Learning Module 7: Introduction to Digital Assets

LOS 7a: describe financial applications of distributed ledger technology

Distributed Ledger Technology (DLT) represents a technology with the potential to revolutionize financial services and record-keeping practices. Built upon a distributed ledger, a database that can be shared across an extensive network of entities, DLT networks are being explored to facilitate the creation, exchange, and tracking of ownership for financial assets on a peer-to-peer (P2P) basis.

The technology offers several potential advantages, such as heightened accuracy, transparency, and security in maintaining records, as well as faster asset ownership transfers and P2P interactions. However, it's essential to acknowledge that DLT is not entirely immune to security risks, which may lead to privacy breaches and issues with data protection. Furthermore, the computational processes integral to DLT often demand significant energy resources to validate transaction activity.

For example, Bitcoin, a prevalent cryptocurrency, utilizes DLT to record all transactions. This approach establishes a transparent and secure means of transferring digital currency from one user to another without relying on a central authority like a traditional bank.

Elements of a DLT Network

In a distributed ledger system, entries are logged, stored, and disseminated across a network of participants, ensuring that every involved entity possesses an identical copy of the digital database. This arrangement makes each iteration of the database a verified repository of all current and past transactions. Key components of a DLT network encompass a digital ledger, a consensus mechanism utilized to validate new entries, and a participant network.

The consensus mechanism stands as the method by which computer entities (or nodes) within the network come to an agreement on the shared status of the ledger. This process usually involves two phases: validating transactions and securing consensus among network participants

to update the ledger. These mechanisms enable the generation of records that are typically considered immutable or unalterable while remaining transparent and accessible to network participants in nearly real-time.

Features of DLT

Key aspects of DLT involve the use of cryptography, employing an algorithmic process to encrypt data, thus ensuring a high level of network security and integrity of the database. For instance, DLT utilizes cryptographic verification methods to confirm the identity of network participants and encrypt data.

DLT technology has the capability to support "smart contracts," which are self-executing computer programs based on predefined terms and conditions agreed upon by contract parties. These smart contracts are useful in automatically executing contingent claims for derivatives and facilitating the instantaneous transfer of collateral in the event of default.

As an illustration, the Ethereum network incorporates smart contracts for automating contract execution. If an individual wishes to bet on the outcome of a football match, they can establish a smart contract on the Ethereum network. This contract will automatically disburse winnings to the victor once the match concludes, based on data obtained from a trusted source.

Blockchain

Blockchain is a type of distributed ledger where information is recorded sequentially within the blocks that are linked or chained together and secured by cryptographic methods.

The linking of blocks is regulated by the consensus protocol, which comprises a set of rules dictating how blocks can join the chain and establish an immutable record. These protocols are formulated to withstand potential malicious manipulation up to a specific level of security.

For instance, in order to add a new transaction to a network, the following key steps must be followed:

Step 1: Transaction occurs between the buyer and the seller

Step 2: A block containing the transaction information is formed and relayed to the network of computers (nodes).

Step 3: The computers (nodes) validated the transaction information and the involved parties

Step 4: After verification, the transaction is combined with other transactions to generate a new block of predetermined size of data for the ledger.

Step 5: The created block of data is linked using cryptography to the previous blocks or blocks containing the transaction data.

Step 6: The transaction is deemed complete, and the ledger has been updated.

It is noteworthy to state that each block has a group of transactions or entries and a secure link termed as a hash to the previous block. Moreover, new transactions are linked to the chain only after the validation through the consensus mechanism.

Types of Protocols

There are two main types of protocols in the blockchain technology. These protocols are distinguished based on their functionality and security level. The two main types of protocols are **Proof of Work (PoW)** and **Proof of Stake (PoS).**

Proof of Work (PoW)

The Proof of Work (PoW) serves as a consensus algorithm within blockchain networks, verifying transactions and adding new blocks to the chain. PoW determines which particular block to add using a computationally expensive lottery. Essentially, it involves a cryptographic problem that must be solved by power computers on a network (called miners) every time a transaction occurs.

Shortcomings of PoW

Miners utilize robust computers and a substantial amount of energy to resolve complicated

algorithmic puzzles, a necessary step in validating and securing transaction blocks on the blockchain. In doing so, they earn cryptocurrency rewards. Consequently, PoW requires significant energy consumption, hence making it costly for an individual third party to exploit historical data.

Proof of Work (PoW) consensus protocols, while effective, are vulnerable to a type of security threat known as the 51% attack. A '51% attack' refers to an attack on a blockchain network by a group of miners controlling more than 50% of the network's mining hash rate or computing power. In PoS, executing a '51% attack' would require ownership of 51% of the cryptocurrency, which is financially disincentivizing, making PoS less susceptible to such attacks.

Within the blockchain network, participants collectively agree that the chain with the most blocks represents the authentic record of all previous transactions.

To successfully execute a 51% attack, a malicious actor must outperform the entire network's computational power, effectively controlling over half of it. This immense level of computational control is the threshold at which the security of PoW protocols is compromised. Gathering such a significant portion of computational power is exceptionally challenging, especially on major blockchains like Bitcoin.

Despite its vulnerabilities, the PoW protocol remains the most widely adopted consensus mechanism for digital assets, largely due to the difficulty of executing such an attack.

Proof of Stake (PoS)

In Proof of Stake (PoS) network participants known as validators pledge capital as a stake to affirm their commitment to validating transactions and proposing blocks. This staking acts as a signal to the network of a validator's readiness to verify transaction accuracy and propose new blocks.

The process involves a majority of validators who have similarly staked digital assets, attesting to the legitimacy of each proposed block. Validators gain rewards (cryptocurrency or a token) both from proposing blocks and from attesting to the validity of blocks proposed by others engaged in the same staking process.

The security framework of PoS is based on a collective of stakers, utilizing their pledged stake to command the network's computational power and thwart attempts by malicious entities to gain a controlling influence.

Permissioned and Permissionless Networks

Distributed Ledger Technology (DLT) can be categorized into two types: **permissionless** and **permissioned networks**.

Permissionless Networks

Permissionless networks are open to anyone who wants to make transactions and thus offer complete transparency, as all transactions on the blockchain are visible to every user. In these open Distributed Ledger Technology (DLT) systems, any participant can perform all network functions, encompassing a wide range of activities.

The primary advantage of permissionless networks lies in their independence from centralized authorities for transaction validation. Instead, transaction legitimacy is established through a consensus mechanism, eliminating the need for a single authoritative entity. This decentralization means there is no single point of failure, as all transactions are recorded on a unified distributed database, with every node holding a copy.

In a permissionless network, once a transaction is added to the blockchain, it becomes a part of a permanent and immutable record. In such networks, trust is not a prerequisite for transactions between parties.

Bitcoin, launched in 2009, is a prominent example of a permissionless network. It functions as the public ledger for all transactions involving its digital currency.

Permissioned Networks

In permissioned networks, the participation of network members in certain activities can be regulated through a system of controls or permissions. These permissions determine the level of

access each member has to the ledger.

For example, participants might be restricted from adding transactions, and regulators may only be allowed to view transactions or access only selected details of transactions.

Comparison between Permissionless and Permissioned Networks

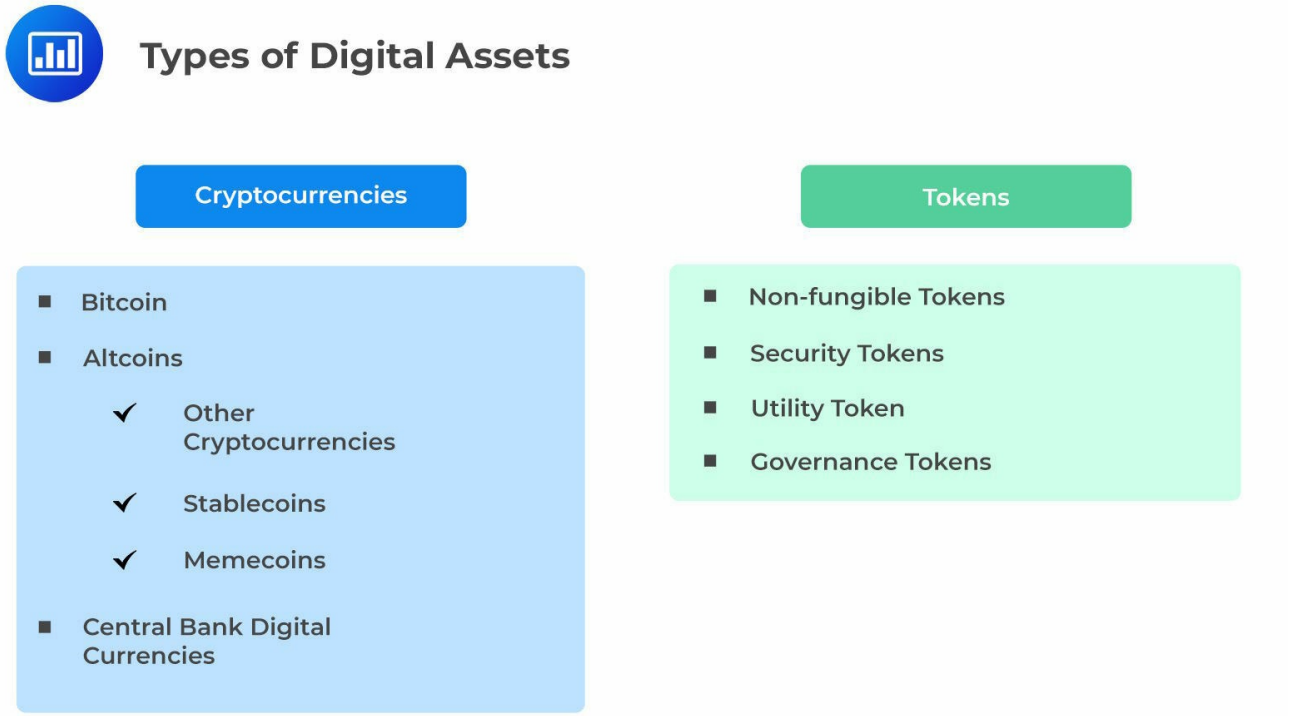
	Permissioned	Permissionless
Speed	Faster with limited member participation	Slower with more members t
Cost	Cost-effective due to fewer member validators	Less cost-effective due to ma
Decentralization	Partially decentralized	Fully decentralized
Access	Membership limited	Unlimited membership
Governance	Determined by centralized authority	Decentralized; maintained by

Digital Assets

The adoption of Distributed Ledger Technology (DLT) has revolutionized the provision of financial services, streamlining processes such as tokenization, post-trade clearing, and compliance. Furthermore, DLT has been instrumental in the creation of digital assets like cryptocurrencies, enhancing the efficiency and delivery of financial services and investment management.

Digital assets are those that exist only on electronic records, with rights to use, buy, or sell. These digital assets enable almost instantaneous transactions between parties without requiring an intermediary.

Types of digital assets are summarized in the diagram below:



Cryptocurrencies

Cryptocurrencies are units that can be used to transfer or store value. They can serve as digital mediums of exchange that lack physical presence and are privately issued by individuals, companies, and other entities. They don't rely on the support of a central bank or monetary authority. Typically, these currencies operate on open Distributed Ledger Technology (DLT) systems, utilizing decentralized distributed ledgers to record and authenticate digital currency transactions.

A number of cryptocurrencies implement self-imposed limitations on the overall amount of currency they can generate. While these limitations could potentially preserve their value, it's crucial to recognize that many cryptocurrencies have encountered substantial price fluctuations.

Central Bank Digital Currencies (CBDCs)

Cryptocurrencies are not backed or regulated by the government. However, central banks worldwide are acknowledging the potential advantages and exploring potential applications for

their unique cryptocurrency iterations, known as central bank digital currencies (CBDCs). These CBDCs generally represent a tokenized form of the fiat currency issued by the central bank (bank note or coin).

Tokens

The transfer of ownership for tangible assets often involves substantial verification efforts with every change in ownership. Distributed Ledger Technology (DLT) has the potential to streamline this process through tokenization by establishing a unified digital ownership record that's easily validated and transferred. This eliminates the necessity for extensive paperwork and legal formalities, thereby enhancing efficiency and transparency in the process.

Examples of tokens include:

Non-fungible tokens (NFTs):

NFTs constitute a distinct type of digital asset. They associate digital items with certificates of authenticity through blockchain technology. Each NFT corresponds to a unique authenticated object, effectively "stamping" assets and representing them within a virtual space.

Security Tokens:

Security tokens digitalize the ownership rights tied to publicly traded securities. These tokens' custody can be maintained on a blockchain, streamlining post-trade processing, settlements, record-keeping, and custody procedures. This unified ledger approach eradicates the need for transaction validation and reconciliation, facilitating various transactions with enhanced ease and transparency.

For instance, initial coin offerings (ICOs) exemplify security tokens, where unregulated processes involve companies selling crypto-tokens to investors in exchange for funds or another agreed-upon cryptocurrency. In comparison to the regulated IPO market, ICOs may involve lower issuance costs and shorter capital-raising timeframes.

Conversely, utility tokens serve functions within a network, enabling payment for services and network fees. While security tokens might offer dividends, utility tokens solely compensate for

activities conducted on the network.

Governance Tokens:

Governance tokens hold significance in permissionless networks by acting as voting tools that shape the operations of specific networks. For instance, within a decentralized finance (DeFi) platform, holders of governance tokens possess the authority to vote on modifications to the platform's rules or parameters.

Question

In the context of permissionless networks, which of the following is *most likely* the primary function of governance tokens in a permissionless network?

A. Provide a source of income for the token holders.
B. Act as a medium of exchange for goods and services within the network.
C. Serve as a voting mechanism to decide on the operation and changes in the network.

The correct answer is C.

The primary function of governance tokens in a permissionless network is to serve as a voting mechanism to decide on the operation and changes in the network. Governance tokens are a type of cryptocurrency that gives holders the right to vote on decisions that affect the protocol. They are a key component of decentralized finance (DeFi) platforms, which are built on blockchain technology and operate without a central authority.

In a permissionless network, anyone can join and participate, and decisions are made collectively by the network's users. Governance tokens give holders the power to influence the direction of the platform, including decisions about technical upgrades, changes to the platform's rules, and how funds are allocated. This democratic approach to decision-making is a defining feature of DeFi platforms and other decentralized networks, and it is made possible by the use of governance tokens.

A is incorrect. Although holding governance tokens can potentially provide a source of income if the value of the tokens increases, this is not their primary function. The main purpose of governance tokens is to give holders the right to vote on decisions that affect the network. Any financial gain from holding the tokens is secondary to this main function.

B is incorrect. While governance tokens can sometimes be used as a medium of

exchange for goods and services within the network, this is not their primary function. The main purpose of governance tokens is to give holders the right to vote on decisions that affect the network, not to serve as a form of currency.

LOS 7b: explain investment features of digital assets and contrast them with other asset classes

Digital assets have gained considerable importance in the financial services sector, establishing themselves as a novel asset category for investors, with cryptocurrencies primarily driving this surge.

Investments in cryptocurrencies are commonly recognized as an alternative asset. As digital assets gain traction, specific institutional investors are strategically exploring these assets for their potential to yield greater returns and potential diversification advantages.

An illustrative instance is Tesla's $1.5 billion investment in Bitcoin in early 2021, signifying an increasing acknowledgment of cryptocurrencies as a credible asset category. When institutional investors become more comfortable with investing in digital assets, it could be an early sign that the market is nearing a tipping point.

Financial Service Providers and Digital Assets

Amid the increasing fascination with digital assets, diverse financial service entities, like digital exchanges, are broadening their infrastructure in preparation for potential investments in these assets. These providers extend a variety of services, such as secure storage, transaction handling, and asset management, all of which play a critical role in fostering the acceptance and expansion of digital assets.

Differences Between Digital and Traditional Financial Assets

- **Differences in inherent value**: Compared to the majority of digital assets lack intrinsic value derived from underlying assets or potential cash flow. For instance, Bitcoin, the most widespread digital asset, does not possess physical collateral or cash flows. Its value is instead predicated on its restricted supply.
- **Differences in validating transactions**: Conventional assets are commonly logged in private ledgers managed by central entities like banks or governments. However, the ownership and transfer of digital assets are typically documented on a decentralized

digital ledger, referred to as a blockchain, utilizing cryptography and advanced algorithms.

- **Differences in the uses as a medium of exchange**: Conventional financial assets are valued and traded in established currencies that are easily transacted and converted into fiat currencies. Digital assets like cryptocurrencies are sometimes used directly as replacements for real-world fiat currencies, especially in online transactions.
- **Differences in legal and regulatory protection**: The regulations concerning financial instruments and their trading are well-established and consistent across most jurisdictions, unlike digital assets. Specific and comprehensive regulations tailored to digital assets are still in the process of development.

Summary of Differences Between Digital and Traditional Assets

	Digital Assets	Traditional Financial Assets
Inherent Value	Lacks fundamental or future cash flow Price driven by blockchain features	Determined by future cash flow from assets
Transaction Validation	Recorded on decentralized ledgers with cryptography and algorithms for permissionless networks	Recorded in private ledgers by central intermediaries
Uses as a Medium of Exchange	Rarely used directly for exchange; targets large-scale commercial acceptance	Not directly used as exchange; tradable into fiat for wide use
Legal and Regulatory Protection	Ambiguous, often contradictory, evolving Generally unregulated, with minimal protections Use may be illegal or criminal in places	Well-established, tested, and proven legal, regulatory, commercial standards, clear and well defined across all jurisdictions

Investible Digital Assets

The digital assets industry has experienced substantial expansion, resulting in the development

of numerous cryptocurrencies and digital assets built upon specialized and optimized blockchains for various uses. The market is primarily dominated by Bitcoin and Ether, collectively representing more than 80% of the total cryptocurrency market value as of July 2022. Bitcoin alone held a market capitalization of around $1 trillion in July 2022, showcasing the substantial influence and expansion of these digital assets.

Bitcoin

Bitcoin, recognized as BTC or XBT, was introduced to ensure secure transactions within a peer-to-peer (P2P) network. It was formulated as a substitute for conventional currencies, functioning both as a means of exchange and a method to retain value. The foundational structure of Bitcoin remains influential in shaping the evolution of other forms of digital assets.

Altcoins

There are numerous cryptocurrencies using technology akin to Bitcoin, collectively termed as altcoins. Altcoins, short for alternative coins, encompass all cryptocurrencies apart from Bitcoin. Notable altcoins such as Ethereum, Ripple, and Litecoin seek to enhance Bitcoin's limitations or introduce added features. For instance, Ethereum introduced smart contracts–self-executing agreements with contract terms written directly into code.

Smart Coins or Smart Contracts

A smart contract is a self-executing agreement in which the essential terms are coded directly into the contract lines. These contracts are executed via the blockchain network, ensuring a traceable and irreversible record, subject to immutable verification by the network's nodes.

In addition to Ether, there are other types of altcoins, such as **stablecoins** and **meme coins**.

Stablecoins

Stablecoins are a unique type of cryptocurrency designed to maintain a stable value. This stability is achieved by pegging their value to another asset, such as the US dollar, precious

metals, or other cryptocurrencies. For instance, the value of Tether (USDT), a well-known stablecoin, is linked to the US dollar.

There are different types of stablecoins, including smart stablecoins or algorithmic stablecoins. These are designed to use algorithms to control the available supply of the asset. For instance, they may mint additional assets when there is increased demand for the coin.

Limitations of Stablecoins

While stablecoins offer stability, they lack the ability to be exchanged for fiat currency and are not supported by legal or regulatory backing. This implies that governments and financial institutions do not recognize them as a valid form of currency.

Benefits of Stablecoins

Stablecoins have the potential to ease settlement processes and simplify cross-border trading, investments, and payments. They enable transactions among different physical and tokenized financial assets and instruments.

An example of a stablecoin is the asset-backed token, which maintains a fixed value relative to a specified asset, such as the US dollar or gold, through tokenization.

Meme Coins

Meme coins are cryptocurrencies often initiated by a joke and are generally launched for entertainment reasons. They can gain popularity in a short period of time, allowing early purchasers to sell their holdings at an often significant profit.

Question

Which of the following statements *least likely* reflects the status of stablecoins?

A. They cannot be directly exchanged for fiat money.
B. They have legal and regulatory backing similar to fiat currencies.
C. They can be used to purchase goods and services from vendors.

The correct answer is **B**.

Stablecoins do not have legal and regulatory backing similar to fiat currencies. While they aim to mimic the stability of fiat currencies by pegging their value to a reserve of assets, they are not issued or regulated by governments or financial institutions. This means they lack the same level of legal protections and guarantees as fiat currencies.

A is incorrect. Stablecoins lack the ability to be exchanged for fiat currency and are not supported by legal or regulatory backing.

C is incorrect. While not all vendors accept stablecoins, their use in purchasing goods and services is increasingly common, especially in digital and online marketplaces. However, it's important to note that the acceptance of stablecoins as a form of payment varies depending on the specific vendor and jurisdiction.

LOS 7c: describe investment forms and vehicles used in digital asset investments

Investments in digital assets can be undertaken either directly on the blockchain or indirectly through exchange-traded products and hedge funds.

Direct Investment on the Blockchain

Direct investment on the blockchain requires a cryptocurrency wallet. The wallet holds the essential public and private digital codes needed to access the assets. These codes can be stored and used through a computer website or a mobile device application.

Investments directly made in digital assets occur through digital exchanges. These transactions are registered on the blockchain, a decentralized, distributed digital ledger that documents transactions across numerous computers.

In contrast to conventional stock exchanges, cryptocurrency exchanges usually operate around the clock, enabling uninterrupted trading, which may contribute to increased market volatility.

There are two types of cryptocurrency exchanges: **centralized** and **decentralized**.

Centralized Exchanges

Centralized exchanges, privately owned platforms for trading cryptocurrencies, share similarities with traditional stock exchanges such as the New York Stock Exchange or the NASDAQ. They offer volume, liquidity, and price transparency, much like conventional stock exchanges, providing real-time trading data.

Trading on these platforms is electronic and direct, similar to online stock trading platforms, without an intermediary broker or dealer. However, these exchanges, which operate on private servers, face security vulnerabilities. If these servers are compromised, the entire system may be affected, potentially disrupting trade and risking the exposure of crucial user information.

Some centralized exchanges fall under regulation, subject to varying regulations depending on the jurisdiction. They might be regulated as financial exchanges or other types of financial

intermediaries.

Decentralized Exchanges

Decentralized exchanges operate in a manner similar to the operation of Bitcoin, mirroring the decentralized protocol of blockchain technology. They function as peer-to-peer trading platforms, lacking a central control mechanism, and run on a distributed platform without centralized coordination or authority.

In decentralized exchanges, if one of the computers on the network is compromised, the exchange remains functional because numerous other computers continue to operate on the network. This resilience is comparable to how a distributed network, such as the Internet, remains operational even if one server experiences issues.

Decentralized exchanges present challenges in terms of regulation since there is no single entity, organization, or group that controls the system. Traders on decentralized exchanges generally have the freedom to transact without being subject to regulatory scrutiny, potentially creating opportunities for illegal activities.

Issues with Cryptocurrency Exchanges

Centralized and decentralized exchanges both encounter issues related to fraud, manipulation, and potential concerns regarding investor protection due to the limited oversight they face. In contrast to exchanges for traditional assets like equity securities and futures contracts, cryptocurrency and their trading platforms operate with minimal regulation. This lack of regulation permits the possibility for individuals or groups to conduct fraudulent activities or manipulate markets.

Risks of Direct Investment in Cryptocurrencies

Investing directly in cryptocurrencies carries several risks. These include:

- **Fraud Risk:** The rise of cryptocurrencies has resulted in a surge in fraudulent activities, encompassing pump-and-dump schemes, market manipulation, theft, and

endeavors aiming to acquire access credentials for cryptocurrency wallet information. Prior to investing in any cryptocurrency, conducting comprehensive due diligence is crucial.

- **Access Risk:** Cryptocurrencies are typically stored in a digital wallet accessible solely through a unique passkey, called a private key. If this key is misplaced, the assets within the wallet become unrecoverable. It's estimated that approximately 20% of all Bitcoins are in wallets that have been lost or abandoned, rendering the owners unable to access their holdings.
- **Concentration Risk:** A substantial portion of smaller cryptocurrencies, known as altcoins, may be predominantly owned by a limited number of holders commonly known as "whales." These are entities possessing a considerable amount of a cryptocurrency, potentially affecting its price.

Indirect Digital Asset Investment Forms

There are several alternatives available for gaining indirect exposure to digital assets. These include:

Cryptocurrency Coin Trusts

These trusts enable investors to trade shares representing significant holdings of a cryptocurrency. These shares are tradable over the counter (OTC) and function similarly to closed-end funds.

Investing in a coin trust eliminates the need for investors to create a digital wallet or manage encryption keys to enter the cryptocurrency market, simplifying the investment process.

These trusts often offer increased transparency in trading as they regularly disclose their holdings, providing investors with a clear view of the specific assets held within the trust.

However, they come with notable drawbacks, including substantial fees and expenses, occasionally surpassing 2%.

Cryptocurrency Futures Contracts

Cryptocurrency futures contracts involve purchasing or selling a specified amount of cryptocurrency at an agreed-upon price on a particular future date. For instance, when you buy a Bitcoin futures contract at $10,000, you're committing to purchasing Bitcoin at $10,000 on a future date, regardless of the current market price.

Unlike physical commodities, these contracts are generally settled in cash, meaning no actual cryptocurrency changes hands. This eliminates concerns about storing or securing the cryptocurrency.

Futures trading involves leverage, allowing control over a considerable amount of cryptocurrency with a relatively small investment. However, this also escalates the investment's risk.

The market for cryptocurrency futures might be less mature, potentially less liquid, and more volatile compared to more established futures markets leading to significant price volatility.

Cryptocurrency Exchange-Traded Funds (ETFs)

A growing array of exchange-traded products, like ETFs, aim to mirror the returns from digital asset investments. Instead of directly investing in cryptocurrencies, these ETFs usually gain exposure to cryptocurrency values through cash and cryptocurrency derivatives. This strategy helps avoid the risks and complexities tied to holding cryptocurrencies directly.

Cryptocurrency Stocks

Cryptocurrency stock entities offer indirect exposure due to their involvement and association with digital assets. It involves buying shares with companies within the cryptocurrency universe, such as cryptocurrency mining, payment providers that accept cryptocurrencies, corporations involved in investing or accepting cryptocurrencies, and companies developing or producing products or services utilized in running blockchain networks.

Hedge Funds Investing in Cryptocurrencies

Hedge funds have become a significant indirect investor in digital assets. Some hedge funds engage in Bitcoin mining as an avenue to boost their returns. This process involves employing high-powered computers to solve intricate mathematical problems, verify transactions within the Bitcoin network. Miners receive new Bitcoin as a reward, which can be subsequently sold for a profit.

Digital Forms of Investment for Non-Digital Assets

Digital forms of investment for non-digital assets refer to various digital formats of investment where the value is derived from an underlying non-digital asset. A good example is asset-backed tokens.

Asset-backed tokens are digital representations of ownership in real or financial assets, deriving their value from the asset they're linked to. These tokens provide digital ownership over assets like real estate, equities, gold, or crude oil. They introduce the concept of fractional ownership, enabling multiple investors to hold a fractional interest in the asset.

For example, consider a $1 million artwork. In traditional scenarios, it's often unaffordable for most investors. However, asset-backed tokens could tokenize this artwork into a million tokens, each representing a 0.0001% stake in the artwork. This way, investors can own a fraction of the artwork for as little as $1, expanding access to high-value assets.

Advantages of Asset-Backed Tokens

Asset-backed tokens heighten the liquidity through fractional ownership of high-priced assets such as art and precious metals.

The digital representation of the claims contributes to unchangeable information on ownership and ownership transfer. Consequently, this increases the transparency of transactions which in turn decreases costs of transaction, intermediation, and record keeping.

Usually, financial regulators categorize asset-backed tokens as securities because owning the token grants the holder an interest in the associated asset.

Issuance of Asset-Backed Tokens

Asset-backed tokens are commonly released on platforms enabling peer-to-peer interaction through transparent smart contracts that endure throughout the chain's duration. These platforms are called decentralized applications (dApps) that record transactions on the blockchain without relying on a central coordinating entity.

Decentralized Finance (DeFi)

The increased promotion of financial decentralized applications (dApps) evolved into a movement recognized as decentralized finance, commonly referred to as DeFi. DeFi endeavors to establish an array of open-source financial applications that function as the building blocks for advanced financial products and services.

Acting as a marketplace for decentralized applications (dApps), DeFi aims to handle core financial roles like serving as a medium of exchange, storing value, tokenizing underlying assets, and maintaining an unalterable record of asset ownership and transfers.

Consequently, smart contracts integrated into dApps can manage most elements of the conventional financial system, including lending, trading, investment, settlement, payment, and decentralized, authenticated, and instant transfers. They can offer time efficiency and risk mitigation in asset transfer and settlement. Nevertheless, the concept of DeFi is still in its early stages and requires further development.

Question

Which of the following is *most likely* the primary advantage of using smart contracts in DeFi lending and borrowing platforms?

A. Allow for the creation of new digital assets.
B. Increase the risk associated with lending and borrowing on DeFi platforms.
C. Automate the loan disbursement process, reducing the need for traditional financial intermediaries.

The correct answer is C.

Smart contracts automate the loan disbursement process, reducing the need for traditional financial intermediaries. This is the primary advantage of using smart contracts in Decentralized Finance (DeFi) lending and borrowing platforms. Smart contracts are self-executing contracts with the terms of the agreement directly written into code. They automatically execute transactions without the need for a third party, which in traditional finance would be a bank or other financial institution.

This automation reduces the time and cost associated with loan disbursement, making the process more efficient. Furthermore, it also reduces the risk of human error and fraud, as the terms of the contract are immutable once they are written into the blockchain. This makes the lending and borrowing process on DeFi platforms more transparent, secure, and efficient, which is a significant advantage over traditional financial systems.

A is incorrect. While it is true that smart contracts can be used to create new digital assets, this is not their primary advantage in the context of DeFi lending and borrowing platforms. The creation of new digital assets is a feature of smart contracts, but it is not directly related to the lending and borrowing process on DeFi platforms.

B is incorrect. Smart contracts do not increase the risk associated with lending and

borrowing on DeFi platforms. In fact, they reduce several types of risk, such as the risk of human error and fraud. However, it is important to note that while smart contracts can mitigate some risks, they also introduce new risks, such as the risk of bugs in the contract code. Nonetheless, these risks are not inherent to the use of smart contracts and can be mitigated through proper coding practices and security audits.

LOS 7d: analyze sources of risk, return, and diversification among digital asset investments

The surge in value of digital assets, particularly cryptocurrencies such as Bitcoin and Ethereum, is a pivotal aspect in digital asset investments. These assets have experienced swift value escalations since their inception, especially due to the introduction of more conventional indirect investment avenues.

Given that cryptocurrencies are relatively recent innovations in the financial market, their market is marked by quick price fluctuations, variations, and a considerable level of unpredictability. This volatile attribute has led many investors to perceive them as alternative investments.

The rapid appreciation in the value of these digital assets has been significantly influenced by the integration of more established indirect investment methods into the cryptocurrency market. These indirect investment avenues may encompass financial instruments such as futures contracts, exchange-traded funds (ETFs), or mutual funds designed to mirror the performance of cryptocurrencies.

Digital Asset Investment Risks and Returns

Bitcoin and Cryptocurrency Values

Bitcoin and other cryptocurrencies gain their value from asset appreciation and do not yield dividends or interest payments like traditional assets such as stocks and bonds. Unlike traditional assets, the market demand for these digital assets, coupled with their limited supply, notably impacts their prices. Bitcoin, for example, has a capped supply of 21 million, resembling a digital equivalent of gold for certain investors. The valuation of these assets operates on a scarcity principle similar to the determination of precious metals' worth.

Risks and Volatility in Cryptocurrency Investment

Investing in cryptocurrencies involves significant risks that are specific to digital assets. Even

though Bitcoin's volatility has decreased, it remains higher compared to traditional financial assets like the S&P 500 Index. The uncertainties surrounding cryptocurrencies as a viable asset class frequently lead to price and return behaviors similar to Bitcoin in other cryptocurrencies, akin to how emerging markets might reflect the volatility seen in established markets.

Regulation and Legal Protection

Regulation of cryptocurrencies is a developing landscape, lacking clear legal safeguards for their role as a means of exchange. In the United States, they fall under digital commodity regulation, while the EU awaits comprehensive rules. This uncertainty presents a substantial risk for investors, as legal protections are not assured in these investments. Frauds and illicit activities among traders, creators, and promoters of digital assets contribute to the legal and regulatory ambiguity.

Restrictions on Cryptocurrencies

Numerous countries have imposed significant limitations on the trading and possession of cryptocurrencies. China, for instance, enacted a ban on the asset in 2021. These restrictions introduce an additional layer of risk for prospective investors in these digital assets.

Diversification Benefits of Digital Asset Investments

Cryptocurrencies, often seen as speculative, possess distinct value drivers that differentiate them from conventional equity and debt markets. They have demonstrated minimal correlations with returns from traditional asset classes, suggesting that the long-term factors determining cryptocurrency prices may diverge from those of typical investment assets.

The valuation and performance of cryptocurrencies are influenced by various factors, including market adoption, network effects, technological progress, regulatory advancements, speculation, and the general market risk appetite. Certain factors unique to cryptocurrencies set them apart as an independent asset class. Additionally, regulatory changes like the European Union's recent proposal for stricter cryptocurrency regulations may also impact cryptocurrency prices.

However, the correlation between cryptocurrencies and traditional assets seems to be rising, potentially affecting their role as diversifiers, especially in times of market instability.

Question #1

Which statement is *least likely* accurate about the diversification benefits of investing in digital assets?

A. Cryptocurrencies always provide a safe haven during periods of market stress.
B. Cryptocurrencies have shown low correlations with traditional asset class returns.
C. The correlation of cryptocurrencies with traditional assets appears to be increasing.

The correct answer is A.

It is not true that cryptocurrencies always provide a safe haven during periods of market stress. While it is true that cryptocurrencies have shown low correlations with traditional asset class returns and that their correlation appears to be increasing, it is not accurate to say that they always act as a safe haven. Cryptocurrencies are highly volatile, and their value can fluctuate wildly in a short period of time. During periods of market stress, cryptocurrencies can experience significant price drops, just like any other asset.

Furthermore, the value of cryptocurrencies is influenced by a variety of factors, including regulatory news, technological developments, and market sentiment, which can all change rapidly and unpredictably. Therefore, while cryptocurrencies can potentially offer diversification benefits, they do not always provide a safe haven during periods of market stress.

B is incorrect. There is evidence to suggest that the correlation of cryptocurrencies with traditional assets is increasing. This could potentially impact their effectiveness as diversifiers, but it does not make the statement untrue.

C is incorrect. Cryptocurrencies have indeed shown low correlations with traditional

asset class returns, which is one of the reasons why they are considered a distinct asset class and why they can potentially offer diversification benefits.

Question #2

Which of the following *least likely* serves as a unique value driver for cryptocurrencies?

A. Market adoption and network effects.
B. Interest rates set by the Federal Reserve.
C. Technological advancements and regulatory developments.

The correct answer is B.

Interest rates set by the Federal Reserve are not a unique value driver for cryptocurrencies. Cryptocurrencies like Bitcoin and Ethereum operate on decentralized networks and are not directly influenced by traditional monetary policies or interest rates set by central banks such as the Federal Reserve. The value of cryptocurrencies is primarily driven by factors such as market adoption, network effects, technological advancements, and regulatory developments. These factors can influence the demand and supply of cryptocurrencies, and hence their price.

A is incorrect. Market adoption and network effects are indeed unique value drivers for cryptocurrencies. The more a cryptocurrency is adopted by users, businesses, and investors, the more valuable its network becomes. This is because the utility and security of a cryptocurrency increase with the size of its network.

C is incorrect. Technological advancements and regulatory developments are also unique value drivers for cryptocurrencies. Technological advancements can improve the functionality, security, and scalability of a cryptocurrency, making it more attractive to users. Regulatory developments can affect the legal status and usability of cryptocurrencies, influencing their demand and price.