

E-Book

Overview of Digital Asset



The Institute of Chartered Accountants of India

(Set up by an Act of Parliament)

Southern India Regional Council

Chennai

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**This e-book has been authored by
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First Edition: July 2022

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Published by: Southern India Regional Council
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FOREWORD

An “Asset”, as per IFRS (International Financial Reporting Standards), the most widely used financial reporting system is defined as follows: "An asset is a present economic resource controlled by the entity as a result of past events. An economic resource is a right that has the potential to produce economic benefits."

Therefore, in simple words, a digital asset is primarily anything that is stored digitally and is uniquely identifiable and that an organization can use to realize value.

Common examples of digital assets can also include documents, audio, videos, logos, slide presentations, spreadsheets and websites; which have the potential to produce economic benefits.

When we generally speak of digital assets, the first thing that comes to the mind of most of us – or rather the uninitiated among us – is crypto currencies. Similarly, when we generally speak of crypto currencies, the first thing that may come to our mind is Bit coin.

However, things are changing fast, with the rapid pace at which crypto currencies are penetrating our financial world, people are more aware of the nitty-gritties. Crypto currencies are soon making a sizeable space for themselves in the investment portfolios of the regular investors, especially the millennial.

We are now able to differentiate between Bit coins, crypto currencies and block chain. We are now able to appreciate that Block chain is the wider technology and crypto currencies are just one of its many use cases. Likewise, Bit coin is one of the many crypto currencies that are traded today.

When we do a deep dive into digital assets, we learn that digital assets are more than just crypto currencies and that there is another subset or another type of digital assets that can be better associate with crypto currencies than digital assets. This subset of digital assets are called virtual digital assets (VDAs).

Virtual Digital Assets have been in the news off-late with the big announcement on the taxability of the VDAs by the Hon’able Finance Minister in the Union Budget of 2022. In this e-book, we will first see what digital assets are and then move on understanding virtual digital assets and the evolving accounting and auditing aspects.

We are conscious of the fact that in a publication meant for professional accountants like this there is a scope for further improving form, contents, presentation and coverage. Accordingly comments and suggestions on the e-book are welcome at sirc@icai.in

CA.China Masthan Talakayala
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Overview of Digital Asset



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Digital Assets in General Business Sphere

What is a digital asset

As per the Oxford Dictionary, Digital means “involving or relating to the use of computer technology.”

An “Asset”, as per IFRS (International Financial Reporting Standards), the most widely used financial reporting system is defined as follows: "An asset is a present economic resource controlled by the entity as a result of past events. An economic resource is a right that has the potential to produce economic benefits."

Therefore, in simple words, a digital asset is primarily anything that is stored digitally and is uniquely identifiable and that an organization can use to realize value.

Common examples of digital assets can also include documents, audio, videos, logos, slide presentations, spreadsheets and websites; which have the potential to produce economic benefits.

A graphic image created by an Ad agency that it will use to create Ad campaign and generate revenue from it can be a digital asset for the Ad agency. An e-book on the certain technical subject authored by a veteran Chartered Accountant can be a digital asset for him or his firm.

Historically, people have considered digital assets to only include photos and videos, but over the years, we have started including other digital files in our definition, such as documents, presentations, and spreadsheets.

A digital asset exists only in digital form and comes with a distinct usage right. Data that do not possess a distinct usage right are not considered assets.

Digital assets include but are not exclusive to:

1. Photos
2. Videos and motion pictures
3. Audio files
4. Presentations
5. Graphics
6. PDFs
7. Spreadsheets
8. Documents
9. Design files
10. 3D files
11. e-Books

and other relevant digital data that are currently in circulation or are, or will be stored on digital appliances such as:

1. personal computers
2. laptops
3. portable media players
4. tablets
5. data storage devices

6. Telecommunication devices

And any and all apparatuses which are or will be in existence once technology progresses to accommodate for the conception of new modalities which would be able to carry digital assets; notwithstanding the proprietorship of the physical device onto which the digital asset is stored.

Some of the common types of digital assets are:

1. PDFs

A PDF (Portable Document Format) is a file format that captures every element of a printed document as a digital image. You can then use this document to view, navigate and print that image. PDFs are widely accessible through programs like Adobe Acrobat and preview.

PDFs are best used for text-heavy documents like brochures or printing that you are finished editing.

2. Video

Video has become a mainstream digital asset used in many different formats. Common formats include .mp4, avi, .mov, which also have their own substandard formats, like MPEG-1, MPEG-2, etc.

MP4s are commonly used for sharing video files on the web, while .avi files are also used widely on the web as a file that retains more quality than an MP4. .mov files are usually larger in size and have a higher quality than both .mp4 and avi files.

3. Presentations

Presentations used for sales and marketing purposes are also considered digital assets.

These may be in the form of Word Documents, Slide Decks, Power point Presentations or even Google Docs. Like PDFs, these file formats can be converted into images that retain their quality which make them perfect for presenting to business partners or clients in a formal setting.

4. Audio Files

An audio asset is anything you can use to further your company's story—from interviews to product explainers to podcasts.

There are several common types of uncompressed audio files you can use such as MP3, WAV, AU, AIFF, PCM or BWF, depending on your needs and industry. For example, BWF files are often used by industries who want more metadata storage, while MP3s are widely accepted for their compressed size.

You can also use speech-to-text tools to create digital audio assets from existing videos so it can be reused in other areas of marketing, like layering for product launches or onboarding training.

5. Images

An image is one of the most common types of digital assets, and there's no one-size-fits-all format.

JPEG (or JPG) files is a smaller file type that is typically used for web page images or on email campaigns. PNG files are slightly larger in size and support transparent backgrounds, making them perfect for custom graphics or social media posts. GIFs are graphics that have been reduced to 256 colours, mimicking a short video that can load quickly.

6. Spreadsheets

Yes—spreadsheets are assets.

They now come in file types beyond .xls files. You can now save spreadsheets as .csv files which can be used with any spreadsheet program including MS Excel, Google Spreadsheet and Open Office Calc. Other common spreadsheet types include .123 and .ods files, depending on your operating platform.

7. Graphics

Graphics are essential assets that include anything from logos to branding materials.

If you have designers working on your team, they will be working with several different types of graphic files, from proofing files to WIP to archived work.

8. Design Files

Finally, design files are assets that are still considered to be in the production phase.

Typically, these will either be PSD files (which stands for a Photoshop Document), or a TIFF file, which is a file that can't be compressed to ensure the quality of the image is retained. For that reason, the size limit of a PSD file is 2GB while a TIFF file can handle more than 2GB. TIFF files also allow tags, layers, and transparency, and are compatible with photo software like Photoshop.

While the definition of a digital asset is constantly changing as new digital formats are emerging in business, it's important to remember that the file format is only part of the definition. The other portion of the digital asset definition is derived from the value the asset brings to the company.

Now a key question that comes up is that is a Digital Asset just any digital file? If not, what are the basic criteria for recognising a digital asset?

There are 3 key elements that make any single file a digital asset. A digital asset must:

1. Be a digital file owned by an individual/company,
2. Provide value (economic benefit) to the individual/company, and
3. Be searchable, discoverable and available for use

It's important also to remember that the definition of what a digital asset is constantly changes with technology. As new digital file formats are invented, they can be added to the list.

What is the Difference between Digital Assets and Other Files?

A digital asset is something represented in a digital form that has intrinsic or acquired value. To simplify, the key difference between a digital asset and other file lies in whether or not the file adds value to the company.

For example, if an image from a photoshoot is used in a social media campaign that raises awareness of an upcoming event and drives registration, that image would be considered a digital asset. However, if a rough screenshot is sent in a one-off email to a potential client, the image itself has minimal long-term value and would likely not be considered a digital asset.

A high-quality photoshoot image is a digital asset

A quick screenshot taken just for reference is not a digital asset

As another example, a detailed legal advice drafted for a client that advises them on certain accounting and taxation aspects is a document that would be considered a digital asset. On the other hand, a copy of an Accounting Standard downloaded from ICAI website, which is not owned by the individual or auditing firm would likely not be considered a digital asset.

A legal advice prepared by an audit firm is a digital asset

An Accounting Standard downloaded from ICAI website is not a digital asset

When evaluating the value of your digital assets, there's more to consider than just the cost of creating them. It's also important to consider 2 factors:

1. the time spent creating or producing it
2. and the ability to recreate it

1. Time and Effort to Produce

When evaluating production value, consider the time, resources, people, and planning that it took to create the asset. Often, an organization's most high-value assets are those that a considerable amount of time and effort. For example, as a marketing manager, losing a single photo, while inconvenient, can likely be resolved fairly quickly, either by re-editing the raw file or selecting another from the shoot. A fully-edited and ready-to-distribute eBook, however, will take significantly more time and effort to recreate and get re-approved, even if you still have each individual asset.

2. Ability to Reproduce

Assets also become increasingly more valuable when they're impossible to recreate. These types of assets usually come from one-time, never-going-to-happen again events, where even all the time and money in the world couldn't recreate that moment. For example, as the marketing department of a sports team would know this all too well, a single photo of a game-winning goal can be extremely valuable and can't be recreated if it's misplaced. When just looking at the costs to create that asset, it's just one of the hundreds of images taken by the photographers in a single night, but to the marketing team, this single photo is more valuable than gold.

With time, the way that we do business is changing and emotions have been influencing buying behaviours, but now it's about more than just producing good ads to drive customer demand. It's about who is connecting the best with customers, and how they're doing it. In an increasingly digital world, most of these connections are happening across online channels: exactly where your digital assets come in.

Digital assets are everywhere, and there's good reason for that.

Not only are digital assets critical for businesses to build successful brand and marketing campaigns, but they also play a key role in supporting sales efforts, training employees and scaling managerial workflows.

How to Make Digital Assets Discoverable

While investing in creating digital assets is important, the assets are only valuable if they can be found. When you're working with a lot of digital assets, it's important to take steps to make sure they're discoverable and can be managed efficiently. This is usually done with the consistent use of metadata (keywords, titles, photographer name, etc.), and a smart taxonomy (category structure).

Metadata

Metadata is essentially data about data providing a variety of information about the asset, beyond its basic filename. There are two types of metadata that include the following:

Technical metadata: usually displayed automatically, such as resolution, photographer name, dimensions, and size.

Descriptive metadata: describing a resource for the purpose of discovery, such as title, description, and keywords.

Most commonly, people tend to associate metadata with keywords. Your keywords are key to powering asset search and give you the power to label your assets in a way that's relevant to your unique business needs.

Taxonomy

A taxonomy is a hierarchical structure that allows you to categorize and classify your assets to ease navigation, and identify relationships between assets. Using a taxonomy will help users intuitively browse for assets in a digital asset management system, especially when they're not exactly sure what they are looking for.

While a basic form of both metadata and taxonomy can be done in-house, or through a digital asset management system to truly take control of their digital assets and give instant access to the people that need them.

Digital Assets in Financial Sphere

For the sake of understanding, we can classify digital assets broadly into 2 types – Asset-backed digital assets and Non-Asset-backed digital assets.

- 1) Non-Asset backed digital assets exist solely as a digital asset and do not represent any legal or proprietary interest in other assets. An example of a category of asset-backed digital assets is cryptocurrencies. Cryptocurrencies are a medium for exchange that are digital and represented by an encrypted data string. Cryptocurrencies are commonly monitored and organized on block chains or a peer to-peer network for use as a publicly distributed ledger, which serves as a tamper evident ledger of transactions (eg., buying, selling, and transferring). For example, Bitcoin, the most common cryptocurrency, is solely a digital currency (ie, there is no central bank or administrator), and can only be transferred or transacted on the blockchain. Ownership in Bitcoin does not convey or represent a legal or proprietary interest in other assets. Normally, assets often have increasing values driven by opportunities and constraints (eg, scarcity). However, in the digital world, there is an ‘artificial scarcity’ issue because digital files can be duplicated and have diminished value unless they are protected by law or encryption/blockchain technologies
- 2) Asset backed digital assets reference an underlying asset or right through a legal or operational mechanism. An example of a category of asset-referencing digital assets is fiat-backed stable coins. Fiat-backed stable coins are digital assets where the price is pegged to fiat money, can be traded on exchanges, and are often redeemable from the issuer for the underlying fiat currency. For example, US Dollar Coin (USDC) is a fiat-backed stable coin that is pegged to the US dollar. Circle, the founder of USDC, claims that each USDC is backed by a US dollar held in reserve, or other assets (for example, treasuries) and therefore convertible on a one-to-one basis for cash. Unlike the example of Bitcoin above, ownership in USDC does reference an underlying asset (US dollar).

The following table summarizes various types of digital assets by class, with definitions, examples, and other considerations:

Class	Definition	Examples	Other Considerations
Cryptocurrencies (Non-Asset backed digital assets)	The type of digital assets that have all of the following characteristics: a. Function as a medium of exchange b. Not issued by a jurisdictional authority (eg, a sovereign government) c. Do not give rise to a contract between the holder and another party d. Are not considered a security.	Decentralized crypto currency (eg, Bitcoin*, Ethereum) operating in a public blockchain network.	Produce Cashflows • No; market participants primarily intend to act as a medium of exchange between different participants on a network. Changes in Price / Observability • Price changes may be observable based on an active market for certain

	<p>Put another way, cryptocurrencies can be defined as digital assets that operate independently from a central bank and are intended to function as a medium of exchange or store of value</p>		<p>cryptocurrencies such as Bitcoin.</p> <p>Gain/Loss on Sale</p> <ul style="list-style-type: none"> • Yes. Contract price less cost/carrying value. <p>Cash Consideration</p> <ul style="list-style-type: none"> • Cryptocurrencies can be purchased with fiat, but certain types may need to be purchased with other digital assets. <p>Investor Protection</p> <ul style="list-style-type: none"> • Not subject to specific regulatory requirements, governance and controls.
<p>Stable coins (Asset backed digital asset)</p>	<ul style="list-style-type: none"> • Stable coins are generally created, or 'minted', in exchange for fiat currency that the issuer receives from a user or third party. • Crypto assets peg their value to a traditional asset, such as fiat money. They are often backed by collateral (or a variety of 'reserves') and offer a promise or expectation that the coin can be redeemed at par upon request. 	<ul style="list-style-type: none"> • Algo-driven autonomous algorithm executing transactions (eg, Metronome), generally underpinned by a public blockchain network • General asset backed (eg, Tether) • Digital representations of fiat currency (eg, USDC*, Gemini dollar) 	<p>Produce Cashflows</p> <ul style="list-style-type: none"> • No; market participants can use stable coins to earn yield by transferring stable coins into digital asset trading platforms, or by using stable coins to serve as collateral for loans and margined transactions, in exchange for interest or returns, or can be used as a means of payment. <p>Changes in Price / Observability</p> <ul style="list-style-type: none"> • Same considerations as cryptocurrencies above. <p>Gain/Loss on Sale</p> <ul style="list-style-type: none"> • Not expected due to intended price stability. For example, the price of Tether on February 18, 2022 was

			<p>\$1.0023. While no expected gain/loss in fiat currency, there is potential for FX risk, similar to FX-denominated currency.</p> <p>Cash Consideration</p> <ul style="list-style-type: none"> • Stable coins can be purchased with fiat, but certain types may need to be purchased with other digital assets. Redemption rights vary considerably in terms of both who may present a stable coin to an issuer for redemption and whether there are limits in the quantity of coins that may be redeemed
<p>Tokens (Asset-backed digital asset)</p>	<ul style="list-style-type: none"> • Asset-backed token – a digital asset that derives its value from something that does not exist on the blockchain but instead is a representation of ownership of a physical asset (eg, natural resources, such as gold or oil). • Utility token – Digital assets that provide users with access to a product or service. 	<ul style="list-style-type: none"> • Specific asset-backed tokens (eg, gold, diamonds, precious metals, real property) • DeFi/Exchange tokens (eg, Uniswap, Chainlink, Binance) • Non-Fungible Tokens (eg, Beeple, Top Shots) • Utility tokens (eg, ZRX, BAT) 	<p>Produce Cashflows</p> <ul style="list-style-type: none"> • No <p>Changes in Price / Observability</p> <ul style="list-style-type: none"> • Price changes may be observable based on the prices of the referenced assets. <p>Gain/Loss on Sale</p> <ul style="list-style-type: none"> • Yes. Contract price less cost/carrying value. <p>Cash Consideration</p> <ul style="list-style-type: none"> • Tokens can be purchased with fiat, but certain types may need to be purchased with other digital assets.
<p>Digital securities (Asset-backed digital asset)</p>	<p>Digital assets that provide an economic stake in a legal entity. Sometimes it is a right</p>	<ul style="list-style-type: none"> • Equity tokens – digital representation of equity. 	<p>Produce Cashflows</p> <ul style="list-style-type: none"> • Yes, depending on the specific digital security. May provide

	<p>to receive cash or another financial asset, which might be discretionary or mandatory. Sometimes it conveys the ability to vote in company decisions and/or represents a residual interest in the issuer entity. May be referred to as a security token.</p>	<ul style="list-style-type: none"> • Security tokens – expected return; debt instrument. • Derivatives tokens – oil rights; derivative of traditional security or digital asset. 	<p>a right to receive cash in the form of dividends or debt principal and interest payments.</p> <p>Changes in Price / Observability</p> <ul style="list-style-type: none"> • Similar considerations as the underlying. For example, a derivative token backed by an exchange-traded oil future could have observable price changes, whereas an equity token in a private company may not if it is a level-three instrument. • For derivatives transactions involving venue-based price observations, it may be prudent to avoid limiting valuation of the digital asset to the price observed at only one particular trading venue and ensure the venues used for price observation purposes are supported by appropriate volumes. It may also be sensible for digital asset derivatives contracts to cater for the possible exclusion in certain circumstances of some categories of data or valuation sources, including trading venues, for price observation purposes. Similarly, index price sources for digital assets may derive their benchmarks from
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			<p>aggregated observed prices from a number of trading venues and may not provide transparency on their methodologies.</p> <p>Gain/Loss on Sale</p> <ul style="list-style-type: none"> • Yes. Contract price less cost/carrying value. <p>Cash Consideration</p> <ul style="list-style-type: none"> • Digital securities can be purchased with fiat, but certain types may need to be purchased with other digital assets
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Key Terms to Understand in Digital Assets

Term	Description
Cryptocurrency	A type of currency that's digital and decentralized. Cryptocurrency can be used to buy and sell things, or as a long-term store of value.
Blockchain	A digital form of record keeping, and the underlying technology behind cryptocurrencies. A blockchain is the result of sequential blocks that build upon one another, creating a permanent and unchangeable ledger of transactions (or other data).
Coin	A representative store of digital value that lives on a given blockchain or cryptocurrency network. Some blockchains have the same name for both the network and the coin, like Bitcoin. Others can have different names for each, like the Stellar blockchain, which has a native coin called Lumen.
Cold Wallet/Cold Storage	A secure method of storing your cryptocurrency completely offline. Many cold wallets (also called hardware wallets) are physical devices that look similar to a USB drive. This kind of wallet can help protect your crypto from hacking and theft, though it also comes with its own risks – like losing it, along with your crypto.
Decentralization	The principle of distributing power away from a central point. Blockchains are traditionally decentralized because they require majority approval from all users to operate and make changes, rather than a central authority.
Decentralized Finance (DeFi)	Financial activities conducted without the involvement of an intermediary, like a bank, government, or other financial institution.
Fiat currency	A fiat currency denotes paper money or coins of little or no intrinsic value in themselves and not convertible into gold or

	silver, but made legal tender by fiat (order) of the government (such as US Dollar or Euro or Rupee).
Hash	A unique string of numbers and letters that identify blocks and are tied to crypto buyers and sellers.
Initial Coin Offering (ICO)	A way that funds are raised for a new cryptocurrency project. ICOs are similar to Initial Public Offerings (IPOs) of stocks.
Market Capitalization	Cryptocurrency market capitalization refers to the total value of all the coins that have been mined. You can calculate a crypto's market cap by multiplying the current number of coins by the current value of the coins.
Mining	The process whereby new cryptocurrency coins are made available and the log of transactions between users is maintained.
Node	A computer that connects to a blockchain network.
Non-fungible Tokens (NFTs)	Non-fungible tokens are units of value used to represent the ownership of unique digital items like art or collectibles. NFTs are most often held on the Ethereum blockchain.
Peer-to-peer	Two users interacting directly without a third party or intermediary.
Stablecoin or Digital Fiat	A stablecoin pegs its value to some other non-digital currency or commodity. A digital fiat represents a fiat, or government-backed currency on the blockchain. (Example: Tether, which is pegged to the U.S. dollar)
Wallet	A place to store your cryptocurrency holdings. Many exchanges offer digital wallets. Wallets may be hot (online, software-based) or cold (offline, usually on a device).

Basics of Blockchain

Blockchain defined:

Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding). Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.

Why blockchain is important:

Business runs on information. The faster it's received and the more accurate it is, the better. Blockchain is ideal for delivering that information because it provides immediate, shared and completely transparent information stored on an immutable ledger that can be accessed only by permissioned network members. A blockchain network can track orders, payments, accounts, production and much more. And because members share a single view of the truth, you can see all details of a transaction end to end, giving you greater confidence, as well as new efficiencies and opportunities.

Key Elements of Blockchain:

Distributed ledger technology

All network participants have access to the distributed ledger and its immutable record of transactions. With this shared ledger, transactions are recorded only once, eliminating the duplication of effort that's typical of traditional business networks.

Immutable records

No participant can change or tamper with a transaction after it's been recorded to the shared ledger. If a transaction record includes an error, a new transaction must be added to reverse the error, and both transactions are then visible.

Smart contracts

To speed transactions, a set of rules — called a smart contract — is stored on the blockchain and executed automatically. A smart contract can define conditions for corporate bond transfers, include terms for travel insurance to be paid and much more.

Basics of Cryptocurrencies

What are Cryptocurrencies?

Cryptocurrencies are digital tokens. They are a type of digital currency that allows people to make payments directly to each other through an online system. Cryptocurrencies have no legislated or intrinsic value; they are simply worth what people are willing to pay for them in the market. This is in contrast to national currencies, which get part of their value from being legislated as legal tender. There are a number of cryptocurrencies – the most well-known of these are Bitcoin and Ether.

Activity in cryptocurrency markets has increased significantly. The fascination with these currencies appears to have been more speculative (buying cryptocurrencies to make a profit) than related to their use as a new and unique system for making payments. Related to this, there has also been a high degree of volatility in the prices of many cryptocurrencies. For example, the price of Bitcoin increased from about US\$30,000 in mid2021 to almost US\$70,000 toward the end of 2021 before falling to around US\$35,000 in early 2022. Rival cryptocurrencies like Ether have experienced similar volatility. The extraordinary interest in cryptocurrencies has also seen a growing amount of computing power used to solve the complex codes that many of these systems use to help protect them from being corrupted. Despite the increased level of interest in cryptocurrencies, there is scepticism about whether they could ever replace more traditional payment methods or national currencies.

How Does a Cryptocurrency Transaction Work?

Cryptocurrency transactions occur through electronic messages that are sent to the entire network with instructions about the transaction. The instructions include information such as the electronic addresses of the parties involved, the quantity of currency to be traded, and a time stamp.

Suppose Alice wants to transfer one unit of cryptocurrency to Bob. Alice starts the transaction by sending an electronic message with her instructions to the network, where all users can see the message. Alice's transaction is one of a number of transactions that have recently been sent. Since the system is not instantaneous, the transaction sits with a group of other recent transactions waiting to be compiled into a block (which is just a group of the most recent transactions). The information from the block is turned into a cryptographic code and miners compete to solve the code to add the new block of transactions to the blockchain.

Once a miner successfully solves the code, other users of the network check the solution and reach an agreement that it is valid. The new block of transactions is added to the end of the blockchain, and Alice's transaction is confirmed. (This confirmation is not instant as it takes time for six blocks of transactions to be processed so that users can be certain that their transaction has been successful.)

Is Cryptocurrency Money?

A frequently asked question is whether cryptocurrency can be defined as 'money'. The short answer is that cryptocurrency is not a form of money. To understand why, we can ask whether the characteristics of cryptocurrencies match the key characteristics of money:

Widely accepted means of payment – can cryptocurrencies be used to buy and sell things? Money generally comes in the form of a nation's currency, and is widely accepted as a means of payment. While cryptocurrencies can be used to buy and sell things, they are not widely accepted as a means of payment, and surveys suggest that only a small fraction of cryptocurrency holders use them regularly for payments.

Store of value – can the purchasing power of cryptocurrencies (their ability to purchase a similar basket of goods and services) be maintained over time? Large fluctuations in the price of many cryptocurrencies mean that their purchasing power is not maintained over time, reducing their effectiveness as a store of value.

Unit of account – are cryptocurrencies a common way of measuring the value of goods and services? In India, the prices of goods and services are measured in Indian Rupee. While some businesses may accept cryptocurrencies as payment, they are not commonly used to measure and compare prices.

So, while cryptocurrencies can be used to make payments, currently their use as a means of payment is limited and they do not display the key characteristics of money.

However, there is one type of digital currency that could be considered money – digital currency issued by a central bank which is also known as Central Bank Digital Currency (CBDC)

What is Central Bank Digital Currency?

A Central Bank Digital Currency (CBDC) can most easily be understood as a digital form of cash. It can be issued by the central bank, accessible to the general public, and used to settle transactions between firms and households. The unit of account would be the national currency, and it could be exchanged at parity (i.e. one for one) with other forms of money, such as physical currency or electronic deposits with well-regulated financial institutions.

What are the main differences between cryptocurrencies and CBDCs? In other words, what makes a CBDC money? A central bank has the ability to ensure that a digital currency it issues exhibits the three main features of money – that is, a CBDC could function as a widely accepted means of payment, store of value and unit of account.

Because it is issued by a central bank, a CBDC would have legal tender status, making it widely accepted as a means of payment. A CBDC would also be an equivalent store of value to other forms of money, since it could be exchanged for an equal value of physical cash or electronic deposits. Finally, the unit of account for CBDC issued by the Reserve Bank would be the Australian dollar. This means it could be used to measure the value of goods and service.

Participants in the Crypto currency Market

There are 3 main participants in the market: Miners, Exchanges, and Traders. Each participant plays crucial roles in the functionality of this market.

Miners

Miners are the individuals or companies that invest in equipment that generates computational power. Miners spend electricity to run computer nodes within the network to validate transactions and potentially be rewarded for their efforts in Bitcoin. These nodes collect transactions and consolidate/organize them into blocks. Marathon Patent Group is an example of a company that is involved in Bitcoin mining operations. It is incentivized to ensure the network's security and in return gain exposure to the asset class as well.

Exchanges

Exchanges are where individuals can buy, sell, or transfer cryptocurrencies for other digital or traditional currencies. There are plenty of exchanges that are important to security, compliance, and expanding recognition of the cryptocurrency market. In the 2017 bull-run, Coinbase served as the "on-ramp" for many retail traders to gain exposure to the cryptocurrency market. Most exchanges transfer their cost of business onto the traders, adding exorbitant trading fees for each transaction. For active traders it is important to research the fee structure at the exchange you plan to use. CrossTower offers an industry-best fee schedule. At CrossTower, taker orders earn a 0.01% rebate for their trade, and the fee maker orders pay is as low as 0.01%. CrossTower's fees are cost effective for retail, active, and institutional traders. This helps promote a healthy market and encourages true price discovery for cryptocurrencies.

Traders

Traders are broken up into three types: Retail, Wholesalers, and Corporate. Retail traders are everyday people who plan out a strategy to accumulate Bitcoin and hold it, or actively trade it. These people may buy Bitcoin every time they have a chance and they use Bitcoin as a de-facto investment account for some portion of their savings. Then there are wholesalers, who are mostly known as "whales" in the crypto community. These are Bitcoin believers from the start, usually pre-2014. These wholesalers have hundreds of Bitcoins since they were introduced to the concept and bought in when the price was still well below \$1,000. Lastly, we have Corporations, which are large companies that have decided to invest in crypto. Several notable companies have now started investing in Bitcoin as a treasury reserve asset to protect their wealth. MicroStrategy was the first, but Jack Dorsey's Square and MassMutual also invested in Bitcoin in 2020. As corporations and hedge funds continue to purchase Bitcoin, JP Morgan projected there will be \$600 billion of new demand created by corporate investors.

Top 10 cryptocurrencies by Market Capitalisation

Data as of as of June 30, 2022

Position	Cryptocurrency	Market Cap
1	Bitcoin (BTC)	\$364 billion
2	Ethereum (ETH)	\$125 billion
3	Tether (USDT)	\$66 billion

4	USD Coin (USDC)	\$56 billion
5	Binance Coin (BNB)	\$35 billion
6	Binance USD (BUSD)	\$18 billion
7	XRP (XRP)	\$15 billion
8	Cardano (ADA)	\$15 billion
9	Solana (SOL)	\$11 billion
10	Dogecoin (DOGE)	\$9 billion

Taxation of Virtual Digital Assets (VDAs)

All Digital Assets are not Virtual Digital Assets, but all Virtual Digital Assets are Digital Assets.

Virtual Digital Assets are typically subsets of all digital assets transacted on a blockchain, such as non-fungible tokens (NFTs), cryptos and other virtual assets.

The Finance Bill 2022 defined VDAs in the newly introduced Clause (47A) under Section 2 of the IT Act, 1961, which reads as under:

"Virtual digital asset" means—

- (a) *any information or code or number or token (not being Indian currency or foreign currency), generated through cryptographic means or otherwise, by whatever name called, providing a digital representation of value exchanged with or without consideration, with the promise or representation of having inherent value, or functions as a store of value or a unit of account including its use in any financial transaction or investment, but not limited to investment scheme; and can be transferred, stored or traded electronically;*
- (b) *a non-fungible token or any other token of similar nature, by whatever name called;*
- (c) *any other digital asset, as the Central Government may, by notification in the Official Gazette specify:*
Provided that the Central Government may, by notification in the Official Gazette, exclude any digital asset from the definition of virtual digital asset subject to such conditions as may be specified therein.

Explanation.—for the purposes of this clause,—

- (a) *"Non-fungible token" means such digital asset as the Central Government may, by notification in the Official Gazette, specify;*
- (b) *the expressions "currency", "foreign currency" and "Indian currency" shall have the same meanings as respectively assigned to them in clauses (h), (m) and (q) of section 2 of the Foreign Exchange Management Act, 1999 (42 of 1999);]*

According to this definition, VDAs are information, code, number or token not being Indian or foreign currency, generated by cryptographic means or otherwise. It is a digital representation of value that is exchanged with or without consideration.

VDAs involve a promise or representation of having an inherent value and function as a store of value or a unit of account. It includes its use in any financial transaction or investment. However, VDAs are not limited to investment schemes and can be transferred, stored or traded electronically.

The definition of VDA include cryptos because of the phrase 'generated through cryptographic means or otherwise' used in the Finance Bill.

WHY ARE CRYPTOS DEFINED AS VDAs?

Digital assets which are not tangible are classified as Virtual Digital Assets. Transactions involving VDAs have been gaining prominence. In the Union Budget of 2022, the finance minister announced that the RBI will issue digital currency in the next fiscal. A currency is a currency only when the Reserve Bank of India issues it, even if it is a crypto.

Digital currencies issued by the RBI are treated as currencies. Anything other than the digital currency issued by RBI, i.e. assets created by individuals, which we usually refer to as a cryptocurrency, will not be covered under the definition of currency. It would fall under 'Virtual Digital Assets'.

Moreover, the government has also included Non-Fungible Tokens (NFTs) or tokens of similar nature, which are cryptographic assets on a blockchain with unique identification codes under the definition of Virtual Digital Assets. The Central Government may notify any other VDA through a notification in the Official Gazette.

The Finance Bill 2022 defines what VDAs are, and cryptocurrency falls under this category. It also defines VDAs in terms of functionality as assets that may have inherent value or operate as commodities. Moreover, the Finance Bill 2022 excludes Indian and Foreign currencies from the definition of VDAs, which indicates that cryptocurrencies are not currencies.

The digital rupee is a Central Bank Digital Currency (CBDC) issued by the RBI. It is a digital version of the physical rupee and enjoys a sovereign guarantee or government backing.

However, the digital rupee is not a virtual digital asset as it is a legal currency used in India. Moreover, digital gold, which is backed by an underlying asset - 'physical gold', is also not a virtual digital asset.

TAXATION OF VDAs

While many countries are gearing up to prescribe a tax and regulatory framework for virtual digital assets, India has been a fast mover by introducing the taxation for Virtual Digital Assets (VDAs). This proposal has created a buzz amongst stakeholders; however, the proof of the pudding lies in eating. This move was imperative considering the boom of cryptocurrency in India, which has made it 2nd highest in terms of number of cryptocurrency users.

While the government had earlier clarified that any gain on transactions in cryptocurrency is taxable, there was no specific guidance regarding taxability of cryptocurrency and Non-Fungible Tokens.

Tax on transfer of VDAs

- With effect from 1 April 2022, it is proposed to levy tax at the rate of 30% on transfer of VDA.
- Only cost of acquisition will be allowed as a deduction. No set off of loss shall be allowed while computing income from VDA. Also, loss arising from transfer of any VDA shall not be allowed to be no set-off against any other income.

- Currently, the definition of VDA is wide enough to cover any information or code or number or token generated through cryptographic means or otherwise and which provides a digital representation of value exchanged with or without consideration, with the promise or representation of having inherent value, or functions as a store of value or a unit of account including its use in any financial transaction or investment, but not limited to investment scheme; and can be transferred, stored or traded electronically.

- Any currency (whether Indian or foreign) has is not covered within the ambit of VDA.
- VDAs also includes NFTs or any other token of similar nature.
- The government may further notify or exclude any other digital asset from the definition of VDA.

Withholding tax provisions

- With effect from 1 July 2022, tax is to be deducted at the rate of 1% on payment made for transfer of VDA to a resident. These provisions would apply even if the consideration is paid partly or fully in kind. TDS is not required in case where aggregate consideration in a financial year is below:

- INR 50,000, if payment is made by specified individual/Hindu Undivided Family
- INR 10,000 in all other case.

In this connection, the Central Board of Direct Taxes (CBDT) has recently issued a Circular No. 13 of 2022 on 22nd June 2022 and Circular No. 14 of 2022 on 28th June 2022 for providing clarifications in the form of Frequently Asked Questions (FAQs) on the withholding tax aspects in relation to transfer of VDA.

Threshold for deductibility of TDS in the hands of buyer

Any person responsible for paying to a resident any sum by way of consideration for transfer of a VDA at the time of credit of such sums shall deduct TDS provided –

- i. the amount paid (single or aggregate) by ‘specified persons’ (individual or HUF who are required to get their accounts audited) exceeds INR 50,000 during the financial year (FY); or
- ii. the amount paid (single or aggregate) by any other person (other than a ‘specified person’ as mentioned above) exceeds INR 10,000 during the FY.

Effective date of TDS and timelines

As per the provisions, TDS needs to be deducted at the time of payment of consideration to the seller subject to the threshold specified above. Thereafter, TDS shall be deposited within 30 days from the month in which it is deducted.

For example, TDS on payment of consideration for transfer of VDA taking place on 15 August 2022 shall be deducted on 15 August 2022, deposited to the government by 30 September 2022 and Form 16E issued by 15 October 2022.

Transactions completed before 1 July 2022 will not be subject to tax withholding. However, will be considered for determining the threshold limit.

Filing of Forms and Documents

The CBDT has notified TDS returns in Form 26QE and Form 26Q for specified persons and others, respectively along with Form 16E to be issued by the deductor. Besides, the exchange may be required to file Form 26QF for cases where TDS is made on multiple parties.

TDS applicability when transactions are executed via an exchange or broker

Transfer of VDA not only involves buyer and seller but may also involve a broker, assisting the transaction. In addition, the VDA can be owned either by the exchange or the broker.

Where VDA is owned by a person, TDS is to be deducted by the exchange crediting such payment whereas, in case VDA is owned by a broker, consideration paid by the broker to the exchange shall also be subject to TDS. However, where the transaction takes place through a broker (broker not being a seller or owner of the VDA), TDS responsibility lies with both the seller and the buyer unless a written agreement specifies that broker alone will do TDS on all transactions.

Where VDA is owned by the exchange, then the buyer or broker shall be responsible for making TDS.

VDA transferred in exchange for another VDA

Where a VDA is exchanged in place of another, the buyer will release consideration on furnishing of proof of payment of taxes. Where transaction takes place through exchange, then the exchange shall facilitate TDS for both the parties by way of written agreement and pay TDS using the popular VDAs (such as BT, ETH, USDT and USDC) for conversion into INR.

TDS liability on payment gateways

The payment gateways allow users to transfer funds using the common methods of transfer i.e., via bank accounts, wallets, UPI, etc. and helps a user withdraw both the capital and / or gains using the payment gateway directly into the bank account.

The Circular has clarified that the payment gateways shall not be required to do TDS provided TDS has been made by the responsible person under section 194S of the Income Tax Act, 1961 (the Act).

Interplay between sections 194S and 194Q

The Circular additionally states that where TDS is once deducted under section 194S, then there is no TDS to be deducted under section 194Q or any other provisions of the Act.

TDS Liability for transactions other than those taking place on exchange

Where VDA transactions are conducted between a buyer and a seller, the buyer shall be required to do TDS. For transactions in kind, the person shall be both buyer and seller and therefore, buyer shall release the consideration in kind only after the seller provides proof of payment of such tax.

Given the size of the VDA market in India and the number of exchanges involved in the transaction process, the above FAQs are indeed a welcome measure, providing much clarity in terms of implementation of TDS provision. While the exchanges may face the burden of increased administration and costs, the implementation of TDS would certainly bring in stability to the VDA ecosystem.

Accounting for Digital Assets

There are many issues that accountants may encounter in practice for which no accounting standard currently exists; one example is cryptocurrencies. For example, as no accounting standard currently exists to explain how cryptocurrency should be accounted for, accountants have no alternative but to refer to existing accounting standards.

For the purposes of determining which accounting standard applies and discussing the related accounting issues, it is useful to classify cryptographic assets into defined subsets based on their characteristics.

A single, generally accepted framework for the classification of these varied cryptographic assets does not currently exist. There is consequently no generally applied definition of a cryptographic asset. This reflects the broad variety of features and bespoke nature of the transactions in practice. However, based on our observations, there are some characteristics that can be used to classify cryptographic assets into similar types. We believe that similar types of cryptographic asset should be accounted for in a similar way.

The characteristics that we observe being most relevant for classifying cryptographic assets for accounting purposes are:

- the primary purpose of the cryptographic asset; and
- how the cryptographic asset derives its inherent value.

Although a range of other characteristics exist, we view these as not being fundamental to determining a common accounting treatment.

Based on the characteristics detailed above, we have defined four specific subsets of cryptographic assets, as set out in the following table:

Subset	Purpose	Inherent Value
Cryptocurrency	Cryptocurrencies are digital tokens or coins based on blockchain technology, such as Bitcoin. They currently operate independently of a central bank and are intended to function as a medium of exchange.	None – derives its value based on supply and demand.
Asset-backed token	An asset-backed token is a digital token based on blockchain technology that signifies and derives its value from something that does not exist on the blockchain but instead is a representation of ownership of a physical asset (for example, natural resources such as gold or oil).	Derives its value based on the underlying asset.

Utility token	Utility tokens are digital tokens based on blockchain technology that provide users with access to a product or service, and they derive their value from that right. Utility tokens give holders no ownership in a company's platform or assets and, although they might be traded between holders, they are not primarily used as a medium of exchange.	Value is derived from the demand for the issuer's service or product.
Security token	Security tokens are digital tokens based on blockchain technology that are similar in nature to traditional securities. They can provide an economic stake in a legal entity: sometimes a right to receive cash or another financial asset, which might be discretionary or mandatory; sometimes the ability to vote in company decisions and/or a residual interest in the entity.	Value is derived from the success of the entity, since the holder of the token shares in future profits or receives cash or another financial asset.

It should also be noted that some cryptographic assets might exhibit elements of two or more of the identified subclasses. These result in hybrid cryptographic assets that will have to be assessed further.

Classification of Cryptocurrency

As of today, there is no accounting standard guiding on how to recognize, Measure and present Cryptocurrency in financial statements. Hence, we are left with the option to refer the existing standards to deal with Cryptocurrencies. The Main practical issue with Cryptocurrency Accounting is the classification of Cryptocurrency. Having many uses cases cryptocurrency cannot be classified under a single type of asset or a commodity or investment. Cryptocurrency's use cases are numerous and many entities use them in different ways. For example, Tesla is holding Bitcoin in its treasury as an investment whereas the second largest Cryptocurrency "Ether" is running the whole ecosystem of Decentralized Finance and Smart contracts on Ethereum blockchain network. Likewise, there are many different use cases and classifications applicable to Cryptocurrencies.

Considering the various possibilities and use cases cryptocurrency can be classified as one of the below:

1. Cash & Cash Equivalent

Currently, in India Cryptocurrencies are not a recognized medium of exchange because it does not represent a legal tender. In addition to this Cryptocurrencies are

subject to Significant price fluctuation which eliminates the possibility of them being classified into Cash & Cash Equivalents as defined in Ind AS 7 because they cannot readily be exchanged for any good or service.

2. Financial Instrument

Some might argue that cryptocurrency should be accounted as a financial asset in accordance with Ind AS 119. However, it does not meet the definition of a financial instrument because it does not represent cash, an equity interest in an entity, or a contract establishing a right or obligation to deliver or receive cash or another financial instrument. Cryptocurrency is not a debt security, nor an equity security because it does not represent an ownership interest in an entity. Therefore, it appears cryptocurrency should not be accounted for as a financial asset.

3. Inventories

Sometimes entities hold cryptocurrency for sale as a part of the ordinary course of business. In those cases, it might be appropriate to account for cryptocurrencies in accordance with Ind AS 2. IAS 2 defines inventories as "assets: held for sale in the ordinary course of business in the process of production for such sale, or in the form of materials or supplies to be consumed in the production process or in the rendering of services.

4. Intangible Asset

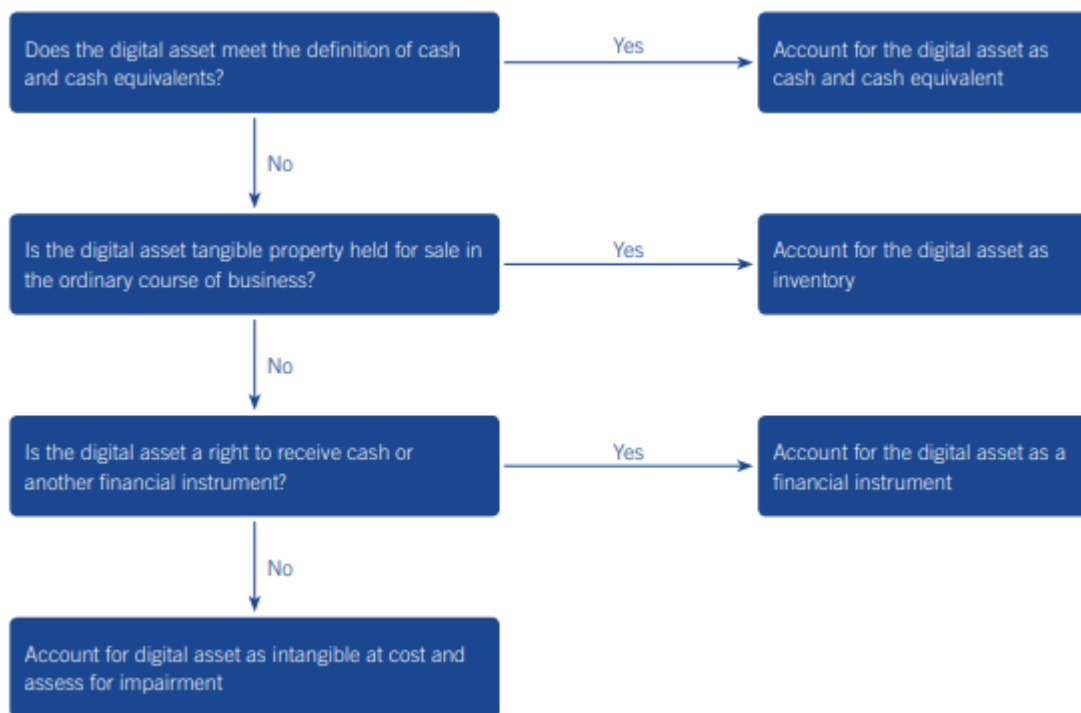
Cryptocurrency meets the closets criteria of Ind AS 38, Intangible Assets. This standard defines an intangible asset as an identifiable non-monetary asset without physical substance.

Ind AS 38 states that "an asset is identifiable if it is separable or arises from contractual or other legal rights. An asset is separable if it is capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable asset or liability".

Therefore, it appears that cryptocurrency meets the definition of an intangible asset in Ind AS 38 as it is capable of being separated from the holder and sold or transferred individually. An entity will also need to assess whether the cryptocurrency's useful life is finite or indefinite. An indefinite useful life is where there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows for the entity. It appears that cryptocurrencies should be considered as having an indefinite life for Ind AS 38. An intangible asset with an indefinite useful life is not amortized but must be tested annually for impairment.

Normally, this means the recognition of inventories at lower the cost or NRV. However, if the entity acts as a broker of cryptocurrencies, then Ind AS 2 states that their inventories should be valued at fair value less costs to sell. This type of inventory is principally acquired to sell in the near future and generate a profit from fluctuations in price. Thus, this measurement method could only be implemented in very thin cases where the business model is to sell cryptocurrency shortly to generate a profit from fluctuations in price.

This can also be explored in the decision tree table below:



In the following analysis, which uses publicly available information, the considerations outlined above are applied to Bitcoin, the most common Non-asset backed digital asset in the market, and USDC, an asset-backed digital asset.

Digital asset	Cash and cash equivalent	Inventory	Financial instrument	Intangible
Bitcoin	N/A – not legal tender and does not have a maturity date	N/A – lacks physical substance	N/A – not a contractual right to cash or another financial instrument	Default category. If an entity is unable to meet the other accounting definitions, the digital asset must be classified here
USDC	N/A – not legal tender and does not have a maturity date	N/A – lacks physical substance	USDC is a financial instrument because it is redeemable for cash	N/A

Measurement Considerations

Applicable standard	Initial measurement	Subsequent measurement	Movements in carrying amount
Inventory (IAS 2) - Other	Cost	Lower of cost and net realisable value	Movements above cost - N/A Movements below cost - Profit and loss
Inventory (IAS 2) - Commodity broker-trader exception	Cost	Fair value less costs to sell	Profit and loss
Intangible assets (IAS 38) - Revaluation model (accounting policy choice but requires existence of active market)	Cost	Fair value less any accumulated amortisation and impairment*	Movements above cost - Other comprehensive income Movements below cost - Profit and loss
Intangible assets (IAS 38) - Cost model	Cost	Cost less any accumulated amortisation and impairment*	Movements above cost - N/A Movements below cost - Profit and loss

*in most cases, no amortisation is expected for cryptocurrencies

Valuation of Crypto currencies

IAS 38 allows intangible assets to be measured at cost or revaluation. Using the cost model, intangible assets are measured at cost on initial recognition and are subsequently measured at cost less accumulated amortisation and impairment losses. Using the revaluation model, intangible assets can be carried at a revalued amount if there is an active market for them; however, this may not be the case for all cryptocurrencies. The same measurement model should be used for all assets in a particular asset class. If there are assets for which there is not an active market in a class of assets measured using the revaluation model, then these assets should be measured using the cost model.

IAS 38 states that a revaluation increase should be recognised in other comprehensive income and accumulated in equity. However, a revaluation increase should be recognised in profit or loss to the extent that it reverses a revaluation decrease of the same asset that was previously recognised in profit or loss. A revaluation loss should be recognised in profit or loss. However, the decrease shall be recognised in other comprehensive income to the extent of any credit balance in the revaluation surplus in respect of that asset. It is unusual for intangible assets to have active markets. However, cryptocurrencies are often traded on an exchange and therefore it may be possible to apply the revaluation model.

Where the revaluation model can be applied, IFRS 13, Fair Value Measurement, should be used to determine the fair value of the cryptocurrency. IFRS 13 defines an active market, and judgement should be applied to determine whether an active market exists for particular cryptocurrencies. As there is daily trading of Bitcoin, it is easy to demonstrate that such a market exists. A quoted market price in an active market provides the most reliable evidence of fair value and is used without adjustment to measure fair value whenever available. In addition, the entity should determine the principal or most advantageous market for the cryptocurrencies.

Auditing of digital assets

When auditors encounter digital assets, such as cryptocurrency in financial statements, do they audit them as cash, financial instruments or something else?

A new generation of digital assets is emerging that promise greater stability. Stable coins, for instance, are often backed by traditional fiat currencies, or a blend of currencies and assets, which stabilize the value and increase the number of possible uses.

As digital assets become more prevalent in financial statements, the question for auditors to consider is how should they audit them? As cash? Financial instruments? Or something else entirely?

New digital assets and their pace of change mean we must actively engage in developing new methodologies and tools, as we continue to apply the best analytical thinking and enhance effective and systematic examination.

To start, it is important to understand management's responsibilities: how they should classify and account for digital assets within their financial statements. Once that is established, we can see more clearly how the auditor should undertake providing assurance on their fair presentation.

The question for auditors to consider is how to audit these assets as they become more prevalent in financial statements

Management's responsibilities

Digital assets have diverse terms and conditions and may be held for different purposes even within the same organization. Let's use cryptocurrency as a topic given the wide use case. Generally, we are seeing the market treating cryptocurrencies as intangible assets to the extent that they are not inventories.

Intangible assets, which give rise to future economic benefit, lack physical substance, are identifiable, controlled by the entity and are not in scope of other standards. Since cryptocurrencies are not tangible (they have no physical substance), they meet the definition under IAS 38; subject to the cost or, if applicable, revaluation model, which continuously compares the carrying amount of the digital asset against its fair value, on subsequent measurement.

The auditor's responsibilities

The different accounting approaches may pose a challenge for auditors, so efforts are under way to establish consistency across global auditing practices.

The auditor's first responsibility is to evaluate the actual blockchain protocol that is used since this is critical to the auditor in assessing evidence from the blockchain.

The lack of relevant official guidance from standard setters dealing with emerging issues related to cryptocurrencies is a major challenge for auditors.

To add further complexity, the definition and assessment of risks can vary depending on the specific digital asset in question, or the way in which the client transacts. This means there can be a wide range of influences on the risk spectrum.

For instance, more mature digital assets typically have a higher number of interested parties (e.g., holders, developers, miners). Similarly, digital assets that are pegged to other economic claims (e.g., gold-backed crypto currency or the stable coin propositions mentioned earlier) might present different risks than those without such intrinsic value such as utility tokens and native digital assets such as Bitcoin. Asset-backed tokens may even present additional complexity, since their smart contract functionality would have to be considered as well. The position of any particular digital asset on the risk spectrum depends on a number of factors. Is the blockchain widely used? Is it open source? How many developers use it?

Auditors also must consider whether transactions are manually initiated or executed automatically via a smart contract. If automatic, there are risks of unauthorized or incorrect transactions associated with software flaws, hacking and reliance on potentially inaccurate information provided to the blockchain by third-party data feed services (known as oracles).

These challenges are further complicated by the fact that it is more difficult for the auditor to verify the existence of digital assets than traditional assets.

Cryptocurrency Risk Framework

Financial Assertions	Description	Typical Audit Procedures used for Testing at Assertion Level	Additional Considerations for Auditing Cryptocurrency
Existence testing	Is the asset there? The purpose of this procedure is to verify whether an asset exists.	<ul style="list-style-type: none"> Confirmation by a third party. Inspection of the asset. Inspection of documents supporting ownership of the asset. Inquiry of management. Subsequent conversion of an asset to currency. 	<ul style="list-style-type: none"> How to get a list of different wallet accounts? How to verify the balance on each wallet? How to verify that the wallet has not been breached? What is the risk that an unauthorized party accesses the account and depletes the balance? How do you verify the existence of digital currency accounts with the multitude of exchanges in various jurisdictions? What source/contractual documents are there to indicate the opening of a wallet? What controls have been implemented to ensure the security of the private key used to access the cryptocurrency asset?
Rights and Obligations testing	Do we own the asset? This is an audit procedure that requires the auditor to verify the ownership of the asset.	<ul style="list-style-type: none"> Confirmation by a third party. Inspection of legal documents. Inquiry of management. Inspection of BOD minutes. 	<ul style="list-style-type: none"> How do we verify the ownership of the wallets without supporting documentation? What party controls the cryptocurrency and the accounts held at digital asset providers (exchanges)? How to assess controls for the exchange? What controls have been implemented at the audit client to support rights and obligations for cryptocurrency? What party controls the wallets and what access controls are established? Is there proof of ownership for the cryptocurrency and private key? Can there be transactions that are not yet added to the blockchain? Are there any hidden wallets? Are inactive wallet accounts deactivated or deleted? What minimum access controls are at the exchange or third-party level? What is the risk that parties in the cryptocurrency transaction are related parties given the anonymity? What internal controls have been implemented at the client level to ensure completeness? What internal controls have been implemented to ensure compliance with cryptocurrency laws and regulations given the lack of consistency of the laws throughout jurisdictions?
Completeness testing	Are there any missing transactions? In completeness testing, the auditor attempts to determine whether all transactions have been recorded in the accounting system.	<ul style="list-style-type: none"> Trace transactions from supporting documents to a journal or ledger. Accounting for the numerical sequence of source documents. Inquiry of management. Inspection of legal documents. Testing client internal controls for completeness. 	<ul style="list-style-type: none"> Can we do a population test rather than a sample? Can we verify that the currency was received from a legitimate ordinary business transaction? Can we determine the payment was sent to the correct vendor? What is the risk exposure if the cryptocurrency came from an exchange with low liquidity and/or low trading volume that makes valuation less reliable? Can we obtain an understanding of how prices of cryptocurrency are reported on various exchanges? What unit of measure is being used to value cryptocurrency? Once entered and a transaction in the wallet is permanent and cannot be changed, can we verify using source documents that the correct amount and/or correct address was entered? What internal controls are implemented at the client to ensure the accuracy of data entered in the blockchain? Can we assess controls at the exchange or third-party level? Can we verify who authorized a transaction, creation of a wallet, or opening an account with an exchange? Can we verify that the cryptocurrency was received from a legitimate ordinary business transaction? Can we assess controls at the exchange or third-party level?
Accuracy and valuation testing	Are the transactions accurate? Here the auditor needs to verify that the recorded transactions are free from errors, recorded at the correct dollar amount, posted to the correct vendor/customer account, and/or posted to the correct general ledger and other subsidiary ledgers and journals.	<ul style="list-style-type: none"> Select a sample of transactions and reperform the accuracy. Trace the source documents to verify the validity of the amount and vendor/customer details. Trace the transaction to the account. Test the controls—what is the process? Did the employees follow company policies such as taking and giving discounts and/or obtaining approvals? 	<ul style="list-style-type: none"> Can we do a population test rather than a sample? Can we verify that the currency was received from a legitimate ordinary business transaction? Can we determine the payment was sent to the correct vendor? What is the risk exposure if the cryptocurrency came from an exchange with low liquidity and/or low trading volume that makes valuation less reliable? Can we obtain an understanding of how prices of cryptocurrency are reported on various exchanges? What unit of measure is being used to value cryptocurrency? Once entered and a transaction in the wallet is permanent and cannot be changed, can we verify using source documents that the correct amount and/or correct address was entered? What internal controls are implemented at the client to ensure the accuracy of data entered in the blockchain? Can we assess controls at the exchange or third-party level? Can we verify who authorized a transaction, creation of a wallet, or opening an account with an exchange? Can we verify that the cryptocurrency was received from a legitimate ordinary business transaction? Can we assess controls at the exchange or third-party level?
Authorization testing	Are the transactions authorized? This is a test to make sure that the recorded transactions are valid and not fraudulent.	<ul style="list-style-type: none"> The auditor needs to understand the business process and pay attention to who does what in the firm. The auditor would obtain a sample of transactions and look at who has signed the source documents such as invoices, disbursement vouchers, cash receipts, and checks. The auditor will examine the transactions at the end of the month, beginning of the month, and supporting documents to determine whether the transactions are in the correct period. 	<ul style="list-style-type: none"> Can we assess whether there were any delays in processing and confirming the cryptocurrency transactions? Can we obtain a list of transactions from a wallet, exchange, or crypto-explorer given a certain cutoff date? What is the impact and risk of a lack of controls at the exchange or third-party level with regard to processing integrity?
Cutoff testing	Are the transactions recorded in the correct period? Here the auditor will focus on transactions that occur during the end of the month and the beginning of the subsequent month to determine the period to which a transaction belongs.	<ul style="list-style-type: none"> The auditor will examine the transactions at the end of the month, beginning of the month, and supporting documents to determine whether the transactions are in the correct period. 	<ul style="list-style-type: none"> Can we assess whether there were any delays in processing and confirming the cryptocurrency transactions? Can we obtain a list of transactions from a wallet, exchange, or crypto-explorer given a certain cutoff date? What is the impact and risk of a lack of controls at the exchange or third-party level with regard to processing integrity?
Occurrence testing	Did the transaction actually happen? If a client claims that a payment was made to a vendor, the auditor needs to verify that the check was written, payment was recorded in the accounts, and the check was mailed. Is revenue earned before recognition? Are transactions with related parties adequately identified and disclosed?	<ul style="list-style-type: none"> Select samples of transactions from source documents and trace them to the recording of the transaction. Scan through journal entries and review any unusual items. Inquiry of management. Inspection of documents supporting the transactions. 	<ul style="list-style-type: none"> Can we obtain confirmation of transactions? What source documents are available for examination? Should we recommend creating new source documents and establishing new procedures related to cryptocurrency? What internal controls have been implemented at the client to ensure occurrence? What is the risk and impact of a lack of controls at the exchange or third-party level?
Adequate Disclosure testing	Are all disclosures required included?	<ul style="list-style-type: none"> Completion of the disclosure checklist. Inquiry of management. Obtaining a legal letter from attorneys engaged by the client. Obtaining a management representation letter. Inspection of documents. 	<ul style="list-style-type: none"> Are the relevant accounting policies for cryptocurrency disclosed? Are all loss contingencies relating to cryptocurrency disclosed? If required, is fair value information disclosed? Is the method of valuing the cryptocurrency adequately disclosed? Are the rights and obligations of cryptocurrency adequately disclosed? Should the business purpose for holding cryptocurrency be disclosed? Are the additional risks involved in holding cryptocurrency adequately disclosed?

Audit Considerations

Existence

One of the biggest challenges in determining whether cryptocurrency exists is verifying the number of crypto-wallets and digital asset accounts for a client at various exchanges. Since cryptocurrency is a digital asset, methods used to inspect inventory and property additions may not suffice. Confirmations are also traditionally used to verify existence. For example, a typical verification of cash will use confirmation letters from banks. However, since cryptocurrencies are maintained in a distributed ledger without a central authority, auditors may not be able to confirm the currency balance using a third party.⁵ If the cryptocurrency is traded through an exchange (third party), a lack of proper assurance reporting mechanisms of the exchange's internal controls using service organization control (SOC) reports makes it difficult to assess, rely on, and verify cryptocurrencies with reasonable assurance.

Further, cryptocurrency keys lost or stolen can render the asset worthless. Therefore, the existence of cryptocurrencies imposes an additional burden on the engagement to verify controls on access and storage of private/public keys. Given the successful attacks on wallets resulting in the complete loss of the cryptocurrency (Young 2019), auditors will want to examine internal controls around the safety of wallets.

Another way to confirm existence is to examine source or contractual documents supporting the asset. Unlike in the regulated banking industry, documentation between the holder of the asset (exchange) and the client organization may be minimal or non-existent. Auditors also use subsequent receipt of fiat currency, in the case of payment settlement or subsequent sale of an asset, to obtain audit evidence for existence. Since such documentation may be non-existent, the auditor will want to test whether the cryptocurrency wallet actually contains the specified amount.

Rights and Obligations

Traditionally, auditors assess the rights and obligations assertion through the inspection of other documents including third-party agreements, confirmations, and Board of Directors (BOD) minutes. While reviewing client cryptocurrency documents, auditors will want to consider: who is the legal owner of the cryptocurrency held by the client, is the cryptocurrency of the client held by an exchange segregated from the exchange's other holdings, what happens to the asset if the exchange goes out of business or loses the cryptocurrency assets, and what are the internal controls at the exchange to protect the security of the asset. Lack of third-party assurance reporting will increase the difficulty in assessing the risks involved.

The auditor will also need to assess the internal controls for cryptocurrency at the audit client as well as the exchange. Internal controls limiting access to private/public keys at the organization while safeguarding loss of the key(s) will need to be evaluated. Cryptocurrency holdings are relatively anonymous as the keys are digitally created and are not easily linked to the owner's identity. In addition, new addresses are easily created and do not require personal information, unlike new investment accounts that require owner identification. The auditor will have to ensure that the owner of the cryptocurrency is the audit client. Given the digital nature, audit firms may need to develop proprietary software to identify and verify cryptocurrency accounts belonging to their clients or hire specialists with such expertise.⁶

Completeness

The completeness assertion requires verifying whether all cryptocurrency transactions are recorded on the blockchain. Commonly, evidence of completeness is obtained by examining pre-numbered source documents, tracing source documents to ledgers, and understanding and testing operating effectiveness of client internal controls around completeness. Even though transactions entered into a blockchain are immutable over time, theoretically, there can be orphan transactions. Therefore, access controls at the client and/or exchange will need to be assessed.

Although there are blockchain explorers that can be used to track and/or aggregate transactions, auditors will need to increase their audit effort to track additional documentation to provide reasonable assurance of completeness. Reconciliations between the blockchain and the accounting records need to be maintained to determine whether there are transactions that have not yet been added to the blockchain. Indeed, sometimes there is a lag between the transaction date and the date the transaction appears on the blockchain due to technology limitations, controls, and volatility at the exchange. Further, auditors should verify that inactive wallet accounts are deactivated or deleted. Moreover, undisclosed wallets and transactions related to those wallets are difficult to identify. Since the identity of parties to the exchange is digitally masked, verifying that one or more of the parties to the exchange are related is difficult.

Last, auditors should consider whether the client firm will face potential losses from litigation and fines arising from inadvertently violating inconsistent laws and regulations of governments on cryptocurrency.

Valuation and Accuracy

The financial statement assertion of valuation and accuracy is used to gather audit evidence that the transactions in the financial statements reflect the correct amount, the actual parties to the exchange, and the correct classification and allocation. Valuation of cryptocurrency is challenging due to a lack of comparable trades, differences in pricing between buy and sell orders, disparate methods in reporting exchange currency pricing, and the difference in pricing of a particular cryptocurrency depending on the exchange used for the trade. In determining the fair value of cryptocurrency assets or possible impairment, the unit of measure is important for valuation (per unit of currency or as a portfolio). In most instances, cryptocurrency will be valued per unit as coins are separable from each other and impairment testing will be performed per unit of account. Accounting records will need to be maintained to track the cryptocurrency cost basis for impairment testing. Additionally, accounting policies used to value cryptocurrency will need to be identified and disclosed such as the market used in valuation, whether there is evidence of manipulation in the market, and whether the market provides enough volume to assess the reliability and relevance of the pricing information. Further, the volatility of the asset market and the consistency of measurement should also be considered.

Typically, a review of reconciliation controls, re-computations, inspection of documents, and understanding and testing of internal controls are used to provide evidence of accuracy. Since cryptocurrency transactions are difficult to identify by looking at the addresses of the originator or receiver, it may increase the risk of failure to identify a related-party transaction or the ability to ascertain that the correct transferee or transferor was recorded.

Errors such as sending cryptocurrency to the wrong address or typographical errors in inputting transactions cannot be rescinded as blockchain transactions are permanent; hence, the client can lose their cryptocurrency through data input errors, increasing the risk of material misstatement. The auditor will need to examine client-level data entry integrity controls, access, and storage controls to

ensure the accuracy of the cryptocurrency transactions. Further, auditors should consider the existence of such controls at the third-party-level (wallet providers/exchanges) to conclude there is reasonable accuracy.

Authorization

Internal control review and testing, re-performance, and inspection of source documents supporting recorded transactions are used to provide audit evidence that the financial statements are comprised of authorized transactions. Auditors should look for evidence that the client has established procedures for authorizing wallet opening, new private key creation, and the use of exchanges. Further, the clients should have separation of duties between authorization, custody, and recording of cryptocurrency transactions by both the client and the third party.

Cutoff

Cut-off testing provides audit evidence that the transactions are recorded in the proper period. Different exchange technology, market volatility, nexus regulation, blockchain consensus mechanisms, and internal controls at the exchange may cause delays in processing transactions. Cryptocurrency transactions also have to be confirmed by cryptocurrency miners before the transfer of assets and some exchanges require multiple confirmations before the transfer of balances. Further, when volatility is experienced in the cryptocurrency market or increased volume is experienced in the exchange, processing delays may occur. Therefore, auditors will have to gather evidence of client and exchange internal controls over processing accuracy to provide assurance of the cutoff assertion.

Occurrence

Occurrence for revenue accounts involves obtaining audit evidence that the transactions reflected in the financial statements are valid and occur only when the revenue is earned. Risks include fictitious transactions and recognition of transactions before all conditions are met. Audit procedures such as confirmation, understanding of internal controls, inspection of documents, and reconciliations are used to gather audit evidence to test occurrence. In auditing cryptocurrency transactions, auditors will need to examine evidence verifying ownership of the private key and evidence of the appropriate party to record the transactions. A sample of transactions in the wallet should be vouched back to supporting documents. Auditors should obtain an understanding of the internal controls surrounding occurrence at the exchange and client level. Separation of duties between custody, recording, and authorizing of cryptocurrency transactions should be part of the audit clients' internal control processes. In addition, physical controls over private keys and information technologies used in the transactions should be part of the control activities related to cryptocurrency. Controls at the exchange or third-party level will also need to be considered, which will be a challenge due to the lack of third-party assurance reporting. IT application controls that prevent or minimize the risk of misidentification of a party to a transaction or the amount will reduce the risk of incorrect posting to the blockchain and resulting probable loss of assets.

Disclosure

The auditors' opinion on the fairness of the client's financial statements includes an evaluation of their presentation including disclosures. Typically, a disclosure checklist is completed to verify all disclosures required by a financial reporting framework are included in the notes to the financial statements. Since there is no guidance from standard setters around appropriate disclosures for financial statements containing cryptocurrency transactions, the auditor will need to assess the adequacy of the client's disclosures using principle-based accounting and white papers. These

alternative guidelines are recommending greater transparency when assessing cryptocurrency disclosure. At a minimum, disclosures already required, such as the nature of the asset, accounting policies, fair value, contingencies, risks associated with cryptocurrency, and valuation should be included in the notes to the financial statements. Additionally, the business purpose of the cryptocurrency transactions, measurement basis, and volatility of the currency may also need to be considered for disclosure.

Summary

A new generation of digital assets is emerging, promising greater stability. As these digital assets are appearing more frequently in financial statements, the question for auditors to consider is, how are these assets audited?

Ultimately, an auditor's responsibility for gathering evidence relevant to management's assertions regarding the fair presentation of the financial statements remains the same, but the nature of procedures performed and evidence gathered differ greatly from traditional audits.

As auditors, we must apply our expertise and work with all stakeholders to develop a comprehensive approach to accepting, designing and executing audits of digital assets.

We play an essential role in maintaining confidence and trust in the capital markets. New digital assets and their pace of change mean we must actively engage in developing new methodologies and tools, as we continue to apply the best analytical thinking and enhance effective and systematic examination.

