

TECHNOLOGY IN MONEY: HOW INNOVATIONS IN TECHNOLOGY ARE MOVING
THE WORLD TOWARDS A GLOBAL CURRENCY

by

Hannah Frederick

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Approved by:

Chris McNeil, Ph.D., Thesis Director

Dave Wood, Ph.D., Second Reader

Dawn Medlin, EdD, Departmental Honors Director

Ted Zerucha, Ph.D., Interim Director, The Honors College

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Abstract

This study seeks to discuss how modern technological advancements in money have created ease in flow of funds globally and have the potential to push the world into utilizing one global currency. Electronic systems of money allow for quicker, more efficient movement of money from one area of the world to another. These systems have generated discussion about introducing a unified currency across the globe. Through survey analysis of different determinants, this paper intends to establish public opinion on a single currency on a worldwide scale as well as overall favor of a fully cashless society. Aside from focusing solely on individual perception of a cohesive currency, this work aims to also look at outside factors that could determine individual's perception of currency standardization. Through looking at secondary subjects, such as patriotism, globalization and trade issues, an individual's openness to change, accessibility to technology, and privacy this paper will analyze the impending possibility of currency unification across the globe.

Introduction to Technology in Money

This paper will discuss existing advancements that have been made in currency by reviewing the evolution of money throughout the history of the world. Looking back at money's past is the first step to pushing our gaze forward to the way currency exists today. This work will also focus on how technology is transforming money and the introduction of new forms of cashless money that are being used by consumers today. Technology is overtaking physical currency as consumers are pushing towards the use of mobile payment technology more and more. This paper will also dive into and how technology is pushing the world forwards towards the opportunity for a single global currency. One currency worldwide has both advantages and disadvantages that will be explored as they relate to a fully cashless society. A survey will be conducted to analyze public opinion on a cashless society and the likelihood of support from individuals for a single global currency. It is important to gain information regarding public opinion because people are the driving force behind the popularity and use of cashless forms of money. Overall, this paper seeks to discuss how technology is involved in transforming the world into a cashless society, while also examining how technology could create a single global currency and what the positive and negative effects of that might be.

Financial markets across the globe have undergone substantial transformation over the course of the past decade. The main factor that has spurred this forward push of markets is innovations in technology. These advancements have created a world occupied by technology “including computer hardware and software capability, massive downsizing in circuitry and processors, telecommunications speed and efficiency, mobile access, in particular, through mobile telephony, tablets, and other hand-held devices, and wearables, and substantial reductions in manufacturing and service costs” (Walker, 1). These improvements to technology have aided

in the advancement and spread of technology into the monetary segment. FinTech, or financial technology, is a term that has been introduced to indicate technology being used in the banking and financial sector. “FinTech can be defined either in terms of market function, market institutions, market technology, market structure, or market impact and disruption” (Walker 3). FinTech can be found in every aspect of the financial world, from the use of computers in banks to store customer information, to the stock market becoming fully tradable on the Internet. Technology has breached financial markets and has altered their structure to be based around the use of technology more than ever before. Essentially, FinTech is defined as however technology is used to obtain financial solutions, which challenges the way that money is currently utilized. Introducing technology to the world of currency has evolved current physical forms of money into more widely used cashless forms.

FinTech is changing the way financial services work in a way that creates new methods for customers to access their financials more efficiently. FinTech has provided easy access to lines of credit, payment processing, and monetary transactions. All of these innovations are creating a new level of convenience for customers in the banking world. Transactions can be made at the click of a button, payments can be processed immediately, and credit approval can be received in less time due to quicker access to information. Direct access to financial technology has created an opportunity for banks to “connect directly to information sources and to almost instantaneously use the information for identity verification” (Chicago Fed, 4). Direct connection to information allows for faster and safer transfer of money from the hands of one party to another. Technology allows for more immediate results, which is what has become most convenient and demanded by consumers. Cash is quickly becoming the money of the past and technological transactions are taking over the future. In 2014, Bankrate.com conducted a survey

that concluded half of the United States population carries twenty dollars or less on their person at all times. Legal tender is becoming obsolete due to its inconvenience, while cashless forms of money are becoming the most prominent form used today in our society.

Financial technology has been introduced in recent years in various forms. In order to understand where these recent advancements in technology came from and how they are used in monetary transactions, it is important to first understand money's past as well. The history and evolution of money helps us to better understand how money functions today and why technology has been such an important innovation for the creation of cashless currency. At the introduction of money, coins were the only form of payment that existed. Currency has evolved since then to support growth in economies and to provide better alternatives per consumer demand. Consumers have constantly sought out change in currency in order to establish money that was more efficient and convenient. America, as well as other countries world wide, has "been on a steady march towards becoming a cashless society since the 1950's, when Diner's Club, American Express, and Bank of America launched the first modern charge and credit cards" (Blyskal, 49). Today, money has evolved to the point that eighty-nine to ninety-three percent of consumer spending is now done completely cashlessly. Going cashless has become the way of the world and has created opportunity for ease of cash flow both locally and globally.

Identifying newly developed forms of currency and their roles in making the trading of money from the hand of one party to another more efficient is important to look at from a global perspective, rather than just individual trade. There has always been a push to introduce novel forms of currency in order to make transactions move more quickly and efficiently. Transactions have already become simpler, but its imperative to identify what the world might look like if it utilized one common currency that was a cashless form of money. Eliminating countries'

individual currencies and focusing in on one cashless currency that could serve the whole world might be the future of faster transactions and more proficient trade. “Now that smartphones and other electronic devices are becoming part of the payment process, the way we spend cashlessly is dramatically shifting, presenting new benefits and some potentially negative consequences” (Blyskal, 49). As technology pushes the world towards the possibility of a single global currency, there are positives and negatives to have awareness about. Positives include speed of transaction, convenience, and ability to send money across the globe without currency conversion. Negatives focus in on privacy issues, money security, and technology crashes.

A survey was conducted to gauge popular opinion on a fully cashless society, as well as a single global currency. The results indicate that participants are not in favor of a cashless society or a single currency. The survey was also conducted to consider different factors that may play a role in influencing opinions about a fully cashless society and a single global currency. When observing individual opinions regarding cashlessness, factors that tested significant were *Age*, *Education*, current use of electronic money (*Electronic Money*), belief that online purchases are secure (*Secure Purchases*), and perceived privacy online (*Privacy*). While studying opinions about a single currency, factors that produced significant results were *Age*, how patriotic individuals consider themselves to be (*Patriotism*), how likely participants are to vote (*Vote*), support for globalization (*Globalization*), support of a central world bank (*Central Bank*), and personal willingness to adapt to general change (*Adaptability*). For example, I find that younger individuals tend to be more open to a cashless society and a single currency. The survey and its results will be discussed further later on in this work.

In the next section, I will discuss how money has evolved from its creation in order to create more convenience for its users. Following that, current forms of cashless money will be

examined with the purpose of informing readers of the technology that has been introduced to replace cash. Not only will new cashless technologies be discussed, but the implications surrounding their use will also be reviewed. I will continue by presenting readers with the implications associated with the use of a single global currency. Lastly, I will discuss the results of my survey. The survey was used to determine public opinion on a fully cashless society, as well as a single global currency. It was also used to assess what additional factors may have an impact on individuals' opinions regarding a cashless single currency.

History of Money's Evolution

In one form or another, money has existed in our world for the past three thousand years. It has been the foundation for the way that societies around the globe create value for objects. Even prior to the introduction of tangible money, bartering systems existed as a way of valuing goods and services in societies. The trading of one good or service for another acted as a form of valuation, essentially the first currency. This was the original way that individuals indicated value. Over time, bartering became a time consuming method for persons to obtain the goods and services they desired because deals took long hours to finalize. To curb the issue of excessive time, currency was introduced as a more efficient method of trade. Currency, from its creation, has not remained constant, but instead existed in several diverse forms over the course of its history. "Money, in and of itself, is nothing. It can be a shell, a metal coin, or a piece of paper with a historic image on it, but the value that people place on it has nothing to do with the physical value of the money" (Investopedia, 2017). Even though the physical form of money is not where it derives its value from, changes in tangible form is important to the evolution of currency. The first system of tangible currency to be considered official money was a metal coin created in China in 1,100 B.C.

Since the presentation of the coin in China, other areas of the world also adopted this way of monetary progression. Metal coins became a widespread symbol of value and completely replaced the need for a barter system. These initial coins were created when metal became a regarded commodity. Metal had value; therefore, a coin made of metal also reserved a certain level of value. Since items of metal were becoming so widely sought out, coins were made of metal as well and made to be “small-scale replicas of metal objects” (BBC, 2014) that a buyer would purchase. For example, if a coin were going to be used to purchase a knife, it would be made into the shape of a knife, just in smaller form. This form of money was also created through an untimely process, much like the barter system, because each coin had to be completed individually. In order to better streamline the process of money creation, the first coins that resembled what we know today were introduced into the monetary system. Coins evolved in to small round pieces of metal, “with fixed weight and value, and bearing an official seal, that is the mark of who has minted them and also a guarantee of their value” (BBC, 2014). In 600 B.C., the country of Lydia was the first country to mint its official currency, since the creation of metal currency in China.

Developments in currency allowed for better trade within a country’s borders and across nations alike. Transitioning into utilizing pieces of currency that were small, easy to trade, and simple to value allowed for more ease in transaction. This spurred both individual and national trade to increase, which created a mass movement of money like never before in the history of the world. Amplified transitions of money from one place to another created strong trading economies. In order to continue to better these new economies, a country had to continue to make advancements through the monetary system or at the very least, keep up with the other countries around them. This push to advance and to construct enhanced forms of currency is

what drove nations to continue to forge ahead and develop innovative forms of currency. Just as the coin became inherently popular and Lydia started to pull ahead in the currency development race, China introduced a brand new idea in the realm of currency, paper money. The Chinese moved from the use of strictly metal coinage to their all-new paper money supply in the year 618 B.C. Paper money did not spread as rapidly as the metal coin did though. The use of paper notes did not become more common until North America was discovered. The trip was so extensive for ships to travel between Europe and North America, that colonist often times ran out of money. They used paper notes to stand in place of money until they were able to actually made payments. This created a more worldwide use of paper money some two thousand years after its introduction, which is much like the paper money we see today.

Money's evolution did not end with the creation of the modern day paper United States Dollar, European Euro, or Japanese Yen, but instead has continued to advance to this day. Since the time of the North American paper currency, the world has not only seen money progress in physical form, but in technological form as well. In regards to tangible advancements, the world has seen the introduction of the check, credit note, and credit card, just to name a few. Credit cards have been in existence since the 1920s. Chains of stores and hotels began offering cards to customers in order to make it easier for out of town customers to access their money while away from their hometown banks. In 1958, the Bank Americard created the first credit card to be accepted at multiple locations, which became known as the Visa card. The introduction of this card eliminated the need for cash because it was accepted everywhere and provided an ease of transaction for customers. Individuals no longer had a need to carry large amounts of cash in their pockets. Instead they traded in their cash for small plastic cards that gave consumers the ability to charge any amount to their account. This gave consumers more power, which created

popularity for the credit card, thus making it the most popular new form of currency.

Currently, twenty-seven percent of all transactions are being made through electronic form, which is higher than any other form of money being used, such as cash or check (Blyskal, 50). Electronic form includes online bill payment and online payments made using a bank account number. Checks followed electronic transactions at nineteen percent, which was closely followed by debit cards at eighteen percent. Since the introduction of the credit card, businesses and financial institutions have been seeking innovative ways to improve money to be more efficient for customers. These advancements serve the purpose of making the transfer of money a more simplified process. Making its trade more efficient for its users has throughout history, motivated the improvement of money. This trend still exists as the modern world strives to improve its current form of money to be something that can continue to spur progress. Recent developments have fallen into the category of new technological forms of money. For example, ApplePay, Google Wallet, and Venmo are some of the new forms of technology that have been created out of a need to push money forms into the next era. These new forms of technological money are beginning to spread worldwide as they become the new currency norm in today's society. Some of the recent technological advancements in cashless money will be discussed below.

Current Forms of Cashless Money

I. PayPal

In 1999, PayPal, before it was even organized under that name, was established to function as a mobile wallet for users. A mobile wallet is a form of payment that allows users to send and receive money through mobile devices. Basically, users' financial information is stored on their PayPal account in order to provide ease of transactions online. Users can even opt to

have a PayPal debit card, which keeps funds that have been received for future payments. PayPal completely altered the way that money was exchanged, by creating a method to complete transactions completely online without the face to face trade of any physical currency. Although PayPal created a whole new medium of exchange, “it didn’t fundamentally change the way merchants interact with banks and credit card companies” (Grabianowski and Crawford, 2005). Essentially, PayPal acts as the intermediary between the buyer and the seller. Both enter their bank account information into the secure PayPal system and PayPal takes care of the exchange between the two parties. A user can add money to their account by linking it to their bank account or credit card. If a user wants to withdraw money from their account, the process is as simple as sending the money back to your bank account, leaving it in your PayPal account for future transactions, or requesting a check by mail.

There are three different types of PayPal accounts that users can sign up to utilize. The first is a personal account, which would be operated by any average individual. A person could sign up for a PayPal account and connect their bank account to it in order to transfer funds into their PayPal account. Once funds were entered into the PayPal account, users could shop online and proceed through checkout using PayPal to complete their transactions. This saves time because there is no need for people to enter in their contact and account information each time they want to make a transaction. Instead, it was all linked through PayPal and transactions could be completed at the click of a button. Another account that PayPal offers is the Premier account. This type of account allows users to accept payments from others that are made with a debit or credit card. This account style is best matched with those who own small online businesses and deal with customers often. These users have access to additional features, which include shopping cart and payment reporting tools. Lastly, users can create a Business Account for large

online businesses. This account can be made under the name of a business and can even create a reoccurring payment schedule from regular customers.

II. Google Wallet

Google Wallet, introduced in 2011, is another form of mobile wallet that acts just like a physical wallet would. “Originally launched as a mobile payment application, Wallet will now be used exclusively to enable users to send and receive money using their smartphones” (Vijayan, 1). Google Wallet is the virtual version of a wallet housed on a user’s phone. Users upload their bank account information and can link any and all of their debit and credit cards to their account. It is just like putting cards into a wallet, but instead it is all done electronically. Instead of having to carry cards around day-to-day, just a swipe on a phone can send money, making it simpler to shop in stores and online. Account set up is made easy for users. All they have to do is create a free Google account and then set up their Google Wallet by entering in their account information. Anyone in the United States or United Kingdom can use Google Wallet through his or her Android, iPhone, or online Google account. Users transfer money from their bank accounts and into the Google Wallet account, where it can be used. With this account, users can send, receive, and withdraw money at any point in time.

To make an online purchase, a website must be compliant with Google Wallet technology. Purchases can also be made in store as well, which can be done through a contactless payment terminal or with the Google Wallet credit card. A contactless payment terminal is a payment reader that uses radio-frequency identification or near field communication to accept payments from smartphones. Users just have to hold their phone close to the terminal and send the payment, and then the store receives the payment securely. The Google Wallet debit card allows users to still have access to their Google Wallet account funds, even while shopping

somewhere that does not comply with Google Wallet technology. The debit card is linked to the user's Google Wallet account and is used the same way a typical debit card that is linked to a bank account would work. Money can also be sent between individuals. Users can even send money to others who do not have a Google Wallet account, as long as they have an email or phone number. Users can send money from their Wallet balance, debit card, or bank account. When users want to withdraw money from their Google Wallet account to be placed back into their bank account, all they have to do is press a button and the money is immediately transferred back into their account.

III. ApplePay

Apple Pay, created in October of 2014, is yet another version of a mobile wallet, but this form of cashless money functions slightly differently than other mobile wallets that came before it. Consumers can still make use of all of their existing credit and debit cards, without ever having to carry the physical cards on their person. Apple is not the inventor of this technology, which is pretty standard amongst mobile wallets, but Apple did improve it. "None of the individual technologies are novel, but Apple turned them into a service that is demonstrably easier than any other" (Hof, 52). People have always sought out ways to improve money in order to make transactions happen more quickly and efficiently. Apple Pay has done just that. When users hold their phone up to the checkout terminal, the payment is completed automatically. Users do not even have to open an application within their phone to complete the payment like they do with other mobile wallets, such as Google Wallet and PayPal. Apple Pay even has a security function that allows users to use their thumbprint in place of their PIN, which even further increases the speed of the transaction. Users also no longer have to show a form of identification with their purchases because Apple Pay has already verified their identity.

The security that Apple Pay has introduced is far beyond the security of other mobile wallets in the market. At first glance, it seems unsafe to store personal information, such as credit card numbers, on a cell phone that has the possibility of being hacked or stolen, but that is not how Apple Pay functions. When a transaction is completed, real card numbers are never actually used. From the beginning, the phone never actually stores real card numbers on it. Since the actual card numbers are never stored, they are not revealed in transactions, so stores never see, or accumulate, consumers' card information. Every time a transaction is made, a unique code, which will only be used for this one transaction, is generated in order to protect consumers' credit card information. This code can only be generated to make a payment through the touch ID function that can only respond to the user's fingerprint. Apple Pay's security is one of the features that give it competitive advantage over other forms of mobile wallets.

IV. Venmo

Venmo has created a platform that combines the rising trend of social media with cashless monetary transactions. Venmo was introduced as a way to move money quickly between friends without ever having to deal with physical cash. It is a quick and simple way to send and receive money from friends instantaneously, through a free smart phone application. Once users download the app, they may add friends via phone number, just like they might on any other form of social media. Consumers have the option to either "request" money from or "pay" their friends once inside the app. When the app is first downloaded, users are prompted to enter their bank account information, as well as their credit card information. Following this, Venmo users can add money into their Venmo account, which functions much like a bank account, but the funds can only be used in Venmo transactions. Users never have to add money to their Venmo account from their bank account if they choose not to, but can pay friends

directly from their bank account with Venmo just functioning as the middleman. When customers receive money from a friend that money is added to the user's Venmo balance. A user can transfer his or her Venmo balance back to their bank account at any point in time with a simple click of the transfer button. Money is deposited to user's bank accounts within twenty-four hours of a transfer request.

Venmo transactions can occur through four different payment methods, which include Venmo balance, credit cards, debit cards, and bank account balances. Venmo can be used without ever trading money from a bank account or card directly, but instead just by accessing money already stored in users' Venmo account. A Venmo balance can only be used for payments when the balance is enough to cover the entire amount of the purchase. If a consumer's Venmo balance is not enough, then a payment will be declined unless one of the other payment forms is available on their account. There are two types of transactions that can occur on Venmo, payments and purchases. Payments are just transactions completed between friends, while purchases are done while paying in merchant applications. Certain apps allow users to connect their Venmo account in order to make in app purchases. Users can update their settings to automatically use a specific payment type for payments and a different kind for purchases. In account settings, users elect to use their card, bank account, or Venmo balance for purchases and payments. Venmo has created a vessel for users to gain simple access their electronic funds, while speeding up the transaction process for users.

V. Bitcoin

Bitcoin was introduced in 2009 as a fully digital currency, also known as virtual currency or cryptocurrency, which has no backing by a government or physical commodity. Cryptocurrency means that Bitcoin applies cryptographic structures on an open source system

that allows all users to view and alter the source code embedded in Bitcoin software. Bitcoin runs like a democracy made up of its users, so any changes made that will not benefit the community, as a whole will not be accepted. This software is composed of a grid of monitors, which is a group of computers from varying locations that function uniformly to complete a goal. Its main functions are to create bitcoins through mining and to authenticate all bitcoin transactions. Bitcoins are created through a practice called mining, which is an extremely complicated data process. Mining occurs when transactions are authorized and added to the Blockchain. Miners “confirm transactions of bitcoins and store them in the Blockchain” (Cocco, 4) and then transform them into Hash through a series of complicated coding in order to derive their value. Blockchain is the term for the ledger of every bitcoin transaction that has ever occurred. Different individuals create blocks and whoever creates the blocks receives the bitcoins that are generated. The Bitcoin system as a whole only has the capabilities to produce twenty-one million bitcoins by the year 2040.

Bitcoins have been created to take the place of other forms of money, such as cash, credit cards, and other cashless currencies. Bitcoin is different than other forms of cashless money because it did not originate from fiat money, however; it has similarities to cash. Like cash both parties in a transaction are unidentifiable, but unlike cash, a third party is involved in the approval of the transaction. Bitcoin allows transactions to be completed almost instantaneously without the presence of transaction fees. Not only are transactions made quickly, but also privately because they are done without connection to the transacting parties identities. Bitcoin is “a purely peer-to-peer version of electronic cash that allows online payments to be sent directly from one party to another without going through a financial institution” (Nakamoto, 1). Essentially ownership of bitcoins is untraceable. Consumers can both send and receive Bitcoins

from any mobile device or computer, just by connecting to the Bitcoin mobile wallet software. All transactions completed with the use of bitcoins are done through code called a private key. Users must keep track of their private key because if it is lost, the bitcoins are gone forever. There is no central bank that can provide users access to a lost private key. Bitcoin utilizes “peer-to peer technology with no central authority or banks” (Nelson, 4). The network of Bitcoin users is who monitors and manages all transactions. The individuals who are hosts of the computing power behind Bitcoin receive recently created Bitcoins as transaction fees. Bitcoin has introduced a simplified way to trade money via the Internet, which has created faster transactions worldwide. As these cashless forms of money gain popularity, there is potential for society to exist completely cashlessly. The following section will discuss what the implications surrounding a fully cashless society are.

A Cashless Economy

A cashless economy is one where financial transactions are not made with physical money, such as paper bills or coins, but instead through the transfer of digital money between transacting groups. Essentially, a cashless society is exactly what it sounds like, a world that has eliminated cash completely. A cashless society is something that has been thought about and speculated about for the last one hundred years, but even today, it is something that has not yet been accomplished. The economy took its first steps towards becoming cashless with the invention of the electronic transfer technology. Electronic transfer is any transfer of money from one individual to another through an electronic terminal, without paper money ever being involved. This created the pathway for other forms of cashless money, such as credit cards and debit cards, to enter the market. Credit cards use to play a significant role in electronic funds transfer; however, they are now being traded for mobile payment technology. Over the last thirty

years, purchases made on credit cards in the United States have dropped from thirty-six percent of total purchases down to fourteen percent of total purchases. The United States is not even where the most significant drop has been seen. Countries such as Belgium, France, Canada, the United Kingdom, and Sweden now record between eighty-nine and ninety-three percent of purchases as mobile transactions, rather than credit card transactions (Blyskal, 50). Cashlessness is becoming available at every point of purchase, from the individual to the business. “Now that electronic devices are becoming part of the payment process, the way we spend cashlessly is dramatically shifting, presenting new benefits and some potentially negative consequences” (Blyskal, 49).

Implications of a Fully Cashless Economy

I. Ease of Transaction

Since money was created, its purpose has continually been to make transactions more convenient. Each time money has evolved it has been mostly due to user need for simplicity and accessibility. Convenience often determines where customers will spend their money. Stores that offer faster payment systems reduce the time customers spend in the store, which is attractive to customers who value their time. Today, cashless transactions have been introduced as a way of creating convenience for consumers. Carrying around a wallet stuffed full of various credit and debit cards and wads of cash is bulky and inconvenient, so new technology was introduced in order to reduce the number of payment options to one. Cashless technology also brings convenience to the realm of person-to-person payments. Payment applications now eliminate the need to write checks or carry specific amounts of cash when making a transaction amongst friends. If a user owes friends money, apps like Venmo, allow for complete cashless transactions. This allows money to be reimbursed in seconds, without users ever having to deliver physical

cash.

Companies have also provided convenience in transactions by eliminating the need for physical coupons and rewards cards through the use of mobile apps. These apps are referred to as branded payment apps. Branded payment apps are specific to an individual company and can be applied to make purchases or to collect coupons to use at that company's stores or online servers. If a user wants to use a coupon, rather than searching through their bag or pockets to find the paper coupon, the app can generate a QR code that can be scanned at a store's checkout. This improves convenience through combining rewards programs and payment methods in one central place. Users can download company apps in order to be better connected to companies they shop with often. Consumers are also more likely to provide their business to companies that value their time and provide convenience. Digital payments and branded payment apps have increased transaction speed and convenience.

II. Security

The invention of credit and debit cards introduced what consumers viewed as a more secure payment platform. Cash can be stolen or lost and used by another individual without a trace. Cards, even though they can be stolen, are much easier to track. Money stolen from a card can also be reimbursed with fraud protection provided by the user's bank. Card purchase history can be tracked by date, time, and location of purchase, so following fraudulent charges is more simplified. Debit cards are also protected by the use of a secret PIN number, known only to the owner of the card, which is required at the time of purchase. Cashless mobile payments offer this same type of security. Payment apps are linked to a user's debit card, credit card, or bank account, so apps have the same type of security as cards because the money derives from the same source. "That means both mobile and plastic payments are covered by the same small-to-

zero loss liability consumers are protected by” (Blyskal, 51). Essentially, mobile payments are at least as secure as the use of cards.

Mobile cashless technology has even become more secure than purchases made with debit and credit cards. Mobile payment technology uses encryption chips that are built into phones to create an added security element for cashless transactions. These chips generate a random number code, called a token, for each transaction as an alternative for the user’s actual bank account number. Tokens are only ever used for one transaction, which makes them completely useless after the transaction is complete. This prevents hackers from obtaining access to user bank account information because a token acquired after the transaction is made is unusable. That number no longer has any relationship to a user’s bank account. Not only is a token used for increased security, but PIN numbers are also employed to protect users accounts. Any time a consumer wished to make a transaction on a mobile payment app, they are required to either enter their PIN number or use fingerprint ID to complete the transaction. This protects users in case of a lost mobile phone. If a debit or credit card is lost, another individual can pick it up and use it, but with mobile cashless technology, this is not the case. No other individuals would have the ability to use that cashless money because they could not activate the fingerprint technology.

Even though protection has been put in place in order to keep cashless payments secure, such as PIN numbers and fingerprint ID, there is still potential for hackers to gain access to information. Cashless mobile payments have been backed by new technology behind their security methods, but hackers are only a few steps behind. Eventually, hackers will catch up to modern cashless security and find new methods for hacking accounts that surpass current security methods. Hackers have already discovered weaknesses in mobile payment technology

and have used those weaknesses to access accounts. In 2015, Apple Pay's top-notch security system was breached. Hackers obtained iPhones under identities other than their own and loaded the account information from stolen credit cards onto the Apple Pay accounts housed on those iPhones. This allowed hackers to use those phones to make transactions like normal and steal money from bank accounts. Banks did not shut these transactions down because the hackers were using stolen identities, which made these transactions appear as if the true account owner was making them.

III. Privacy

The introduction of cashless technology has brought rise to the idea of consumer privacy. When users register themselves to employ a cashless payment platform, an abundance of private information is often required. Name, age, social security number, and bank account information are just some of the typical information points that are used by cashless technology. This information is important to use because it verifies a user's identity in performing transactions, which is a preventative method for fraud attempts. Even though user's private information becomes much more public through mobile payment apps, it is not easily accessible by others. Mobile payment apps strive to safeguard the financial information of their users. Any time a transaction is made, retailers can obtain a user's information, but this information is only used to track each user's purchases. Giving up a level of privacy can be beneficial for consumers. Tracking transactions can be valuable for protecting against fraud. Banks and stores can monitor payment regularities associated with a consumer's information in order to quickly become active in the case of fraudulent charges.

Giving up certain amounts of privacy can provide simplicity for household budgeting and money management. Mobile bank accounts can record transaction history in order to induce

more efficient household money management. Transaction data can be imported into budgeting software in order to keep track of where expenditures lie each month. When transactions are purely cashless, rather than done using cash, they are easier to keep track of and monitor. Also, giving up private transaction information creates opportunity for customized advertisements. Data can be collected on where consumers shop, what they buy, and how often they shop. This allows coupons to be provided for products that consumers actually shop for. Providing some private information allows for more convenience and security in mobile cashless transactions.

Beyond just money being stolen through penetrable security, identities can be stolen as well. With increased hype surrounding mobile payment technology, comes an increased target for hackers and data breaches. A stolen identity is a huge privacy issue that mobile payment apps face. Users store a lot of personal data within the realm of mobile payment apps. Account information is needed of course, however users also provide social security numbers, names, and birth dates on many payment platforms. Hackers who gain access to this type of information have the ability to not only steal money, but also identity. Stolen identities can lead to stolen accounts, new accounts opened, and lines of credit created. Privacy issues also come into play when payment applications exploit your information for targeted ads. Mobile payment apps can also access searches done on a user's phone and collect that information. Many users view this as an infringement on their privacy. Tracking data that is completely unrelated to mobile cashless purchases oversteps boundaries into individuals' privacy.

IV. Transaction Cost

Even though transactions are faster and more efficient with the use of cashless mobile payments, “consumers ultimately pay billion in fees each year when they pay without cash” (Blyskal, 51). These fees are not apparent and obvious, but rather hidden because their effects are

not directly seen at the time of payment. Consumers are not charged fees straightforwardly when they make transactions, but rather receive the repercussions later on through price increases. When a cashless transaction is made, banks charge merchants a fee in order to accept those transactions from customers. Essentially, every time a transaction is made; the business pays money out of pocket, which reduces their profits. In order to mitigate this cost, merchants raise prices of goods and services, which ultimately reflect back onto consumers. Consumers have to pay more for something just to cover the fees that merchants face for accepting cashless payments. Basically, consumers are paying increased product prices to receive convenience in transactions.

Convenience that comes with cashless payments can also be a drawback because it supports the easy spending of money by consumers. When a consumer has to spend physical cash, it is simple for them to recognize the value of how much they are spending. It is challenging to part with physical cash. When a user pays with a cashless method, it is much easier to give up the money because users do not have to look at the actual money they are paying out. Swiping a card or swiping a mobile phone over a reader is simple and makes it so much plainer to spend money without realizing the value of what a user is giving up. The use of store specific cards also has created cashless convenience, but further entices users to spend more than they normally would. Stores even offer consumers savings when they make purchases with a store sanctioned card. This encourages more spending than a user normally would partake in, just to obtain a few dollars of additional savings. Convenience comes at a price.

V. Reliability

Cashless technology has been one of the most beneficial inventions of our generation; however, its potential for failure is extreme. Failure and system crashes can occur at every level

of the transaction process, from the individual, to large financial institutions. Mobile payment technology is all stored on a user's cell phone. Cell phones are operated off of battery life, so if a user's phone is dead, their ability to execute transactions is completely void. Consumers who rely solely on mobile payment technology and forgo the option of carrying cash or cards would be without any method of payment if their phone broke or had no battery charge. This situation could also occur during severe weather, subsequently causing power outages. A power outage would interrupt electronic transactions at many different levels. Individuals would not have power to charge their mobile devices, retailers would not be able to receive payments, and banks would not be able to operate the transfer of money between accounts. Essentially, the whole world would come to a stop because there would be no way to pay or even access money, unless a consumer had access to cash.

Cyber attacks also have the ability to shut down the whole cashless system. Hackers who gain access into cashless payment systems can send viruses into those systems and cause complete shutdowns. Unlike with cash, which can be used fully independently of technology, cashless methods of payments are fully reliant on the presence of technology. If a system is hacked and crashes, then users have no way to access their methods of payment. Hackers can access the software used in mobile payment applications and shut down the app on all users mobile devices. Hackers can also gain access into retailer technology and shut it down, so businesses are no longer able to receive cashless money as payment. If society became completely cashless, then there would be potential for a full economic shut down due to the inability for anyone to move cashless money. Cashless payment technology provides many benefits to transactions, but is totally useless if technology fails. Next, I will discuss the possibility of a single global currency and what implications come along with it.

A Single Global Currency

The goal in introducing a single currency to the world is to create a monetary union made up of every country in the world. “Monetary Unions are groups of countries which share a currency. Usually, they share geographical borders, but not always. Also, they often have close trade and other financial relationships” (SGCA). Currently several distinctive monetary unions exist between different countries and regions across three of the continents: Europe, Asia, and Africa. The most well known of all of these monetary unions is the European Monetary Union (EMU), which is comprised of twelve members of the European Union. This union is controlled by the European Central Bank, which serves the purpose of managing the Euro, which is the central currency of the EMU. The objective of a single global currency would follow this same pattern. It would be one common currency that could be used anywhere in the world and would be governed by a central world bank. The purpose of a single global currency would be to create ease of transaction across borders all over the world, especially through the use of technology. Both benefits and pitfalls arise when faced with the possibility of a single global currency.

Implications of a Single Currency

I. Removal of Currency Conversion Costs

Often times, currency converters, such as banks, will not buy back foreign currencies for their home currencies, which leaves users stuck with currency that cannot be used once they return home from being abroad. This process basically makes consumers pay for money that will go to waste. Exchanging money from one country’s currency to another’s is not a free process. If an individual or business desires to exchange their currency for an alternative one, this can be done at a bank or credit union, an online currency converter, or an airport kiosk. All of these places charge a service fee for initiating this conversion for customers. Exchanging currency

abroad is an even more expensive process since a consumers' native currency is not commonly exchanged abroad, which makes supply limited. The process of exchanging money becomes more expensive because it requires users to pay out additional money just to switch what form of currency they are using. Users can forgo conversation costs on the front end of the transaction by choosing to make purchases abroad with credit or debit cards. This eliminates cash conversion costs, but fees are still enacted on the back end. When a consumer makes a purchase in another currency with their card, the credit card company charges a fee as a percent of the total purchase and the bank does as well.

Exchange rates also vary across countries. One dollar does not equal one Yen and one Yen does not equal one Euro. An exchange rate is the "price for which the currency of a country can be exchanged for another country's currency" (business dictionary, 2017). If a foreign currency were overvalued, then a user would lose purchasing power when converting money into that country's currency. Creating a single global currency would eliminate all of the costs associated with currency conversion. If there was only one currency in the world, consumers could travel across borders without having to worry about transitioning their currency. This would prevent consumers from having to pay transaction costs during the conversion process and completely remove the need for currency conversion as a whole. The use of a single currency would also eliminate exchange rates. A unified global currency would make exchanges go extinct. This would allow consumers to maintain their purchasing power across the globe. Transitioning into a solitary currency worldwide would eliminate conversion costs and allow currency to maintain its value globally.

II. Price Transparency

Price transparency is the capability to access information on bid and ask prices of any

good or service at a specific time. Essentially, this is ability of consumers to understand what a product is worth and what it is selling for. When the same products and services are offered across the globe in different currencies, it creates potential for prices to be set at dissimilar levels. Prices that are set in a currency different than a user's home currency create difficulty in understanding true worth of a good or service. Looking at the value of a good or service in a foreign currency is tough to compare to its value in a user's native currency. When currencies cannot be compared, it becomes impossible to determine whether something is overvalued or undervalued relative to other things simply by looking at the price. Mathematical conversions would be required to derive true value, which is something typical consumers do not have the knowledge to do. A variety of currencies introduce the possibility of unfair pricing, which is not obvious to all consumers.

Transitioning into a single global currency would eliminate the difficulty in analyzing pricing differences. A common currency would create ease in comparing prices in one country to another because all prices would be set in the same understood currency. Users could quickly and easily determine what the best price for a good or service is simply by looking at its price in different countries' markets. With a single currency and the elimination of exchange rates, firms have access to cheaper raw materials, which reduces costs behind producing goods. Raw materials are cheaper under these circumstances because sellers do not have to raise prices to offset exchange rate discrepancies. These lower prices are derived from countries ability to buy from each other more easily due to unified pricing in the same currency. Lower producing costs create a domino effect on the rest of the production process and ultimately create cheaper goods for users to purchase. Invoking a single global currency has the ability to increase price transparency and lower prices across the world as a whole.

III. Heightened Competition and Trade

Transforming the current global monetary system into a single global currency system would induce greater price transparency, which would in turn initiate greater competition. When goods and services are all priced using the same currency, there is less discrepancy on what the true value of that good or service should be. If consumers can easily spot price differences, then they will always buy undervalued, rather than overvalued goods. Firms want consumer's business, which entices them to keep their prices competitive with others in the market. A single currency drives high prices down and low prices up to a fair middle ground price. Prices that come out of competitive pricing strategies typically represent the true value of a good or service and often times, prices even fall below true value as firms try to gain market share over others. This allows consumers and businesses alike to buy at fair prices, whereas with separated currencies purchases at prices that were way too high were extremely possible. A unified currency would flatten out price levels and offer all consumers the fairest prices for goods and services worldwide.

Trade among countries is valuable in part because it allows each country to focus on what it specializes in and then outsource on other necessities. Trade, however, gives rise to exchange rate risk. Exchange rate risk is the risk that businesses face when they owe money or will receive money in another country's currency in the future, but there is a potential that the currency in the other country will change in value in relation to their home currency. In order to protect themselves from the risk of a currency value change, businesses hedge their risk by using derivative contracts to take an opposite position from their current exposure. Hedging comes at a cost. For example, commissions have to be paid on many derivatives contracts. Introducing a single global currency would eliminate exchange rate risk completely and create a pathway for

easy trade between countries. With one currency there would be no need to hedge, so there would be no more hedging costs and countries could trade freely at a unified price.

IV. Global Policy

In order to support one currency across all nations a sole governing body that creates a single monetary policy for the whole world would have to be created. Monetary policy is the process in which a governing authority over a currency deals with the supply and demand of money, inflation rates, and interest rate in order to create stability in the economy. The introduction of a single currency would mean that the same currency strategies would have to be initiated in all countries. One monetary policy means one approach. The supply of money would have to be the same in all countries, the interest rates would have to be the same in all countries, and the inflation rates would have to be the same in all countries. One of the major goals of a monetary policy is to promote economic growth. If economies across the world are behaving differently, a single monetary policy might be detrimental to their economic health.

Even when governed under the same body, economies behave differently from one country to another. One country might experience economic turmoil, while others are experiencing growth or vice versa. Monetary policy can be used to boost economies during downturns and slow them during upturns. The issue involved is how do governing bodies approach monetary policy when economies are experiencing different things? If a majority of countries are experiencing growth, monetary policy might be set to increase interest rates, but that would be unfavorable for countries that were not experiencing the same upturn, but rather downturn. A single global currency creates the need for a single monetary policy; however, one monetary policy is not beneficial for countries that are experiencing opposite economic conditions than the majority. A single currency has the potential to create economic disorder for

many countries.

V. Shift Costs

Transition from the present multiple currency system to a single currency system is not a free process. Making the switch to a single currency would be an expensive procedure upfront because of all steps that would need to be taken to eliminate individual currencies in order to move towards a single one. Currently, all countries and monetary unions have methods for printing their own currency that they have previously invested money into. If a single currency were introduced, countries would have to pay for disposal of old moneymaking equipment and currency itself. There would no longer be a need to keep any of it around, but if for some reason a country decided to, they would have to pay storage fees. Investments would also be required for new equipment to print the new global currency. Costs would also be involved to purchase raw materials to be transformed into money.

Costs are not only incurred in the removal of old money and the creation of new money, but in societies function as well. A country's currency is built into a way their society functions. Many points of technology focus on ability to read a certain form of currency. ATMs, for example, are able to read the currency of their native count, but will have to be adjusted in order to accept a new global currency. This will incur a costly expense to alter the technology used in every ATM around the world. This problem will also occur in other money accepting technologies, such as parking meters, self check out, and vending machines. All of this technology will have to be adapted to read and accept a new global currency. Costs here will involve research and development, as well as all new product creation. Switching to a global currency is not as simple as just printing new money, but in fact, involves transforming the way societies accept money. Moving from multiple currencies to just one will be expensive on the

front end of the switch in order to get the world ready to accommodate a new kind of currency.

VI. National Sovereignty

National Pride is one of the most commonly mentioned disadvantages of transitioning to a single global currency. Citizens tend to be proud of the country they live in and proud to be distinctive from other countries around the world. Patriotism, which is devout love and support for one's country, is something that causes individuals to want to remain national, rather than global on currency issues. One of the major factors that differentiates countries from each other is their economies. Countries, or monetary unions, each have their own currency, which is representative of that country or area. For example, United States paper money includes pictures of individuals who played an integral role in the country's history, as well as the country seal. Other countries money follows this same trend. Transitioning from a national currency to a single currency has the ability to create a feeling of loss in individuals who feel as if they are losing a piece of their country's identity. If a single currency were adopted, there would be a loss of individual representation through a country's personal currency.

Economic strength is also a place that citizens derive their pride for their country. Each country with its own currency has the power to make its own economic policies. Converting to a single currency would cause individual countries to give up some control over their economies. Citizens may fear giving up that jurisdiction because it then puts countries on a more level playing field, rather than allowing some countries to be stronger than others. Stronger economic countries especially fear a single currency because they could have to follow the same policies as weaker countries, which has potential to weaken their economies. This is a key element in why countries feel negatively towards a single currency. Countries do not want to lose their ability to be economically strong. Citizens find satisfaction in their economic standing. Introducing a

single currency fosters globalization on a worldwide platform. Globalization is feared by many because of the potential impact that could affect jobs and wages. A single global currency could allow individuals to work in any country. The countries that offer higher wages will bring in all of the work force, but those who offer lower wages will lose a large portion of their job market.

Survey Method

A survey (Appendix A) was conducted in order to understand what factors affect individuals' perceptions of a fully cashless, single currency society. It seeks to explore what determinants cause someone to be for or against a cashless society and a single currency. This survey will take a look at demographic factors, access to and use of technology, patriotism, opinion on a single monetary policy, view on security and privacy, opinion on globalization and trade, and openness to change. All of these factors may have an effect on individuals' opinions of a cashless single currency. It is important to gauge individuals' opinions because individuals are the main driving force behind pushing the world towards a cashless single currency. If individuals are in favor of going fully cashless and transitioning into a single currency, then the world may be more likely to follow suit.

I. Survey Procedure

I created my own survey through the website [surveymonkey.com](https://www.surveymonkey.com), which is a platform for users to create their own surveys. Survey Monkey allows potential participants to access created surveys via a link. Participants who gained access to the link could only take the survey once to eliminate the possibility of bias. I believed that this was the best way to collect data because it was simple to reach a large number of individuals who were willing to complete the survey. This also allowed me to collect data from a diverse group of subjects.

The survey was comprised of 29 questions (Appendix A) and typically took users 10-20

minutes to complete. Participants answered some demographic questions to start off the survey, followed by questions about their opinions in several different areas. The purpose of the demographic questions was to analyze if certain opinions were linked to specific demographic areas. At the completion of the survey, participants were thanked for their time and their results were logged into the Survey Monkey database.

II. Sample

This survey was accessible via a link sent out through different channels. Participants accessed the link via Facebook most often (Table 5). The only measure participants had to meet to qualify for this survey was participants had to be at least 18 years of age. The population used for this sample contained a wide range of individuals, from students at Appalachian State University, to others who accessed the survey online. I asked a lot of my friends to complete this survey, which could introduce some bias because many of them share similar opinions. I also asked a lot of people who are my Facebook friends, which makes this sample not completely random. The sample used for this survey included 165 participants who agreed to partake in this survey completely voluntarily. The demographic information asked from the sample included age, gender, education level, income level, and survey access. Tables 1-5 contain frequency tables for each of the demographic areas of interest. The median age range of the sample included in this survey is the age range 45-54 and the age range observed most often was the range 55-64 (Table 1). The sample included 89 women, who make up 55.28% of the sample and 72 men, who make up 44.72% of the sample (Table 2). The education level observed most often by participants was some college (Table 3). The median income level that was observed was \$75,000-\$99,99; however, student was the answer observed most often (Table 4). Frequency tables are included to represent the degree to which the sample supports a cashless economy, as

well as a single currency.

III. Results

General Results

The two variables that I was most interested in observing were *Cashless* and *Single Currency*. Both variables were tested through regression analysis against other variables observed in the survey. According to the survey results, 67.88% of participants were not in favor of a cashless economy (Table 6). Participants did not support a single currency either. A majority of participants, 58.54%, stated they would not be in favor of a single currency (Table 7). Table 9 shows correlation between all of the variables tested for in this survey. In this section, I will examine what variables may be associated with participants' favor of a cashless society, as well as which variables may be correlated with participants' favor of a single currency.

Cross sectional Analysis

Stata Ologit was used to complete statistical analysis on the survey data. Ologit stands for ordered logistic regression. "Ologit fits ordered logit models of ordinal dependent variable on the independent variables" (Stata Manual, 1389). Regardless of what value is used as the dependent variable, the larger values are expected to correspond to increased outcomes. The purpose of using this model is to approximate relationships between an ordinal dependent variable and a set of independent variables. An ordinal variable is one that can be categorized and ordered. I chose to use this statistical method in order to analyze if there was a relationship between different variables from my survey sample. Stata Ologit also allows for the use of control variables, so I can put in controls when testing for a relationship between certain variables. In Stata I ran two different statistical tests to look for relationships between variables. The first test used the variable *Cashless* as the dependent variable and the second used the variable *Single_Currency* as

the dependent variable. In both tests, I controlled for the variables *Age*, *Gender*, *Education*, and *Income*. Table 8 includes definitions for each variable used in my statistical analysis.

Factors that may Influence Support of a Cashless Society

One question asked to participants through the survey was “how likely are you to be in favor of a purely cashless society?” The purpose of asking this question was to gauge individual support for going fully cashless as well as to determine what other variables may influence individual support. To determine what variables have a statistically significant effect on an individuals’ likelihood to support a cashless society, a regression analysis was done using Stata. Each test controlled for the demographic variables *Age*, *Gender*, *Education* and *Income*. Table 10 shows the Stata Ologit results associated with the *Cashless* variable. Participants’ frequency of online purchases, access to a mobile banking account, and use of a nontraditional currency were tested, but did not prove to be significant factors. The following variables were tested and resulted in significance.

a. Age

Prior to conducting this study, I hypothesized that younger age ranges would be more likely to support a fully cashless society because they are more familiar with mobile cashless technology. Regression analysis determined that *Age* was statistically significant in 7 out of the 10 regressions that were completed. Each regression performed produced a negative association between *Age* and *Cashless* variables. Coefficient estimates range from -0.1672 to -0.3591. A negative association means that as age decreases, the support of a cashless economy increases. Z-scores ranged from -2.59 to -1.00. Age was the most significant when tested with the variable *Openness*. This test proved significant with a p-value of 0.01.

b. Education

Education level was hypothesized to be a significant factor in participants' likelihood to support a fully cashless society. It was assumed that a higher level of education would result in more support of a cashless society due to a better understanding of the economy. The coefficient estimate was positive for all 9 of the regressions completed. These coefficients ranged from 0.2058 to 0.3636. The positive association between the variables suggest that the higher the education level of the participant, the more likely they are to be in favor of a cashless society. The *Education* variable was significant in 7 of the 9 regressions it was included in *Education* was most often significant at the 5% level, but one regression was significant at the 1% level.

c. Electronic Money

Users favor for purchasing things with electronic money as opposed to cash was statistically significant at the 1% level in the regression analysis that was completed. It was hypothesized that this would be the result because those who typically use electronic money in place of cash should also be in favor of a fully cashless society. The coefficient estimate was 0.6948 (Table 10, Column 3). The positive association supports that those who are more likely to use electronic money are also more likely to be in favor of a fully cashless society.

d. Adaptability

Fully cashlessness is still a new idea, so adaptability was hypothesized to play a role in a participants' willingness to switch to a fully cashless society. It was assumed that the more adaptable participants believed themselves to be, the more likely they would be to support a fully cashless society. The reason behind this is that one must be

adaptable in order to accept the new idea of cashlessness. The variable *Adaptability* gave an output z-score of -1.41 (Table 10, Column 5), which actually was not considered significant. The coefficient estimate for this variable is -0.5446. This negative association would indicate that those who consider themselves to be less adaptable are more likely to support a cashless society only if these results were significant.

e. Secure Purchases

The variable *Secure Purchases* represents participants' concerns with security when making purchases over the Internet. It was assumed that those who were less concerned with security in online transactions would be more likely to support a fully cashless society. This hypothesis was confirmed through a regression analysis. The coefficient estimate was -0.268 (Table 10, Column 7). The negative association suggests that those who are less concerned with security when making purchases online are more likely to support a cashless society. *Secure Purchases* was significant at the 10% level. This variable is less significant than others tested that resulted in significance at the 1% level; however, it is still statically significant.

f. Privacy

Before performing the regression analysis, it was hypothesized that participants who believed their information was kept private on the Internet would be more likely to support a cashless society. The coefficient estimate produced by the regression is 0.652 (Table 10, Column 8). This positive association means those who believe their information is kept private online are also more likely to support a fully cashless society. The variable *Privacy* produced a z-score of 3.03 (Table 10, Column 8), which is associated with a p-value of 0.01. This suggests that *Privacy* is significant at the 1%

level.

g. Multiple Factors

A regression analysis was completed testing for multiple variables that were of interest due to their significance when tested individually. This regression analysis can be seen in table 10, column 10. The variables that were included in this analysis were *Age*, *Gender*, *Income*, *Education*, *Mobile Banking*, *Privacy*, *Purchase Online*, *Electronic Money*, and *Adaptability*. The variables that proved significant were *Privacy* and *Electronic Money*. *Privacy* produced a coefficient estimate of 0.5769, which shows it is positively associated with the other variables tested for. It was also significant at the 5% level. *Electronic Money* has a coefficient estimate of 0.7239, which also shows a positive association between it and the other variables tested for in this regression. It was significant at the 1% level.

Factors that may Influence Support of a Single Currency

Another question of importance asked to participants through the survey was “how likely are you to be in favor of a one single global currency?” The reasoning behind proposing this question was to determine individual support for transitioning to a single global currency, as well as to determine what other variables may influence individual support. To determine what variables have a statistically significant effect on an individuals’ likelihood to support a single currency, a regression analysis was done using Stata. Each test controlled for the demographic variables *Age*, *Gender*, *Education* and *Income*. Table 11 shows the Stata Ologit results associated with the *Single_Currency* variable. The variables *Domestic_Purchase*, *Openness*, *Expansion*, *Importing*, and *Federal_Reserve* were tested, but did not prove to be significant factors. The following variables were tested and resulted in significance.

a. Age

Age was hypothesized to be a significant variable in participants' likelihood to support a single global currency. The hypothesis was that the younger age ranges would be more likely to support a single global currency because younger people are more prone to seek out convenience. The regression analysis performed supported this hypothesis with the results that younger aged participants were in fact more prone to support a single currency used across the globe. The coefficient estimates ranged from -0.4744 to -0.0683. The coefficient was negative in all 12 regressions run. A negative association suggests that the younger a participant is, the more likely they are to be in support of a single global currency. The variable *Age* was significant in 10 out of 11 regressions performed. It was significant at the 1% level in 9 of those regressions and at the 5% level in one of those regressions.

b. Patriotism

Prior to conducting this study, I hypothesized that the more patriotic participants considered themselves to be, the less likely they would be to support a single global currency. This was believed because if an individual were more likely to be supportive of their own country, then they would not be in support of having a global currency that involved other countries. A regression analysis was performed and the variable *Patriotism* was significant at the 5% level with a z-score of -2.26 (Table 11, Column 3). The coefficient estimate is -0.2339 (Table 11, Column 3). The negative association means that the less patriotic individuals perceived themselves to be, the more likely they were to support a single currency. This supports the hypothesis that the more patriotic individuals consider themselves to be, the less likely they are to support the idea of a

single global currency.

c. Vote

The variable *Vote* represents participants' likelihood to vote in the most recent presidential election. The variable *Vote* is associated with an individual's *Patriotism*, so it was assumed that those who considered themselves more likely to vote were more patriotic and therefore are less likely to support a single global currency because they have pride in their country as an individual. This hypothesis was supported through a regression analysis. *Vote* was significant at the 1% level when tested against *Single_Currency*. A z-score of -3.12 (Table 11, Column 4) was observed. The coefficient estimate is -0.4216. The association was negative, which means the less likely a participant was to vote, the more likely they are to be in favor of a single global currency.

d. Globalization

Users favor for globalization is statistically significant at the 1% level. It was hypothesized that this would be the result because those who support globalization, which is the free flowing of ideas people, and goods throughout the world, should also be in favor of a single global currency. The regression test concluded this hypothesis to be correct with a z-score of 5.01 (Table 11, Column 5). The coefficient estimate of 0.5674 has a positive association, which suggests that the more a participant favors globalization, the more they will also favor a single global currency.

e. Central Bank

Prior to conducting this study, I hypothesized that those who believed it was a good idea to have a central bank for the world would also support a single global currency because both variables focus on a global monetary policy. A regression analysis

determined that the variable *Central_Bank* was statistically significant. The z-score observed was 6.09 (Table 11, Column 8). This test proved significant with a p-value of 0.01. The coefficient estimate is 0.9923 (Table 11, Column 8), which creates a positive association between the two variables. This supports the hypothesis that those who are more supportive of a central bank will also be more supportive of a single global currency.

f. Adaptability

Before performing the regression analysis, it was hypothesized that participants who considered themselves more adaptable would be more likely to support a single currency. The variable *Adaptability* produced a z-score of -2.37 (Table 11, Column 9), which is associated with a p-value of 0.05. This suggests that *Adaptability* is significant at the 5% level. The coefficient estimate is -0.3745 (Table 11, Column 9), which is a negative association. This suggests that the hypothesis was not correct and that the less participants considered themselves to be adaptable, the more likely they were to support a single global currency.

h. Multiple Factors

An additional regression analysis was done to test for multiple variables that were of interest due to their significance when tested individually. The results from this regression analysis are in table 11, column 12. The variables tested in this analysis were *Age*, *Gender*, *Income*, *Education*, *Vote*, *Globalization*, *Central Bank*, and *Federal Reserve*. The variables that tested significant were *Income*, *Vote*, *Globalization*, and *Central Bank*. *Income* produced a coefficient estimate of 0.1329, which shows it is positively associated with the other variables tested for. It was also significant at the 10%

level. *Vote* has a coefficient estimate of -0.3608, which proves a negative association between it and the other variables tested for. It was significant at the 10% level. *Globalization* presented a coefficient estimate of 0.4625, which suggests positive association between it and the other variables included in the regression. The last variable of significance is *Central Bank*. It produced a coefficient estimate of 0.9242. This positive association means *Central Bank* is positively associated with the other variables used in this regression.

Conclusion

Overall, the information discussed in this work is important because of the effects it may have on the future. According to the survey results, the variable *Age* was significant when observing both favor of a cashless society and favor of a single currency. The correlation estimate was negative in every single regression that was run involving *Age* for both the *Cashless* variable and the *Single Currency* variable. This negative association suggests that younger ages are more likely to be in favor of a fully cashless society, as well as a single currency. This is important because those who are a part of the younger age ranges will soon be the ones who are controlling the work force and are the largest participators in the economy. If younger ages are in favor of a cashless single currency, then as they age to become a more significant part of society, their opinions will be more likely to turn into reality. Although this is a major possibility, it is also realistic to assume that as the younger generation ages, their opinions might become more conservative and they will no longer favor a cashless single currency. Currently, the general consensus of the survey is the majority individuals are not in favor of a cashless society or a single global currency. As the younger generation ages there is a potential for general opinions to change, which will reflect favor for a single currency and a

cashless society.

The creation of the survey proved to be a beneficial method for determining individual's opinions about a cashless society and a single global currency, as well as additional factors that played a role in determining those opinions. Using Stata to run regression analysis allowed me to determine which variables observed throughout the survey were significant and which were not. Prior to analyzing the results, every variable included in the survey was assumed to be significant at some level; however this did not turn out to be the case. This testing method also allowed me to control for certain demographic variables when testing for significance. When observing the variable *Cashless*, there were several variables that tested significant. *Age, Education, Electronic Money, Adaptability, Secure Purchases, and Privacy* all were significant. Variables tested that did not produce significant results include *Gender, Income, Purchase Online, Mobile Banking, Openness, and Bitcoin*. The results for the variable *Single Currency* also had some variables test significant. *Age, Patriotism, Vote, Globalization, Central Bank, and Adaptability* were all significant variables when tested against *Single Currency*. The variables that were tested that did not prove significant were *Gender, Education, Income, Domestic Purchase, Openness, and Expansion*. It was believed that all of these variables would test significant before assessing the survey results, but many of them did not play a significant role in participants' opinions towards cashlessness or a single currency.

Readers should be careful when reading through these results because the sample used to obtain them was not completely random. I passed the survey on to a lot of my friends on Facebook, so the population has potential to be biased. Readers should keep this in mind when reading through all survey results. In conclusion, I hope that these results will provide useful information for readers about where the future of money could possibly be headed. It is

important that readers understand which variables were significant and what the implications involved are for a cashless society and a single global currency. The potential for both to happen in the future is extremely possible and I hope these results allow readers to understand that potential.

Appendix A
A Cashless, Single Currency Society Survey

- 1. What is your gender?**
 - a. Male
 - b. Female
- 2. What is your age?**
 - a. 18 to 24
 - b. 25 to 34
 - c. 35 to 44
 - d. 45 to 54
 - e. 55 to 64
 - f. 65 to 74
- 3. What is the highest level of education you have completed?**
 - a. High School Degree or Equivalent
 - b. Some College
 - c. Associates Degree
 - d. Bachelors Degree
 - e. Graduate Degree
- 4. What is your approximate average household income?**
 - a. Student
 - b. Less than \$25,000
 - c. \$25,000-\$49,999
 - d. \$50,000-\$74,000
 - e. \$75,000-\$99,999
 - f. \$100,000-\$124,999
 - g. \$125,000-\$149,999
 - h. \$150,000-\$174,999
 - i. \$175,000-\$199,999
 - j. \$200,000 and Up
- 5. If you answered “Student” to the previous question, what is your parent’s income level?**
 - a. Less than \$25,000
 - b. \$25,000-\$49,999
 - c. \$50,000-\$74,000
 - d. \$75,000-\$99,999
 - e. \$100,000-\$124,999
 - f. \$125,000-\$149,999
 - g. \$150,000-\$174,999
 - h. \$175,000-\$199,999
 - i. Greater than \$200,000

- 6. How much more likely are you to purchase a product if it's made in the United States?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely
 - g. Indifferent
- 7. Which of the following social media sites do you use regularly? (Check all that apply)**
- a. Facebook
 - b. Instagram
 - c. Twitter
 - d. SnapChat
 - e. LinkedIn
- 8. How likely are you to be in favor of one single global currency?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely
- 9. How patriotic do you consider yourself to be?**
- a. Very Unpatriotic
 - b. Unpatriotic
 - c. Somewhat Unpatriotic
 - d. Somewhat Patriotic
 - e. Patriotic
 - f. Very Patriotic
- 10. How likely are you to be in favor of using electronic money (cashless) as opposed to cash transactions?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely
- 11. How likely are you to vote in the upcoming presidential election?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely

- 12. How likely are you to support globalization? (Globalization is the process by which people, ideas, and goods are spread throughout the world, spurring more interactions and integration between the world's cultures, governments, and economies.)**
- Very Unlikely
 - Unlikely
 - Somewhat Unlikely
 - Somewhat Likely
 - Likely
 - Very Likely
- 13. Do you display the American Flag in your home, office, or car?**
- Yes
 - No
- 14. On a scale of 1 to 5, how open do you consider yourself to new experiences? (1=least open, 5= most open)**
- 1
 - 2
 - 3
 - 4
 - 5
- 15. How often do you purchase items online?**
- Never
 - Yearly
 - Monthly
 - Weekly
 - Daily
- 16. Which of the following payment methods do you feel are secure? (Check all the apply)**
- Cash
 - Check
 - Credit/ Debit Cards
 - PayPal
 - Venmo
 - Snap Cash
 - Square
 - Apple/ Google/ Samsung Wallet
- 17. How likely are you to support American companies expanding into other countries?**
- Very Unlikely
 - Unlikely
 - Somewhat Unlikely
 - Somewhat Likely
 - Likely
 - Very Likely

- 18. How likely are you to be in favor of a central world bank controlling global monetary policy?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely
- 19. How likely are you to adapt well to an unplanned situation?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely
- 20. Which of the following devices do you have access to on a daily basis? (Check all that apply)**
- a. Smart Phone
 - b. Tablet/ iPad
 - c. Laptop Computer
 - d. Desktop Computer
 - e. Landline Phone
 - f. T.V.
 - g. Video Game Console
- 21. How likely are you to support the United States importing goods from other countries for sale within our borders?**
- a. Very Unlikely
 - b. Unlikely
 - c. Somewhat Unlikely
 - d. Somewhat Likely
 - e. Likely
 - f. Very Likely
- 22. Do you have a mobile banking account?**
- a. Yes
 - b. No
- 23. Which of the following online payment methods have you used before?**
- a. Entering Credit/ Debit Card information on the Internet
 - b. PayPal
 - c. Venmo
 - d. Snap Cash
 - e. Square
 - f. Apple/ Google/ Samsung Wallet
 - g. Online/ Mobile Banking

- 24. How concerned are you about security in relation to making purchases or banking over the Internet?**
- Very Unconcerned
 - Unconcerned
 - Somewhat Unconcerned
 - Somewhat Concerned
 - Concerned
 - Very Concerned
- 25. How likely are you to be in favor of a purely cashless society?**
- Very Unlikely
 - Unlikely
 - Somewhat Unlikely
 - Somewhat Likely
 - Likely
 - Very Likely
- 26. Do you feel that your information on the Internet is kept private?**
- Not Private
 - Somewhat Private
 - Private
 - Very Private
- 27. How likely are you to support the Federal Reserve controlling United States monetary policy?**
- Very Unlikely
 - Unlikely
 - Somewhat Unlikely
 - Somewhat Likely
 - Likely
 - Very Likely
- 28. Have you ever used a nontraditional currency, such as bitcoin?**
- Yes
 - No
- 29. How did you access this survey?**
- Received the link via text message
 - Received the link via GroupMe
 - Received the link via email
 - Received the link via Facebook
 - Other

Tables:

Table 1 – Frequency of Age Demographic

Frequency of Age Demographic		
Age	Count	Percentage of Total
18-24	41	25.15%
25-34	17	10.43%
35-44	17	10.43%
45-54	24	14.72%
55-64	53	32.52%
65-74	11	6.75%
Total	163	100.00%

Table 1 shows the frequency of the age demographic in the sample from the survey.

Table 2 – Frequency of Gender Demographic

Frequency of Gender Demographic		
Gender	Count	Percentage of Total
Male	72	44.72%
Female	89	55.28%
Total	161	100.00%

Table 2 shows the frequency of the gender demographic in the sample from the survey.

Table 3 – Frequency of Education Demographic

Frequency of Education Demographic		
Education Level	Count	Percentage of Total
High School Degree of Equivalent	16	9.82%
Some College	64	39.26%
Associates Degree	10	6.13%
Bachelors Degree	43	26.38%
Graduate Degree	30	18.40%
Total	163	100.00%

Table 3 shows the frequency of the education demographic in the sample from the survey.

Table 4 – Frequency of Income Level Demographic

Frequency of Income Demographic		
Income Level	Count	Percentage of Total
Student	41	25.00%
Less than \$25,000	4	2.44%
\$25,000-\$49,999	8	4.88%
\$50,000-\$74,999	22	13.41%
\$75,000-\$99,999	19	11.59%
\$100,000-\$124,999	12	7.32%
\$125,000-\$149,999	21	12.80%
\$150,000-\$174,999	13	7.93%
\$175,000-\$199,999	9	5.49%
\$200,000 and up	15	9.15%
Total	164	100.00%

Table 4 shows the frequency of the income demographic in the sample from the survey.

Table 5 – Frequency of Survey Access

Frequency of Survey Access		
Access Point	Count	Percentage of Total
Text Message	9	5.45%
GroupMe	25	15.15%
Email	7	4.24%
Facebook	124	75.15%
Total	165	100.00%

Table 5 shows the frequency of the survey access data in the sample from the survey.

Table 6 – Frequency of Support of a Cashless Society

Frequency of Support of a Cashless Society		
Cashless Society	Count	Percentage of Total
Very Unlikely	67	40.61%
Unlikely	8	4.85%
Somewhat Unlikely	37	22.42%
Somewhat Likely	31	18.79%
Likely	8	4.85%
Very Likely	14	8.48%
Total	165	100.00%

Table 6 shows the frequency of support of a cashless society in the sample from the survey.

Table 7 – Frequency of Support of a Single Currency

Frequency of Support of a Single Currency		
Single Currency	Count	Percentage of Total
Very Unlikely	52	31.71%
Unlikely	27	16.46%
Somewhat Unlikely	17	10.37%
Somewhat Likely	29	17.68%
Likely	21	12.80%
Very Likely	18	10.98%
Total	164	100.00%

Table 7 shows the frequency of support of a single currency in the sample from the survey.

Table 8 – Variable Definitions (Part 1)

Variable Definitions	
Adaptability	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Age	Ranges from 1 to 6 with 1 being age 18-24, 2 being age 25-34, 3 being age 35-44, 4 being 45-54, 5 being 55-64, and 6 being 65-74
Bitcoin	Equals 1 when participant has not used a nontraditional currency and 2 when participant has used a nontraditional currency
Cashless	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Central_Bank	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Domestic_Purchase	Ranges from 0 to 6 with 0 being indifferent, 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Education	Ranges from 1 to 5 with 1 being high school degree or equivalent, 2 being some college, 3 being associates degree, 4 being bachelors degree, and 5 being graduate degree
Electronic_Money	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely

Table 8 provides definitions for some of the variables from my sample.

Table 8 – Variable Definitions (Part 2)

Variable Definitions	
Expansion	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Federal_Reserve	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Gender	Equals 1 when participant is a male and 2 when participant is female
Globalization	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Importing	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely
Income	Ranges from 0 to 9 with 0 being student, 1 being less than \$25,000, 2 being \$25,000-\$49,999, 3 being \$50,000-\$74,000, 4 being \$75,000-\$99,999, 5 being \$100,000-\$124,999, 6 being \$125,000-\$149,999, 7 being \$150,000-\$174,999, 8 being \$175,000-\$199,999, and 9 \$200,000 and Up
Mobile_Banking	Equals 1 when participant does not have a mobile banking account and 2 when participant does have a mobile banking account
Openness	Ranges from 1 to 5 with 1 being least open and 5 being most open
Patriotism	Ranges from 1 to 6 with 1 being very unpatriotic, 2 being unpatriotic, 3 being somewhat unpatriotic, 4 being somewhat patriotic, 5 being patriotic, and 6 being very patriotic

Table 8 provides definitions for some of the variables from my sample.

Table 8 – Variable Definitions (Part 3)

Variable Definitions	
Privacy	Ranges from 1 to 4 with 1 being not private, 2 being somewhat private, 3 being private, and 4 being very private
Purchase_Online	Ranges from 1 to 5 with 1 being never, 2 being yearly, 3 being monthly, 4 being weekly, and 5 being daily
Secure_Purchases	Ranges from 1 to 6 with 1 being very unconcerned, 2 being unconcerned, 3 being somewhat unconcerned, 4 being somewhat concerned, 5 being concerned, and 6 being very concerned
Vote	Ranges from 1 to 6 with 1 being very unlikely, 2 being unlikely, 3 being somewhat unlikely, 4 being somewhat likely, 5 being likely, and 6 being very likely

Table 8 provides definitions for some of the variables from my sample.

Table 9 – Correlation Coefficients (Part 1)

	Age	Gender	Education	Income	Domestic_ Purchase	Single_ Currency
Age	1.0000					
Female	0.2329	1.0000				
Education	0.3492	0.1561	1.0000			
Income	0.6842	0.1408	0.5473	1.0000		
Domestic_Purchahse	0.0854	-0.0333	-0.1726	-0.0731	1.0000	
Single_Currency	-0.3477	-0.1545	-0.0854	-0.1675	-0.1902	1.0000
Patriotism	0.0558	0.0423	0.026	0.0287	0.1403	-0.1681
Electronic_Currency	-0.1866	-0.1165	0.1687	-0.0089	-0.1709	0.3407
Vote	0.1605	-0.0274	0.1324	0.1503	0.1227	-0.2003
Globalization	-0.3892	-0.2086	-0.0213	-0.2397	-0.1785	0.4356
Openness	-0.1154	-0.0541	-0.1609	-0.0098	-0.2121	0.032
Purchase_Online	-0.1407	-0.0691	0.1545	0.1049	-0.0261	0.0081
Expansion	-0.1189	0.0355	0.2056	0.063	-0.1576	0.1015
Central_Bank	-0.4932	-0.1648	-0.0335	-0.3348	-0.2506	0.6221
Adaptability	0.0450	-0.0228	-0.1055	-0.0244	0.1458	-0.1989
Importing	-0.1279	0.0165	0.2406	-0.0053	-0.0879	0.1565
Mobile_Banking	-0.3055	-0.0886	-0.0159	-0.1005	-0.1095	0.1683
Secure_Purchase	0.2769	0.2267	0.0216	0.1616	0.1649	-0.2199
Cashless	-0.2088	-0.0726	0.1542	-0.0537	-0.1575	0.2722
Privacy	-0.1693	-0.0723	-0.0589	-0.0545	-0.1269	0.3029
Federal_Reserve	0.0640	0.1912	0.2419	0.0689	0.0555	-0.0551
Bitcoin	-0.1645	0.1448	0.1024	0.0871	-0.1005	0.2403

Table 9 provides the correlation coefficients of the variables observed in the sample from the survey.

Table 9 – Correlation Coefficients (Part 2)

	Patriotism	Electronic_ Currency	Vote	Globalization	Openness
Patriotism	1.0000				
Electronic_Currency	-0.1903	1.0000			
Vote	0.0715	-0.0588	1.0000		
Globalization	-0.2011	0.4423	-0.0433	1.0000	
Openness	0.1295	0.0331	0.1028	0.0449	1.0000
Purchase_Online	-0.0119	0.2116	-0.0071	-0.1029	0.2145
Expansion	-0.1526	0.3028	0.001	0.1988	0.1051
Central_Bank	-0.1814	0.2651	-0.1768	0.4371	0.0983
Adaptability	0.1094	-0.0520	-0.3480	-0.0016	0.1370
Importing	-0.0274	0.1545	0.0812	0.1703	0.0268
Mobile_Banking	-0.0232	0.2539	-0.1557	0.2014	0.0664
Secure_Purchase	0.198	-0.2844	0.0397	-0.2458	-0.0009
Cashless	-0.2706	0.4973	-0.2369	0.2954	-0.061
Privacy	-0.1125	0.0881	-0.1982	0.233	-0.0846
Federal_Reserve	0.0917	0.0232	0.0140	-0.0093	-0.1000
Bitcoin	-0.0284	0.1497	-0.207	0.144	0.1010

Table 9 provides the correlation coefficients of the variables observed in the sample from the survey.

Table 9 – Correlation Coefficients (Part 3)

	Purchase_Online	Expansion	Central_Bank	Adaptability	Importing
Purchase_Online	1.0000				
Expansion	0.1266	1.0000			
Central_Bank	0.0452	0.2459	1.0000		
Adaptability	0.0187	-0.1161	-0.3019	1.0000	
Importing	0.0246	0.3842	0.2651	0.1262	1.0000
Mobile_Banking	0.1247	0.0663	0.1141	0.0340	0.0956
Secure_Purchase	-0.116	-0.1559	-0.2402	0.0632	-0.0896
Cashless	-0.0076	0.2965	0.416	-0.1119	0.2128
Privacy	-0.1847	0.0468	0.2158	-0.2126	0.1305
Federal_Reserve	0.0958	0.047	-0.0216	-0.1355	0.1554
Bitcoin	0.0730	0.1366	0.2844	0.0471	0.1034

Table 9 provides the correlation coefficients of the variables observed in the sample from the survey.

Table 9 – Correlation Coefficients (Part 4)

	Mobile_ Banking	Secure_ Purchases	Cashless	Privacy	Federal_ Reserve	Bitcoin
Mobile_Banking	1.0000					
Secure_Purchase	-0.075	1.0000				
Cashless	0.1722	-0.2674	1.0000			
Privacy	0.1167	-0.2807	0.2768	1.0000		
Federal_Reserve	-0.0207	-0.0642	0.0184	-0.0065	1.0000	
Bitcoin	0.1236	-0.0357	0.1696	0.2208	-0.0331	1.0000

Table 9 provides the correlation coefficients of the variables observed in the sample from the survey.

Table 10 – Cashless Regression Analysis (Part 1)

VARIABLES	1 Cashless	2 Cashless	3 Cashless	4 Cashless	5 Cashless
Openness	-0.1164 (-0.64)	-0.1005 (-0.54)			
Age	-0.1961 (-2.59)***	-0.3276 (-2.26)**	-0.1748 (-1.22)	-0.3591 (-2.39)**	-0.3238 (-2.34)
Female		-0.1868 (-0.56)	0.0144 (0.04)	-0.2161 (-0.64)	-0.1148 (-0.34)
Education		0.3289 (2.37)**	0.2058 (1.32)	0.3506 (2.56)**	0.3233 (2.34)**
Income		0.0368 (0.39)	-0.0107 (-0.12)	0.0486 (0.52)	0.0284 (0.32)
Electronic_Money			0.6948 (5.35)***		
Purchase_Online				-0.2333 (-1.10)	
Adaptability					-0.1799 (-1.41)

***p<0.01, **p<0.05, *p<0.1

Table 10 includes the stata ologit regression for *Cashless* for the sample from the survey. The p-value is listed below the coefficient estimate for each value. Variable definitions are in Table 8.

Table 10 – Cashless Regression Analysis (Part 2)

VARIABLES	6 Cashless	7 Cashless	8 Cashless	9 Cashless	10 Cashless
Age	-0.2648 (-1.91)*	-0.2858 (-1.99)**	-0.2599 (-1.90)*	-0.2606 (-1.88)*	-0.1672 (-1.00)
Female	-0.1553 (-0.46)	-0.0646 (-0.18)	-0.1743 (-0.51)	-0.3008 (-0.84)	0.0478 (0.14)
Education	0.3636 (2.70)***	0.3209 (2.28)**	0.3568 (2.50)**	0.3429 (2.42)**	0.2390 (1.43)
Income	-0.0009 (-0.01)	0.034 (0.38)	0.0033 (0.04)	0.0056 (0.07)	-0.0163 (-0.17)
Mobile_Banking	0.5037 (1.22)				0.2091 0.48
Secure_Purchases		-0.268 (-1.90)*			
Privacy			0.652 (3.03)***		0.5769 (2.38)**
Bitcoin2				0.9903 (1.12)	
Purchase_Online					-0.3922 (-1.50)
Electronic_Money					0.7239 (5.22)***
Adaptability					-0.0458 (-0.27)

***p<0.01, **p<0.05, *p<0.1

Table 10 includes the stata ologit regression for *Cashless* for the sample from the survey. The p-value is listed below the coefficient estimate for each value. Variable definitions are in Table 8.

Table 11 – Single Currency Regression Analysis (Part 1)

VARIABLES	1 Single_Currency	2 Single_Currency	3 Single_Currency	4 Single_Currency
Domestic_Purchase		-0.1142 (-1.46)		
Age	-0.4568 (-3.56)***	-0.4273 (-3.30)***	-0.4718 (-3.61)***	-0.4511 (-3.54)***
Female	-0.2965 (-0.96)	-0.3275 (-1.05)	-0.2756 (-0.89)	-0.3483 (-1.12)
Education	0.02 (0.17)	-0.0082 (-0.07)	0.0193 (0.16)	0.0384 (0.31)
Income	0.046 (0.55)	0.0365 (0.43)	0.0589 (0.7)	0.0642 (0.77)
Patriotism			-0.2339 (-2.26)**	
Vote				-0.4216 (-3.12)***

***p<0.01, **p<0.05, *p<0.1

Table 11 includes the stata ologit regression for *Single Currency* for the sample from the survey. The p-value is listed below the coefficient estimate for each value. Variable definitions are in Table 8.

Table 11 – Single Currency Regression Analysis (Part 2)

VARIABLES	5 Single_Currency	6 Single_Currency	7 Single_Currency	8 Single_Currency
Age	-0.3066 (-2.34)**	-0.4744 (-3.51)***	-0.4187 (-3.12)***	-0.1621 (-1.47)
Female	-0.1062 (-0.34)	-0.301 (-0.98)	-0.3443 (-1.09)	-0.3676 (-1.19)
Education	-0.0986 (-0.80)	0.002 (0.02)	0.0011 (0.01)	-0.185 (-1.40)
Income	0.0574 (0.7)	0.0575 (0.66)	0.0385 (0.45)	0.1126 (1.49)
Gloablization	0.5674 (5.01)***			
Openness		-0.1338 (-0.66)		
Expansion			0.0806 (0.62)	
Central_Bank				0.9923 (6.09)***

***p<0.01, **p<0.05, *p<0.1

Table 11 includes the stata ologit regression for *Single Currency* for the sample from the survey. The p-value is listed below the coefficient estimate for each value. Variable definitions are in Table 8.

Table 11 – Single Currency Regression Analysis (Part 3)

VARIABLES	9 Single_Currency	10 Single_Currency	11 Single_Currency	12 Single_Currency
Age	-0.4945 (-3.58)***	-0.4293 (-3.25)***	-0.4593 (-3.57)***	-0.0683 (-0.56)
Female	-0.1644 (-0.53)	-0.2835 (-0.92)	-0.2594 (-0.84)	-0.1937 (-0.56)
Education	-0.0307 (-0.25)	-0.0256 (-0.19)	0.0479 -0.38	-0.2265 (-1.60)
Income	0.0624 (0.70)	0.0428 (0.51)	0.0416 -0.5	0.1329 (1.71)*
Adaptability	-0.3745 (-2.37)**			
Importing		0.1691 (0.91)		
Federal_Reserve			-0.0614 (-0.79)	
Vote				-0.3608 (-1.65)*
Globalization				0.4625 (3.69)***
Central_Bank				0.9242 (5.32)***
Federal_Reserve				-0.079 (-0.97)

***p<0.01, **p<0.05, *p<0.1

Table 11 includes the stata ologit regression for *Single_Currency* for the sample from the survey. The p-value is listed below the coefficient estimate for each value. Variable definitions are in Table 8.

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