countries. Several projects are found in Nigeria, Angola, and Sudan. Notable projects are the power plants, dams, ports, rail lines, and Roads. SinoHydro Dam in Ghana set off in 2008 took up a $562 million loan from China (Mlambo et al., 2014). More than $3.3 billion has been put into the power generation plants across African countries (Mlambo et al., 2014). These power plants financed by China amount to more than 6000 MW. The total electricity production in Africa is 17000MW, which shows the vast fraction it adds. In 2009, China gave Mauritania $280 million for port expansion by 900 meters. It also increased the port's capacity to 500,000 tons (Chaziza, 2020). China set aside $4 billion to rehabilitate and build new rails across various African countries. The road sector is significantly small as compared to other achievements. Only $550 million has been pumped into the African road network by China (Dollar, 2019). Firms such as the China Road and Bridge Corporation take up such initiatives in various African countries.

Major Challenges to Both China and Africa

The outside world is pessimistic about China-Africa relations. Several Western nations perceive the loans by China to be a gagging approach to Africa where the Chinese government is exploiting the weakness of limited finances in African countries (Wissenbach, 2010). A neocolonialism at present, the Western nations see the venture by China into Africa as a movement-oriented to appeasing the sitting government officials and disregarding other members

of the African countries criticizing the act (Lumumba-Kasongo, 2011). China's massive influence on the economic position of various African nations creates dependency and sets up a hierarchy. The outside nations see this as a move by China to control African countries (Gu & Schiere, 2011). These African nations will owe them and significantly become Chinese puppets by pumping funds. According to various global experts, China could be tapping into the unexploited resources in Africa. Numerous raw materials in Africa make it a potential exploitation ground (Wissenbach, 2010). China's approach has thus not been left from scrutiny. The African nations cannot ignore such notions from the Western parties. The need to boost its economic value is drowning many countries in debt, and soon it might catch up with these states. Failure to repay the loan is a potential conflict between China and Africa relations (Gu & Schiere, 2011). African countries could potentially lose their resources or the infrastructure built by the Chinese. It could drown African nations' economic states. Despite these global concerns, the Chinese government continues to put more funds into the development of African countries, focusing on infrastructure and technology.

Discussion

China and African relations or the Sino-African relations have become a globally volatile topic. The Chinese venture into the African realm continues to generate adverse reactions on its implications and potential takeover of the African countries and command the resources. Despite these ideas, China's and Africa's goals appear to go along. The relations between the two parties are heralded by the need for one another (Diawara & Hanson, 2019). Due to the Western donor policies, loans became hard to obtain for the African nations. However, the Chinese approach synced with the African perceptions and seemingly led to both depending on each other. China has become a global superpower; as a result, selling its infrastructure and technology to the outside world (Leslie, 2016). The primary focus of various global pessimists is on what China gets out of its relations with Africa. The African benefit significantly as a result of the connections. China paves the way for the economic boom in Africa. According to Verhoeven (2014), China embraces Africa without hostile intentions. Despite the global concern of African takeover, China-Africa relations are two-way dynamic and oriented on goals set by both parties.

Conclusion

The millennium has seen the Chinese government lend billions into several African infrastructures and technological advancements. Economic ties between the African countries and the People's Republic of China grew strong as more money was pumped into these African countries. FOCAC presents an open platform that the African countries and China can shape the relationship to serve a long-term purpose. The African benefit significantly as a result of the relations. China paves the way for the economic boom in Africa. China-Africa relations benefit both parties in different ways, where Africa gets access to loans that improve its infrastructure to sell its exports, while China imports products and exports its technology to Africa. The relations are based on goals and are a two-way dynamic benefiting both China and Africa.

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