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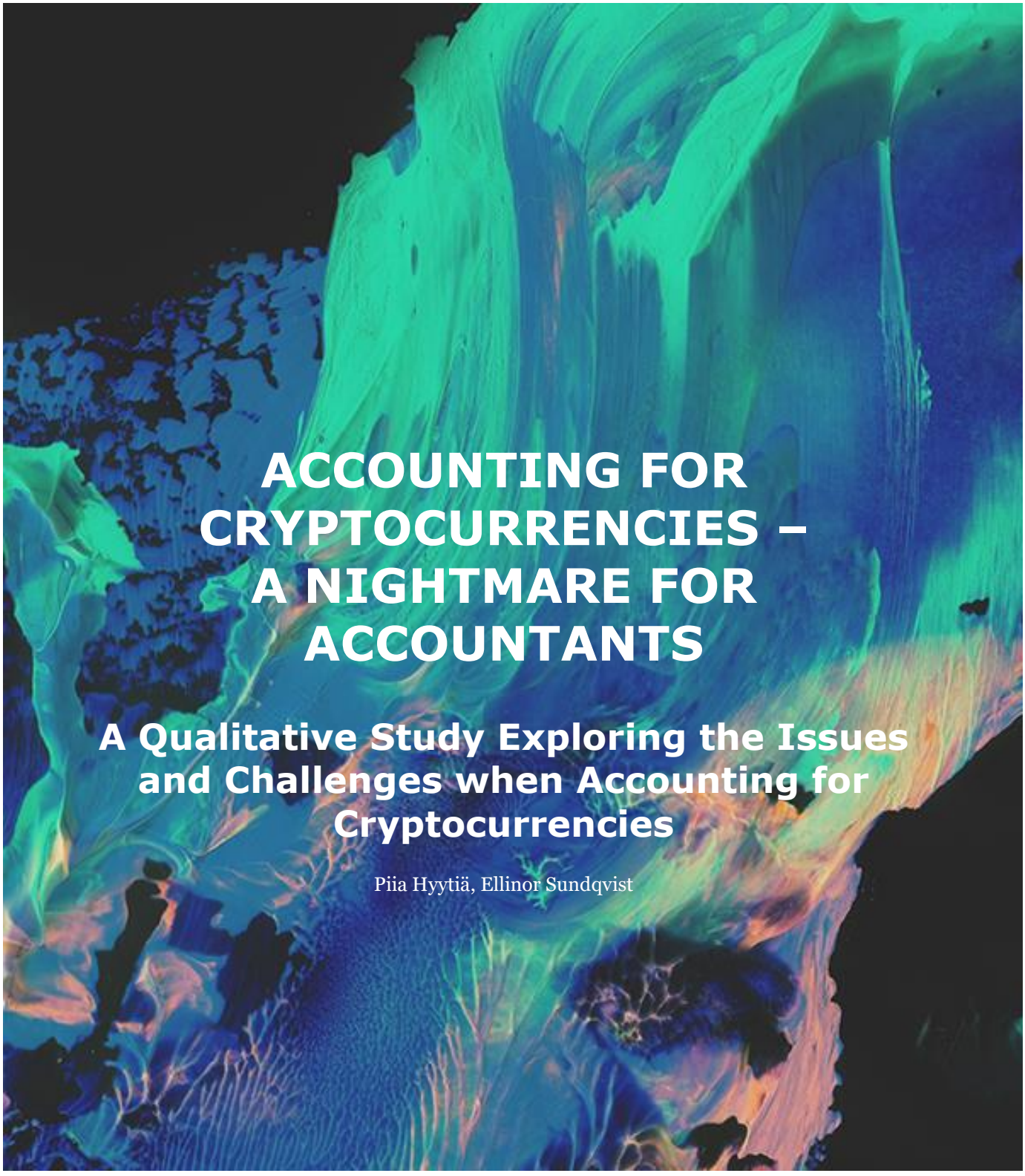

ACCOUNTING FOR CRYPTOCURRENCIES – A NIGHTMARE FOR ACCOUNTANTS

A Qualitative Study Exploring the Issues and Challenges when Accounting for Cryptocurrencies

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Degree Project, 30 Credits, Spring 2019
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Abstract

Cryptocurrencies are a phenomenon which has appeared more and more during the last years and is widely used by both individuals and entities. Their technological features have intrigued many, resulting in a significant growth of the number of cryptocurrencies available and an increased amount of areas of usage. More and more businesses have started using cryptocurrencies for example for investment purposes or accepting them as a means of payment. This has resulted in an urgent need of guidance from accounting standard setters to regulate how they are treated in financial statements. The result of the lack of such guidance has led to a variety of accounting treatments used in practice which have created significant challenges for preparers of financial statements. Up until recently the guidance for preparers of financial statements consisted of reports issued by the big accounting firms and recommendations from local regulatory accounting bodies. The lack of literature together with the possible consequences for the marketplace has resulted in an urgent need of guidance to avoid a patchwork of accounting treatments in the market. Furthermore, these challenges may result in possibilities of conducting earnings management or an increased information asymmetry between stakeholders and entities.

The purpose of this study is to understand and discuss the practical accounting issues and challenges related to cryptocurrencies for preparers of financial statements. The research is based on four broad themes which seek to assist the purpose by including several perspectives to the issues and challenges faced. The themes that the research is divided into are assets, revenues, disclosures and risk factors associated with cryptocurrencies. Based on these four themes the research question this research aims at answering is:

"What are the practical accounting issues and challenges for the preparers of financial statements related to cryptocurrencies?"

The empirical findings of this research suggest that there are many challenges which need to be resolved when it comes to accounting for cryptocurrencies. There are issues present in all four themes, but the main challenges which were identified revolved around asset classification, valuation, disclosures and risk factors. Furthermore, based on the empirical findings it is evident that the knowledge of practitioners is of a more practical nature while literature is more based on specific standards and paragraphs which can be applied. However, this research provides practical contributions to existing literature and includes aspects of risk consequences for accounting and financial markets at large. It is concluded that more accounting guidance is needed for cryptocurrencies to increase the usefulness of financial information and to reduce possibilities of earnings management which occur because of divergent accounting treatments.

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Acknowledgement

Firstly, we would like to thank all the interviewees for taking the time from their busy schedules to contribute to the study. This study would not have been possible without their participation and we are sincerely grateful. We would also like to express our gratitude to our supervisor of this research, Tobias Svanström. He has given valuable guidance and feedback throughout the thesis writing process. Last but not least, we want to thank our friends and family for the support and cheers provided during the semester.

Umeå, Sweden 2019-05-17

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Concepts / Glossary

The big 6 accounting firms - Refers to BDO, Deloitte, EY, Grant Thornton, KPMG and PricewaterhouseCoopers [PwC]. Hereafter these ate referred to as the 'big accounting firms'.

Bitcoin - One of the largest cryptocurrencies in the market. Can be used as an alternative payment method, accepted by several major companies such as Microsoft and Dell Computers (Tan & Low, 2017, p. 220).

Blockchain - The sequence of the blocks periodically grouped together in a block of recent transactions in the network (Böhme et al., 2015, p. 217).

Coins/Tokens - Cryptographic assets can be described as either tokens or coins (PwC, 2018, p. 2). The difference between these two is based on the asset's functionality but in practice the terms can be used interchangeably.

Cryptocurrency - "*A digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank*" (Oxforddictionaries).

Cryptography - Cryptography serves as a mechanism for securely encoding the rules of a cryptocurrency system in the system itself (Narayanan et al., 2016, p. 1).

Earnings Management – Manipulation of accounting numbers and structuring transactions to mislead or influence outcomes depending on accounting numbers (Healy & Wahlen, 1999, p. 368).

Fiat Currency - Paper money or coins which have little or no intrinsic value in themselves and are not convertible into gold or silver but are made legal tender by order of a government. For example, Euro or US Dollar (PwC, 2018, p. 3).

International Accounting Standards (IAS) - Accounting standards issued by the International Accounting Standards Committee, the predecessor of the International Accounting Standards Board (IFRS, 2018, p. 2).

International Accounting Standards Board (IASB) - An independent group of experts responsible for the development and publication of accounting standards (IFRS a, n.d).

International Financial Reporting Standards (IFRS) - Globally accepted accounting standards set by the International Accounting Standards Board (IFRS b, n.d).

Mining - A process where a miner solves a transaction puzzle and publishes a block which contains a proof-of-work and other miners verify the solution (Böhme et al., 2015, p. 217).

Miner - Miners are individuals who solve computational problems allowing them to put transactions securely on the blockchain and receive the block reward and a possible fee attached to those transactions (Easley et al., 2019, p. 8).

Chapter 1: Introduction

This chapter provides an introduction to cryptocurrencies including their history and the technology behind it. Furthermore, descriptions about cryptocurrencies and accounting are provided which aim at introducing the reader to the issues which will be discussed throughout the research. Finally, the research gap is presented leading to the research question and purpose of this thesis.

1.1 Background

1.1.1 Introduction to cryptocurrencies

The concept of cryptocurrencies was established in 2009 when the first cryptocurrency, Bitcoin, was made available to the public. A cryptocurrency is a transferable digital asset which is secured by cryptography (White, 2015, p. 383). Bitcoin was created by the pseudonym Satoshi Nakamoto who in 2008 published a paper in which the idea and technology behind Bitcoin was introduced (Marr, 2017). The currency was created as a response to the financial crisis (Davis, 2011, p. 62), and what was needed according to Nakamoto was "*an electronic payment system based on cryptographic proof instead of trust"* (Nakamoto, 2008, p. 1). The result was a peer-to-peer electronic network allowing individuals to make anonymous transactions without the need for financial intermediaries (Polasik et al., 2015, p. 10).

After the publication of Nakamoto's report in 2008, Bitcoin was made available to the public in 2009, and the process of creating new Bitcoins and verification of transactions begun (Marr, 2017). However, it was not until 2010 when the digital currency was firstly traded, when a man purchased two pizzas for 10,000 Bitcoins. In the end of 2017, these 10,000 Bitcoins were worth $100 million (Price, 2017). The popularity of Bitcoin increased during 2011, and alternative cryptocurrencies started appearing (Marr, 2017). Since the inception of Bitcoin, the availability of unregulated cryptocurrencies has risen exponentially, from one digital currency to over 2000 available with varying size and market share (CoinMarketCap a.). The price of cryptocurrencies is known to be fluctuating, in 2013 the price of Bitcoin reached $1000 per unit for the first time, but shortly thereafter the price dropped to $300 leading to large losses for investors (Marr, 2017). At the time of writing (2019-02-07) the market value of one Bitcoin is $3,416.30 and there are around 17.5 million Bitcoins circulating (CoinMarketCap a.) out of the limited supply of twenty-one million Bitcoins (Davis, 2011, p. 62). At the time of completing this research the market value of one Bitcoin is $7,051,72 (2019-05-13), which means that the value has more than doubled. The highest recorded price of Bitcoin was achieved in December 2017 at $19,783.21 (Kharpal, 2018).

The invention of Bitcoin spurred the creation of several new cryptocurrencies (Lee et al., 2018). These cryptocurrencies use similar cryptographic technologies but employ different algorithmic designs. Examples of other cryptocurrencies are Litecoins, Peercoins, Dogecoin, Counterparty, Ethereum and Ripple (Franco, 2015, p. 171 & 181). The cryptocurrencies with the largest market cap are at the time of writing (2019-02-07), Bitcoin, Ripple (XRP) and Ethereum (CoinMarketCap c.). Bitcoin is the first cryptocurrency and therefore it is the most popular example which is tied to the blockchain technology (Crosby et al, 2016, p. 8). The majority of the literature about

cryptocurrencies uses Bitcoins as an example cryptocurrency when explaining the functionality behind the technology and the history of cryptocurrencies.

The purposes of holding cryptocurrencies are varying, initially one of the objectives of Bitcoin was to be used for online payments as a form of electronic cash (Peters et al., 2015, p. 2). Moreover, cryptocurrencies can be held as a medium of exchange, for long- or short-term investment purposes or for speculative purposes (Australian Accounting Standards Board [AASB], 2016, p. 5). Bitcoin has been traded since 2010, but its main use has initially been for speculation, however, there has been a widespread of use ranging from daily transactions to be used in mergers of companies (Peters et al., 2015, p. 2; Railborn & Sivitanides, 2015, p. 25). In addition, cryptocurrencies are also used for Initial Coin Offerings (ICO), which are used by startup companies as a source of a fast and easy way of funding as it avoids the regulated capital raising process (Sontakke & Ghaisas, 2017, p. 16).

1.1.2 The technology behind cryptocurrencies

The technology behind cryptocurrencies is based on a creation of digital value which enables peer-to-peer transactions without a financial intermediary (Franco, 2015, p. 11). The Bitcoin network has a decentralized ledger containing the balance of every Bitcoin user (Franco, 2015, p. 14). The users are identified by large lines of letters and numbers and transactions are protected through a digital signature including two different "keys" (Crosby et al. 2016, p. 9). The designated number and letter line that the users are identified through is the public part of a cryptographic key, the private part of the key is only in the usage of the owner (Franco, 2015, p. 14). To be able to spend money, the owner of the cryptocurrency needs to prove his or her ownership of the private key (Crosby et al., 2016, p. 9). This enables both the buyer and seller have to their identities encrypted and no personal information is transferred from on to the other (Murphy et al., 2015, p. 3). With a Bitcoin transaction there is no third-party intermediary, the buyer and seller interact directly (peer to peer), but their identities are encrypted. Transactions do not come in the order in which they are generated, and there is a need for a system which abolishes possible double spending of the cryptocurrencies. The double-spend effect means that there is a danger that someone can spend the same money any number of times (Davis, 2018, p. 63). This problem was solved with a mechanism known as the blockchain technology (Crosby et al., 2016, p. 9).

The blockchain technology is intrinsically linked to Bitcoin and can be explained through how Bitcoin works (Crosby et al., 2016, p. 9). The blockchain technology is applicable to any digital asset transaction done online. New transactions which are published to the Bitcoin network are periodically grouped together in a block of recent transactions (Böhme et al., 2015, p. 217). Blocks are compared with the most recently published blocks, to make sure that unauthorized transactions have not been added. This forms a sequence of blocks or a blockchain. Transaction records need to be practical and updated since it is the foundation of the entire Bitcoin system. To encourage users to help, the Bitcoin system awards Bitcoins to the users who are able to solve mathematical puzzles which are based on the pre-existing contents of the block. When solving the puzzle, a user publishes a block which contains a proof-of-work that a solution was fulfilled and referenced to the previous complete block. Other users must approve the solution before continuing their work with new block which contains new outstanding transactions. This process is called "mining" and the users approving the solution is a "miner" (Böhme et

al., 2015, p. 217). Figure 1 contains a graphic explanation of the validation of cryptocurrency transactions.

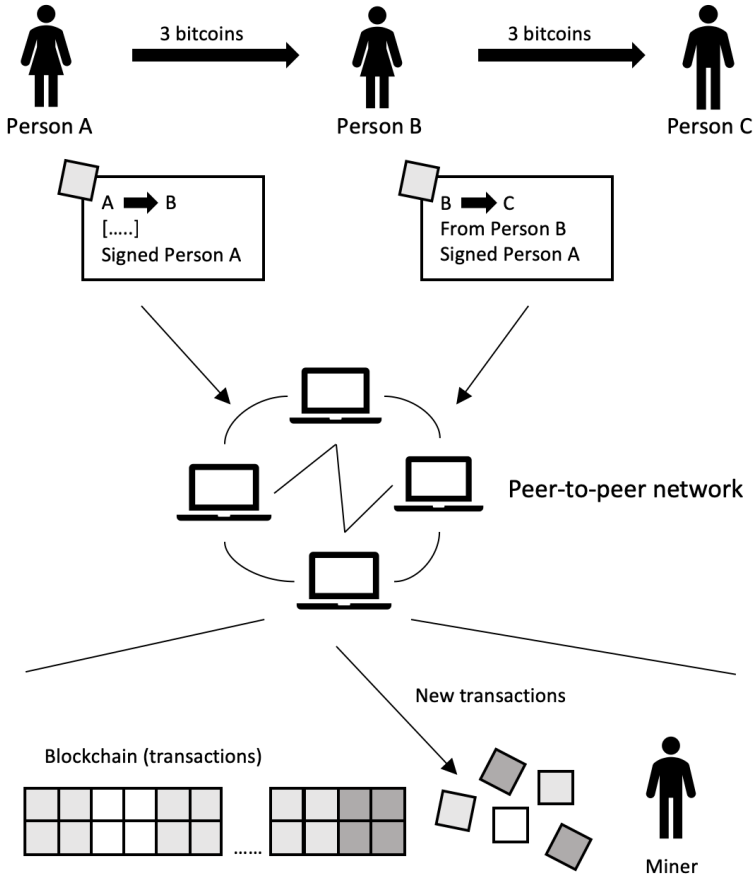

Figure 1 - Bitcoin approach to transaction flow and validations.

Inspiration: Böhme et al., 2015, p. 216.

A Bitcoin transaction is not completed before it has been added to the blockchain (Böhme et al, 2015, p. 217). New transaction sequences are added approximately every ten minutes. However, miners are working constantly on adding blocks of transactions and constructing previous transactions. Mining of Bitcoins comes with a significant cost (Böhme et al., 2015, p. 218). The computerized proof-of work calculations are power-intensive and consume approximately as much energy as Greece or Algeria does during one year (Digiconomist, 2019).

1.2 Accounting related issues

1.2.1 Regulation of cryptocurrencies

The innovative characteristics possessed by cryptocurrencies result in many concerns for regulatory bodies. The main challenge for prospective regulators is where to impose constraints (Böhme et al., 2015, p. 231). According to Jacobs (2018, p. 112) the legal status of cryptocurrencies varies from country to country and is subject to frequent changes as governments and central banks constantly study and revise their views and

opinions. Japan has one of the largest markets for Bitcoin, and the country has accepted cryptocurrencies as legal tender. In other countries cryptocurrencies are accepted but not viewed as legal tender, examples of such are, United Kingdom, South Korea and Singapore (Rooney, 2018). Furthermore, there are also countries where cryptocurrencies are illegal, one example is China, which is one of the world's biggest sources of cryptocurrency mining (Reuters, 2018; Rooney, 2018).

Lack of regulations and the anonymity associated with cryptocurrencies have raised serious concerns that they would facilitate money laundering and other criminal activities (Jacobs, 2018, p. 112). Furthermore, transactions are not protected by government regulations or controls. The lack of regulations also concerns the accounting and audit professions, as there are no applicable IFRS standards regulating the accounting for cryptocurrencies which have resulted in a variety of accounting practices used (AASB, 2016, p. 3). Nevertheless, the International Financial Reporting Interpretations Committee [IFRIC], have in March 2019 issued guidance on which accounting standards are applicable to cryptocurrencies, however, it is an interpretation, and thus not an absolute solution on how it should be treated in financial statements. Furthermore, it was also tentatively decided that no new standard will be issued which regulates cryptocurrencies. Moreover, since no official standard is issued it is not a requirement to follow the recommendations made, and there is room for other interpretations.

1.2.2 Cryptocurrencies and accounting

The usage of cryptocurrencies in business has increased over the last years, and large companies such as Overstock, Expedia, PayPal and Microsoft accept cryptocurrencies as payment methods (Nasdaq, 2018). The increased usage of cryptocurrencies in businesses has resulted in an urgent need for accounting guidance from standard setters (EY, 2018, p. 1). National accounting authorities around the world have expressed the need for guidance to avoid a patchwork of inconsistent rules used globally (Qassim, 2018). AASB (2016, p. 3) also highlights the importance of the issuance of a standard to avoid a diversity of accounting treatments used. Furthermore, in a study conducted by Yilmaz and Hazar (2018, p. 328) it is found that investors believe there are inadequate standards when accounting for cryptocurrencies.

As of today, there are no available IFRS standards regulating the accounting requirements for cryptocurrencies (International Accounting Standards Board [IASB], 2018, p. 7). The existing guidance mainly consists of an agenda decision by IFRIC, AASB guidance, and reports issued by the big accounting firms. AASB (2016, p. 3) has issued their view on the matter and suggests solutions of which standards could be applied to the accounting for cryptocurrencies. Most of the literature available focus on the asset classification of cryptocurrencies and various accounting treatments. The agenda decision issued by IFRIC provides guidance on which existing standards can be applied to cryptocurrencies (IFRS, 2019). Nevertheless, this guidance does not provide solutions to all associated issues with accounting for cryptocurrencies and there are diverging views of whether these accounting treatments provide relevant financial information or not.

One of the main challenges brought up in literature is what type of asset cryptocurrencies can be classified as. The possible asset classifications discussed by the literature are inventory, cash, cash equivalents, financial instruments and intangible assets (AASB, 2016, p. 8). The guidance from IFRIC suggests that the possible applicable standards are IAS 2, inventory or IAS 38, intangible assets (IFRS, 2019). However, there are contrary

views of whether these asset classifications provide relevant and useful information to financial statement users or not. The determination of what standard applies to cryptocurrencies is a key consideration as it affects all subsequent accounting treatments and disclosures in financial statements. Furthermore, as suggested by Barth (2006, p. 272), different assets are associated with different expectations of the future. Thus, different asset classifications may come with expectations for users of financial statements which may affect the decisions made. Besides the matters of which IFRS standards are applicable, there are also issues regarding the definition and recognition of an asset which needs to be resolved (AASB, 2016, p. 8; Tan & Low, 2017, p. 223).

Additionally, issues about accounting for revenues and disclosures of information in financial statements have also been identified as key considerations. In the case of revenues, it is suggested that cryptocurrencies should be accounted for in accordance with IAS 21 - the effects of changes in foreign exchange rates (Grant Thornton, 2018a, p. 10). Furthermore, the requirements in IFRS 15 - revenue from contracts with customers' need to be considered when accounting for revenues (Deloitte, 2018, p. 13). Moreover, timing of recording transactions, price fluctuations and whether transactions from cryptocurrencies meet the recognition criteria from revenues, are issues which should be taken into account. Disclosures refer to the notes of financial statements which seek to clarify financial information to stakeholders. The required disclosures depend on various factors such as the accounting standard applied and the materiality of holdings. All these challenges brought up can have implications for investors and stakeholders where the accounting treatments decided upon can affect decisions of the users of financial statements. For example, the purpose of holding cryptocurrencies affect the accounting treatment, and such information may not be evident from financial statements, and thus, influence the decisions made by users of financial statements.

Common to all publications is a discussion of the complexity of accounting for cryptocurrencies, matters are not only related to the accounting practices, but a technological understanding also has a great impact. A more detailed description on the contents will be provided below in the theoretical framework with a deeper description of the possible accounting treatments. The accounting issues identified concerns the accounting for assets, the accounting for revenues, disclosures and risk factors related to cryptocurrencies. Some of the risk factors will be briefly discussed below.

1.2.3 Risk factors related to accounting for cryptocurrencies

Cryptocurrencies are associated with a lot of risks, both in general, and related to the accounting for cryptocurrencies which may create concerns for stakeholders. Furthermore, accounting for cryptocurrencies comes with challenges for accountants too, as cryptocurrencies differ from other type of assets. An understanding of the attributes of each cryptocurrency is needed as the features of different cryptocurrencies vary (Deloitte, 2018, p. 5), thus, it is required that accountants not only know possible accounting treatments, but also the technology behind cryptocurrencies to be able to treat it correctly. In the absence of applicable accounting standards there will be divergent accounting treatments in the marketplace which may have consequences for financial markets and its stakeholders. According to Raiborn and Sivitanides (2015, p. 33) cryptocurrencies are subject to risks of accounting fraud, particularly with violation of measurements and revenue recognition criteria. Furthermore, there are risks with the non-mandatory accounting guidance for cryptocurrencies as different accounting policies can exist. It is argued that the choice of accounting policy can be used as a mean of achieving specific

objectives by management, which is one definition of earnings management (Scott, 2014, cited in Hasan & Rahman, 2017). Thus, the accounting policy applied to cryptocurrencies can be used as a mean to pursue earnings manipulation. Moreover, the accounting challenges with cryptocurrencies may have consequences for the usefulness of financial information when the economic substance of the cryptocurrency may not be represented correctly with for example the possible asset classifications. This can result in implications not only for reporting entities, but for the trust in financial markets at large. The usefulness of financial information can be a concern for investors, if information is not fairly presented or if there is a general distrust in entities holding or accepting cryptocurrencies. In such case information may not facilitate efficient and effective decisions for financial statement users (Raiborn & Sivitanides, 2014, p. 33).

Cryptocurrency accounting is associated with a high degree of subjectivity where professional judgement is of importance. It is argued that professional judgement is particularly important in situations when standards are incomplete or when situations are complex or not clearly defined (Ivan, 2016, p. 1134-1135). However, the usage of judgement in accounting facilitate opportunities to select reporting methods, estimates and disclosures which suit the entity and increases the value of accounting as a means of communication (Healy & Wahlen, 1999, p. 366).

In addition, there is a skepticism associated with cryptocurrencies which can be a risk factor. Cryptocurrencies offer global reach, speed, low cost to use and it is difficult for authorities to track transactions (Brill et al., 2014, p. 14-15). This attracts money laundering and other criminal activities. Foley at al. (2018, p. 2) found that illegal activities accounts for a substantial proportion of the users and trading activity in Bitcoin and it is argued that approximately one-quarter of all users (26%) and close to one-half of Bitcoin transactions (46%) are associated with illegal activities.

Taxation and cryptocurrencies

Related to the accounting of cryptocurrencies is the taxation of such, which varies from country to country and between individuals and businesses. The taxation issues associated with cryptocurrencies are how to categorize cryptocurrencies and the specific activities involved with them (The Law Library of Congress, 2018, p. 2). There are various taxation policies around the world, for example, in Israel cryptocurrencies are taxed as an asset, while in Argentina and Spain cryptocurrencies are subject to income tax (The Law Library of Congress, 2018, p. 3). Moreover, the tax authorities in Sweden have decided to give more attention to the taxation of cryptocurrencies, since a significant amount of the trade with cryptocurrencies is not reported to the tax authorities (Skatteverket, 2019). The taxation of cryptocurrencies is not a main focus of this thesis, however it is closely related to accounting, thus, it can influence the accounting decisions made.

1.3 Problematization and Research gap

The increased usage of cryptocurrencies combined with its volatility has led to an increased global interest and scrutiny by organizations, investors, regulators, governments and others (Chartered Professional Accountants [CPA], 2018, p. 3). In the beginning of 2018, the total market capitalization of cryptocurrencies reached its peak and Coinmarketcap indicated that the market capitalization of the combined crypto markets approximately reached 760 billion dollars (Haig, 2018). At the time the valuation

was larger than Switzerland's GDP, which is the 19th largest in the world. AASB (2016, p. 6) states that the Bitcoin market alone is big enough to warrant action. Thus, it can be concluded that cryptocurrencies cannot be neglected in terms of its involvement to stake of wealth (Procházka, 2018, p. 161). Besides the practical issues arising from determining the appropriate accounting treatment, problems resulting from the divergent accounting treatments can be of great significance to financial markets. Possibilities of increased information asymmetry between management and stakeholders may occur, together with prospects of conducting earnings management in the unregulated accounting environment. Issues such asset classification or valuation problems may have big implications not only for the reporting entity, but also for the economy at large.

There is a limited amount of research conducted about the accounting for cryptocurrencies, and together with the limited guidance from IASB there is a broad field to be researched. The issue of accounting for cryptocurrencies has recently grown in importance because of the increased usage of cryptocurrencies (EY, 2018, p. 1). The matter has been discussed both from a US GAAP perspective and an IFRS perspective, and this research will focus on the accounting issues from an IFRS perspective. AASB's report about the recommended accounting treatment for cryptocurrencies has up until recently served as a basis for proceeding literature. In March 2019, IFRIC issued an interpretation of which existing standards can be applied in the accounting for cryptocurrencies. Simultaneously, it was decided not to consider a standard that regulates the accounting treatment for cryptocurrencies (IASB, 2019).

Raiborn and Sivitanides (2015) have conducted research on the accounting issues from a US GAAP perspective with a focus on the following accounting issues: asset classification, mining transactions, holding process, exchange transactions, mergers and acquisition processes and disclosure activity. Moreover, Tan and Low (2017) discuss the accounting issues from the perspective of a digital currency exchange and from a trading firm. In research conducted by Procházka (2018) the competing IFRS models are brought up together with a discussion on the most suitable accounting treatments. A study has also been conducted with a focus on accounting for Bitcoin, based on models about stewardship and neoliberalism (Ram et al., 2016, p. 2). In addition, a master thesis has been published by Ramrakhiani (2018) from Dublin Business School, which covers similar themes and a practical perspective by accounting practitioners. Nevertheless, there are differences between this study and Ramrakhiani's study, for instance, this thesis employs various perspectives ranging from accounting specialists to an entrepreneurial view and discusses related risk factors to cryptocurrency accounting. However, since it is a master thesis it is not peer-reviewed or validated from an academic perspective, the reliance of the study has not been evaluated. Moreover, since the publication of Ramrakhiani's thesis the interpretation from IFRIC has been published which can serve as a guidance for the accounting treatment. In addition, reports by the big accounting firms have not been considered in Ramrakhiani's research.

The most closely related academic study to this research is Ram et al.'s study which is a practical research adopting a mixed method by identifying key characteristics of Bitcoin in literature together with accounting policies inspired by neoliberalism and stewardship. The main similarity between this study and Ram et al.'s study is the usage of a practical approach with interviews with accounting experts. Thereafter there are many differences, a large emphasis is made on the quantitative aspect of the study, and the range of themes

discussed is broader. In this study, a larger emphasis on accounting standards is applied. Moreover, Ram et al.'s study is based on principles of neoliberalism and stewardship.

The limited previous research has consequences for the design of this study as there are no fixed models available and data is not easily accessible. Four central themes have been identified which will be the focus of this thesis: assets, revenues, disclosures and risk factors, see figure 2. These are based on reviews of the literature by trying to extract central themes which are applicable to the accounting of cryptocurrencies. Furthermore, these themes are discussed based on the perspectives provided by IFRS-experts, consultants and an entrepreneur.

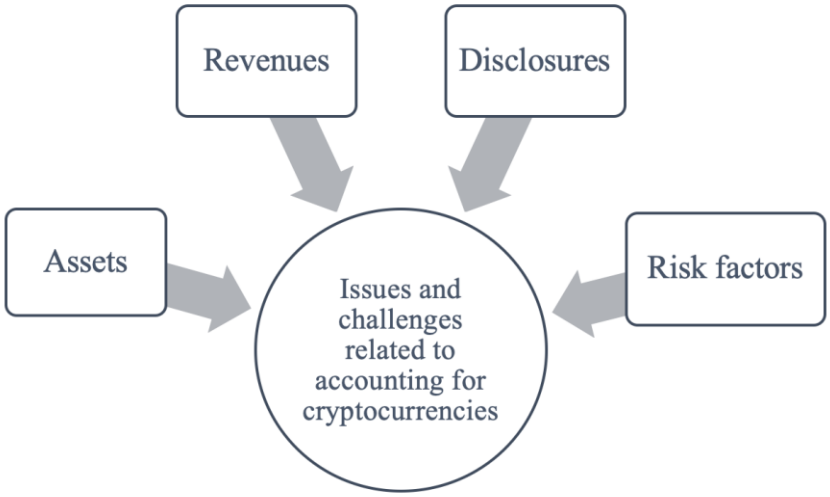

Figure 2 - Four central themes related to accounting for cryptocurrencies.

The common features of previous research are that the majority of studies have not applied a practical approach to the problem. Furthermore, when a practical approach has been utilized, it has focused on financial reporting experts, rather than employing different perspectives from people related to these issues, such as accountants, consultants and IFRS experts. Moreover, in the existing literature, the lack of previous research is emphasized, resulting in many research opportunities (Procházka, 2018, p. 184; Ram et al., 2016, p. 22). In addition, what is also brought up in existing literature is the need for guidance from IASB.

The aim of this research is to be positioned within the field of financial accounting. Brown & Jones (2012) have conducted a study mapping and exploring the contemporary field of financial accounting research. Based on the study the field of financial accounting can be divided into four major content categories which are, market-based accounting research, accounting practices and regulation, earnings management and accounting choices, and finally disclosure and annual reports (Brown & Jones, 2012, p. 247). Since the accounting for cryptocurrencies is at early stages it is difficult to determine an absolute positioning within the field, instead, this research results in contributions in several of these content categories. Foremost the positioning of this research falls under accounting practices and regulations, but contributions are also made within earnings management and accounting choices and disclosure and annual reports. Furthermore, as this research aims at

describing a recent accounting phenomenon subject to limited previous research, there is a difficulty in determining the exact positioning of the research.

1.4 Research question

There are a limited amount of guidelines and regulations governing how cryptocurrencies are accounted for in accordance with IFRS standards. The lack of clear guidelines has resulted in a variety of accounting practices used in the marketplace. There are significant risks associated with this affecting not only accounting but also financial markets. In addition, there are challenges present for preparers of financial statements who must rely on a best practice in which professional judgement is needed. Furthermore, it is an area with a limited amount of research, and practical perspectives to the issues with accounting for cryptocurrencies have not been explored extensively.

Thereafter, this research aims to answer the following research question:

"What are the practical accounting issues and challenges for the preparers of financial statements related to cryptocurrencies?"

1.5 Purpose

The purpose of this research is to understand and discuss the practical accounting issues and challenges which are related to cryptocurrencies for preparers of financial statements. Cryptocurrencies is an emerging area lacking clear guidelines, regulations or laws how it should be accounted for. IFRS does not offer any guidance regarding cryptocurrencies and in such circumstances a general procedure for the selection of an accounting policy applies (Procházka, 2018, p. 164). Furthermore, this causes different issues and challenges to accounting firms and organizations, since cryptocurrency transactions can be presented in financial statements in a variety of ways. Perspectives from various participants are applied, ranging from members of regulatory bodies, IFRS-experts, consultants and an entrepreneur. By applying several perspectives, the aim is to gain a deeper understanding of the issues and challenges for different preparers of financial statements. The aim of this research is not to provide solutions to the encountered challenges, but rather serve as an initial discussion resulting in an increased awareness of the issues and a springboard for future research.

1.6 Delimitations

This research is delimited to consultants, IFRS-experts and an entrepreneur who are working with cryptocurrencies within the Nordic countries. It is believed that the context can to some extent serve as a global representation of the issues faced since IFRS standards are used globally and similar issues and challenges are faced in other countries. The knowledge of professionals may differ between countries, or where cryptocurrencies are used to a larger extent, but it is deemed that the main challenges brought up are similar in all countries applying IFRS. However, the taxation for cryptocurrencies is likely to

differ amongst countries, but since it is not the main research focus it is not believed to be a limitation to the study.

The study is partly delimited to the big accounting firms with regards to the recommended accounting treatments. As the big accounting firms' recommendations are highly trusted (Bendor-Samuel, 2018) and they provide guidance to clients, it is perceived that these accounting firms provide a representation of what is done in practice. Furthermore, as there are limited recommendations on how to account for cryptocurrencies it is assumed that companies requiring guidance on the accounting treatment would turn to the big accounting firms. This indicates that the treatment suggested by the big accounting firms is a representation of what is done by companies holding or accepting cryptocurrencies.

There are a wide range of other accounting issues besides those brought up in this research, the main focus is on cryptocurrencies held for own account or acceptance of cryptocurrencies as a method of payment. Other issues found is the accounting for initial coin offerings, tokens or cryptocurrencies held for third parties, however, these issues are outside of the scope of this thesis. Nevertheless, the respondents touched upon these issues, so there is some inclusion of these problems, but it is not a focus and it is therefore not covered in the theoretical framework.

Chapter 2: Theoretical Research Methodology

This chapter presents and motivates the methodological choices for this thesis. The ontological, and epistemological standpoints are discussed together with explanations of the research approach, method and design. Lastly, a summary of the methodological choices is presented.

2.1 Ontology: Subjectivism

Ontology is related to the nature of reality (Saunders et al., 2012, p. 130). The core consideration is whether social entities are objective entities with a reality external to social actors, or if social entities are constructions built up by social actors (Bryman & Bell, 2011, p. 20). These two views on the nature of reality are called objectivism and subjectivism. Objectivism proposes that social entities are independent and external to social actors (Saunders et al. 2012, p. 131). Furthermore, it is also viewed that social reality is objective and external to the researcher and that all people have the same interpretation of what reality is (Collis & Hussey, 2014, p. 47). Subjectivism on the other hand suggests that social entities are created based on the perceptions and actions of social actors and that it is necessary to not only study the situation, but also the social details of a situation (Saunders et al., 2012, p 132). It is also believed that reality is socially constructed and that there are multiple realities since every person has their own view on reality (Collis & Hussey, 2014, p. 47).

Accounting for cryptocurrencies is an unexplored area where the nature of reality needs to be researched from a subjectivist approach as the phenomena is researched based on human interpretations and views. Furthermore, as the accounting for cryptocurrencies is highly influenced by the perceptions and actions by individuals and based on judgement. Subjectivism is associated with social constructionism which suggests that social actors have different interpretations of situations as a consequence of the person's own view of the world (Saunders et al., 2012, p. 132). As there are no standards regulating the accounting for cryptocurrencies it is dependent on social constructionism in making accounting decisions. Furthermore, financial statements differ in their presentation around the world and are influenced by for example social, economic and legal circumstances by different countries. Moreover, different criteria are used in the recognition of items in financial statements and different bases of measurement are being used (IASB, 2010, p. A18). Due to the lack of specific accounting standards a subjective approach is needed to capture the underlying assumptions to the accounting decisions made.

2.2 Epistemology: Interpretivism

An epistemological consideration is related to the question of what is and should be considered as acceptable knowledge in a discipline (Bryman & Bell, 2011, p. 15). There are two main paradigms when considering how the research should be conducted: positivism and interpretivism (Collis & Hussey, 2014, p. 43). A research paradigm is a philosophical framework which guides how scientific research should be performed. Positivism is an epistemological position supporting the application of methods of natural

science to a study of social reality and beyond (Bryman & Bell, 2011, p.15). The scope of positivism is difficult to pin down since it used in a number of ways by different authors. For some writers' positivism is a descriptive category describing a philosophical position which can be discern in a research, whereas others interpret it as a pejorative term used to describe simple and superficial data collection. Under the positivist stance, theories provide the basis of explanation, enable the anticipation of phenomena, predict their occurrence and thereafter allow them to be controlled (Collis & Hussey, 2014, p. 44). Positivism assumes that social phenomenon can be measured and therefore it is associated with quantitative methods of analysis.

Interpretivism is a contrast to positivism (Bryman & Bell, 2011, p. 16). Based on an interpretivist stance it is necessary for the researcher to understand differences between humans in our roles as social actors (Saunders et al., 2012, p. 137). It underlines the difference between conducting research among people rather than about objects. As the aim of this research is to study different perspectives on accounting for cryptocurrencies based on existing accounting standards, an interpretivist approach is suitable to display all aspects of the topic. Further, it is expected that there is no one right answer to the challenges present and therefore an interpretivist stance is taken. As discussed before, cryptocurrencies are not regulated with strict laws or regulations, which leaves the accounting treatment up to interpretation. Interpretivism is associated with the belief that social reality is not objective but rather subjective since it is shaped by observations (Collis & Hussey, 2014, p. 45). Interpretivism focuses on exploring the complexity of social phenomena. It is evident that accounting for cryptocurrencies is a complex area based on the lack of standards which results in a high level of subjectivity needed.

2.3 Research approach: Inductive

There are three types of research approaches based on the reasoning adopted: deductive, inductive and abductive (Saunders et al., 2012, p. 143). Research which starts with a theory which develops when reading academic literature can be defined as a deductive approach (Saunders et al., 2012, p. 144). On the contrary, if a research starts by collecting data to further understand and explore a phenomenon and the research eventually generates or builds a theory, it can be seen as an inductive approach. The main difference is that a deductive study aims to develop theory, while an inductive study aims to formulate theory (Saunders et al., 2012, p. 145-146). A deductive approach is the most common perspective when viewing the relationship between theory and research (Bryman & Bell, 2011, p. 11). It is also important to acknowledge the abduction approach, which combines deduction and induction by moving back and forth from theory and data and vice versa (Saunders et al., 2012, p. 147).

According to Bryman and Bell (2011, p. 27) studies employing an interpretivist epistemological orientation and subjective ontological orientation, generally have an inductive approach, and this thesis follows this logic. An inductive approach is seeking to understand the nature of the problem (Saunders et al., 2012, p. 146), which in this research implies the problems and issues related to accounting for cryptocurrencies. However, the study is not completely inductive since pre-existing literature was used to guide the research. Nevertheless, it is argued that an inductive approach cannot be used without enough knowledge about the research topic, and a thorough literature review is still needed before the research is conducted (Saunders et al., 2012, p. 74). Moreover, the

theoretical framework was utilized when determining the main themes in constructing the interview guide for the interviews. The aim of the research is not to generate a new theory, but rather to serve as a contribution by discussing the existing literature and connecting it to the knowledge of preparers of financial statements. Thus, this research does not strictly follow an inductive approach as it does not aim to generate a theory in the end.

2.4 Research method: Qualitative

There are two types of research methods which can be used, qualitative research or quantitative research. Qualitative and quantitative methods differ in terms of epistemological assumptions, methodological procedures, research methods and theoretical frameworks (Yilmaz, 2013, p. 323). Quantitative research emphasizes quantification and seeks to test theories (Bryman & Bell, 2011, p. 26-27). It is concerned with relationships between variables which are tested with statistical techniques (Saunders et al., 2012, p. 162). Furthermore, it is associated with a deductive approach where data is used to test theory. There is an emphasis on testing and verification together with a focus on reasons for social events (Ghauri & Grønhaug, 2010, p. 105). Moreover, quantitative methods seek to make a generalization to a population while qualitative research generalizes by comparisons of properties and contexts. Quantitative research can answer a question of "how much" of something is occurring, in contrast, qualitative research can answer questions such as "what" and "how" something is occurring (Lee et al., 1999, p. 164).

The alternative research method is qualitative research, which is a strategy "*concerned with a subjective assessment of attitudes, opinions and behavior*" (Kothari, 2004, p. 5). There is an emphasis on the relationship between theory and research with a focus on the generation of theory, and where individuals' interpretations of the social world are of importance (Bryman & Bell, 2011, p. 27). Furthermore, qualitative research is of an interpretive nature where researchers are concerned with subjective and socially constructed meanings about the research phenomena (Saunders et al., 2012, p. 163). Qualitative data is normally understood only within a specific context and is associated with findings with high validity, which is the degree to which the research accurately reflects the phenomena under study (Collis & Hussey, 2014, p. 130). It is suggested that qualitative research is suitable for describing, interpreting and explaining a phenomenon rather than generalizing or examining issues of prevalence (Lee, 1999, p. 38). The techniques associated with qualitative research are mainly focus groups, projective techniques and depth interviews (Kothari, 2004, p. 5).

The aim of this research is to find practical implications for the accounting of cryptocurrencies, from the perspective of preparers of financial statements. Because of the limited number of accounting professionals with knowledge about cryptocurrencies, a qualitative method is most suitable to fulfill the purpose of this research. When conducting a quantitative research, it comes with constraints since data is not easily accessible. For example, because of the limited amount of knowledge, surveys are not suitable since the population is not big enough. Moreover, to adapt a quantitative approach in analyzing financial statements for patterns in how cryptocurrencies are accounted for is not either suitable because of the varying nature of cryptocurrencies. In addition, a lack of information in financial statements about cryptocurrencies together with the varying types of businesses add another limitation for conducting quantitative research on the topic.

Qualitative research with an inductive approach is used to advance to a richer theoretical perspective than already existing (Saunders et al., 2012, p. 163). With a lack of research and regulatory guidance to the accounting of cryptocurrencies, this method serves to build upon the existing literature and develop a practical knowledge to the problem. It is suggested that qualitative research have four major characteristics (Lee et al., 1999, p. 163) and these are highly related to the research to be conducted. The characteristics suggest that qualitative research occurs in natural settings, it derives from the participant's perspective, it is flexible and lastly qualitative observation methods are not standard. This study is conducted in the natural setting of actors related to the accounting for cryptocurrencies. Furthermore, participants' perspectives are of great importance, and perspectives will differ as a result of the lack of regulation. Moreover, the research is flexible to capture as many perspectives to the problem as possible. As this research seeks to increase the understanding of a phenomena, a qualitative research method is appropriate (Ghauri & Grønhaug, 2010, p. 106).

2.5 Research design: Exploratory

There are three types of possible research designs, exploratory, descriptive and explanatory (Neuman, 2011, p. 38). These research designs serve different ways of approaching an issue, based on for example the pre-existing knowledge about the subject and the type of question the research will answer. Exploratory research tries to answer the question "what", descriptive research answers questions such as "how" and "who", while explanatory research seeks to answer the question "why" (Neuman, 2011, p. 38-39).

Exploratory research is suitable when there are few previous studies and the purpose is to search for patterns and ideas in the chosen area (Collis & Hussey, 2014, p. 4). Exploratory studies are also useful when the precise nature of the problem is unsure and when an understanding of the topic needs to be enhanced (Saunders et al., 2012, p. 171). Furthermore, exploratory studies tend to rely on the contribution of the participants, and interviews are likely to be unstructured. A key consideration of conducting such a study is flexibility, because of the changing nature of the research (Kothari, 2004, p. 37; Saunders et al., 2012, p. 171). Additionally, a wide collection of data is often used, and the research is very open. Exploratory research seldom provides specific answers to problems and issues, but rather serve as a springboard for future research (Collis & Hussey, 2014, p. 4).

An alternative research design is a descriptive study which aims to describe phenomena as they exist and its characteristics (Collis & Hussey, 2014, p. 4). A descriptive study is not unlikely to be an extension of an exploratory study, the descriptive study goes further in the understanding of a problem compared to an exploratory study (Collis & Hussey, 2014, p. 4; Saunders et al., 2012, p. 171). Descriptive studies start with a well-defined issue and attempts to describe it, resulting in a detailed view of the area of study (Neuman, 2011, p. 38-39). Studies concerned with predictions or narration of facts are examples of descriptive studies (Kothari, 2004, p. 37). Furthermore, descriptive studies are often associated with drawing conclusions about a population, and the study must have protection against bias and maximize reliability. Contrary to an exploratory study, a descriptive study is not flexible, and more structured means of executing the study are

used (Kothari, 2004, p. 37). The final research design, explanatory research, is a continuation of descriptive research and seeks to establish causal relationships between variables (Collis & Hussey, 2014, p. 5; Saunders et al, 2012, p. 172). An explanatory study tries to identify the reasoning why something occurs, and looks for causes and reasons (Neuman, 2011, p. 40). Additionally, it is used to extend a theory or to enrich the explanation of a theory (Neuman, 2011, p. 38).

The accounting for cryptocurrencies is a very unexplored area, both based on the theoretical and practical contributions made. Because of the limited information about the subject, an exploratory study is most suitable. Since an understanding of the area needs to be enhanced and the contributions of participants are of great importance to the outcomes of the study, it is natural to use an exploratory design. Furthermore, exploratory research is often associated with research with an inductive approach (Saunders et al., 2012, p. 549). As the research topic is new and there is a limited amount of data available, it is suitable to commence an exploratory research with an inductive approach. Moreover, Neuman (2011, p. 38) suggests that exploratory research is appropriate when the subject is very new and has not been explored before.

The question of *what* is asked in exploratory research and the outcome is expected to yield in more precise questions to be researched in the future. The aim of this research is to gain a deeper understanding of *what* the accounting issues related to cryptocurrencies are and serve as an exploration of the implementations made in practice. The flexibility of exploratory research is a key consideration in this research. The research has adapted in accordance with the knowledge possessed by the participants as well as with the limited amount of previous research. Furthermore, the dynamic nature of the subject and the fast emergence of cryptocurrencies results in an area which is subject to extensive future research.

2.6 Summary of methodological choices

Accounting for cryptocurrencies is an unexplored topic requiring a high degree of flexibility in the methodological choices. This research adopts an exploratory design seeking to capture the complexity of the area. A qualitative method is used, and the research is reliant on the participants of the study because of the lack of predetermined theories or models. Furthermore, the research's philosophical assumptions are based on a subjectivist ontology and an interpretivist epistemology. In addition, an inductive approach is chosen as the aim is to understand the nature of the problem. However, new theories are not generated and therefore this research does not follow inductive approach strictly. Below in Table 1 follows a summary of the methodological choices made.

Table 1 - Summary of methodological choices.

Methodology	**Research choice**
Ontology	Subjectivism
Epistemology	Interpretivism

Research approach	Inductive
Research method	Qualitative
Research design	Exploratory

Chapter 3: Practical Methodology

This chapter describes the practical methodology used in this research. It contains information about aspects related to data collection, data analysis, literature search and ethical considerations. The chapter further includes a summary of the number of possible respondents contacted together with explanations of the different clusters they belong to.

3.1 Data collection

There are two types of data which can be used in a research; primary and secondary data (Saunders et al., 2012, p. 304). Primary data is a data collected by the researchers when conducting their own research, whereas secondary data has already been collected for another purpose. There are advantages and disadvantages with both methods. Primary data collection can be costly, time consuming and it might be difficult to collect large data sets. However, primary data is generally more flexible, and it produces deeper and more elaborate explanations than secondary data (Zikmund et al., 2013, p. 156). Secondary data is easy to access, and it saves time and money (Saunders et al., 2012, p. 317; Bryman & Bell, 2011, p. 313). Secondary data collection comes with some disadvantages. One specific problem associated with secondary data collection is that it might not fulfill the purpose of the research (Saunders et al., 2012, p. 319-320). Furthermore, with secondary data, the data is difficult to control and there might not be any control over the data quality (Bryman & Bell, 2011, p. 321).

This research utilized primary data since the purpose was to get an in-depth understanding what accounting issues and challenges practitioners face when accounting for cryptocurrencies. The primary data for the research was collected through semi-structured interviews. The respondents were chosen based on their knowledge and experience of cryptocurrencies and accounting.

3.1.1 Sampling

There are two types of sampling techniques which a researcher can use: probability or non-probability sampling (Saunders et al., 2012, p. 261). Probability sampling is commonly related to survey research strategies where a researcher aims at drawing conclusions from the sample whether the population answers to the research question or not (Saunders et al., 2012, p. 262). This sampling method is based on the assumption that the sample will be chosen at random from a sampling frame (Saunders et al., 2012, p. 281). Non-probability sampling includes elements of subjective judgements and to be able to answer the research question an in-depth study needs to be conducted. Non-probability sampling is therefore a more suitable sampling technique for this research.

After choosing the suitable sampling technique for the research, a more specific technique was selected. According to Saunders et al. (2012, p. 284-291) there are four different sampling techniques connected to non-probability sampling, which are quota sampling, purposive sampling, volunteer sampling and haphazard sampling. In this research both purposive sampling and volunteer sampling were used. In purposive sampling judgements need to be made when selecting participants who can answer the research question (Saunders et al., 2012, p. 287). This was the case when contacting the prospective participants. At initial stages accounting specialists were foremost contacted

as it was deemed they would have knowledge about accounting for cryptocurrencies. In addition, volunteer sampling was used and more specifically snowball sampling (Saunders et al., 2012, p. 289). This technique is commonly used when it is challenging to identify members of the desired population. Snowball sampling includes four identifiable steps: establish contact with one or two cases in the population, ask these cases to identify further cases, ask these new cases to identify further cases and stop when there are no new cases, or when the sample is large enough. Thus, the sampling starts with one or a few cases or people and then spreads out based on links to the initial cases (Neuman, 2011, p. 269). Since the population was difficult to define in this study, snowball sampling provides a possibility to find new interviewees (Saunders et al. 2012, p. 289). If the initial contact did not know anything about the accounting for cryptocurrencies it was inquired if they knew someone who does, and through that new possible informants were found.

A research using an inductive approach is concerned with the context in which events take place, therefore a study with a small sample is more appropriate (Saunders et al., 2012, p. 146). The sample size depends on population characteristics, the type of data analysis to be employed, and the degree of confidence in sample accuracy needed for research purposes (Neuman, 2011, p. 263). As this study did not seek to draw any conclusions about a population a small non-homogenous sample was used.

The practical sampling method was challenging because of the lack of knowledge from the accounting professionals contacted. Furthermore, there may have been resistance to participate because of the nature of cryptocurrencies and reluctance to speculate in issues not covered by an accounting standard. The initial goal was to have informants from regulatory bodies, companies holding or accepting cryptocurrencies, stakeholders and accounting firms. Due to a low answering rate from the people contacted, the informants were mainly accounting professionals from accounting firms and company representatives which have tasks related to cryptocurrencies. However, two informants are members of accounting regulatory bodies and work in accounting firms. Besides the constraint of few responses, it was challenging to identify companies holding or accepting cryptocurrencies. Therefore, a focus was made on accounting firms since it is required that they are updated with the latest trends and accounting procedures. Further, accounting firms are often hired to assist preparers of financial statements and should therefore possess the right knowledge about the accounting for cryptocurrencies.

At initial stages of the research process personal contacts were utilized to identify a starting point for the sample. Through personal contacts people working with auditing or accounting were contacted with the aim of achieving a snowball sample. After using personal contacts, a broader search for possible participants was made through purposive sampling. All large audit/accounting firms were contacted (BDO, Deloitte, EY, Grant Thornton, KPMG and PwC), where accounting specialists were mainly approached. Accounting specialists were reached out to with the preconception that they have thorough knowledge of accounting standards and should keep updated with emerging accounting issues. Furthermore, associations working with cryptocurrencies were contacted, people speaking at cryptocurrency conferences, and companies accepting or holding cryptocurrencies. Authors of reports about cryptocurrencies and accounting by companies and regulatory bodies were also contacted as it was believed that they would possess sufficient knowledge on the area. No pre-set criteria were used when contacting possible respondents, except the expectation of either having enough knowledge about

accounting standards or knowledge about cryptocurrencies which could be related to accounting and regulatory issues. The reason for not having set criteria were the limited amount of knowledge by accounting professionals and the indeterminate population which created constraints to finding possible informants. A flexibility in the sampling was used to gain as many perspectives to the issues as possible. Flexibility in the research is an important aspect of exploratory research which was utilized to gain as many knowledgeable respondents as possible. The initial aim was to access perspectives from regulatory bodies, IFRS-experts, consultants, stakeholders such as investors or creditors and companies holding or accepting cryptocurrencies as a payment method. The respondents in the research are consultants, IFRS-experts which are members of regulatory accounting bodies and an entrepreneur accepting cryptocurrencies.

In total 55 people were contacted, see Table 2 for a summary of the contacts made. The main proportion of people were contacted through email initially, but other contact methods such as LinkedIn and phone were also used. People all around the world were reached out to, for example, authors of accounting reports from Australia and South Africa were contacted. However, the participants of the study are all from the Nordic countries. Out of the 55 people contacted 23 people answered, however, a very small proportion answered that they had any knowledge about the subject. Therefore, the number of interviews was limited to 6 informants as it was believed these 6 people had the enough knowledge about the topic. In addition, a discussion was conducted over email with a technical accounting expert, but since it did not have all the characteristics of an interview it is regarded as an additional contact that is included in the empirical results. Several of the professionals contacted answered that they did not have enough knowledge, but that it is a very interesting subject needing further research.

Table 2 - Summary of contacts with possible interviewees.

Category	**Contacted**	**Answered**	**Interviewed**
Consultants	12	7	4
Cryptocurrency Associations	4	2	0
IFRS experts	12	8	2
Authors of reports about cryptocurrencies and accounting	5	1	0
Speakers at cryptocurrency conferences	3	1	0
Companies with cryptocurrencies in balance sheet or income statement	4	1	1

Lawyers	1	1	0
General email-addresses at accounting firms	12	1	0
Banks	2	1	0
Total	**55**	**23**	**7**

A total of 7 informants with accounting related knowledge of cryptocurrencies agreed to participate in the study, all with various backgrounds and knowledge about cryptocurrencies. The informants were contacted between 2019-02-01 and 2019-03-14. While some of the informants were introduced by personal contacts others were found through the firm's websites or by associations engaging in cryptocurrencies. The informants were contacted through email initially, but all interviews except one was conducted over the phone. See Table 3 for detailed information. Information about the informants' backgrounds and the interviews are provided in Table 5 in chapter 5.

Table 3 - Details of contacts with actual informants listed in the order of when they were contacted.

Informant	**Identified via**	**Contact medium**	**Initial contact date**
Consultant 1	Introduced by personal contact	Email	2019-02-01
Consultant 2 (previous auditor)	Introduced by personal contact	Email	2019-02-13
IFRS expert & member of regulatory group (IFRS-expert 2)	Introduced by personal contact	Email	2019-02-15
IFRS expert & member of regulatory group (IFRS-expert 1)	The firm's website	Email	2019-02-20
Consultant 3	Introduced by personal contact	Email	2019-02-22

CEO of company accepting and holding cryptocurrency (The entrepreneur)	Through cryptocurrency association	Email	2019-03-04
Consultant 4	Through cryptocurrency association	Email	2019-03-14

The interviewees all possess different backgrounds and perspectives which are an advantage to the research. For example, two of the respondents have a background within auditing resulting in an additional perspective besides their current work position. Another respondent is a member of a cryptocurrency association and two respondents are members of different regulatory groups. It was deemed that all the respondents have very interesting backgrounds and experience and would be able to provide useful insights to the research. Nevertheless, not all the respondents had practical knowledge from accounting for cryptocurrencies. However, everyone had knowledge about both accounting and cryptocurrencies, but not necessarily in combination. Because of the constraints of finding respondents it was accepted that not all respondents had practical experience from accounting for cryptocurrencies. In a perfect scenario it would be desired that all informants would have had practical accounting experience from cryptocurrencies and a thorough understanding of accounting standards. However, it is believed that because of the undeveloped nature of accounting for cryptocurrencies the informants of this research had adequate knowledge and experience.

3.1.2 Interview guide

Qualitative research uses different research tools when gathering data from their interviewees (Zikmund et al., 2013, p. 140-141). Saunders et al. (2012, p. 374) differentiate between three levels of formality in interviews; structured interviews, semi-structured interviews and unstructured interviews. Structured interviews are based on a set of predetermined standardized questions and are often used as a mean to collect quantitative data. Furthermore, quantitative interviews are structured to maximize the reliability and validity of key concepts (Bryman & Bell, 2011, p. 466). Semi-structured interviews are associated with open-ended questions and it is an approach allowing the ability to address specific issues (Zikmund et al., 2013, p. 150). This research was based on semi-structured interviews to create a broader understanding of the practical implications of the accounting of cryptocurrencies. In this type of interviews, a set of overall themes are often used and some key questions to be covered, however, the structure and set of questions may vary depending on the context of the interview (Saunders et al., 2012, p. 374). In qualitative interview methods there is also an emphasis on the respondents' perspective to the phenomena under research (Bryman & Bell, 2011, p. 466). However, semi-structured interviews may lack the flexibility resulting in creative explanations by the respondent (Zikmund et al., 2013, p. 141). Unstructured interviews are informal and used to explore a general area in depth (Saunders et al. 2012, p. 375). There are no predetermined questions and a greater emphasis is made on the respondents' discussion about for example events, behavior and beliefs related to the research area.

It is suggested that semi-structured interviews are appropriate to understand the set of concepts and ideas used by the respondent as a basis for his or her opinions and beliefs (Easterby-Smith et al., 2012, p. 132). The rationale behind an accounting decision is one of the key considerations in understanding the complex accounting for cryptocurrencies and therefore, semi-structured interviews are considered appropriate. The interviews conducted were adapted depending on factors such as the respondents preexisting knowledge about cryptocurrencies and their work experience.

Before conducting the interviews, an interview guide was created to ensure that all topics were covered in the interviews. The interview guide can be found in Appendix 3. The interview guide should include all interview topics in the order they will be asked, however, the actual interview is not limited to the questions in the interview guide (Magnusson & Marecek, 2015, p. 46). Furthermore, an interview should encourage the participant to discuss their experiences without being constrained by preset categories and classifications. To develop the interview topics, it is suggested by Magnusson and Marecek (2015, p. 51) that the literature should be reviewed and ideas from conversations with knowledgeable people should be used. Prior to designing the interview guide contacts were established with possible interviewees where some themes were discussed briefly over the phone or through email. By gaining an initial understanding of the possible interviewees' knowledge, preconceptions were created, and inspiration was gained on how to design the questions and which themes to be covered. The contacts ranged from an email conversation discussing the broad outlines for accounting for revenues from cryptocurrencies and a phone meeting where possible accounting treatments were discussed briefly. For example, the knowledge about the revenue channels such as Kraken and Coinbase were discussed with one of the informants before the interview. These contacts facilitated an understanding of practitioners' knowledge and experience of the topic and was used to set the level of complexity and detail of the questions and themes covered in the interviews. To design the interview guide the knowledge gained from conversations with knowledgeable people and the previous literature was utilized to establish the broad themes. A mind map was conducted where possible questions or themes were discussed, a replication of the mind map is shown in Figure 3 below. To ensure that the questions were appropriate and provided answers to the research question the interview guide was under criticism in one of the work in progress seminars.

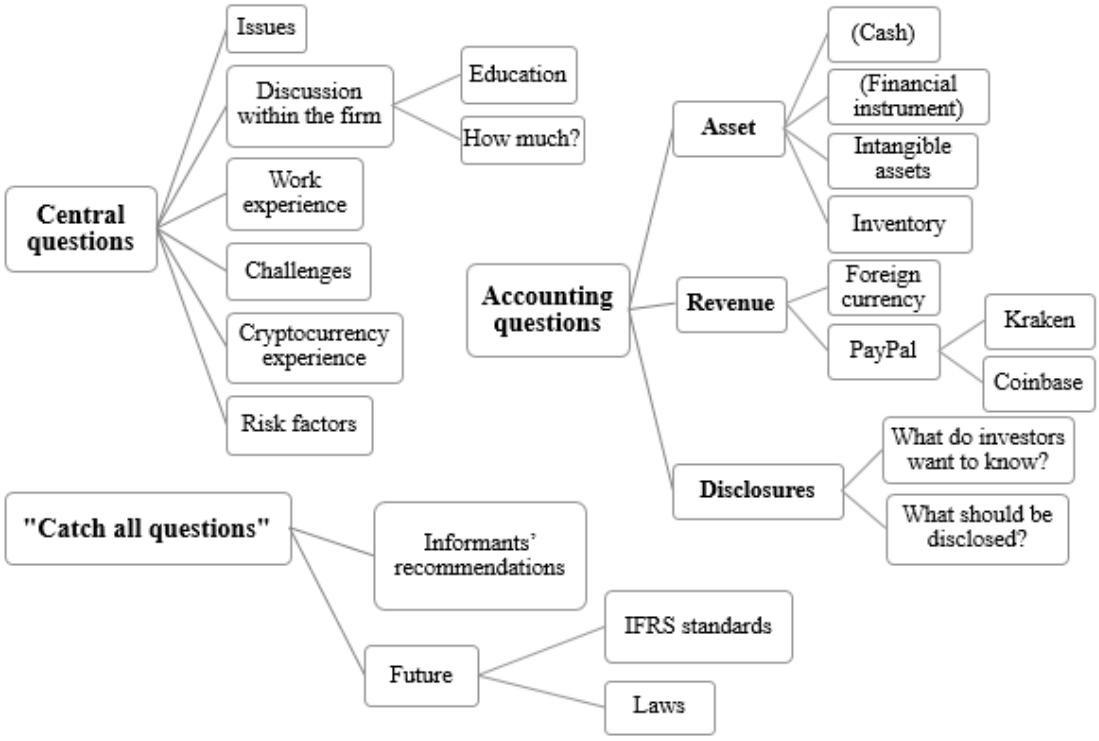

Figure 3 - Mind map of themes to be covered in interview questions.

The interview guide was used as an outline for the interviews, however, due to the nature of semi-structured interviews the interview guide was not followed precisely. Some questions required follow up questions while others were discussed briefly due to a lack of knowledge from the respondent. To strengthen the dependability of the research the informants were given a participation information sheet (Appendix 1) and information about the broad themes the interview would cover (Appendix 2), at least three days prior to the interview (Bryman & Bell, 2011, p. 473).

3.1.3 Designing questions for interviews

Research questions should be presented in a logical order and it is often advantageous to move from general to specific topics (Collis & Hussey, 2014, p. 136). The questions vary greatly in qualitative interviews (Bryman & Bell, 2011, p. 477). In semi-structured interviews questions are often open-ended to invite the participant to share experiences and offer reflections and opinions (Magnusson & Marecek, 2015, p. 47). According to Kvale (2007, p. 60-62) the interviewer's questions should be brief and simple and nine different types of interview questions are identified. Amongst these nine questions this study utilized introductory, follow-up, direct and indirect questions. It is debated whether the easy questions, like interviewees job title, age or education, should be placed in the beginning or in the end of the interview. Some believe that they are best placed at the beginning so that interviewee gains confidence when answering easy questions, while others prefer them in the end of the interview so that the interview starts with more interesting questions. It is recommended to start with easier questions if the questions are sensitive to their nature.

The interviews started with some general questions about the respondents' previous work experience and experience from cryptocurrencies. Thereafter general questions regarding accounting and cryptocurrencies were asked. It was decided to start with more simple

questions to ensure that the interviewee felt comfortable before asking questions requiring more reflection. Next, more specific questions were asked which were divided between the four central themes: assets, revenues, disclosures and risk factors. The questions regarding accounting for cryptocurrencies as assets were derived from the general process of accounting for assets which follows the structure of accounting standards. Accounting for revenues from cryptocurrencies has not been widely discussed in literature so the questions regarding revenues were more general and open questions, while the asset related questions were more specific. The questions about disclosures were also of a general character. When formulating questions about risk factors it was intended to not ask too specific questions, but rather let the informant speak broadly about possible risks. Finally, some finishing questions were asked where the respondents for example were asked to discuss about the future for accounting for cryptocurrencies. Since the research topic is rather unexplored research wise it is important that interviewees are probed by asking questions which require them to elaborate on their initial statement (Collis & Hussey, 2014, p. 135). Probes are questions interviewee can ask in response to what the interviewee has said (Collis & Hussey, 2014, p. 136). Probes were utilized to gain a greater understanding of the respondents' answers or to ask them to elaborate on an issue discussed. For example, informants were asked why they chose a specific asset classification for cryptocurrencies as a probe when asking which asset classification is suitable.

In general, to construct the questions a basic understanding of the literature was needed, however the questions were not based on the findings in the literature, but rather general themes found. Furthermore, the questions were not based on any specific accounting standards which are mentioned in the theoretical framework. The aim was to identify a general process and ask the respondents to discuss the themes based on that rather than what specific accounting standards suggest.

3.1.4 Execution of interviews

The 6 interviews that were conducted was made over the phone. The additional contact with IFRS-expert 2 was an email discussion which included approximately 30 emails back and forth. The discussion revolved around the same themes and questions as the interviews did but because of the nature of the discussion it is not regarded as an interview. The respondent was asked to participate in an interview, but because of the informant's time constraints the topic was discussed through email. For further information see Table 5 in Chapter 5. Telephone interviews are useful for groups which are hard to reach, or when sensitive questions are asked (Bryman & Bell, 2011, p. 498). It was difficult to identify people who had any experience or knowledge of the accounting for cryptocurrencies, so therefore people around the world were contacted, which makes telephone interviews most suitable for this research. Furthermore, to provide guidance on such an unexplored subject without clear regulations can be sensitive, thus, phone interviews are suitable to ensure comfort for the respondent. However, there are some disadvantages with conducting phone interviews, for example, body language cannot be observed which can be important if the respondent shows discomfort or confusion (Bryman & Bell, 2011, p. 489). Another disadvantage with conducting phone interviews is the risk of not noticing when the respondent is thinking about an answer and the interviewer may continue to the next question (Zikmund et. al., 2013, p. 214).

All interviews were recorded with consent from the participant and later transcribed. In qualitative research, it is not only what people say, but also the way it is been said which

is of interest and by recording interviews this can be incorporated in the analysis (Bryman & Bell, 2011, p. 482). Furthermore, by recording interviews the interviewers can be more attentive to what is being said, interesting points made and follow up with probes.

During all interviews both researchers were present. Bechhofer et al. (1984, p. 98) argues that there are considerable advantages with having two interviewers. For example, it can create a greater sense of a normal conversation rather than an interview. Furthermore, it also facilitates a more natural way of asking questions in cases where it is more natural for one person to ask a question rather than the other (Bechhofer et al., 1984, p. 99). This method was adopted by the researchers in some cases when one researcher had more knowledge about a topic than the other. One of the interviews was made in Swedish, which only one of the researchers speaks, resulting in only one interviewer, but both researchers were present during the interview. The interview was scheduled to be held in English, but it was changed last minute and therefore the questions were translated during the interview. The transcription from this interview was translated to English after the interview.

In qualitative research flexibility is important when conducting interviews (Bryman & Bell, 2011, p. 485). It can be for example a varying order of questions or following up leads made by the respondent. The interview process was very flexible, for example, during the course of the interview it was decided not to ask some of the questions because of a lack of knowledge from the respondent. This was made to ensure that the respondent felt comfortable and that his or her answers were valuable. Furthermore, in interviews where the respondent did not have knowledge about all the areas, the emphasis of questions was shifted based on their knowledge.

After the data collection process some respondents were contacted to ask some additional questions or seek clarifications of what was said during the interviews. This was done to enhance the quality of the data and to ensure that the researchers had understood what the respondent said in a proper way. For example, one respondent was contacted with the purpose of getting a statement about the issuance of the agenda decision from IFRIC as this decision was not known by the researchers at the time of the interview.

3.2 Literature search

The literature search was a crucial component of this research. A literature review is defined as a critical evaluation of the existing knowledge on a topic (Collis & Hussey, 2014, p. 87). Furthermore, the literature review develops arguments of what the published literature indicates and what is known and not known on the topic (Wallace & Wray, 2011, p. 151). At early stages it was evident that there was a limited amount of literature available discussing cryptocurrencies and accounting. This resulted in an extensive literature search to identify as many perspectives to the subject as possible. The purpose of reviewing the existing literature is to gain an understanding of what is known about the area, which theories and concepts are relevant, what research methods have been used previously, if there are any controversies or inconsistencies and finally to explore any unanswered research questions within the area (Bryman & Bell, 2011, p. 92). As previously mentioned, this research aims at a positioning within financial accounting and contributions within three content categories, accounting practices and regulations, earnings management and accounting choices and disclosures and annual reports. The

literature search was mainly based on contributions within these areas, but other areas were also explored.

At initial stages of the research process reports from the big accounting firms were reviewed to grasp an overview of the topic. What was found early were the lack of applicable accounting standards to cryptocurrencies. Thereafter a search for an academic contribution to the topic was made. Amongst others Google Scholar and Umeå University Library services were used to obtain a thorough understanding of the existing literature. Primarily academic peer-reviewed articles were used. In the literature search keywords and phrases such as *cryptocurrencies and accounting, accounting for cryptocurrencies, accounting for Bitcoin, cryptocurrencies in financial statements, cryptocurrencies, Bitcoin, earnings management, professional judgement, information asymmetry, disclosures, earnings management and cryptocurrencies* etc. were used. In addition, publications on the topic were searched for at the websites of the large accounting firms. Due to the limited amount of research about the topic in addition to academic articles, guidance from regulatory bodies and the big audit firms were also used in the theoretical framework. The limited academical contributions to the topic led to a reliance on sources from accounting firms and regulatory bodies in addition to academic articles. Nevertheless, it can be discussed which of the information sources provide the most accurate information on the topic, if it is practitioners or academia. The big accounting firms have trust from stakeholders and are engaging in transforming activities (Bendor-Samuel, 2018), hence there is an evident trust in the big accounting firms and the reports can be seen as reliable sources. Furthermore, by utilizing reports from the big accounting firms as one of the bases for the theoretical framework the scientific literature was enriched by practical perspectives.

During the data collection period one of the informants mentioned that an interpretation of how to account for cryptocurrencies had been issued by the International Financial Reporting Interpretations Committee. The interpretation was published 2019-03-06. The information came to the knowledge of the researchers after the theoretical framework was finished, hence, the guidance from IASB was added in retrospect. As it is only an interpretation of how it should be treated, the guidance does not overrule previous literature suggestions.

In all material aspects primary sources were used throughout the research, however there are some exceptions, for example when the original source has been in another language. Because of the infant age of cryptocurrencies many references represent young fields of research. A vast majority of the reviewed literature was published after 2010, however with some exceptions, when discussing for example the origins of earnings management.

3.3 Analysis of data

According to Saunders et al. (2012, p. 548) a research commences from either a deductive or an inductive approach. Since this research is following an inductive approach it is intrinsically followed when analyzing the data. Consequently, the data was collected and then analyzed to identify any underlying meanings to the data which could help understanding the themes discovered early in the research. In the inductive analysis approach the intent is to identify relationships between the data and develop questions for further research (Saunders et al., 2012, p. 549).

At the initial stage of the analysis the qualitative data was transcribed. The transcribing process involves audio-recording the interviews and reproducing it as a written word-processed account by using the actual words (Saunders et al., 2012, p. 550). Transcription of audio-recorded interviews is time-consuming as it is not only needed to record exactly what was said but also trying to give an indication of the tone in which it was said (Saunders et al., 2012, p. 550; Bryman & Bell, 2011, p. 482). Transcribing is slow, and it takes a touch-typist between 6 and 10 hours to transcribe every hour of audio-recording (Saunders et al., 2012, p. 550), this study conducted 6 audio-recorded interviews with an average length of 50 minutes, meaning it took roughly 40 to 50 hours to conduct full transcriptions. The transcribing workload was divided equally by the researchers and both transcribed 3 audio-recorded interviews. In instances when it was difficult to hear what the interviewee said both researchers listened to the transcriptions to ensure it was correctly represented. To be able to select relevant information from irrelevant information a data reduction was conducted after the transcription of all the interviews. The data reduction was reviewed by both researchers. Data reduction involves the process of selecting, focusing, simplifying, abstracting and transforming the data appearing in transcriptions (Ghauri & Grønhaug, 2010, p. 199). Continuous data reduction involves discarding useless data and compare data where relationships of interest exist (Collis & Hussey, 2014, p. 158). For example, when the informants' discussions were beyond the scope of the research such data was discarded.

According to Bryman and Bell (2011, p. 571) one of the most common ways of approaching qualitative data analysis is through conducting a thematic analysis. Thematic analysis is a method used to systematically identify, organize and offer insight into patterns of themes across a data set (Braun & Clarke, 2012, p. 57). The main reason why thematic analysis was chosen was the flexibility it provides (Braun & Clarke, 2012, p. 58). Thematic analysis is flexible since it can be conducted in several different ways and suits both inductive and deductive approaches (Braun & Clarke, 2012, p. 58). Flexibility is one of the key features of an exploratory research (Kothari, 2004, p. 37; Saunders et al., 2012, p. 171), thus, thematic analysis is suitable for this research as it adopts an exploratory research design. Thematic analysis allows the researchers to identify the relations in a particular topic and connect themes to the research question (Braun & Clarke, 2012, p. 57). One possible way of identifying themes is by recognizing the occurrence of certain words, phrases, and so on which denotes a theme (Bryman & Bell, 2011, p. 624). In other words, a theme is more likely to be identified when the data is coded. Therefore, coding was used to when trying to recognize relationships and to categorize the data under the existing themes identified. Coding can be used as the starting point for most forms of qualitative data analysis (Bryman & Bell, 2011, p. 584). Coding is a process of assigning a numerical score or other character symbol to previously edited data (Zikmund et al, 2013, p. 465). This study utilized key words used by the participants. For example, one of the themes identified were risk factors and here codewords such as volatility, lack of regulation and transactions were identified.

The coding was conducted by utilizing multiple colors which were used to get a visual picture how to further categorize the data. The researchers had a preconception on which categories the data should be divided into based on the themes that the interview guide was based on. After reviewing the data, the identified categories to which the data was divided into were; general concerns about cryptocurrencies, assets, revenues, disclosures, risk factors and future. The themes were divided between the researchers for an initial

analysis and were later discussed by both researchers. The data was categorized accordingly and subcategories such as tax issues and IFRIC agenda decision were identified based on the discussions of the respondents. Furthermore, the categorized data was compared with the theoretical framework and further analyzed in the chapter 6. Before finalizing the analysis, the data was revised once more and compared to the theoretical framework.

3.4 Ethical considerations

The moral values or principles forming the basis of a code of conducts are referring to the term ethics (Collis & Hussey, 2014, p. 30). There are four main areas which ethical principles in business research tend to revolve around; harm to participants, lack of informed consent, invasion of privacy and deception (Bryman & Bell, 2011, p. 128). These four different areas will be further addressed related to this research.

Harm the participants can imply different matters to different participants (Bryman & Bell, 2011, p. 128). Harm can be understood as physical harm, legal harm or psychological harm (Neuman, 2011, p. 145-148). Harming the participants entails the confidentiality of records and anonymity of participants (Bryman & Bell, 2011, p. 129). Therefore, it is crucial that the identities and records of individuals and organizations should be maintained confidential. It is more common that the issues of confidentiality and anonymity raise difficulties for many forms of qualitative research, where special care has to be pursuit when it comes to the possible identification of persons, organizations, and places (Bryman & Bell, 2011, p. 130). To reduce harm to participants and ensure their anonymity a participation information sheet was sent to the participants which included information about anonymity, see Appendix 1. Prior to the interview the participants were reassured that the study will be completely anonymous. The participants were also informed that if any straight quotes would be used in the study, they would be given the chance to review them before publishing the thesis. Confidentiality was considered by stating that the data only will be accessible to the authors of the thesis.

One of the most important ethical principles is that participation needs to be voluntary (Neuman, 2011, p. 149), this is identified as a second area of the ethical principles (Bryman & Bell, 2012, p. 132). The principle means that prospective research participants should be given enough information that an informed decision can be made whether to participate or not in the study (Bryman & Bell, 2011, p. 132). Prior agreeing to the interview participants were given information about the central themes to be discussed in the interview as well as the purpose of the study, see Appendix 2 for the information provided.

The third main area of ethical concerns is related to voluntary consent and it relates to the issue of which degree of invasions of privacy can be accepted (Bryman & Bell, 2011, p. 136). Privacy is linked to the understanding of informed consent the participant agrees on. In the participation information it was clearly stated what the participant's involvement would to entail. Furthermore, it was also stated that participants can refuse to answer questions if she/he does not want to answer.

According to Bryman and Bell (2011, p. 136) deception occurs when researchers represent their research as something other than what it is. Deception occurs when

researchers often want to limit the participants' understanding of what the research is about so that the respondents answer more naturally to the research (Bryman & Bell, 2011, p. 137). Participants received an information sheet before the interview, which gave them a broad scope what would be asked during the interview. Because of the complex nature of the research topic and the lack of knowledge of accounting professionals the interview guide containing the interview questions was not shared with the participants prior to the interview. This was done to ensure that the participants would not feel that he or she did not have enough knowledge to answer the questions and that the participant was comfortable with answering the questions despite a possible lack of practical experience.

When reflecting upon ethical considerations it is important not only protect the participants of the study but also take the reader into consideration. The purpose throughout this research has been to present the data fairly and truthfully. The intention has not been to steer the research in a certain direction but to serve as a representation of the literature and the knowledge of the informants.

Chapter 4: Theoretical Framework

The theoretical framework includes thorough explanations of the existing literature which provides guidance to the accounting for cryptocurrencies. The chapter is divided into four major parts which directly or indirectly covers the four central themes of this research: assets, revenues, disclosures and risk factors. It should be noted that risk factors are incorporated into all aspects of cryptocurrency accounting and will therefore not have its own sub-chapter. The theoretical framework will serve as a basis for the analysis.

4.1 The foundation of financial reporting

IFRS standards are a set of accounting standards issued by IASB aiming to be a set of rules applying equally to financial reporting by public companies worldwide (Ball, 2006, p. 6). IASB seeks to narrow differences in financial reporting and to harmonize regulations, accounting standards and accounting procedures related to the preparation and presentation of financial statements (IASB, 2010, p. A16). The purpose of financial reporting is "*to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity*" (IASB, 2010, OB2, p. A19). To achieve its objectives, IASB has issued the Conceptual Framework seeking to complement the IAS and IFRS standards by assisting IASB, national standard-setting bodies, preparers of financial statements, users of financial statements and auditors with various accounting issues.

One of the foundations of financial information is the qualitative characteristics of useful financial information from the Conceptual Framework. Tan and Low (2017, p. 223-224) highlight the importance of the Conceptual Framework in the accounting for cryptocurrencies and suggests that it should be used to determine the appropriate accounting treatment. The fundamental qualitative characteristics are relevance and faithful representation which are essential to make financial information useful to its users (IASB, 2010, QC4-QC5, p. A26). Relevance refers to financial information being capable of making a difference in the decisions made by financial statement users (IASB, 2010, QC6, p. A27). The concept of relevant information is discussed by AASB (2016, p. 17) when determining what measurement basis should be applied to provide relevant information to users of financial statements. Related to the concept of relevant financial information is the concept of materiality, where materiality is an entity-specific aspect of relevance (IASB, 2010, QC11, p. A27). Information is material if excluding or misstating it could influence the decisions made by financial statement users. The second qualitative characteristic is faithful representation of financial information, it refers to the ability of information to not only represent relevant phenomena, but to also faithfully represent the phenomena it aims to represent (IASB, 2010, QC12, p. A27). Moreover, for information to have a faithful representation, it would be complete, neutral and free from error. It is argued that the principle of faithful representation is a key consideration as it requires an interpretation of the economic substance which varies with the reporting entity (Tan & Low, 2017, p. 220). Thus, the accounting treatment and the definition of what faithful representation is regarded as depends on the nature of the reporting entity.

There are four qualitative characteristics enhancing the usefulness of financial information which is relevant and faithfully represented, these are; comparability,

verifiability, timeliness and understandability (IASB, 2010, QC19, p. A29). Firstly, financial information is more useful if it can be compared with for example another entity or previous periods, it facilitates an identification and understanding in similarities and differences among items (IASB, 2010, QC20-21, p. A29). The concept of verifiability means that independent observers can reach the same conclusion that an item is faithfully represented (IASB, 2010, QC26, p. A30). For instance, the verification can be a direct verification by counting the amount of cash available, or an indirect verification by checking the inputs to a model (IASB, 2010, QC27, p. A30). Timeliness refers to information being available to decision-makers in time to be capable of influencing their decisions (IASB, 2010, QC29, p. A30). Lastly, the concept of understandability is about the presentation of information and the ability of classifying, characterizing and presentation of information in a clear and concise manner (IASB, 2010, QC30, p. A30). The enhancing qualitative characteristics are available to further improve the qualitative characteristics of useful financial information, however, the enhancing characteristics cannot make information useful if it is not relevant or faithfully represented (IASB, 2010, QC33, p. A31). The enhancing qualitative characteristics are of importance in the selection of the measurement basis used for cryptocurrencies (AASB, 2016, p. 17).

One of the purposes of the Conceptual Framework is to assist preparers of financial statements in topics which yet has not been covered in IFRS (IASB, 2010, p. A17), thus, the Conceptual Framework have great importance in the accounting for cryptocurrencies due to the lack of applicable standards. Ram et al., (2016, p. 7) supports this view and propose that the Conceptual Framework needs to be consulted when accounting for cryptocurrencies.

4.1.1 Lack of applicable accounting standards

In the absence of an applicable IFRS standard to a transaction, event or condition management should develop an accounting policy resulting in relevant and faithfully representative information (IAS 8.10). The sources which should be considered in the absence of applicable standards are primarily IFRS and IAS dealing with similar and related issues, and secondarily, the Conceptual Framework. In addition, pronouncements of other standard-setting bodies, other accounting literature and accepted industry practices can be considered to arrive at the most suitable accounting practice (IAS 8.10). This indicates that first and foremost recommendations by IFRIC should be considered before other accounting literature. The importance of IAS 8.10 is also highlighted by PwC (2018, p. 11), Procházka (2018, p. 164) and Ram et al. (2016, p. 7). However, as there are IFRS standards which can be applied to cryptocurrencies it can be argued that the application of IAS 8.10 would be inappropriate (CPA, 2018, p. 10).

The lack of guidance from accounting standards in accounting for cryptocurrencies has led to a diversity in accounting treatments used in practice (AASB, 2016, p. 3). Furthermore, the usage of different measurement attributes resulting from different classifications lead to a possibility that similar economic events are treated differently in accounting (Barth, 2006, p. 274). Such a problem is likely to occur when accounting for cryptocurrencies, and it may have consequences. Divergent accounting practices can open up for issues such as earnings management. Healy and Wahlen (1999, p. 368) provide a widely accepted definition of earnings management: "*Earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes*

that depend on reported accounting numbers". Firms can manage earnings either upwards or downwards to achieve certain reporting objectives (Plummer & Mest, 2001, p. 2). When managing earnings upward firms can increase sales and decrease operating expenses and non-operating expenses (Plummer & Mest, 2001, p. 4). Furthermore, to be able to manage earnings downward it is done vice versa, so firms decrease sales and increase operating and non-operating expenses. Earnings management is used as a proxy for quality reporting, since quality of reporting can be predominantly measured by reduced earning management (Kaaya, 2015, p. 57).

Barth et al. (2008, p. 468) have investigated whether accounting amounts of firms applying IAS exhibit less earnings management. The study conducted indicated that firms applying IAS have a higher accounting quality than entities who do not apply IAS (Barth et al., 2008, p. 468). It is concluded by Barth et al. (2008, p. 467-468) that the overall accounting quality improves after entities adopt IAS and IFRS and higher accounting quality reduces earnings management. To achieve a better accounting quality the IASB have issued principle-based standards and taken the step to remove allowable accounting alternatives to demand accounting measurements reflecting firms' economic position and performance better. If management's opportunistic discretion in determining accounting amounts, for example by managing earnings would be carried out, the accounting quality could increase. Ball (2006, p. 9) has discussed the accounting quality in relation to managerial manipulation, and it is found that a low capacity of managerial manipulation can be seen as a requirement for high quality of financial statements. In addition, Stolowy and Breton (2004, p. 9) have found that the are two types of accounting manipulation, accounting fraud and earnings management. Fraud refers to manipulation which lies outside of the law and standards while earnings management remains within the law.

Some controversial research results have been found related to earnings management and IFRS standards. Lin et al. (2012, p. 642) argue that when adopting IFRS standards issued by IASB entities exhibit more earnings management compared to when national GAAP are used. Nevertheless, accounting for cryptocurrencies and accounting quality have not been given attention in conjunction and it can be debated whether the suggested accounting treatments for cryptocurrencies enable a higher degree of earnings management or not.

Scott (2014, cited in Hasan & Rahman, 2017) defines the choice of accounting policy as a means to achieve specific objectives by management as earnings management. Thus, by not having clear guidelines on which accounting policy should be applied there is room for earnings management and management can use the choice of accounting policy to achieve its objectives. Dichev et al. (2013, p. 1) suggests that one mean to unravel earnings management is to make comparisons with other companies in the industry. However, when there is no official standard which needs to be adhered to, there will be diverging accounting treatments and comparisons are difficult to make which can leave room for earnings management. According to Raiborn and Sivitanides (2014, p. 33) there is a high risk for accounting fraud related to cryptocurrencies, particularly with violation of measurement and revenue recognition criteria. Furthermore, it is argued that accounting information do not have the responsibility to provide information on the safety of transactions, however, there is a responsibility to provide information on transactions facilitating efficient and effective decisions for the public (Raiborn & Sivitanides, 2014, p. 33). As the number of cryptocurrency transactions and companies accepting or trading

with cryptocurrencies increase the need for guidance on accounting practices increases to avoid these issues.

4.1.2 Professional judgement

IAS 8.10 is one of the foundations of accounting when applicable standards are not available. It is stated that management must use its judgement to apply the appropriate accounting policy (IAS 8.10). Financial reports are in general to a large extent based on estimates, judgements and models rather than exact descriptions (IASB, 2010, OB11, p. A20). Thus, estimates and professional judgement are important in accounting. The term professional judgement is widely used in accounting, it is defined as "*the application of relevant training, knowledge and experience, within the context provided by auditing, accounting and ethical standards, in making informed decisions about the courses of action that are appropriate in the circumstances"* (Eilifsen et al., 2014, p. 57-58). When applying professional judgement different conclusions can be reached in the application of IAS/IFRS, even when circumstances are similar, necessarily this indicates that not only one conclusion is right (Ionescu, 2011, cited in Ivan, 2016, p. 1128). Moreover, professional judgement has a usefulness in situations which are complex, dynamic and not clearly defined and especially in situations where standards are incomplete (Ivan, 2016, p. 1134-1135). The importance of judgement in the setting of accounting for cryptocurrencies is discussed by Tan and Low (2017, p. 226), it is suggested that the accountant does not only have to know the accounting standards, but also the economics of the business to apply accounting judgement. Furthermore, PwC (2018) mentions the term judgement frequently which indicates an importance of applying judgement to complex situations such as the accounting for cryptocurrencies.

Professional judgement is also an important matter in the context of earnings management. Accounting standards usually require judgement and estimations in the appliance of accounting policies (Marai & Pavlovic, 2013, p. 46). However, in many cases there is no guidance of when estimates and judgement made are within the boundaries of acceptable accounting principles or when it becomes aggressive and could be perceived as financial fraud. Furthermore, in order for financial reports to convey management's information on firm performance, there must be room for judgement in financial reporting (Healy & Wahlen, 1999, p. 366). However, the usage of management's judgement also creates opportunities for earnings management. Financial reports in some extent convey managements information on the firm's performance (Healy & Wahlen, 1999, p. 365). It is argued that professional judgement facilitates the selection of reporting methods, estimates and disclosures to suit the entity's economics which can increase the value of accounting as a means of communication. This indicates that professional judgement can be used to select the reporting methods which suits the entity best and communicates what management wants it to convey.

4.1.3 Balance sheet approach vs income statement approach

There are two alternative approaches in financial reporting which are a balance-sheet approach and an income statement approach (Dichev, 2008, p. 454). The two approaches have different perspectives to what is seen as accounting quality. Financial reporting quality is of interest to the users of financial statements and for accounting standard setters as it is "*an indirect indicator of the quality of financial reporting standards*" (Schipper & Vincent, 2003, p. 98). Furthermore, Ball (2006, p. 9) suggests that financial reporting quality needs an accurate description of economic reality, a low capacity for managerial manipulation, timeliness and asymmetric timeliness.

Historically there has been a debate about these approaches, and up until the mid-1970s the income statement approach dominated financial reporting, but ever since the balance-sheet approach is most widely used (Dichev, 2008, p. 455). According to the balance-sheet approach a proper valuation of assets and liabilities is the primary goal of financial reporting, while other accounting variables are considered secondary. The income statement approach on the contrary, states that the determination of revenues, expenses and earnings as the primary goal of financial reporting (Dichev, 2008, p. 455). Furthermore, the two guiding principles of the income statement approach are revenue recognition and matching of expenses and revenues. Standard setters are utilizing the balance-sheet approach as it is believed that asset and liability measures reflect the current economic conditions and expectations of the future best and that it results in useful financial information for financial reporting (Barth, 2006, p. 271).

Based on the literature covering the accounting for cryptocurrencies it is evident that a balance-sheet approach is used as it is based on current accounting standards which are reliant on a balance-sheet approach. Furthermore, the amount of literature covering accounting for revenues from cryptocurrencies is limited, which indicates that the income statement approach seems to be of less importance. Many valuation methods for assets and liabilities are based on fair values, which is an aspect discussed by Barth (2006), who is a proponent of the balance-sheet approach. When accounting for cryptocurrencies as assets or revenues the fair value measurement is present in several of the asset classifications and it is suggested by Deloitte (2018, p. 16) that fair value is the most suitable valuation method when it comes to revenues. Furthermore, it is believed that fair value measurements meet several of the qualitative characteristics of useful financial information, and therefore is superior (Barth, 2006, p. 274-275). It is also argued that fair values are comparable as the value depends only on the characteristics of the particular asset and not the characteristics of the entity holding the asset. However, Dichev (2008, p. 465) argues that market value changes are unpredictable and in a pure market value accounting setting earnings will have a high volatility and loose its predictability and persistence, and thus, a fair value measurement is not appropriate.

The proponents of the income statement approach argue that it is the natural foundation for financial reporting for most entities (Dichev, 2008, p. 454). It is believed that a majority of entities are devices for earning revenues and earnings, and that assets are supplements and temporary devices (Dichev, 2008, p. 458). Furthermore, it is argued that the balance sheet approach is only suitable if the "*primary mission of the firm is to earn money by acquiring, storing, and growing assets, and earnings represents the realized or unrealized growth in these assets".* For the accounting for cryptocurrencies different approaches may be suitable for different companies, depending on the materiality and purpose of holdings of cryptocurrencies. Furthermore, it is suggested that for entities holding financing assets the balance sheet approach is more appropriate, however, for operating activities the income statement approach is more suitable as assets in such case have little independent and separable value (Dichev, 2008, p. 463). The importance of the two approaches lies in what is perceived as accounting quality, and because of the possible risks associated with cryptocurrencies accounting quality is a key concept.

4.2 Assets

The process of accounting for assets starts with determining whether a resource meets the definition of an asset or not. If this is the case, next, recognition criteria are considered and further determined if the asset should be recognized in the financial statements (Christian & Lüdenbach, 2013, p. 6). Moreover, if the criteria are met the asset needs to be classified in accordance with applicable IFRS standards. This chapter will follow the structure used by IASB's Conceptual Framework, IFRS and IAS standards. See figure 4 below.

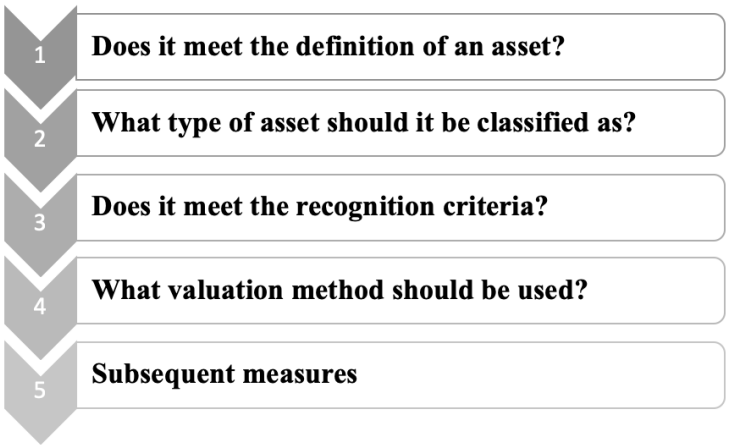

Figure 4 - The process of accounting for assets.

4.2.1 Definition and recognition of an asset

IFRS (2019) have summarized cryptocurrencies with three characteristics, which are the following "*a digital or virtual currency that is recorded on a distributed ledger and uses cryptography for security*", it "*is not issued by a jurisdictional authority or another party*", and "*a holding of a cryptocurrency does not give rise to a contract between the holder and another party*". Furthermore, the Conceptual Framework defines an asset as *"a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity"* (IASB, 2010, 4.4, p. A34). Entities need to determine whether cryptocurrencies meet the definition of an asset. AASB (2016, p. 8) argues that a holding of a digital currency meets the definition of an asset. It is rationalized by explaining an example of a past event, where an entity would either buy, mine or receive a cryptocurrency as a payment. Furthermore, the entity would be able to control the digital currency unit by deciding when to sell it or use it as medium of exchange. Lastly, if an entity sells or otherwise exchanges a cryptocurrency, the economic benefit is expected to flow to the entity.

AcSB Discussion Group (2018, p. 1) has also discussed whether cryptocurrencies are assets based on the interpretation of the Conceptual Framework. Both views have been discussed, in the case where cryptocurrencies were to be seen as assets, paragraph 4.11 and 4.12 from the Conceptual Framework were further discussed. Paragraph 4.11 (IASB, 2010, p. A36) states, in part, that *"physical form is not essential to the existence of an asset"* and paragraph 4.12 (IASB, 2010, p. A36) further states, *"although the capacity of an entity to control benefits is usually the result of legal rights, an item may nonetheless*

satisfy the definition of an asset even when there is no legal control". Supporters of the view that investors are controlling their investments in cryptocurrencies believed that the use is controlled through the mechanics of the public distributed ledger (AcSB Discussion Group, 2018, p. 1). Group members in the meeting agreed that cryptocurrencies meet the definition of an asset (AcSB Discussion Group, 2018, p. 2).

Furthermore, an asset needs to fulfill the recognition criteria of assets for it to be recognized on the balance sheet. According to Christian and Lüdenbach (2013, p. 6) assets are not always recognized in the statement of financial position. An asset is recognized in the balance sheet "*when it is probable that the future economic benefits will flow to the entity*" and "*the asset has a cost or value that can be measured reliably*" (IASB, 2010, 4.44, p. A41). In addition, the specific criteria in the applied accounting standard needs to be considered to determine that the asset meets the recognition criteria. In AcSB Discussion Group (2018, p. 1) an uncertainty aspect of whether future economic benefits are expected to flow to the entity was discussed, where the discussion revolved around the determination of future economic benefits being high enough. Most of the big accounting firms are stating that cryptocurrencies are assets, but it is not further elaborated how cryptocurrencies meet the definition and recognition criteria of assets (Deloitte, 2018, p. 12; EY, 2018, p. 10; Grant Thornton, 2018a, p. 4; PwC, 2018, p. 3).

4.2.2 Asset classification

IFRS standards do not offer specific guidance on the accounting for cryptocurrencies and there is no clear industry practice, therefore the accounting for cryptocurrencies could fall into a diversity of different standards (PwC, 2018 p. 5). It should be considered why an entity is holding cryptocurrencies to be able determine the right accounting model. There are two characteristics which PwC (2018, p. 3) identifies as being most relevant when classifying cryptographic assets for accounting purposes and these are: "*the primary purpose of the cryptographic asset",* and "*how the cryptographic asset derives its inherent value".* Furthermore, it is suggested that each cryptocurrency holding should be evaluated separately based on the characteristics of the cryptocurrency, the market for it and other circumstances (CPA, 2018, p. 5).

Moreover, in determining the appropriate accounting treatment for cryptocurrencies the purpose of acquiring a cryptocurrency needs to be considered, together with the expected use of it (Procházka, 2018, p. 164). These suggestions are in line with Tan and Low (2017, p. 220), which suggest that the purpose of holding a cryptocurrency is a key consideration in determining the subsequent accounting treatment.

Following will be a description of the suggested accounting treatments of cryptocurrencies in the literature; cash, cash equivalents, financial instruments, intangible assets and inventory, see figure 5. The classifications range from one extreme to another, but these are the classifications which have been suggested in the literature and which have the most similar characteristics to cryptocurrencies. Not all classifications are applicable because of restrictions in the standards, however, they are all important to consider since some of the traits of cryptocurrencies are indirectly linked to the characteristics of for example a currency.

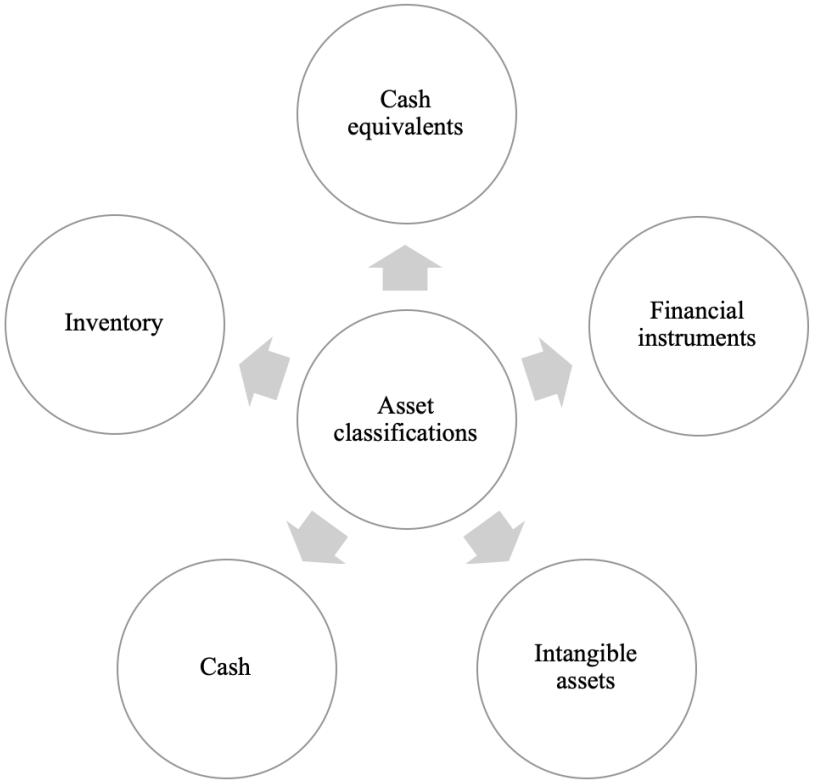

Figure 5 - The suggested asset classifications for cryptocurrencies.

4.2.3 Cash and Cash equivalents - IAS 7

Cash

The most obvious question is whether cryptocurrencies meet the definition of cash in IFRS (Deloitte, 2018, p. 12). Usually currency is accounted for as cash (CPA, 2018, p. 6). The term "cryptocurrency" indicates that it would be a currency, but it does not necessarily mean it is cash for accounting purposes. According to AASB (2018, p. 9) some argue that a digital currency is another form of cash and that it should be accounted for as such. Deloitte (2018, p. 12) states that cash are notes and coins and the right to obtain notes and coins. The IAS 7 standard defines cash in paragraph 6 as "*cash on hand and demand deposit*", however, no further definitions of cash or demand deposit are provided (AASB, 2018, p. 9). PwC (2018, p. 5) has identified two reasons why cryptocurrencies do not have similar properties like cash and currency. Firstly, cryptocurrencies are not legal tender and they are not backed by any government or state, and secondly cryptocurrencies are not capable of setting prices for goods and services directly. Furthermore, AASB (2018, p. 10) believes that the most important aspect of cash for accounting purposes is support from a central bank and a designation of it as legal tender.

IAS 32 covering financial instruments, includes a definition of cash in its presentation and this is rationalized in paragraph AG3: "*Currency is a financial asset because it represents the medium of exchange and is therefore the basis on which all transactions are measured and recognized in financial statements. A deposit of cash with a bank or similar financial institution is a financial asset because it represents the contractual right of the depositor to obtain cash from the institution or to draw a cheque or similar*

instrument against the balance on favor of a creditor in payment of a financial liability." Cash and currency are used interchangeably in IAS 32 paragraph AG3 (AASB, 2018, p. 9). Some cryptocurrencies can be used as a medium of exchange and this was the purpose behind Bitcoin and some other cryptocurrencies (CPA, 2018, p. 6). However, it seems as cryptocurrencies represent a limited medium of exchange compared to traditional fiat currencies. This is partly because cryptocurrencies are not supported by a central bank or recognized as legal tender in most jurisdictions. Furthermore, IFRIC have not identified any cryptocurrencies which are used as a medium of exchange and as a monetary unit in price setting to the extent that it could be a basis to measure transactions in financial statements (IFRS, 2019).

Even though it is possible to convert a cryptocurrency into cash through a cryptocurrency exchange, the holder does not have the right to receive cash (Deloitte, 2018, p. 12). Procházka (2018, p. 165) recognizes certain settings under which cryptocurrencies can be treated as cash. Accordingly, it is deemed that the definition of cash by IAS 7.6 is just an enumerative list and therefore a general definition of cash shall be used when classifying cryptocurrencies (Procházka, 2018, p. 166). Despite this view, the rest of the literature follow the argumentation that cryptocurrencies does not have the characteristics of cash (AASB 2018, p. 10; CPA, 2018, p. 7; Deloitte, 2018, p. 12; EY 2018, p. 20; Grant Thornton, 2018a, p. 4; IFRS, 2019 & PwC, 2018, p. 5). Moreover, IAS 7.6 and IAS 32 paragraph AG3 are referred to and it is concluded that cryptocurrencies should not be considered cash or currency under these standards.

Several countries have issued formal statements about digital currencies and only a few countries seem to recognize it as a legal tender (Hill, 2014). However, numerous of jurisdictions have tax and anti-money laundering regulations regulating digital currencies. This means that tax and other government authorities have definitions and views on cryptocurrencies while IFRS does not (AASB, 2018, p. 10). However, from a taxation perspective the challenge appears to be how to categorize cryptocurrencies and the specific activities involving them for purposes of taxation (The Law Library of Congress, 2018, p. 2). In addition, different countries have categorized cryptocurrencies differently for tax purposes. Moreover, digital currencies have not received a broad acceptance, and they are not supported by central bank, or recognized as legal tender (AASB, 2018, p. 10). Therefore, AASB states that digital currencies do not meet the definition of cash with the reference to the guidance in IAS 32:AG3. This might however change in the future if digital currencies gain acceptance (AASB, 2018, p. 10).

Cash equivalents

Since cryptocurrencies are not considered as cash, the possibility of cryptocurrencies being classified as cash equivalents need to be considered (AASB, 2018, p. 10). Some financial instruments have traits similar to cash. According to IAS 7 these financial instruments are referred to as cash equivalents which are required to be presented together with cash for the purposes of a cash flow statement. Cash equivalents are defined in IAS 7 as "*short-term, highly liquid investments that are easily convertible to known amounts of cash and which are subject to insignificant risk of changes in value*" (IAS 7.7). This would foreshadow that a cryptocurrency would fail the definition of a cash equivalent, as the price is highly volatile (AASB, 2018, p. 11). However, there are different views on this. Cryptocurrency prices are always represented in some other currency, such as US dollar or Euros (AASB, 2018, p. 11). One view argues that the exchange traded price volatility for cryptocurrencies are too significant and therefore cryptocurrencies would

fail the definition of a cash equivalent. However, the contrary view sees that a cash equivalent in a foreign currency is very volatile in an entity's functional currency and does not affect its accounting as a cash equivalent.

When following this logic, an insignificant risk of change in value can only be estimated if the value is based on the same currency (AASB, 2018, p 11). Accordingly, this is because the significance of the risk of changes in value of a cryptocurrency only can be assessed with cash existing in the same currency. Nonetheless, as discussed before, cryptocurrencies are not considered as cash and therefore they would fail the definition of a cash equivalent. Moreover, cryptocurrencies seem to fail the definition of a cash equivalent no matter what view is followed (AASB, 2018, p. 11).

4.2.4 Financial instruments / Financial assets - IAS 32, IFRS 9

The definition of a financial instrument is "*any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity*" (IAS 32.11). A financial asset is referred to as cash or a contractual right to receive cash or another financial asset from another entity (IAS 32.11). Since cryptocurrencies are not cash, nor gives any contractual right to receive cash or another financial asset, cryptocurrencies cannot be viewed as financial assets (Grant Thornton, 2018a, p. 5; IFRS, 2019; Ram et al., 2015, p. 20). Cryptocurrencies are created by the process of mining, and as they do not come to existence as a result of a contractual relationship they cannot be classified as a financial instrument or financial asset (AASB, 2016, p. 12). However, there are proponents which argue that cryptocurrencies meet the definition of financial assets since it can be seen as virtual cash, and thus serve as a medium of exchange enabling investors to purchase goods and services (AcSB Discussion Group, 2018, p. 3). Furthermore, Procházka (2018, p. 167) states that even though cryptocurrencies do not meet the definition of a financial asset, the surrounding the economic factors of a transaction are comparable to trading with financial instruments. It is also suggested, that by applying IAS 8.11, "*an accounting policy adopted for investment-like cryptocurrencies can refer to the measurement models of IFRS 9*". The applicable models suggested that would provide relevant sources of useful information for financial statement users are fair value through profit and loss or fair value through other comprehensive income. Nevertheless, the view that cryptocurrencies cannot be classified as financial instruments or financial assets is shared by the majority of the literature (AASB, 2016, p. 12; CPA, 2018, p. 7; Deloitte, 2018, p. 12; Grant Thornton, 2018a, p. 5; IFRS, 2019; Procházka, 2018, p. 166; PwC, 2018, p. 5).

However, there are cases which may lead to cryptocurrencies being classified as a financial instrument, such as forward contracts, options, or other cash settled contracts based on movements in cryptocurrencies (CPA, 2018, p. 7). Procházka (2018, p. 168) point out that cryptocurrencies may also be classified as a hedged item under hedge accounting if they are reliably measurable. Furthermore, cryptocurrencies may also be within the scope of IFRS 9 when used for short-selling and other derivative-like contracts.

4.2.5 Inventory - IAS 2

There are two different scenarios leading to the recognition of cryptocurrencies as inventory (Procházka, 2018, p. 169). These two scenarios will be discussed separately, including the classifications, recognition and valuation of the asset.

Cryptocurrency held for sale

IAS 38 excludes intangible assets held by an entity for sale in the ordinary course of business (AASB, 2018, p. 13; CPA, 2018, p. 9; IFRS, 2019). These intangible assets should be accounted for as inventory under IAS 2 (AASB, 2018, p. 13; CPA, 2018, p. 9; IFRS, 2019) It is determined in IAS 2 that inventories are not required to be in a physical form, but inventory should consist of assets held for sale in the ordinary course of business (PwC, 2018, p. 6). Cryptocurrencies held for sale in the ordinary course of business should be accounted for using IAS 2 (IFRS, 2019). For IAS 2 to be applicable, it is necessary for the entity to demonstrate that its business model for cryptocurrencies is coherent with holding it for sale in the ordinary course of business (Deloitte, 2018, p. 15).

The initial measurement for inventory is at cost (PwC, 2018, p. 6). The subsequent measure for inventory "*shall be measured at the lower of cost and net realizable value*" (IAS 2.9). Net realizable value refers to "*the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale*" (Deloitte, 2018, p. 15). If needed, impairments made to net realizable value are recognized as part of inventory expenses in profit or loss accounts. An impairment is a write down of the value of an asset. If previous write-downs are reversed this will be recognized as a reduction of the inventories expense. The reversal of an inventory impairment is limited to the amount of the original write-down.

Commodity broker-traders

IAS 2 has a scope exception for commodity broker-traders where the accounting treatment is different from that of regular inventories (CPA, 2018, p. 9; Deloitte, 2018, p. 15). A broker-trader is an entity buying or selling commodities for others or for own account (Deloitte, 2018, p. 15). Even though there is not an exact definition of commodities under IAS 2, the description corresponds to the economic model of cryptocurrencies and this model is more relevant, and reliable compared to merchandise by cryptocurrency brokers (Procházka, 2018, p. 169). It is important that the reporting entity demonstrates that it is a broker-trader and that the cryptocurrency is held for sale in the ordinary course of business (Deloitte, 2018, p. 15). Deloitte (2018, p. 15-16) has made two judgements regarding commodity broker-traders and cryptocurrencies. Firstly, it is accepted that a cryptocurrency can be a commodity. Secondly, if a cryptocurrency is being held as a longer-term investment, or as a hedge against another instrument, it is not being held for sale in the ordinary course of business. CPA (2018, p. 9), EY (2018, p. 10), PwC (2018, 6 & 8), Deloitte (2018, p. 15) and Grant Thornton (2018a, p. 9) agrees that the scope exception can be applied in the case of cryptocurrencies being sold in the ordinary course of business. On the contrary, AcSB Discussion Group (2018, p. 4) have discussed views where cryptocurrencies could not be classified as inventory. The proponents of this view believe that cryptocurrencies are not within the scope of IAS 2, mainly because they do not meet the definition of an asset described in IAS 2.3(b) or 2.6. These proponents believe that cryptocurrencies are rather mediums of exchange.

IFRIC suggests that in the case of commodity broker-traders the requirements in IAS 2.3(b) should be considered (IFRS, 2019). Broker-traders measure inventories of commodities at fair value less cost to sell and changes in value are recorded either in profit or loss (IAS 2.3). IAS 2 specifies that this basis is also used for financial reporting purposes and recognize changes in fair value less costs to sell in profit or loss in the period of the change (Deloitte, 2018, p. 15). However, it is not clear how to interpret the measurement exception for commodity broker-traders in the context of cryptocurrencies

(Grant Thornton, 2018a, p. 9). By following IAS 2's accounting for broker-traders would intuitively seem to be an appropriate approach for the entities holding cryptocurrencies with the intention to actively buy and sell them.

4.2.6 Intangible assets - IAS 38

Asset classification

An intangible asset is defined as an identifiable non-monetary asset without physical substance (AASB, 2016, p. 12). There are four aspects of this definition, whether the asset is identifiable, if it can be defined as an asset, if it is non-monetary and if it is without physical substance. An asset is identifiable if it is capable of being separated or divided by the entity or if it arises from a contractual or legal right (IAS 38.12). Cryptocurrencies are sold in units on an exchange market, thus, they are identifiable (AASB, 2016, p. 12; Grant Thornton, 2018a, p. 6). Secondly, cryptocurrencies need to meet the definition of an asset, which is a "*resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity*" (IAS 38.8). Control in the context of intangible assets means that "*the entity has the power to obtain the economic benefits that the asset will generate and to restrict the access of others to those benefits*" (IAS 38.13). AASB (2016, p. 13) proposes that cryptocurrencies meet the definition of an asset since an entity can obtain the associated economic benefits through selling the asset or use it as a means of payment. Furthermore, Grant Thornton (2018a, p. 6) shares this view, since cryptocurrency holdings can be traded on an exchange or through peer-to-peer transactions there is an expected inflow of economic benefits. PwC (2018, p. 6) also arrive at the same conclusions. On the contrary, Tan and Low (2017, p. 220) do not share this view. It is believed that there are no associated future economic benefits besides being a medium of exchange or investment, and that cryptocurrencies do not meet the definition of an intangible asset.

The third aspect to consider is whether the asset is non-monetary. The definition of a monetary asset is "*money held and assets to be received in fixed or determinable amounts of money*" (IAS 38.8). Since the value of a cryptocurrency is not fixed or determinable but subject to fluctuations in value resulting from supply and demand, it is not a monetary asset, and therefore classified as a non-monetary asset (Grant Thornton, 2018a, p. 6). Finally, it needs to be established that cryptocurrencies are without physical substance in order for it to be classified as an intangible asset. Both AASB (2016, p. 13) and Grant Thornton (2018a, p. 6) are proponents of this statement and agree that cryptocurrencies do not have any physical substance.

Numerous reports and studies argue that cryptocurrencies should be classified as intangible assets (AASB, 2016, p. 13; CPA, 2018, p. 8; Deloitte, 2018, p. 13; Grant Thornton, 2018a, p. 6; KPMG, 2018, p. 2; Procházka, 2018, p. 175; PwC, 2018, p. 6). According IFRIC, IAS 38 can be applied when IAS 2 is not applicable (IFRS, 2019). To evaluate situations when IAS 38 cannot be applied professional judgement is required to determine the accounting treatment. KPMG (2018, p. 3) stresses that a careful evaluation of form and substance of the cryptocurrency needs to be made to determine whether it meets the definition of an intangible asset. This is also supported by PwC (2018, p. 7) who highlight the importance of understanding the nature and characteristics of the cryptocurrency and the purpose of holding the asset.

Recognition of assets
After classifying cryptocurrencies as an intangible asset, the recognition criteria need to be assessed. The recognition criteria are "*it is probable that there will be future economic benefits from the asset*" and "*the cost of the asset can be reliably measured*" (IAS 38.21). The recognition criteria are not widely discussed in literature, however, KPMG (2018, p. 3) states the importance of considering the relevant legal environment in the recognition of cryptocurrencies as intangible assets. The evaluation may require special attention to legal issues because of the complex nature of cryptocurrencies, however, it may be complicated due to the limited amount of laws and regulations available.

Initial measurements
An intangible asset is initially measured at cost (IAS 38.24). If the cryptocurrency is paid in cash the measurement of the cost is straightforward (Deloitte, 2018, p. 13). However, in situations where the cryptocurrency is received in exchange for goods, services or another cryptocurrency the accounting treatment is more complex. KPMG (2018, p. 3) shares this view and suggests the preparers of financial statements to seek the expertise from specialists and use professional judgement in such situations.

Subsequent measurements
There are two aspects which need to be resolved in the subsequent measurement of an intangible asset, measurement and amortization (Procházka, 2018, p. 174). There are two models for the measurement of intangible assets; the cost model and the revaluation model (Deloitte 2018, p. 13; IAS 38.72). In the cost model cryptocurrencies are carried at cost less any accumulated depreciation and accumulated impairment losses (IAS 38.74). Under the revaluation model the intangible asset is measured at fair value less any accumulated amortization and accumulated impairment losses (IAS 38.75). However, the revaluation model can only be used if there is an active market for cryptocurrencies (Deloitte, 2018, p. 14). An assessment needs to be made whether the market for a specific cryptocurrency can be defined as an active market. However, the existence of a market or exchange is not enough for it to be classified as an active market. It needs to be evaluated whether there is enough frequency and volume of transactions to provide pricing information for a specific cryptocurrency (Deloitte, 2018, p. 14). PwC (2018, p. 21) also highlight issues when there are several markets for a cryptocurrency and how to deal with such situations. Furthermore, Procházka (2018, p. 182) suggest that the potential low reliability of market prices is a factor to consider when determining whether an active market is present.

Procházka (2018, p. 174) argues that Bitcoin and other major cryptocurrencies are traded on active markets, however minor cryptocurrencies often lack in trading activity and thus, the condition is violated. If the revaluation model is used issues such as how to track movements in the revaluation and how to record them in other comprehensive income need to be addressed (Grant Thornton, 2018a, p. 8). It also needs to be determined if it should be done on an individual coin basis, which exchange is used for the measurement and at what time.

When accounting for a possible amortization an assessment needs to be made whether the useful life of the intangible asset is finite or indefinite (Procházka, 2018, p. 174). An intangible asset has an indefinite useful life when "*there is no foreseeable limit to the period over which the asset is expected to generate net cash inflows for the entity*" (IAS 38.88). There are shared views that cryptocurrencies meet the definition of an intangible

asset with an indefinite useful life (Deloitte, 2018, p. 16; CPA, 2018, p. 8; Grant Thornton, 2018a, p. 8; KPMG, 2018, p. 2; Procházka, 2018, p. 174). Since cryptocurrencies are designed to act a store of value over time it meets this definition (Grant Thornton, 2018a, p. 8). An intangible asset with an indefinite useful life is not amortized (IAS 38.107).

Intangible assets with an indefinite useful life should be tested for impairment annually or when there is an indication that the asset can be impaired (IAS 38.108). An impairment is recognized when the carrying amount is higher than the recoverable amount of the asset (IAS 36.8). The recoverable amount is the higher of an assets fair value less costs to sell and its value in use (IAS 36.18). Since cryptocurrencies have no other use than a medium of exchange, it will be the fair value less costs to sell which is compared to the carrying amount (Deloitte, 2018, p. 16). Under the cost model this means that if the fair value is below the carrying amount at the reporting date an impairment loss needs to be recognized in profit and loss accounts. However, at the end of each reporting period an assessment needs to be made to determine if there is an indication that an impairment in prior periods no longer exists or has decreased (Deloitte, 2018, p. 17). If such indication exists, the recoverable amount is estimated, and the cryptocurrency is again measured at fair value. It is only if the cryptocurrency has been impaired before that a reversal can be performed, such reversal is recognized in profit and loss accounts. Increases in the value above the carrying amount are not recognized, thus, an increase in value above cost is not recognized. It is only when a sale is performed that a gain on disposal can be recognized (Deloitte, 2018, p. 17).

Intangible asset conclusions

Despite the rather unanimous view that cryptocurrencies meet the definition of an intangible asset, AASB (2018, p. 13) believes that the accounting treatment in IAS 38 does not provide relevant and useful financial information. The reasoning behind is that IAS 38 is not designed to deal with assets held for speculative or investment purposes or for items with cash-like features. Moreover, Procházka (2018, p. 174) states that barely any settings where an entity would be able to use cryptocurrencies as intangible assets can be identified. It is concluded that recognizing cryptocurrencies as intangible assets is not appropriate no matter if the cryptocurrency is purchased externally or mined (Procházka, 2018, p. 175). Moreover, it is argued that even if cryptocurrencies meet the technical definition of an intangible asset, they do not possess the economic characteristics of intangible assets (Procházka, 2018, p. 175). The accounting requirement in IAS 38 assumes that the asset will be used to generate cash flows within the business, however, cryptocurrencies do not possess such utilities (Deloitte, 2018, p. 15). Grant Thornton (2018a, p. 8) shares the view that accounting for cryptocurrencies under IAS 38 do not provide satisfying and intuitive results. Despite these views, it is the accounting treatment suggested by IFRIC when it is not sold in the ordinary course of business (IFRS, 2019).

4.2.7 Summary of asset classifications

It is concluded that the two possible asset classifications for cryptocurrencies are inventory or intangible assets. A classification of cryptocurrencies as cash, cash equivalents or as a financial instrument can be disregarded quickly after reading the standards as it does not meet the definition of either of the assets. However, it can be discussed whether applying these standards provide relevant and useful financial information or if it can mislead stakeholders when standards are not specifically designed for cryptocurrencies.

The asset classification of cryptocurrencies may have consequences for the users of financial statements as different asset classifications may convey different information. One of the possible asset classifications for cryptocurrencies is intangible assets. According to Lev and Daum (2004, p. 6) there is a general agreement that traditional accounting-based information systems are not capable of providing adequate information about intangible assets and their economic consequences. This results in a volatility of stock prices, leading to a misallocation of resources in capital market, which in turn affects cost of capital for entities which have a significant amount of intangible assets (Lev & Daum, 2004, p. 7). In addition, it is argued by AASB (2016, p. 13) that the classification of cryptocurrencies as intangible assets does not provide relevant and useful financial information. Thus, classifying cryptocurrencies as intangible assets may have undesirable consequences not only for investors, but also for financial markets. Classifying cryptocurrencies as financial assets is not possible, however, Procházka (2018, p. 167) argues that such an asset classification captures the surrounding economic factors of cryptocurrencies. Accordingly, it could be debated which asset classification provides the most relevant information to users of financial statements and for financial markets. Furthermore, different asset classifications may have different meanings to different users of financial statements, and provide relevant information to some, but not to others. It is difficult to generalize the consequences of the asset classification for stakeholders, and as the classifications are circumstantial the effects for investors are likely to differ.

Below in Table 4 follows a summarization of the discussed asset types and the possible initial and subsequent accounting treatments.

Table 4 – Summary of possible asset classifications for cryptocurrencies.

Type of asset	**Classification - yes/no**	**Initial measurement**	**Subsequent measurement**
Cash/cash equivalents - IAS 7	No	-	-
Financial instruments - IAS 32 & IFRS 9	No	-	-
Inventory - IAS 2	Yes	Cost	Lower of cost and net realizable value
Commodity broker-traders - IAS 2	Yes	Fair value less cost to sell	Fair value less cost to sell

Intangible assets - IAS 38	Yes	Cost	Cost model / Revaluation model

4.3 Revenues

4.3.1 Accounting for revenues

Revenue arises from income in the ordinary course of business (IASB, 2010, 4.29, p. A39). There are five steps in the process of accounting for revenue in accordance with IFRS 15 - revenues from contracts with customers (PwC, 2016, p. 1-11). The five steps consist of: identifying the contract, identifying performance obligations, determine transaction price, allocate transaction price and recognize revenue. All these steps need to be undertaken in order to recognize revenue in the income statement. To identify the contract, it needs to be determined that a contract exists and that the contract is with a customer (PwC, 2016, p. 2-2). Secondly, the performance obligations of the contract need to be identified, a performance obligation is defined as "*a promise in a contract with a customer to transfer a good or service to the customer*" (EY, 2012, §p. 9). The performance obligations are the goods or services promised in the contract. Next, the transaction price needs to be determined, the transaction price is the amount of consideration to be transferred in exchange for the goods or services (PwC, 2016, p. 4-2). Determining the transaction price can be challenging in some circumstances, for instance when it is a variable amount, the payment method is not cash or with long credit times (EY, 2012, p. 11). Next the transaction price needs to be allocated to the performance obligations, this occurs for example when contracts involve sale of multiple goods or multiple services (PwC, 2016, p. 5-2). Finally, the revenue can be recognized, which can be done when the customer obtains control over a good or service (PwC, 2016, p. 6-2). There are two criteria which needs to be fulfilled for revenue to be recognized in the income statement, "*it is probable that any future economic benefit associated with the item will flow to the entity*" and "*the item has a cost or value that can be measured with reliability*" (IASB, 2010, 4.38, p. A40). The recognition of revenue occurs simultaneously as an increase in an asset or a decrease in a liability is recorded (IASB, 2010, 4.47, p. A42).

4.3.2 Revenues from cryptocurrencies

There is a limited amount of literature regarding the accounting treatment of revenues arising from cryptocurrencies. This section will conclude the existing findings and suggestions as well as relating it to the accounting treatment for revenues in foreign currencies.

According to Deloitte (2018, p. 16) it is likely that when an entity accepts cryptocurrencies as a payment method a sale has been made in accordance with IFRS 15, revenues from contracts with customers. When the transaction price is a non-cash consideration, it should be measured at fair value (IFRS 15.66), thus, a consideration made in cryptocurrencies should be measured at fair value (Deloitte, 2018, p. 16). However, because of the high volatility of cryptocurrencies the timing of the valuation of the cryptocurrency may be important (PwC, 2018, p. 21). Questions such as what time of the day the valuation should be performed and how the valuation time is determined in entity groups with different time zones need to be addressed. CPA (2018, p. 17) also

highlight this issue in the fair value measurement of cryptocurrencies, not only in the case of revenue, but also if cryptocurrencies are held as assets. The volatility and timing of recording transactions may represent a significant accounting policy requiring consistency of application. PwC (2018, p. 19) agrees that it represents a significant accounting policy and suggests that disclosures in the notes of financial statements are needed.

Tan and Low (2017, p. 223) differentiate between two groups with different ownerships of cryptocurrencies, trading firms and digital currency exchanges. Trading firms use cryptocurrencies as a medium of exchange while digital currency exchanges use it as a commodity. It is argued that in the case of using cryptocurrencies as a medium of exchange the revenue or expense is recorded at the transacted exchange rate (Tan & Low, 2017, p. 224). Procházka (2018, p. 175) agrees with this accounting treatment and proposes that cryptocurrencies should be treated as foreign currency transactions. The transactions should be recorded at a spot rate and closing balances should be restated at the closing rate. The recurring gains or losses at year-end should be included in profit and loss accounts (Procházka, 2018, p. 175). Furthermore, a revenue transaction made with cryptocurrencies should be accounted for with the same principles as when accounting for cash and credit sales (Tan & Low, 2017, p. 223). For a cash sale in cryptocurrencies the transacted exchange rate is used, and it is recorded as a normal cash sale. When a credit sale is made the accounting treatment differs, the price of the cryptocurrency is likely to change from when the balance on accounts receivable is recorded until when the receivable is realized. This may result in large gains or losses in exchange differences. Moreover, the problems with the volatility of cryptocurrencies are highlighted in the context of revenues from cryptocurrencies (Tan & Low, 2017, p. 224).

In the case of a digital currency exchange the accounting treatment becomes more difficult (Tan & Low, 2017, p. 225). Digital currency exchanges often obtain cryptocurrencies from miners or consumers and trading firms having an excess of cryptocurrencies, these cryptocurrencies are than sold to realize a profit by a percentage commission or a bid-ask spread. In such case the revenue received is the functional currency gained from selling the cryptocurrency (Tan & Low, 2017, p. 225).

It is suggested that cryptocurrencies should be accounted for in accordance with IAS 21 - the effects of changes in foreign exchange rates (Grant Thornton, 2018a, p. 10; Procházka, 2018, p. 166). At initial recognition the transaction should be recorded in the functional currency at the spot exchange rate at the date of the transaction (IAS 21.21). In transactions where the exchange rate does not fluctuate significantly an average exchange rate can be used, however, because of the fluctuating value of cryptocurrencies it may not be appropriate. The accounting treatment in subsequent periods depends on whether the transaction can be defined as a monetary or non-monetary item (Grant Thornton, 2018a, p. 10). The views whether it should be accounted for as a monetary or non-monetary items differs, Procházka (2018, p. 166) argues that holdings of cryptocurrencies are monetary items while many others argue it is non-monetary items (AASB, 2016, p. 13; CPA, 2018, p. 8; Deloitte, 2018, p. 16; Grant Thornton, 2018a, p. 10). In the view that cryptocurrencies are monetary items, at the subsequent accounting treatment the cryptocurrency should be measured at the closing rate (IAS 21.23). Non-monetary items are measured either at the exchange rate on the date of the transaction or at the exchange rate at the date when fair value was measured (IAS 21.23). Deloitte (2018,

p. 16) states that generally the non-monetary transactions need to be recognized at fair value.

If revenues arise from mining, the accounting treatment may differ. In order for a miner to be able to recognize revenue in accordance to IFRS 15 the miner needs to have a contract with the blockchain (Deloitte, 2018, p. 16). When accounting for the block reward which is the cryptocurrency gained from mining a transaction, a counterparty is needed to the contract who is a customer for it to be recognized as revenue (Grant Thornton, 2018b, p. 6). However, no contract can exist in accordance to IFRS 15 since there are no enforceable rights and obligations. This means that newly created cryptocurrencies cannot be recognized as revenue. Nevertheless, it is argued that they can be recognized as other income within profit and loss accounts in accordance with the Conceptual Framework (Grant Thornton, 2018b, p. 6).

4.4 Disclosures

There are no disclosure requirements specifically designed for cryptographic assets and related transactions (PwC, 2018, p. 24). Therefore, entities should follow the disclosure requirements of the IFRS standards when accounting for cryptocurrencies (CPA, 2018, p. 12; IFRS, 2019 & Grant Thornton, 2018a, p. 10). Based on the applicable asset classifications of cryptocurrencies, entities should apply the disclosure requirements IAS 2.36 to cryptocurrencies held for sale in the ordinary course of business and IAS 38.118-128 to other holdings of cryptocurrencies (IFRS, 2019). In addition, if the cryptocurrency is measured at fair value, the disclosure requirements in IFRS 13, fair value measurement should also be applied (CPA, 2018, p. 12 & Grant Thornton, 2018a, p. 10). However, given the complexity and volatility associated with cryptocurrencies, entities should consider whether to have additional disclosures about their holdings of cryptocurrencies (CPA, 2018, p. 12). The Conceptual Framework offers instructions of what should be included to the financial statements in paragraphs QC13, QC14 and QC18 (IASB, 2010, p. A27-A29). Information is provided to the users of financial statements which is useful in making economic decisions (IASB, 2010, p. A16). However, the Conceptual Framework does not override the accounting principles in IFRS (IASB, 2010, p. A17).

IASB provides guidance for disclosures (CPA, 2018, p. 12). The purpose of financial statements is defined as *"structured representation of the financial position and financial performance of an entity"*. Furthermore, it has the objective of providing information about financial position and performance which is useful for the users of financial statements. Disclosures are regulated further in IAS 1.17c, where it is stated, *"A fair presentation also requires an entity to provide additional disclosures when compliance with the specific requirements in IFRSs is insufficient to enable users to understand the impact of particular transactions, other events and conditions on the entity's financial position and financial performance"*. However, IAS 1.31 states that entities do not need to provide certain disclosures required by IFRS if the information is not material. This standard guide entities to consider whether to provide additional disclosures when users of financial statements are unable to understand the consequences of particular transactions or the condition on the entity's financial position or performance (IAS 1.31).

The requirements above are discussed by CPA (2018, p. 12), Deloitte (2018, p. 16) and Grant Thornton (2018a, p. 10). In addition, CPA (2018, p. 12) and PwC (2018, p. 24)

state that the following disclosures might be relevant: a description of the cryptocurrency and the purpose of holding it, the number of units of the cryptocurrency held at year end, how the accounting policy was determined, the cost model used, the fair value for the cryptocurrency together with the appropriate IFRS 13 disclosures and information on the market risk associated with the cryptocurrency. In addition, there may be disclosures outside the scope of financial statements required by securities regulators (CPA, 2018, p. 13). Cryptocurrencies do not fit easily with the IFRS framework and therefore entities need to consider additional disclosures in order to comply with the overall objectives in IAS 1 (Grant Thornton, 2018a, p. 10).

PwC discusses different topics when entities should use different standards for disclosing information when holding cryptocurrencies (PwC, 2018, p. 24). One topic discussed is when an entity is involved with cryptocurrencies and related transactions. In this case entities should for example disclose descriptions of the cryptocurrencies held, including their characteristics and the business model for holding cryptocurrencies Another context includes the accounting policies used, for example; the accounting standard applied to cryptocurrencies held, the measurement basis and possible future regulatory developments. Disclosures of accounting policies are regulated in IAS 1.117 and 1.112. The sources of estimation uncertainty are also discussed, which are regulated in IAS 1.125. Moreover, it is suggested by IFRIC that IAS 1.122 can be applied, where judgements made by management regarding the holdings of cryptocurrency should be disclosed if those judgements are significant on the amounts in financial statements (IFRS, 2019). Furthermore, events after the reporting period which falls under IAS 10 are brought up. An example of such a circumstance is when there is a major change in the value of a cryptocurrency held by an entity after the reporting period which can influence economic decisions by financial statement users (IFRS, 2019).

Estimates of the future can be recognized as a part of assets in financial statement, or alternatively be included in the disclosures to financial statements (Barth, 2006, p. 282). Because of the volatility of cryptocurrencies, it may be appropriate to include such disclosures to better communicate the nature of the cryptocurrency. For example, disclosures about the inputs to the estimation of the value of the asset or risk assessment disclosures could be included (Barth, 2006, p. 283). A suggested example is based on the requirements in IFRS 2 - Share-based Payment, where it is required to disclose the expected volatility of share options. Because of the nature of cryptocurrencies, such disclosures may be appropriate to include expectations about the volatility in financial statements.

One of the main reasons for disclosure transparency around the relevant facts and circumstances is that cryptocurrencies and related transactions are a topic of significant interest for all stakeholders and especially shareholders, analyst and regulators (PwC, 2018, p. 24). Furthermore, Raiborn and Sivitanides (2015, p. 32) suggests that guidance on disclosures for cryptocurrency transactions should be provided as it would help stakeholders to determine the possibility of information asymmetry. Information asymmetry arises from differences in information and incentives between entities and investors (Healy & Palepu, 2001, p. 407). These information and incentive problems hinder an efficient allocation of resources in capital markets and disclosures have an important role in reducing such problems (Healy & Palepu, 2001, p. 406). Related to the concept of information asymmetry is agency theory which refers to a situation where an agent is hired to act in behalf of a principal, and where the agent and principal have

diverging interests (Jensen & Meckling, 1976, p. 308). The information asymmetry between the agent and the principal creates uncertainty whether the agent acts in the best interest of the principal (Arshad et al., 2011, p. 129). Moreover, it is argued that the demand for disclosures is a result of information asymmetry and agency conflicts (Healy & Palepu, 2001, p. 406). It is suggested by Chandra et al. (2006, p. 234) that by increasing the amount of disclosed information, a reduction of information asymmetry between management and stakeholders is achieved together with reduced information gathering costs. Furthermore, management have incentives to disclose a high level of voluntary information as it indicates that management is acting in accordance with the interests of investors (Arshad et al., 2011, p. 125). Thus, an increased amount of disclosures can reduce the perceived information asymmetry in the marketplace.

Entities should ensure that their financial statements include a set of clear disclosures. Those disclosures will include some of the applicable disclosure requirements by the IFRS, depending on the accounting classification by the holder (PwC, 2018, p. 24). Cryptocurrencies is an evolving area of accounting and therefore entities should closely monitor the developments and moreover align disclosures with market expectations and requirements.

4.5 Summary of theoretical framework

The theoretical framework of this thesis aims to provide thorough explanations of the accounting treatments for cryptocurrencies together with discussions about the associated risk factors. Evident in all these categories is the need for standard setting to diminish the differences of accounting treatments in the marketplace to avoid issues such as earnings management. The possible asset classifications for cryptocurrencies are intangible assets or inventory, and the subsequent measurements such as valuations and impairments depend upon the asset classification. Besides the asset classification there are several other risks which needs to be resolved when accounting for assets, such as determining if there is an active market for cryptocurrencies or not. However, there are debates about whether the information provided by the applicable asset classifications provide useful and relevant financial information or not. This represents a significant challenge when accounting for cryptocurrencies, and there can be consequences for financial markets and for users of financial statements.

In accounting for revenues there is a substantial lack of guidance from the big accounting firms and from academic literature. It needs to be determined if revenues from cryptocurrencies meet the requirements of IFRS 15 - revenues from contracts with customers and if it should be accounted for in accordance with IAS 21 - the effects of changes in foreign exchange rates. When it comes to disclosures of cryptocurrencies the requirements of the applied standard needs to be followed and thereafter the entity can decide which additional information should be disclosed. The amount of disclosures in financial statements can have effects on the perceived information asymmetry between management and stakeholders. Furthermore, it is suggested by Chandra et al. (2006, p. 234) that a high level of disclosures lead to a reduction of information asymmetry.

There are several risk factors which are associated with accounting for cryptocurrencies that have been discussed throughout the chapter. For example, issues such as earnings management, financial information not being relevant and useful for financial statement

users and information asymmetry have been identified as associated risks. These risk factors may have implications beyond the actual accounting treatment and can have consequences for financial markets affecting the quality of financial reporting.

Chapter 5: Empirical Results

This chapter presents the empirical findings which were based on interviews with consultants, accounting experts and an entrepreneur. The findings are presented in accordance with the four major themes of the research. Initially the informants are presented, thereafter a general discussion related to accounting and cryptocurrencies is given. Following are the findings related to assets, revenues, disclosures and risk factors. The chapter is concluded with the informants' views on the future of accounting for cryptocurrencies.

5.1 Information about informants

In table 5 and 6 the informants are presented. A brief explanation of the informants work experience is given together with the number of tasks related to cryptocurrencies expressed as a percentage. The average interview time with the participants was 50 minutes which excluded information about the interview.

Table 5 - Presentation of the interviewees.

Respondent	Experience	Interview channel	Interview date	Length of interview
Consultant 1	The informant has worked with accounting consultancy for one and half years. 50 % of tasks related to cryptocurrencies.	Phone	2019-03-15	35 minutes
Consultant 2	The informant has worked five years in auditing and one year in consulting. 20 % of tasks related to cryptocurrencies.	Phone	2019-03-19	50 minutes
Consultant 3	The informant has been an entrepreneur for 10 years and now works with regulatory affairs. 50% of tasks related to cryptocurrencies.	Phone	2019-04-09	50 minutes
Consultant 4	The informant works as a consultant. Previously worked as an auditor for 11 years. 1% of tasks related to cryptocurrencies.	Phone	2019-04-11	40 minutes

Technical accounting expert and member of a regulatory group (IFRS-expert 1)	The informant has worked within technical accounting for fifteen years, previously an auditor. Barely any tasks related to cryptocurrencies.	Phone	2019-03-26	80 minutes
CEO of a company that is accepting and holding cryptocurrencies (The Entrepreneur)	Entrepreneur with a background in construction engineering. 100% of tasks related to cryptocurrencies.	Zoom and Skype	2019-03-28	45 minutes

Table 6 – Presentation of additional informant.

Respondent	**Experience**	**Contact channel**	**Time period**	**Number of emails**
Technical accounting expert and member of a regulatory group (IFRS-expert 2)	The informant has worked 31 years within the same company and have since 2004 been responsible for accounting specialists within the company. 0% of work tasks related to cryptocurrencies.	Email	2019-04-10	30

For simplicity 'technical accounting expert and member of a regulatory group' 1 and 2 will here on after being referred to as IFRS-expert 1 and IFRS-expert 2. CEO of a company accepting and holding cryptocurrencies is referred to as the Entrepreneur.

5.2 General concerns about cryptocurrencies

Before asking more specific accounting questions, the informants were asked to explain their interpretation about the issues and challenges regarding cryptocurrencies. These issues and problems include general, regulatory and accounting perspectives. A variety of challenges emerged, some which were discussed by more than one participant and others were only introduced by one participant.

One of the problems which emerged in several of the discussions was that cryptocurrencies are still new and unfamiliar. This view was discussed by Consultant 1, Consultant 4, IFRS-expert 1 and the Entrepreneur. Consultant 1 thought that it is the biggest problem, and it explains the lack of guidelines to be followed. The Entrepreneur believed that the lack of information is a problem when for example a person would like

to start with cryptocurrencies but is not familiar with the subject. The Entrepreneur also believed that regulators are not yet at the stage to issue guidance since the number of users is still low.

IFRS-expert 1 continued by addressing another problem with cryptocurrencies: "*I think the problem is getting your arms around of what they constitute, is it cash, not really, is it a physical thing, no it is not, so can I trade with it, yes maybe, okay so what are they worth, I don't really know*". IFRS-expert 1 kept on analyzing what kind of obligations are involved with cryptocurrencies and thought this matter is not urgent since there is no law taking care of this because it is unfamiliar territory. It was said that if it would be simple someone would have tied up an accounting standard, saying that the owner of cryptocurrencies should account for it in a certain way. IFRS-expert 1 further explained that all the accounting standards available now are dealing with some sort of physical matter. Furthermore, cryptocurrencies could either be an intangible asset which one cannot really touch, or a finance matter where you have either the right to receive cash or another financial instrument. Consultant 1 and 4 were discussing similar issues. Consultant 4 stated: "*I think that people do not agree on how it should be handled*". However, Consultant 4 said that everyone could agree that cryptocurrencies are not handled as cash. Consultant 1 thought cryptocurrencies are difficult to identify for example in the bank.

Valuation was thought to be one of the problems by Consultant 3 and 4. However, Consultant 4 did not see this as the most significant issue with cryptocurrencies since it is believed to be simple if there is day-to-day trading with the currency from which a fair market value could be derived from. Consultant 4 continued with saying that it has been a lot of discussions around the valuation and how it should be handled. Consultant 3 discussed the lack of a legitimate cryptocurrency exchange which one can rely on when conducting a valuation of cryptocurrencies. In addition, Consultant 2 believed that volatility should be mentioned when talking about the problems and issues of cryptocurrencies.

Many of the informants mentioned one central issue which is that officials from regulatory bodies do not know how to treat cryptocurrencies. This issue was discussed by Consultant 1, 2 and 3 and the Entrepreneur. Consultant 2 believed it is because there is no mechanism which stimulates or supports cryptocurrencies. Furthermore, cryptocurrencies are not backed by nation, a federal reserve or corresponding. This was brought up by IFRS-expert 1 as a problem. IFRS-expert 1 pointed out: "*...there is no stability and no sort of guarantee of those cryptocurrencies working or having a stable value*". It was continued with stating that the technology might be excellent, but it is not certain that it can be trusted in the marketplace. Furthermore, IFRS-expert 1 continued with saying that having cash or currencies issued by a nation, sort of reserve or bank is something that we know since a century back, and it works, and people trust them. Which introduces another problem, the trust in cryptocurrencies. IFRS-expert 1 explained that there are several laws around the current system, telling what cryptocurrencies mean and what they constitute of. It was continued by stating that it is tied to the technology behind cryptocurrencies, but the technology itself is not the problem, rather what the technology can do. Consultant 1 agreed partly with IFRS-expert 1 about the technology and believed that the new technology needs to be implemented better in the old routines. Another issue connected to technology is that people need to understand cryptocurrencies. IFRS-expert 1 believed we are a long way of having people really, truly understand what crypto assets

are and how they are treated. It was continued by saying that if one does not understand, it gives an inherent sort of uncertainty and distrust. Consultant 2 concluded: "*It is vital for the economy and the whole world that financial institutions work and are stable and we do not have that with cryptocurrencies*".

Another general issue discussed by IFRS-expert 1 is the gap between financial accounting and entrepreneurial companies. It was deemed that this is a typical issue in development industries and companies where there is a difficulty in explaining operations in financial statements. This results in high costs of gaining capital since there is a high cost of having skilled personnel who can translate these operations into financial statements. In addition, IFRS-expert 1 said "*If it is difficult for skilled IFRS preparers in how to treat these things, then imagine what it would be like for local companies trying to raise capital by branding their financial statements through the IFRS system"*. IFRS-expert 1 thought this is a problematic area where two worlds collide.

A summary about the most discussed issues and problems with cryptocurrencies was provided by IFRS-expert 1, who stated that the biggest challenges are: "*The abundance of different versions of cryptocurrencies and crypto assets, and you don't really know for certain what they resemble, how stable they are, what they mean, what the right and obligations are, what sort of jurisdictional strength of they have, can you rely upon them and how do you know they work* ". It was mentioned that cryptocurrencies are discussed globally, but locally in Nordic countries challenges have not occurred to the same extent yet. IFRS-expert 1 believed that cryptocurrencies are not evident on the level where IFRS is applied or where companies are trading on marketplaces. The discussion continued with the possibility for it to occur on a lower level, where IFRS-experts are not involved. However, IFRS-expert 1 stated: "*But cryptocurrencies are out there, so if you possess those and they have a value, you need to account for them anyway, even though you are not really certain what they are*".

Tax issues

Some of the informants had more knowledge about the tax issues related to cryptocurrencies than others. All the informants who could answer the question based their answers on the tax system in their home country. They referred to the instructions the country has given related to cryptocurrencies. All the participants are granted full anonymity and therefore it is not revealed where the informants are from. All the participants are from the Nordic Countries, in which three countries are represented. These three countries will be called country A, B and C for anonymity purposes.

Taxation could be seen problematic no matter where the participant is from. The Entrepreneur started the discussion by stating: "*...whether the taxation is correct or fair in different jurisdictions, for example in Country B the taxation is quite unfair*". The Entrepreneur told that some discussions have occurred, where the mistakes of Country B's taxation have been under harsh criticism. It was continued with saying that Country B uses the same model as the US, which means that one will be taxed with the capital gain tax which will be around 34%. The Entrepreneur explained that the situation used to be such that the tax will only be realized when one converts assets to fiat money or alternatively when one buys a product or service. The Entrepreneur continued: "*Now the situation is such that it makes trading impossible because the tax realizes every time there is profit no matter if you buy another cryptocurrency, so it effectively makes it impossible for a private person to trade in Country B*". In addition, one will be taxed on all gains,

but losses cannot be deducted, and this is an impossible situation for many. However, it was believed that the situation is better for companies. The Entrepreneur believed that the situation will change over time and mentions that s/he has tried to make the tax authorities to understand that they are driving people and business out of the country. This was why it was decided by the Entrepreneur to move the business to a neighboring country with a more liberal taxation system for cryptocurrencies. The Entrepreneur concluded: "*They are driving people who would be bringing tax money in and if Country B would have a favorable taxation you would get more jobs, more innovation and young people coming in to the country rather than pushing them away, while they take their innovations and educations with them".*

Consultant 1, 2 and 4 stated that they do not have much knowledge when it comes to tax issues for cryptocurrencies. However, all of them knew where to turn to get guidance for taxation for cryptocurrencies. Consultant 1 and 4 would rely on the recommendations provided by the tax authorities in Country A. Consultant 4 thought that these recommendations are quite easy to follow when it comes to handling cryptocurrencies in the books, however when a private person is owning cryptocurrencies the taxation can be more complex. Consultant 2 brought up an interesting aspect from Country C when it comes to the fine lines from the taxation authorities. It was deemed that if a company does not know how to tax cryptocurrencies, one needs to make it fit into the current system and describe what one is doing, so that authorities can review arguments to determine if it is correct. Consultant 2 continued "*...if the authorities agree they agree and if not, they will come back to you and say that they do not agree with you and one gets a chance to correct it*". Consultant 3 gave a similar example from Country B. Consultant 3 stated that tax authorities can provide personal treatment when it comes to taxes if one is really willing to pay taxes. In addition, Consultant 3 has made investments in cryptocurrencies just to test the taxation system.

5.3 Assets

5.3.1 General problems with accounting for cryptocurrency assets

An issue discussed and emphasized throughout the interview with IFRS-expert 1 was the importance of understanding what the cryptocurrency is in order to be able to determine the accounting treatment. Questions such as what the cryptocurrency does, what rights it gives you, what you can use the cryptocurrency for and whether is there a market for it or not, has to be answered to better understand the underlying features of the cryptocurrency and thereafter determine the accounting treatment. IFRS-expert 1 said "*It is so so important to understand what that asset is, without that understanding you cannot treat it properly under IFRS".* It was suggested to look into the document from the issuing party, often called the 'whitepaper' to get a better understanding of the features and the rights and obligations of the cryptocurrency. An example with Initial Coin Offerings was brought up where the issuing company makes an initial coin offering with a value of 100 but only 80 are bought and 20 is kept by the company and the questions is whether those remaining 20 can be defined as an asset. IFRS-expert 1 thought that if you create your own "currency" which is not based on existing technology or acknowledged by the public, the it is probably not an asset, or an asset without any value. Based on the understanding of the cryptocurrency the preparers of financial statements will be able to determine whether it meet the definition of an asset at all in the first place and thereafter the subsequent accounting treatment. It was suggested by IFRS-expert 1 that once there is an

understanding of the cryptocurrency then one of the existing IFRS standards can be applied.

IFRS-expert 1 emphasized the first three steps in accounting for assets, (1) does it meet the definition of an asset, (2) does it meet the definition of the specific asset class and (3) does it meet the recognition criteria. Once the process is solved the specific IFRS standard is applied and the measurement is decided based on the requirements in the standard. Consultant 2 agreed with this process and believed that in order to account for cryptocurrencies this process must be followed. However, Consultant 2 thought that the difficult question is to determine what type of an asset cryptocurrencies are, but believes it meets the definition of an asset. In addition, Consultant 2 believed that the valuation and subsequent measurements are something which needs to be agreed on since companies need clear guidelines. A differentiation was made between the big cryptocurrencies and tokens where the steps and procedures differ. Consultant 1 believed that the classification of the asset is the most important, and thereafter the biggest challenge is the valuation of the asset which depends on the classification. It was suggested by IFRS-expert 1 to apply one of the existing standards to cryptocurrencies rather than develop your own accounting standard for it.

5.3.2 Asset classification

The views from the respondents on what type of asset cryptocurrencies should be classified as were varying. The suggested asset classifications were financial assets, intangible assets, inventory and cash. Some of the respondents were very sure on what type of asset it can be classified while others were more uncertain and thought several standards could be applied. A view shared by all the respondents is that circumstances affect the asset classification and different classifications may be suitable for different companies. This was suggested by Consultant 2 that "*The purpose of holding cryptocurrencies affect the asset classification"*. As previously mentioned, this was also something which was emphasized by IFRS-expert 1 who stressed the importance of an understanding of the cryptocurrency in order to be able to classify in one of the existing asset classes.

Consultant 2 believed cryptocurrencies can be classified as financial instruments in general, but also that Bitcoin can be classified as a currency. IFRS-expert 1 believed cryptocurrencies could be classified as financial assets, intangible assets or something else. However, it was also stated that as long cryptocurrencies are not backed by a government or broadly accepted, they do not meet the definition of a financial asset under IFRS 9. If it would be either broadly accepted or government backed, then it could be classified as an equivalent of a currency. IFRS-expert 1 also discussed the possibility of amending the financial instrument standard to encompass cryptocurrencies but believed that IASB thought it was too early and therefore issued the guidance through IFRIC. Consultant 3 on the other hand believed cryptocurrencies should be considered as foreign currency since there are already established systems handling foreign currencies and then cryptocurrencies should fall under that category. However, Consultant 3 discussed the problem of what type of cryptocurrencies could be considered as currencies, and believed the largest cryptocurrencies such as Bitcoin, Ethereum and Ripple should be considered currencies. Consultant 4 on the contrary said, "*I think that everyone does not agree on how it should be classified, but I think everyone can agree that it is not cash"*. The suggestion made by IFRS-expert 2 was to follow the document issued by the accounting firm at which IFRS-expert 2 works at to arrive at the most suitable accounting treatment.

This document must be followed unless IFRS-expert 2 would have strong reasons not to follow it. Depending on the circumstances, the suggested accounting treatments are then inventory in accordance with IAS 2 or intangible assets in accordance with IAS 38.

Consultant 4 strongly believed cryptocurrencies should be classified as inventory. It was deemed that if one has a company issuing the cryptocurrency, that it is manufactured, then "*for sure it is inventory".* However, there can be a complexity when a company is trading in cryptocurrencies on a day to day basis, but since a financial company should handle their stocks as inventory Consultant 4 believed that it should be inventory in that case too. In addition, Consultant 4 has not seen any other classification of cryptocurrencies in the balance sheet than inventory. Nevertheless, Consultant 4 mentioned situations where cryptocurrencies could be classified as a financial asset, for example if a company has excess cash and invest it in cryptocurrencies or if it is an investment which is a product from a financial company.

5.3.3 Recognition of assets

The respondents were asked about the recognition of assets and whether they could see any issues with the measurement of a cost or value and the probability of future economic benefits, which are based on the recognition criteria for assets. This appeared to be a difficult question that not all respondents had an answer to or could think about the possible issues. Consultant 1 could see problems with both aspects and believed that both were important because of the volatility of cryptocurrencies and that in general it is not reliable. Consultant 2 thought that both recognition criteria may be difficult to fulfill, but *"if you have cryptocurrencies you will probably have some economic benefit by holding it by using it as a mean of payment or make gains on it"*. However, the measurement can be difficult for cryptocurrencies other than Bitcoin which has a realized market. IFRS-expert 1 again highlighted the importance of understanding what rights the company have and based on that a decision can be made whether the recognition criteria can be met. IFRS-expert 1 said "*It is back again to understanding the legal rights and obligations from the issuing document, otherwise you cannot do the accounting I think".*

5.3.4 Valuation

The valuation of cryptocurrencies has been one of the issues brought up by most of the participants as one of the biggest challenges. The valuation method depends on which standard is applied to cryptocurrencies in the first place, but there are still issues which need to be resolved. Consultant 4 suggested: "*I would look into the market value, always, because there is no other way to do it*" and that the market value should be based on an average price from the biggest cryptocurrency exchange platform, or on the lowest found price from these platforms. In addition, in the case of cryptocurrencies being classified as inventory, Consultant 4 believed that the first in first out (FIFO) method should be used. The biggest challenge in the valuation was according to Consultant 3 the timing of the valuation. Since the price of cryptocurrencies fluctuates constantly one needs to decide when the valuation should be made, and which exchange platform the valuation should be based on. Consultant 3 believed some sort of rules should be applied to the exchange platforms to facilitate a standard for the derived prices. Consultant 2 made a contrast of the valuation between the big cryptocurrencies such as Bitcoin and Litecoin and smaller cryptocurrencies and tokens. It was suggested that for the bigger cryptocurrencies the price when the cryptocurrency was bought should be used at the initial measurement, and at subsequent measurements the market price should be used. For tokens Consultant 2 believed the valuation is more difficult both at initial- and subsequent measurements.

IFRS-expert 1 discussed different scenarios where different valuation methods may be appropriate, but also says that everything depends on which standard is applied in the first place. IFRS-expert 1 said *"as long as I can find the right place to put my item under IFRS, I would just use that standard and go through the decision tree and work the accounting out".* So, the valuation method depends on the asset classification which determines if it should be measured at cost or at fair value. It was suggested that if the cryptocurrency is traded on the market, there is an active market for it and the purpose of the holding is to trade, then it should be valued at fair value. In such case, IFRS 13, fair value measurement standard should be utilized to determine the fair value. However, the determination of the fair value can be difficult according to IFRS-expert 1, but there is guidance on what methods can be used in IFRS 13 that can help to determine the value. The other discussed scenario was when there is no active market for the asset, in that case the asset should be kept at cost and the company should actively make sure that it is not impaired. An example was provided in the case when cryptocurrencies are classified as inventory, then they are normally measured at cost initially and at subsequent measurements if the value in the marketplace is lower than in the books then an impairment of the inventory must be made.

Consultant 4 who previously has worked as an auditor has had colleagues who worked with the auditing of companies holding cryptocurrencies where there often was a conflict between the auditor and the client on the valuation. The client wanted the higher valuation of the cryptocurrency and the auditor wanted the lowest valuation because of the uncertainty of the future of cryptocurrencies. Moreover, there was a disagreement on the valuation methods between the auditors because of a lack of knowledge, no research on the area and no applicable standards.

5.3.5 Subsequent measurements

When the informants were asked about the subsequent measurements such as depreciation, amortization and impairments the responses mainly revolved around impairments. Both Consultant 4 and IFRS-expert 1 said that according to financial reporting standards impairment tests should be performed when there is an indication for impairment. IFRS-expert 1 said it also depends on how often the company issues financial statements and that you must always have an updated cost or fair value measurement. Consultant 4 said that unless there is not an indication for an impairment during the year, it must always be evaluated at the balance sheet date. It was then suggested by IFRS-expert 1 that one would look into the marketplace to calculate the value of the cryptocurrency and if it is lower than the value in the books it would be seen as an impairment indicator. Consultant 2 highlighted the importance of impairment tests in the case of an active market and believes that from an audit perspective the main concern would be that you could defend the value in the balance sheet. Furthermore, in the case of assets that have a complex nature which is difficult to understand and measure, then good arguments for the value in the balance sheet are needed.

5.4 Revenues

The respondents had varying knowledge and experience with accounting for revenues from cryptocurrencies. Furthermore, the suggested accounting treatments made by the respondents were varying. Revenue transactions have not been discussed significantly in

the literature and there is not much guidance for practitioners on how to handle such transactions in the accounting.

There were some issues with the revenue process discussed by all the respondents, for example that there is no real guidance on how to account for it which means that there are no right ways to do it. This issue was highlighted by both Consultant 1 and the Entrepreneur. The Entrepreneur stated that the accounting treatment is based on logic and the most efficient way of accounting since there are no regulations. In addition, the Entrepreneur has not experienced any problems with the accounting treatment and thought that regulators are satisfied with an accounting model based on logic and in which an effort has been made. Furthermore, Consultant 1 said that there are a lot of steps in accounting for revenues from cryptocurrencies and there are no correct ways of doing it and emphasizes the issue of not knowing if the used accounting treatment is correct.

5.4.1 Accounting process

Consultant 1 is working with a client accepting payments in cryptocurrencies and explained the process by which this client accounts for its revenues from cryptocurrencies. It was explained by Consultant 1 that a revenue portal is used which is like a digital wallet similar to PayPal. In this revenue portal the client can have different cryptocurrencies and fiat currencies, there can be revenues from for example Bitcoin and Ethereum, and simultaneously holdings of a fiat currency in the same wallet in which transaction fees are being charged. The process by which Consultant 1 accounts for revenues is described in figure 6 below. It should be noted that this is not an absolute way of accounting for revenues, but the way Consultant 1 accounts for the revenues for his or her client.

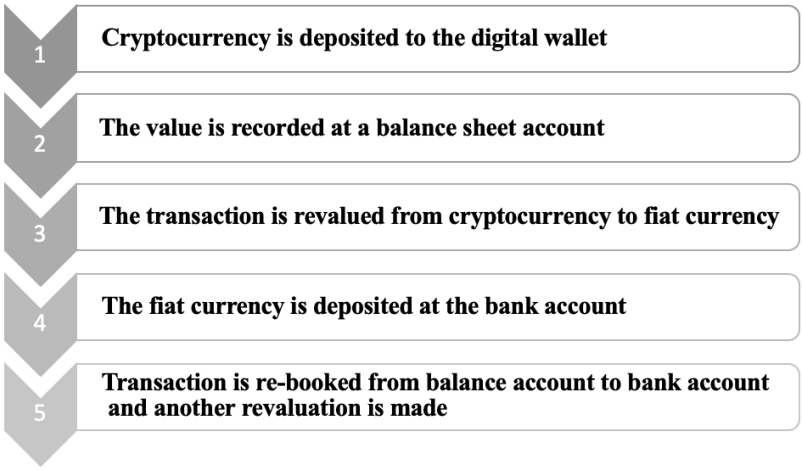

Figure 6 - The process of accounting for revenues from cryptocurrencies as suggested by Consultant 1.

In this process there are several issues which need to be resolved. There are many possible differences in exchange rates in this process which are highlighted by Consultant 1. Firstly, there can be a difference in the value of the cryptocurrency from the day it is transferred to the revenue portal to the day it is exchanged to a fiat currency and withdrawn from the revenue portal. To avoid this difference, it was suggested that as soon the cryptocurrency is received it should be transferred to a fiat currency to avoid the

differences in exchange rates and possible fluctuations in price. There is also an issue if a company has several cryptocurrencies and fiat currencies in the same wallet which must be compressed. Consultant 1 expressed "*there is a very big currency exchange valuation difference that is a problem"*. It was explained that in the second and third stage of the process a valuation must be made to a fiat currency, based on for example the information in the revenue portal. When the cryptocurrency is withdrawn from the digital wallet and deposited into the bank account another valuation must be made. A key issue highlighted was the need of judgement to determine when there is a value change in the cryptocurrency and when there is change in value of the fiat currency. This is also one of the main differences between accounting for revenues from cryptocurrencies and fiat currencies which was suggested by Consultant 1. It was said that with transactions in fiat currencies it is easier to identify when the change in value occurs which makes it easier to value the currency correctly. In addition, verifying account balances at the closing of books becomes more difficult when transactions are made in cryptocurrencies compared to fiat currencies.

The Entrepreneur proposed a different way of accounting for revenues. The method suggested is to get a report from all transactions made including dates and values of transactions. Thereafter an average exchange rate derived from different exchanges would be used to book the value of the revenue. It was also said that this is how other companies are accounting for it. In addition, the Entrepreneur mentioned that it is an advantage that you cannot notice that the company is using cryptocurrencies in its financial statements.

Different accounting methods were suggested from the respondents who did not have any practical experience from accounting for revenues from cryptocurrencies. There were divergent views on the complexity of accounting for revenues from cryptocurrencies, Consultant 4 thought there are no major differences from accounting for revenues from cash while the other respondents highlighted several issues which need to be resolved. Consultant 3 believed that the difficulty lies in the currency exchange transactions that need to be made back and forth. Consultant 2 thought one challenge lies in the more technical transactions rather than the more traditional revenue transactions which can be based on the traditional accounting framework for such transactions. In addition, Consultant 2 said, "*I would say that the biggest question is when you recognize the revenue, is it when you receive cryptocurrencies or when it is converted to fiat money?"*. Consultant 2 suggested that if the recognition criteria are fulfilled the recognition and valuation of the revenue should be made at the point when the revenues are received. This view was also shared by Consultant 3 and the Entrepreneur, who thought it was important to record the revenues on the day which the cryptocurrency payment is received.

The revenue issues discussed by IFRS-expert 1 and IFRS-expert 2 mainly revolved around which valuation method should be used and the difficulties in determining the value of the revenues. Two scenarios were discussed by IFRS-expert 1: when the cryptocurrency received has a listed market price and when no such market price is available. In the case of an available market price IFRS-expert 1 believed that the cryptocurrency should be measured at a transaction price resembling the listed market price. If no market price is available it was suggested that the method of accounting for barter transactions should be used, which is the fair value of the good or service which has been transferred. Consultant 4 discussed similar procedures and stated that the valuation of the revenue should be derived from the market value of what the payment

would have been worth in cash. Both Consultant 3 and Consultant 4 believed that the transaction price should be the same as what the price would have been in a fiat currency. IFRS-expert 2 stated that the valuation problem also depends on whether it is determined beforehand that the payment will be made in cryptocurrencies or if it is an elective payment method.

In addition, IFRS-expert 1 discussed the importance of an understanding of why a company is accepting cryptocurrencies as a payment method, which can give an indication to how the valuation should be performed. It was also suggested that it should be asked why the company do not prefer payments in cash instead, and how much cash the client would have preferred instead of a cryptocurrency. This would then give an indication about the value of the cryptocurrency. Another issue discussed by both Consultant 3 and Consultant 4 were the problems with adding VAT in the transaction price since the VAT must be stated in a fiat currency. Consultant 4 also thought that many businesses accepting cryptocurrencies tend not to pay taxes for these types of transactions.

5.4.2 Credit times

The respondents were asked to discuss issues which could occur when there is credit time involved in the invoicing of goods or services and payments are expected in cryptocurrencies. IFRS-expert 1 said that the initial thought is to account for it at the same way as if it would be an invoice in Euros and the functional currency is Swedish Kronor. The value after the credit time might be different, resulting in a gain or loss which needs to be recognized in the income statement. Consultant 4 agreed with this and suggest that the possible difference in the value should be recognized in an account for currency exchange differences. Consultant 1 on the other hand, said that the value change should not be recorded as gains or losses in currencies. Instead the transactions need to be separated and be accounted for in accounts such as changes in cryptocurrency since cryptocurrencies are not classified as currencies. Consultant 2 also discussed the issues with credit times and involving accounts receivables and states that the accounting treatment is more complex when accounts receivables are involved compared to receiving the payment straight away.

5.4.3 General issues discussed

There is an uncertainty aspect related to accepting cryptocurrencies as a payment method which was mentioned by IFRS-expert 1. The uncertainty lies in having cryptocurrencies in a digital deposit which someone else is governing, how certain can a person then be that the deposit actually exists and that those cryptocurrencies are used. IFRS-expert 1 said "*because if you do not think you can control your asset, you have a big piece of a problem"*. However, it was mentioned that this is more of an audit problem, rather than an accounting problem. Additionally, in the case of holding crypto-tokens there can be an additional process which needs to be acknowledged, for example if these crypto-tokens only can be used for certain things, which will affect the measurement of the revenue too.

Consultant 3 said that if cryptocurrencies could be classified as currency then the number of issues would be reduced. In such case the digital wallet in which the cryptocurrencies are held in would be used as a foreign currency account which means that one could buy and sell products and services with the currency and the balance would be valued on the balance sheet date. Thus, the balance at the account would only need a valuation at the balance sheet day and not after every transaction as it is suggested today.

5.5 Disclosures

When the interviewees were asked what companies should disclose in their financial statements different views are discussed. Additionally, the views differed when a participant with an accounting perspective and a participant with entrepreneurial perspective were asked. However, all participants were aware that there are formal requirements which need to be followed.

IFRS-expert 1 stated that it is natural in several way to have additional disclosures. Firstly, IFRS-expert 1 believed that it should be stated how a company has decided upon the selected accounting policy for cryptocurrencies. IFRS-expert 2 agreed on this, in addition, it was also deemed that details about the cryptocurrencies should be disclosed at the balance sheet date. IFRS-expert 1 continued and said that if there are cryptocurrencies in the company's balance sheet the same disclosure requirements should be used as for any other assets within same asset category. IFRS-expert 1 gave an example of this: "*if I have an intangible, I would apply the disclosure requirements in that standard*". However, IFRS-expert 1 added that when it comes to cryptocurrency companies, they need to be very explicit of what these cryptocurrencies are, so people who read financial statements understand the cryptocurrencies. Furthermore, IFRS-expert 1 discussed requirements under IFRS and more specifically IAS 1 and 8, to explain above and beyond what the standard requires. This is done to ensure that people understand the transactions, assets, liabilities, the performance of the company as well as the financial stability of the company and the position the company is in. IFRS-expert 1 concluded: "*Besides just applying relevant standards I would make sure that the reader of those financial statements would understand what these assets and liabilities are*".

Some of the participants would rather not disclose information about cryptocurrencies in financial statements. This view was shared by Consultant 1 and the Entrepreneur. Consultant 1 stated that if an entity's business itself is not about cryptocurrencies, the client would not be guided to disclose information. Additionally, Consultant 3 stated that smaller companies are not required to disclose information about cryptocurrencies in the same way as bigger companies. The Entrepreneur was aware that a certain amount of information needs to be disclosed to keep the activity of the company transparent. However, the Entrepreneur would rather not mention that cryptocurrencies are used in the company at this point in time. This is mostly because of safety reasons, the Entrepreneur stated, "*…lately the crypto scene has gotten more and more popular and it attracts all kind of bad people who might want to take advantage of by hacking or steeling your cryptocurrencies*". Nonetheless, the Entrepreneur was conscious that this is contrary of what the regulators want, which is the maximum amount of information.

However, not all the participants have seen cryptocurrency related disclosures yet and are uncertain about the formal requirements which should be applied. Nevertheless, these participants believed that companies should disclose information that the user of financial statements would find relevant and useful when making financial decisions. Furthermore, clients would be guided to look more closely at the formal requirements from the IFRS standards which was in line with what IFRS-expert 1 said. Consultant 4 gave an example of a situation when cryptocurrencies are classified as inventory in the balance sheet and in this case disclosure requirements are followed in accordance to IAS 2. However, there are not that many requirements in IAS 2, nevertheless, based on the Conceptual Framework there is a need to clarify how the asset is valued. Consultant 3 brought up the

legal side of disclosing information and the aspect how accounting laws will shape the requirements and practices for disclosures. However, it was highlighted that no one knows how the legal changes will affect the requirements and practices yet, even though the process is changing at the moment.

IFRS-expert 1 mentioned an IFRS standard regulating risk disclosures when it comes to different sorts of operating risks. IFRS-expert 1 continued. "*I mean, it would make sense that if a company trades in or in any other way is involved in cryptocurrencies, explain the risks of those, because it is an unfamiliar territory for most investors and creditors and I think that would be something that naturally I would think that companies who issue financial statements and have cryptocurrencies would display anyway*". In addition, IFRS-expert 1 discussed the possibility of implementing new requirements, where a company would disclose the nature of these asset and the risks in having them. It was suggested that this could be the solution during a transition period when there is no guidance.

Stakeholder view

When the informants were asked to speculate what stakeholders want to know when reading financial statements similar issues emerged. Speculations introduced themes such as the reason for holding cryptocurrencies, value changes and the risk related to the valuation.

IFRS-expert 1, Consultant 2, and Entrepreneur were discussing that stakeholders foremost need to understand why the company is holding cryptocurrencies. IFRS-expert 1 believed that stakeholders need to understand what it is in the company's operations creating these assets and why the company holds them. In addition, the Entrepreneur believed that it is also important to understand if a company is selling cryptocurrencies to fiat money to cover expenses. Consultant 2, 3 and 4 thought that is important to understand what kind of cryptocurrencies the company holds, so they can make their own judgements. Furthermore, Consultant 4 stated, "*If I were a stakeholder, I would really like to know how much cryptocurrencies the company holds*". Whereas Consultant 3 believed that investors should be interested how the company is handling cryptocurrencies and based on that determine whether the company is trustworthy or not.

Furthermore, the respondents discussed the valuation of cryptocurrencies. Consultant 1 believed that stakeholders would be interested in the negative and positive changes in the value of cryptocurrency. IFRS-expert 1 stated, *"...stakeholders would need to understand how cryptocurrencies are valued, how risky they are and how volatile is that value"*, whereas Consultant 4 stated, "..*it is really tricky when it comes to valuation, since the fluctuations are really big and a lot can happen in just a couple of days*". In addition, Consultant 2 thought that the initial measurement should be mentioned. Consultant 3 agreed with the importance of disclosing information about the valuation when thinking from the stakeholder perspective.

IFRS-expert 1 concluded the themes covered by stating: "*The stakeholder need to understand why we have cryptocurrencies, what right they give, and how are they valued, and what the risk in that valuation is, I think these are the central themes that someone wants to know*".

5.6 Risk factors

The respondents were asked several questions related to the possible risks with holding or accepting cryptocurrencies as a payment method. One of the asked questions was whether holding or accepting cryptocurrencies could send any warning signals related to for example illegal activities or earnings management. The volatility of cryptocurrencies is a risk factor according to Consultant 3 since it can result in an overestimation of the value which result in hidden risks in the balance sheet. In addition, the hidden risks make it harder for stakeholders to determine if the company is healthy or not and that the company is not hiding assets. Consultant 2 believed this is a great challenge since no training is provided to deal with such questions. Furthermore, Consultant 1 deemed that the riskiness of the company depends on a full picture, rather than only the fact that the company has activities related to cryptocurrencies. According to Consultant 4 there are risks related to the complexity of transactions and there is a need for a system to manage transactions to ensure they are recorded correctly. IFRS-expert 1 saw a raised suspicion with cryptocurrencies since people do not know how these cryptocurrencies work in a non-regulated marketplace which creates a problem. In addition, there is a general distrust that cryptocurrencies would be used for non-legit purposes, such as on the black market, for money laundering or for less legitimate businesses. On the contrary, the Entrepreneur said, "*Cryptocurrencies have had a bad reputation because of the media, and I think it is intentional".* It was suggested that the bad reputation have occurred since certain parties such as the legal system want to buy more time. Additionally, the Entrepreneur discussed the fact that fiat currencies are "*by far the most used medium for money laundering and most of the money launders are working under a banking license"*. The Entrepreneur instead wanted to highlight the benefits of cryptocurrencies, such as the ability to track all transactions because of the immutability of the general ledger. However, IFRS-expert 1 raised the question of *"why don't you use cash if there is cash available, that is governed and controlled?".* A suggested concern was the lack of regulation and federal reserve which takes care of the cryptocurrencies, which according to IFRS-expert 1 attracts a darker element of the financial industry. Consultant 3 saw some issues with the safety of cryptocurrency wallets, concerns such as who is managing the digital wallet and who can guarantee the safety of the wallet. In addition, it was pointed out that Consultant 3 has seen every possible way which a cryptocurrency can be lost in, and that there is no digital wallet which is completely safe.

When the informants were asked if cryptocurrencies could affect the rejection or acceptance of a client a majority of the informants believed that just holding cryptocurrencies should not be a factor which could affect the decision. However, Consultant 4 said "*yes we would reject a client just because they have cryptocurrencies".* Nevertheless, it was stated by Consultant 4 that a risk assessment is always made, but there is always a question about whether the client holds or accepts cryptocurrencies since it is viewed as a risk factor. It was believed that an evaluation needs to be made to determine if there could be any problems connected to the cryptocurrencies, for example if there is debt connected to the cryptographic asset. It was suggested by IFRS-expert 1 that it is rather the underlying business model than the holding of a cryptocurrency which would affect a possible rejection of the client. Consultant 1 agreed with this statement and believed it would depend on other circumstances. IFRS-expert 2 also believed it is not a specific factor affecting the rejection of a client, but it could indirectly affect it. What should be taken into consideration when deciding about acceptance or rejection of a client according to IFRS-expert 1 is the way the client conducts business and make sure

that accounting wise it is treated in an acceptable way. In addition, there should be disclosures which states how the cryptocurrency works, the purchase price, the marketplace, the volatility and the riskiness of the cryptocurrency. However, if the client would hold cryptocurrencies which are unfamiliar and not understood by the accounting firm then that could cause the business setup being subject to a red flag.

5.6.1 Different advice for different cryptocurrencies

When asking if accounting advice for different types of cryptocurrencies could vary, the respondents had different views. IFRS-expert 1 said that different cryptocurrencies may need more help or attention depending on how complicated or unfamiliar the cryptocurrency is, but there would not be different accounting advice. It was suggested that you should "*go through the decision tree and put it in a bucket and apply that model and describe that in your financial statements".* Consultant 2 differentiated between tokens and cryptocurrencies and said that having tokens possesses a higher risk than cryptocurrencies. In addition, it was deemed that there are higher risks with other cryptocurrencies than Bitcoin. Consultant 3 agreed with this statement since many practices can be applied to Bitcoin but might not be suitable to the smaller cryptocurrencies. Furthermore, it was stated that it is more difficult to apply rules and regulations to the smaller cryptocurrencies compared to Bitcoin. In addition, if the cryptocurrency is small the valuation is more difficult. Consultant 3 also said that "*some cryptocurrencies are only for the criminals"* and advises clients to be careful with other cryptocurrencies than the major ones.

5.6.2 Interpretation from IFRIC

There are some risks associated with the issuance of the agenda decision from IFRIC since it is not a standard which is mandatory to apply. IFRS-expert 1 said that on one hand when something like this is issued people will read it and align with it because people are looking for guidance. On the other hand, since it is not mandatory it can still be disregarded which according to IFRS-expert 1 is a nightmare for an accountant. Furthermore, the result may be different accounting policies in the same marketplace which is not great for financial markets. This statement was also agreed with by Consultant 4 which saw risks of making your own interpretations of what accounting principle should be applied when there are no clear recommendations. However, IFRS-expert 1 thought the issued interpretation is better than nothing but disliked when there is a gap between what is mandatory and what is not. Nevertheless, questions may arise if a company is not following the recommendations since it comes from a standard setting organization, but simultaneously it is not mandatory to follow the recommendations since it is not an IFRS. Consultant 4 would rather see a recommendation clearly stating how it should be done rather than this is how it can be handled it, but it is not required. Another issue suggested by IFRS-expert 1 was that companies do not know about the agenda decisions because they only follow the IFRS standard book, and EU law states that it is IFRS which should be followed. This results in an uncertainty which was expressed by IFRS-expert 1 as "*it makes the world uncertain, and uncertainty costs, so it is not great for capital markets to have sort of a quasi-GAAP alongside a mandatory GAAP".*

5.7 Future

Participants were asked to express their thoughts about the future for cryptocurrencies, both from general and regulatory perspective. Contradictory predictions were given about

the popularity of cryptocurrencies, in which some believed cryptocurrencies will be the next big technological innovation and others were more uncertain about the future of cryptocurrencies. However, almost all participants agreed that there will be an accounting standard for cryptocurrencies in the future.

"*I think the cat is out of the bag and you cannot stop it anymore*", the Entrepreneur believed that there is a future for cryptocurrencies and like internet it will come but it will take time. Both IFRS-expert 1 and the Entrepreneur discussed about regulators lagging behind the technology and the need for catching up, when it comes to both legal regulations and the accounting standards. IFRS-expert 1 thought that down the line accounting models need to be found which are treating cryptocurrencies and it is believed to be probable that these accounting models will evolve when legal requirements surrounding cryptocurrency assets will evolve. IFRS-expert 1 further stated that accounting can sometimes be a bit slow, since it reacts to things which are already happening. IFRS-expert finished by concluding: "*Tech people will evolve first and create things, from that we will have national law or international law coming in regulating this, we will probably have regulations in financial market places as well, we might have tax regulations coming in, and then I think you would see formal sort of accounting standards evolve*".

Almost all the participants were positive to the implementation of an IFRS standard for cryptocurrencies. For example, Consultant 1, 2 and 3 were stating the following: "*I think there will be a standard in the future*", "*Definitely there will be standard for cryptocurrencies*" and "*Probably there will be more regulation from IASB that will regulate how it should be handled*". However, Consultant 2 was uncertain whether this technology will be groundbreaking, since it was believed that no one really fully understands how it works and where is it going. Consultant 1 continued with a thought that there will be a lot of legal cases in the future, which will give preconceptions on how to deal with the situation. Consultant 3 also highlighted the future legal rulings which will change the existing procedures of financial reporting. Consultant 2 shared an audit perspective and believes that audit standards should be adapted to become more suitable for auditing of companies holding cryptocurrencies. Consultant 2 concluded, "*I am glad that I am not advising with accounting, they have to do something with the accounting standards and the audit standards*". Consultant 3 pointed out a differing point of view by stating that there might not be need for new rules if cryptocurrencies would be classified for example foreign currency. Existing rules used for foreign currency could be applied to cryptocurrencies and thereafter there would not be a need for new rules. A suggestion made by Consultant 4 was to have a fund in the balance sheet for potential future losses connected to cryptocurrencies since value fluctuations are big and a lot can happen with the value just during a few days.

The Entrepreneur thought that cryptocurrencies are still somewhere in between of denial and fighting. However, it was deemed that cryptocurrencies will be moving toward the mainstream when the regulators really start to fight against cryptocurrencies. Consultant 4 stated, "*Probably there will be more clarifications on how we will handle it forward because this is not an area that will be disappearing in a couple of years*". The discussion continued with a conversation about institutions investigating into how you can pay with cryptocurrencies and other blockchain techniques. Consultant 4 stated, "*Probably there will be more clarifications on how we will handle it forward because this is not an area that will be disappearing in a couple of years*". It was also believed that clarifications are

needed to avoid questions on how to handle cryptocurrencies. IFRS-expert 2 hoped another clarification will be made by IFRIC on cryptocurrencies to provide more guidance. Finally, IFRS-expert 1 believed that there is a crossroads for the matter on determining whether cryptocurrencies should be a new accounting area with specific treatment or if it should be fitted into one of the existing accounting “buckets”.

Chapter 6: Analysis

This chapter analyzes the empirical results from the interviews and discusses them in the context of the research question and theoretical framework. The answers of the respondents will be analyzed to be able to find correlations and differences and connect those to the theoretical framework. Analysis involves the four different themes: assets, revenues, disclosures and risk. The themes further include aspects such as uncertainty, different viewpoints and uncovered themes.

6.1 Introduction to analysis

Cryptocurrencies are a new technology which has emerged during the last 10 years and regulation of cryptocurrencies have increased in importance. Cryptocurrencies are used for different purposes, for example they remove the need for a financial intermediary which is attractive for some, others hold cryptocurrencies for investment purposes because of their volatility. The growing usage of cryptocurrencies is increasing the need for applicable accounting regulations, and as it grows, so does the need for regulations. At its peak the market capitalization of cryptocurrencies was of the size of Switzerland's GDP, which is the 19th largest in the world (Haig, 2018). It is argued that the market for Bitcoin alone is significant enough to warrant action from standard setters (AASB, 2016, p. 6). Thus, there is an evident need for regulations to avoid unfortunate consequences for stakeholders, financial markets, accounting firms and regulators. Regulations will help reduce uncertainty and ultimately provide relevant and useful financial information to users of financial statements, which is the purpose of financial reporting.

The varying answers from the respondents regarding most of the challenges with accounting for cryptocurrencies indicates that there is an uncertainty in the area amongst practitioners. Furthermore, the literature available reaches similar conclusions about for instance asset classification. However, there seems to be a gap between the knowledge of practitioners and the suggestions made in literature. Moreover, because of the infancy of accounting for cryptocurrencies, it is not expected that it is a widespread knowledge or practice applied by many. However, it is believed that if the respondents would have been given the correct asset classification then the subsequent procedures would have been discussed with greater confidence. Nevertheless, it was not expected that discussions would go into specific paragraphs in the standards, but rather provide an overall perspective. In addition, the respondents had different experiences and perspectives to the matter which resulted in different suggestions. These different perspectives provide a breadth to the topic by including viewpoints from the small entrepreneur to accounting specialists who have many years of experience from applying standards.

In general, there were several questions that the respondents did not know the answers to or where it was elaborated about the issues at broad rather than based on experience. However, the fact that there was not a lot of knowledge also provides an answer to this research and indicates that it is a complex area with a lot of uncertainty. Another explanation for this may be the lack of guidelines to apply to cryptocurrencies, resulting in a high degree of subjectivity in the accounting for cryptocurrencies. This subjectivity can be a risk which can open up for possibilities of earnings management.

6.2 Assets

6.2.1 Asset classification

The suggestions made by the respondents regarding asset classification ranged from financial assets, intangible assets, inventory and cash. These are the same classifications which have been discussed in the literature, thus, the respondents have some basic knowledge on which standards can be applied, however, some classifications cannot be applied because of restrictions in the standards.

The possibility of classifying cryptocurrencies as financial assets was discussed by several of the informants. The definition of a financial instrument is "*any contract that gives right to a financial asset of one entity and a financial liability or equity instrument of another entity"* (IAS 32.11). Furthermore, a financial asset is referred to as cash or a contractual right to receive cash or another financial asset from another entity (IAS 32.11). In the agenda decision issued by IFRIC it is stated that cryptocurrencies do not give rise to a contract between the holder and another party (IFRS, 2019). It is also concluded that cryptocurrencies cannot be classified as financial assets since it is not cash, an equity instrument of another entity or give rise to a contractual right. The view that cryptocurrencies cannot be classified as financial instruments or financial assets is shared by a majority of the literature (AASB, 2016, p. 12; CPA, 2018, p. 7; Deloitte, 2018, p. 12; Grant Thornton, 2018a, p. 5; IFRS, 2019; Procházka, 2018, p. 166; PwC, 2018, p. 5). Thus, the literature arrives at one conclusion, but some of the informants have contrary views.

Nevertheless, even if cryptocurrencies are not within the scope of IAS 32 or IFRS 9 today, the possibility of amending the standard was discussed by IFRS-expert 1. However, if such an amendment would occur then cryptocurrencies would have needed to be backed by a government or be generally accepted according to IFRS-expert 1. AASB (2018, p. 10) shares a similar view and states that for cryptocurrencies being able to be classified as a financial asset, the central issue is it not being backed by a central bank or being classified as legal tender. Furthermore, Procházka (2018, p. 167) believes that even though cryptocurrencies do not meet the definition of a financial asset or instrument, they still have the surrounding economic factors comparable to trading with financial instruments. Based on this and the discussions by the informants there may be an indication that cryptocurrencies have similar characteristics as financial assets but do not meet the definition of a financial asset. Furthermore, an amendment of the standard as discussed by IFRS-expert 1 may be suitable to encompass cryptocurrencies and hence solve problems of cryptocurrencies having the characteristics of financial assets but not meeting the definition of such. It needs to be determined whether classifying cryptocurrencies as financial assets may provide more useful financial information rather than classifying it as for example intangible assets or inventory.

The second asset classification discussed was cash or currency, which it was deemed by Consultant 2 and Consultant 3 that cryptocurrencies could be classified as. Based on the literature the conclusion reached is that cryptocurrencies do not have the characteristics of cash since it is not backed by a government or state (PwC, 2018, p. 5) and cannot be used as a medium of exchange (CPA, 2018, p. 6). Furthermore, cryptocurrencies cannot be used as a monetary unit in price setting (IFRS, 2019). The view that cryptocurrencies cannot be defined as cash was highlighted by Consultant 4 who believed it was generally agreed upon that it could not be defined as cash. However, there are situations which are

recognized by Procházka (2018, p. 166) where cryptocurrencies could be defined as cash. Furthermore, all cryptocurrencies have different characteristics, where some of the bigger cryptocurrencies could partly meet the definition of cash, while small ones may not have enough trust for them to even be considered as a medium of exchange. Furthermore, AASB (2016, p. 10) argues that as cryptocurrencies gain acceptance the belief that it cannot be accounted for as cash may change. A classification related to cash which was not mentioned by any of the respondents was cash equivalents. However, for an asset to be classified as a cash equivalent it cannot be subject to significant risks in value. Nevertheless, based on the views expressed by the informants of the issues with the volatility of cryptocurrencies, it may not be appropriate to classify it as cash equivalents.

What is concluded in the literature is that there are two possible asset classifications for cryptocurrencies, inventory and intangible assets. Both IFRS-expert 1 and 2 mentioned these classifications, but only one of the other respondents mentioned one of the classifications as possible. This indicates that there may be a knowledge difference between accounting specialists and consultants or similar working closer to clients while accounting specialists provide guidance and are required to know the accounting treatment in a broad range of standards. It is believed that consultants have client specific knowledge rather than an overall knowledge, and it may be difficult to think outside of the context of a client. Furthermore, both IFRS-experts are members of regulatory bodies where cryptocurrencies have been discussed, thus, they may have a broader understanding and knowledge about the area.

Consultant 4 believed cryptocurrencies should in most cases be classified as inventory. However, according to IFRS (2019) cryptocurrencies can only be classified as inventory when they are held for sale in the ordinary course of business. It is suggested by Deloitte (2018, p. 15) that an entity needs to demonstrate that its business model is coherent with holding cryptocurrencies for sale in the ordinary course of business for it to be classified as inventory. As stated by IFRS-expert 1, the asset classification of cryptocurrencies is very circumstantial, and this is one of the factors affecting the asset classification. In addition, IAS 2 has a scope exception regulating the accounting for inventory in the case of the entity being a commodity broker-trader (Deloitte, 2018, p. 15). Commodity broker-traders have the purpose of generating profits from fluctuations in price resulting from buying or selling commodities. In accordance with the guidance provided in the literature, this scope exception could be applied to cryptocurrencies. This was not explicitly mentioned by any of the participants, however, Consultant 4 discussed the possibility of financial companies to classify their stocks as inventory, which is somewhat in line with a commodity broker-trader.

The final asset classification suggested was intangible assets. According to IFRS (2019) IAS 38, intangible assets is applicable to cryptocurrencies when they are not held for sale in the ordinary course of business, thus, when IAS 2 does not apply. Intangible assets as a classification was not extensively discussed by the respondents, but rather mentioned as a possible classification. Both IFRS-experts suggested that cryptocurrencies should be classified as intangible asset, however, it was not mentioned by any of the other participants. It could be speculated whether it is believed that classifying cryptocurrencies as intangible assets is a far-fetched classification not in line with the economic substance of cryptocurrencies, and thus, few suggestions are made about such classification. Furthermore, it is argued that even though cryptocurrencies meet the definition of an intangible asset, it does not provide relevant and useful financial information (AASB,

2018, p. 13). Grant Thornton (2018a, p. 8) shares this view and states that applying IAS 38 to cryptocurrencies does not provide satisfying and intuitive results. In addition, there are many challenges which needs to be resolved when it comes to determining whether cryptocurrencies meet the definition of an intangible asset, the initial and the subsequent measurements. However, neither of the challenges brought up in the literature were discussed by any of the respondents. One issue mentioned by Deloitte (2018, p. 14) is determining whether there is an active market for cryptocurrencies when deciding upon which subsequent measurement method should be used. This is an issue that needs to be resolved when it comes to all valuations and can be related to the challenges of determining the reliability of market prices (Procházka, 2018, p. 182).

In general, what needs to be considered when deciding upon the asset classification of cryptocurrencies is the circumstances surrounding the actual asset classification. It has been highlighted in the literature and by the participants that there is no absolute way of accounting for cryptocurrencies and there are many factors affecting the asset classification. For example, Consultant 2 stated that the purpose of holding the cryptocurrency affects the asset classification. This view is also shared by PwC (2018, p. 3) which suggests that the primary purpose of holding the crypto asset needs to be considered when deciding upon the asset classification. Furthermore, IFRS-expert 1 also emphasized the importance of understanding the cryptocurrency and the surrounding circumstances in all types of accounting treatments. It can be concluded that there are many factors which need to be taken into consideration when determining the asset classification and a thorough understanding is needed.

6.2.2 Recognition of assets

After classifying an asset, it needs to be determined whether this asset meets the recognition criteria. Recognition criteria are not broadly discussed in the literature since it expected that existing standards are used together with judgement to apply the recognition criteria to different situations (IFRIC, 2019). The Big 6 accounting firms state that cryptocurrencies are assets, but it is not further elaborated upon how cryptocurrencies meet the definition and recognition criteria of an asset (Deloitte, 2018, p. 12). The recognition criteria were introduced to the informants when asking them whether there are any issues related to the recognition of an asset. The recognition criteria are the following: "*It is probable that any future economic benefits associated with the item will flow to or from the entity*" and "*The item has a cost or value that can be measured with reliability*" (IASB, 2010, 4.38, p. A40). Different aspects were discussed despite some of the informants did not have a straightforward answer. Regardless of the uncertainty of the respondents they believe that there are problems with both recognition criteria, which were presented to the them. Issues regarding volatility of cryptocurrencies could be a challenge which causes problems with reliability. Measurement for other cryptocurrencies than Bitcoins can be difficult since there might not be a realized market. The legal rights and obligations were also brought up and it was stated that those need to be understood to be able to make the decision whether recognition criteria can be met. It is deemed that the informants provided differing answers since it is up to professional judgement to assess whether there will be any future economic benefit or if cryptocurrencies can be measured with reliability. It is also believed that the type of cryptocurrency a client is holding can affect their personal judgement. Bitcoin has a more stable position than perhaps some other newer cryptocurrency, so it is easier to see future economic benefits associated with Bitcoin.

6.2.3 Valuation

After determining that the asset can be recognized on the balance sheet an initial measurement is made, thereafter subsequent measurement methods are used to determine the value after the initial recognition. The initial measurements of assets were not explicitly discussed by the respondents, there was rather a focus on the different valuation methods which could be used, therefore the valuation is discussed in terms of both initial and subsequent measurements. When following the initial measurement requirements in IAS 2 and IAS 38 the asset should be measured at cost, however, in the case of a commodity broker-trader it is measured at fair value less cost to sell. When it came to subsequent measurements the discussion mainly revolved around impairments of the cryptocurrency. It is assumed that this is because most of the participants did not have the knowledge on what cryptocurrencies should be classified as. However, if there would be a straightforward asset classification it is deemed that the interviewed accounting professionals would have known about the subsequent measurements and which methods would have been applied. Nevertheless, because of the complex nature of cryptocurrency assets it may result in bigger challenges and difficulties which need to be considered in the subsequent measurements and therefore it was more difficult to think in such terms.

Based on the requirements in IAS 2 and IAS 38, the initial and subsequent measurement methods which can be used are summarized in the table below.

Table 7 - Methods for subsequent measurements.

Asset classification	Initial measurement	Subsequent measurement
Intangible assets - IAS 38	Cost	Lower of cost and net realizable value
Inventory - IAS 2	Cost	Cost model or revaluation model

One respondent suggested that in general cryptocurrencies should be measured at cost at initial measurement and in subsequent measurements at market price. This is to some extent in accordance with what the standards require. Cost as an initial measurement applies to inventory and intangible assets, and at subsequent measurement different versions of the market value can be used. The subsequent measurement for inventory is at the lower of cost and net realizable value, where net realizable value is the estimated selling price in the ordinary course of business less costs of completion and selling costs (Deloitte, 2018, p. 15). Thus, the net realizable value is a version of the market value of the cryptocurrency. For the measurement of intangible asset there are two different models; the cost and revaluation model (Deloitte, 2018, p. 13; IAS 38.72). In the cost model the cryptocurrency is carried at the cost less any accumulated depreciation and accumulated impairment losses (IAS 38.74). Under the revaluation model the intangible asset is measured at fair value less any accumulated amortization and accumulated impairment losses (IAS 38.75). When the revaluation method is used the market value is then used to determine the fair value of the asset.

When the market value is used to determine the subsequent value of a cryptocurrency asset there are several issues faced. One issue discussed by Consultant 4, PwC (2018, p. 21) and CPA (2018, p. 17) is the timing of measuring the value of the cryptocurrency. Since cryptocurrency exchanges are always open it needs to be determined what time of the day the valuation should be made. It is suggested by PwC (2018, p. 19) that this can represent a significant accounting policy requiring consistency when applying it. Furthermore, what was also discussed was which exchange platforms could be trusted to determine the fair value of the cryptocurrency. Consultant 4 provided an interesting aspect to this uncertainty by suggesting that if an average value of the cryptocurrency could not be found, then the lowest value found should be used. This represents a more conservative accounting policy which is often preferred by auditors according to Consultant 4. Moreover, in the case of using the revaluation model to measure intangible assets, it needs to be established that there is an active market for the asset (Deloitte, 2018, p. 14). The existence of a market or exchange for the cryptocurrency is not enough for it to be an active market, but an evaluation needs to be made to determine that there is enough frequency and volume of transactions to provide accurate pricing information. The determination of the existence of an active market is needed in all fair value measurements, thus it is one of the basic determinants of whether a fair value valuation is appropriate. Procházka (2018, p. 174) argues that Bitcoin and other major cryptocurrencies are traded on active markets, however, smaller cryptocurrencies often lack enough trading activity for them to be classified as an active market. Consultant 2 agreed with this and says that bigger cryptocurrencies such as Bitcoin have a realized market while for smaller cryptocurrencies or tokens the valuation is more difficult.

Barth (2006, p. 274-275) suggest that fair value measurements meet several of the qualitative characteristics and that it is a superior measurement, based on the suggestions of the informants it seems like this view is shared. Furthermore, it is argued that fair value measurements increase the comparability of financial statements (Barth, 2006, p. 274-275), which is a key consideration to unravel earnings management (Dichev et al., 2013, p. 1).

IFRS-expert 1 discussed a general practice which should be applied to the valuation of cryptocurrencies and differentiates between two situations, when there is an active market and when there is not. When there is an active market a fair value measurement should be used and accounted for in accordance to IFRS 13, fair value measurement. When no active market is available the asset should be kept at cost and be tested for impairments when needed. This valuation method applies to both inventories and intangible assets in general and is in accordance with the requirements of IAS 2 and IAS 38.

The subsequent valuation methods are foremost applied in the case of indications of impairments. When determining whether an intangible asset is impaired it first needs to be decided whether the asset has a finite or indefinite life (Procházka, 2018, p. 174). This practice was not discussed by any of the respondents but need to be considered in the case of possible impairments for intangible assets. If the intangible asset would have had a finite life, then amortizations would have been conducted instead of impairments. It is argued that since cryptocurrencies are designed to act as a store of value over time there is no foreseeable limit to the period over which it is expected to generate cash inflows to the entity (Grant Thornton, 2018a, p. 8). Impairment tests should be conducted whenever there is an indication that the asset may be impaired (IAS 36.8). This was brought up by both Consultant 4 and IFRS-expert 1, and it was also stated that the frequency of issuance

of financial statement also determines the timing of possible impairment tests. It was also suggested that marketplace plays a big role when performing the impairment test. It was recommended by IFRS-expert 1 to look into the marketplace to calculate the value of the cryptocurrency and if the value is lower than the accounted value there is an impairment indicator. The discussions about impairment testing were in accordance with the requirements in the standards.

6.3 Revenues

In the process of accounting for revenues from cryptocurrencies there are no guidelines or regulations to be followed by the preparer of financial statements. This was evident in the interviews as the suggested ways to account for it differed significantly, and it was also stated by the respondents that in general there is a lack of knowledge on how it should be done. Additionally, several respondents highlighted the issues with not having any clear guidelines, it was expressed by Consultant 1 that one does not know if the accounting treatment is correct because of the lack of guidance.

To account for revenues in accordance with IFRS 15 there are five steps that needs to be considered: identifying the contract, identifying the performance obligations, determine transaction price, allocate transaction price and recognize revenue (PwC, 2016, p. 1-11). What was discussed by the participants mainly revolved around determining the value of the cryptocurrency expressed in a fiat currency. This indicates that in the case of cryptocurrencies to determine and allocate the transaction price are some of the biggest challenges. As for example stated by Consultant 1, it needs to be determined when there is a change in the value of the cryptocurrency and when there is an exchange rate difference occurring because of the several valuations which must be made. Nevertheless, there are many issues that need to be resolved related to the valuation. One issue discussed both by the literature and by the respondents is the timing of recording transactions which is important for initial and subsequent measures. Issues such as what time of the day the measurement should be made at, and from which exchange platform needs to be resolved. CPA (2018, p. 17) and PwC (2018, p. 19) believes this represents a significant accounting policy. Because of the abundance of different exchange platforms, a determination needs to be made to validate which exchanges are reliable and from which reliable values can be derived from. Furthermore, this is important not only in the process of accounting for revenues, but for all valuations that need to be made in the accounting.

In accordance with IAS 21.21 an average exchange rate can be used when exchange rates do not fluctuate significantly. Consultant 4 believed an average rate should be used when making the valuation. However, it can be discussed if cryptocurrencies are one of those assets which fluctuates significantly, and therefore it is not appropriate to use an average price when valuating transactions. Based on what was discussed previously by a majority of the respondents when the volatility of cryptocurrencies is seen as one of the biggest challenges, it may not be appropriate to use an average exchange rate. However, the same issue arises again when determining which exchange platform can be trusted and where the exchange price should be derived from. Consultant 1 who has practical experience from accounting for revenues from cryptocurrencies uses the exchange rates available at the digital wallet at which the client trades at. This is one method that can be used, but it should not be seen as the only way to do it.

A majority of the respondents believed the market value should be used to determine the valuation at the date when the revenues are received. There are two present scenarios in the case of revenues, whether it is a cash sale or a credit sale. In the case of a cash sale and IAS 21 is applied the measurement of the transaction should be based on the spot rate of the transaction at the balance date (IAS 21.21). This is in line with what the respondents suggested, that the market value at the balance date should be used. In the case of a credit sale two valuations need to be made, at initial measurement the spot rate should be used when recording accounts receivable. When the consideration is transferred to the company and the revenue is recognized subsequent measurement methods should be used, at this stage the valuation depends on whether the consideration is classified as a monetary or non-monetary asset (Grant Thornton, 2018a, p. 10). The respondents expressed different views on whether cryptocurrencies could be classified as cash, where Consultant 4 explicitly said that it is not cash and that is generally agreed upon. Simultaneously, Consultant 3 believed it should be treated as foreign currency, thus cash. What is concluded in the literature is that cryptocurrencies are not cash since they are not legal tender, they are not backed by a government or state and they are not capable of setting prices for goods and services (PwC, 2018, p. 5). Hence, according to the literature cryptocurrencies are non-monetary items. Non-monetary assets should be measured at either closing rate or at fair value (IAS 21.23). According to Deloitte (2018, p. 16) in the case of cryptocurrencies fair value should be used as a measurement.

Another issue discussed by the literature is if revenue from cryptocurrencies should be measured in the same way as a non-cash consideration, which is at fair value (Deloitte, 2018, p. 16). This is in line with what IFRS-expert 1 said, that in the absence of a listed market price, the method of accounting for barter transactions should be used, which is the fair value of the transferred good or service.

When gains and losses occur because of differences in the value of the cryptocurrency from the initial recognition to when the revenue is recognized there are differing methods suggested by the respondents and by the literature. Such gains and losses are discussed by Procházka (2018, p. 175) and Tan and Low (2017, p. 233) where it is argued that these gains and losses should be recorded in profit and loss accounts. However, it is not stated whether those items should be separated from other possible gains and losses in foreign currency or if it should be recorded in the same accounts. According to Consultant 1 such gains and losses should be separated from fiat currency exchange differences. Consultant 4 on the other hand, believed it should be recorded as gains and losses in currencies. Nevertheless, different accounting practices may be suitable for different companies, for instance a company having exchange rate differences in both cryptocurrencies and foreign fiat currencies may have a need to separate such gains and losses, while other companies may not have the same need. Another issue related to this which was highlighted by Consultant 1 is determining when the gains and losses occur because of a difference in the value of the cryptocurrency, and when it is an exchange rate difference.

6.4 Disclosures

IFRS standards do not provide any disclosure requirements specifically designed for cryptocurrencies (PwC, 2018, p. 24), therefore the opinions differ between the participants and three perspectives are available on the matter. IFRS-experts knowledge

was in line with the literature, whereas Consultants were still unfamiliar with the requirements and applicable standards. The entrepreneurial perspective preferred not to disclose information at this point of time.

IFRS-expert 1 stated that if there are cryptocurrencies in the entity's balance sheet, the same disclosure requirements should be used as for any other asset in the same category. This can be compared with PwC's report about cryptocurrencies (2018, p. 24), where it is stated that entities should follow the applicable disclosure requirements by IFRS, depending on the accounting classification made by the holder. Furthermore, the general requirements under IFRS are discussed. IFRS-expert 1 also brought up IAS 1 and 8 to explain above and beyond what the standards require. This is done to ensure that people understand transactions, assets, liabilities and the performance of the company as well as the financial stability of the company and the position the company is in. Disclosures are regulated in IAS 1 and it is stated in IAS 1.17c that an entity needs to provide additional disclosures when it is difficult for the users to understand the impact of transactions or events. Nevertheless, no specific paragraphs were mentioned by IFRS-experts and the discussion had more of a perfunctory view. Another interesting aspect was brought up during the interview by IFRS-expert 1 who stated that entities should follow the standards regulating risk disclosures. Market risk associated with cryptocurrencies was also discussed by CPA (2018, p. 12) and PwC (2018, p. 24). This is perceived as an interesting aspect as the riskiness of cryptocurrencies was expressed by several of the participants which can serve as an indication that such disclosures should be included in financial statements.

Common to all informants was that everyone was aware that formal requirements exist, but no one has seen disclosures containing cryptocurrencies, which indicates that entities choose not to disclose information if they are somehow associated with cryptocurrencies. Consultant 1 would not advise a client to disclose information if an entity's business itself is not about cryptocurrencies. Furthermore, it is stated in IAS 1.31 that entities do not need to provide certain disclosures required by IFRS if the information is not material. For example, if an asset is classified as an intangible asset the disclosure requirements of IAS 38 does not need to be followed if the holdings of cryptocurrencies are not material enough. It can be considered whether Consultant 1's statement may refer to materiality. Materiality is an entity specific aspect of relevance and information is material if misstating or excluding it could influence the decisions made by financial statement users (IASB, 2010, QC11, p. A27). The guidance IFRIC released recently suggested that IAS 1.122 can be applied, where judgements made by management regarding the holding of cryptocurrency should be disclosed if those judgements are significant on the amounts in financial statements (IFRS, 2019). These judgements leave room for possibilities of earnings management as materiality is entity specific and one can argue for choices made and hence manipulate earnings. Thus, materiality leaves space for professional judgement within an entity. If information about cryptocurrencies is not disclosed, it is difficult to evaluate what type of accounting treatment has been used for cryptocurrencies and earnings management can be pursuit easier.

Conversely, the Entrepreneur would not disclose any information about cryptocurrencies, since it is not for now mandatory for the smaller companies. It can be discussed from an entrepreneurial perspective whether disclosures provide any benefit for the company itself. The Entrepreneur discussed the fact that cryptocurrencies are often denounced by the media as a tool which criminals use and therefore, they have a bad reputation. For

example, if an entity is associated with cryptocurrencies which are commonly perceived as risky and associated with illegal activities it can be more harmful for entities to disclose information about cryptocurrencies instead of disclosing as little information as possible, since the current system enables it. However, this can be a disadvantage from the stakeholder's perspective. To be able to assess an entity's financial performance stakeholders want to access as much information as possible to be able to determine the state of an entity, which is contradictory to what entities want to reveal and this can be linked to increasing information asymmetry. Nevertheless, to be transparent and disclose as much information as possible can also be an advantage for the entity as stakeholders may gain more trust and the entity can easier attract investments based on well-grounded decisions by the stakeholders. Agency theory and information asymmetry are closely related to disclosures and stakeholders. It is argued that by increasing the amount of disclosed information, a reduction of information asymmetry between management can be achieved (Chandra et al., 2006, p. 234). However, it can be speculated whether additions of disclosure requirements may decrease information asymmetry, but other problems can arise. There are two scenarios that can arise, either the increased amount of disclosures increases the trust in an entity which may easier attract capital, or, transparency of financial statements might make it harder for entities to raise capital because of a skepticism from possible investors.

The informants were asked to conjecture on what stakeholders want to know about cryptocurrencies when reading financial statements. Foremost, IFRS-experts, Consultants and the Entrepreneur all agreed that stakeholders need to understand why the company is holding cryptocurrencies. It was also believed to be important to know what kind of cryptocurrencies the company is holding, and the amounts of cryptocurrencies held. Valuation was raised as an important theme by Consultant 2, 3 and 4, as fluctuations are big, and a lot can happen in only couple of days. It can be argued that both entities and stakeholders are acting based on their own interest. IFRS-expert 1 stated that as a stakeholder one needs to understand why the entity has cryptocurrencies, what right they give, how are they valued, and what the risks of the valuation are. In other words, as a stakeholder one wants to know as much as possible. Whereas, entities at the moment might be alert what should be disclosed since cryptocurrencies are related to illegal activities and all of the stakeholders are not familiar with cryptocurrencies. This can however change in the future if or when cryptocurrencies gain more trust from the users and regulators.

6.5 Risk factors

There are multiple risks related to accounting for cryptocurrencies, it has been mentioned by Raiborn and Sivitanides (2014, p. 33) that there is a high risk for accounting fraud related to cryptocurrencies. One of the main issues is the lack of guidance from accounting standards resulting in different accounting treatments in practice. A non-stringent accounting treatment can open up for possibilities of earnings management or other accounting fraud. When the agenda decision from IFRIC was discussed with the participants it was deemed it would result in some alignment of accounting treatments, but that it also opens up for several risks. A non-mandatory guidance issued from a regulatory accounting body should result in a lower divergence of accounting treatments in the market. However, as it is not mandatory to follow the guidance the same issues may still be present as it can be disregarded. According to IFRS-expert 1 such a situation

is a nightmare for an accountant since it is a quasi-accounting principle present alongside the mandatory accounting principles. Furthermore, this results in an increased uncertainty, and uncertainty costs, not only for accounting firms, but also for financial markets at large because there is a reduction in trust.

The technology and features of cryptocurrencies results in many risks when accounting for transactions made in cryptocurrencies. One risk brought up by Consultant 3 was the volatility of cryptocurrencies resulting in difficulties in valuation where there is a risk of an overestimation of the value of cryptocurrencies in the balance sheet. If such an overestimation is made there may be hidden risks in the balance sheet which impede stakeholders' ability to determine whether the company is healthy or not. This can also open for possibilities of hiding assets and be used as a mean to conduct earnings management. This may result in several risks, not only with possibilities of earnings management, but also with an increased information asymmetry between management and stakeholders.

There is a strong correlation between accounting and taxation, however taxation authorities and other regulatory bodies seem to be ahead of accounting regulations as there is some guidance on how cryptocurrencies are treated for taxation purposes. The participants believed it is positive that taxation authorities have issued guidance as it gives some indication on how it can be treated for accounting purposes. However, as taxation rules differ between countries this can lead to a further increase in different accounting treatments in the market as it is treated in different ways in different countries. Furthermore, it was expressed by the participants that there is a flexibility in taxation for cryptocurrencies since tax authorities want to decrease the complexity of taxation of cryptocurrencies to increase the number of entities paying taxes. This flexibility can both be an advantage and disadvantage in accounting, it may lead to an increased willingness to obey to rules, but it may also result in different taxation and accounting practices. Nevertheless, taxation has an important impact on accounting, and Consultant 1 believed there will be legal cases in the future which will give indications on how cryptocurrencies should be handled both in accounting and taxation.

Another concern for accountants is the general distrust in cryptocurrencies arising from perceptions that cryptocurrencies are used for non-legitimate purposes such as money laundering or less legitimate business purposes. This suggestion was brought up by IFRS-expert 1 and it was also evident that cryptocurrencies in general are perceived to be a risk factor. When the informants were asked if cryptocurrencies were a factor taken into consideration when deciding upon rejection or acceptance of a client it was evident that cryptocurrencies possess risks which need to be taken into consideration. Consultant 4 said that a client could be rejected because they were holding cryptocurrencies, but the other informants believed it needs to be evaluated and taken into consideration, but it was rather the underlying business model and not only the fact that the company is holding cryptocurrencies. Furthermore, it was deemed believed that the perceived riskiness also depended on the type of cryptocurrency held, where there was a higher trust in bigger cryptocurrencies such as Bitcoin. This shows that there may also be associated risks for a consulting company with having a client who holds cryptocurrencies.

A problem not discussed explicitly by the informants, but which is perceived to be one of the biggest risk factors are the increased opportunities to conduct earnings management. Accounting for cryptocurrencies is associated with the need for a high degree of

subjectivity and professional judgement in the accounting decisions made since there are no formal standards which need to be adhered to. Professional judgement is in general important in accounting but is even more important in complex situations when standards are incomplete (Ivan, 2016, p. 1134-1135). The lack of standards and high degree of subjectivity opens for increased possibilities of conducting earnings management. One example of such situations was mentioned previously when it comes to valuation of cryptocurrencies which may lead to opportunities of hiding assets. Furthermore, there is a lack of comparability of financial statements when there are divergent accounting practices, and it has been argued that one can detect earnings management by making comparisons with similar entities. However, such possibilities may be limited when accounting for cryptocurrencies, so it is difficult to assess how much this is taken advantage of. These increased opportunities to conduct accounting fraud may also result in an increased usage of cryptocurrencies for such purposes. Moreover, in extension there may be consequences for financial markets as the trust in entities holding companies may diminish and information asymmetry is perceived to be higher.

6.6 Qualitative characteristics of useful financial information

The qualitative characteristics of useful financial information are presented in the Conceptual Framework which encompasses IAS and IFRS standards. The two qualitative characteristics of useful financial information are relevance and faithful representation which seek to make financial information useful to its users (IASB, 2010, QC4-QC5, p. A26). Relevance refers to financial information being capable of making a difference in decisions made by financial statement users (IASB, 2010, QC6, p. A27). Faithful representation refers to the ability of information to not only represent relevant phenomena, but also faithfully represent the phenomena it seeks to represent (IASB, 2010, QC12, p. A27). Both these concepts are highly relevant when accounting for cryptocurrencies, however, neither of the concepts have been discussed directly by the respondents, but the findings can indirectly be connected to the characteristics. One discussion which has been evident throughout the literature and the interviews is the usage of fair value measurement, where it has been suggested that fair value measurements are appropriate for cryptocurrencies. It is argued that the fair value measurement of assets is of importance as it meet several of the qualitative characteristics of financial reporting (Barth, 2006, p. 274). Thus, the usage of fair value measurements can enhance the usefulness of financial information, which in some cases is threatened when the economic substance of cryptocurrencies is described through existing accounting standards which may not provide enough information.

Relevance

The concept of relevance can be seen in discussions about whether it should be evident in financial statements that companies are holding cryptocurrencies. As cryptocurrencies cannot be used as the reporting currency all transactions have to be translated into a fiat currency, so if the company does not actively disclose information that it is holding or trading with cryptocurrencies, then it is not shown in financial statements. Consultant 1 and Consultant 3 who actively have worked with companies holding or accepting cryptocurrencies stated that it is not shown in the balance sheets of these companies that they have cryptocurrencies. The Entrepreneur has actively chosen not to omit information about cryptocurrencies as a precautionary safety measure to safeguard against possible thefts or similar. A judgement must be made whether disclosing information about

cryptocurrencies provide relevance to the users of financial statements and if it can make a difference in the decisions made. In making such judgements the concept of materiality should be considered where it must be determined whether for example the amounts of cryptocurrencies held, or amount of operations related to cryptocurrencies are material or not. In general, there must be a trust in the judgements made by management when deciding upon such practices, however, such judgements also open up for possibilities of earnings management. Healy and Wahlen (1999, p. 366) discuss such practices and suggests that professional judgement facilitate a selection of reporting methods, estimates and disclosures which can increase the value of accounting as a means of communication. This represents a significant risk that can occur by not disclosing any information about cryptocurrencies in financial statements. Furthermore, by not actively showing information about cryptocurrencies it can lead to an increased distrust in companies. This was expressed by IFRS-expert 1 who believed that as much information as possible should be visible in financial statements and expressed a skepticism towards companies trading with cryptocurrencies rather than fiat currencies.

Additionally, Consultant 4 said that cryptocurrencies are an evident risk factor and something which is taken into consideration when deciding upon acceptance or rejection of a client. This indicates a general skepticism towards holding cryptocurrencies, but the skepticism and uncertainty could be reduced by disclosing enough information to users of financial statements. To increase the relevance of financial information it can then be suggested that information about holdings of cryptocurrencies should be evident in financial statements to facilitate well informed decisions by the users of financial statements. However, the concepts of relevance and materiality may be different for different people, resulting in relevant and sufficient information for one user of financial statement but insufficient information for another user.

When stakeholders cannot see that a company is holding cryptocurrencies it may result in an inability for stakeholders to make well informed decisions. There are many associated risks with this, for example it leads to an information asymmetry between management and stakeholders. Information asymmetry is an issue present in all financial reporting, however, the aim is to reduce information asymmetry between management and users of financial statements. When it is actively chosen to not communicate such information there is an increased information asymmetry. Chandra et al. (2006, p. 234) suggests that this information asymmetry can be reduced by increasing the amount of disclosed information. In addition, it is suggested that management should have incentives to communicate a high level of voluntary information since it indicates that management is acting in the best interest of the principals (Arshad, et al., 2011, p. 125). The suggestions made by some of the participants goes against what Arshad et al. suggests, and the relevance of financial information aspect of the suggestions can be discussed whether it seeks to enhance financial information or not.

Also related to the relevance of financial information is the matter of differences in relevance to different stakeholders. One person may be strongly against cryptocurrencies and do not want to invest in companies holding or accepting cryptocurrencies, while for another person it is not a significant factor. But for the one who is strongly against cryptocurrencies then the communication of holding cryptocurrencies is of greater importance as it affects the financial decisions made by that person, thus, the information is of relevance. While for another person it is of no difference, and such information is not relevant and does not influence his or her financial decisions. Nevertheless, by not

stating anything in financial statements about cryptocurrencies can lead to an additional risk for investors because of the fluctuating values of cryptocurrencies which may lead to great losses to the investor. In such case investors may not be able to make informed and active decisions to safeguard his or her interests and investments. However, the concept of materiality is as mentioned previously of great importance in the communication of information since holdings of cryptocurrencies may not affect investors in any way if the holdings are small.

Faithful representation

The second qualitative characteristic of useful financial reporting is faithful representation. For information to have a faithful representation it should be complete, neutral and free from error (IASB, 2010, QC12, p. A28). A complete description of an asset includes all information necessary for a user to understand the phenomena (IASB, 2010, QC13, p. A28). At minimum a group of assets should include a description of the nature of the asset, a numerical description and a description of what the numerical depiction represents. In addition, it may also include significant facts about the quality and the nature of the item, and the process used to determine the numerical description of the asset. Based on these features of faithful representation one could argue that information about the nature of the asset should be disclosed at the least. As crypto assets differ significantly from traditional assets it may also be necessary to include significant facts about the quality and nature of the item as it is a relatively new type of asset. Furthermore, as there are many different methods of valuing a cryptocurrency a description on how the values are arrived at may also be included to achieve a faithful representation. Additionally, as discussed before, because of the lack of standards there is a risk of misstating information or intentionally misstating information, therefore it may be difficult to determine whether financial information is free from error or not.

Enhancing qualitative characteristics

There are four qualitative characteristics enhancing the usefulness of financial information that is relevant and faithfully represented, these are; comparability, verifiability, timeliness and understandability. Information about an entity is more useful when it can be compared with other entities (IASB, 2010, QC20, p. A30). When there is a divergence among accounting practices used, the level of comparability may decrease. However, in several of the suggestions made by both literature and the informants it was suggested that fair value measurements are appropriate in the accounting for cryptocurrencies. Accordingly, it is argued by Barth (2006, p. 275) that fair value measurements increase the comparability of financial information as the values only depend on the characteristics of the particular asset and not the characteristics of the entity holding the asset. Furthermore, it is also argued that fair value measurements reflect the same type of information in all periods which enhances consistency of application. In such a case, it can be argued that the balance-sheet approach provides more relevant financial information when it comes to cryptocurrencies by enhancing consistency and comparability of financial information.

The agenda decision by IFRIC may lead to more similar accounting practices being used, however there is no guarantee since it is not mandatory to apply the recommendations. However, the results from the agenda decision may lead to an increased level of comparability of financial statements, but because of the infancy of these guidelines it may take time. IFRS-expert 1 expressed thoughts about these issues and the resulting consequences for financial markets. It was believed that the lack of clear guidelines leads

to uncertainty in financial markets. One of the reasons behind the uncertainty can be the lack of comparability of financial statements. Furthermore, it was also said that such a situation is a nightmare for an accountant. Additionally, Consultant 4 saw risks of making your own interpretations on how cryptocurrencies should be treated in the accounting.

Verifiability refers to the ability of different knowledgeable and independent observers to reach consensus that an item is faithfully represented (IASB, 2010, QC26, p. A30). Based on the findings in this research there seems to be a difficulty in achieving consensus on many aspects of the accounting for cryptocurrencies. One clear example are the diverging suggestions of what type of asset cryptocurrencies should be classified as. Examples ranged from cash, inventory, financial instruments and intangible assets. Moreover, the responses also differed when it came to accounting for revenues from cryptocurrencies. This indicates that there is an inherent risk that achieving verifiability of financial statements may be difficult in the case of cryptocurrencies. Nevertheless, the agenda decision by IFRIC may be able to diminish these differences and increase the verifiability. Verifiability is important when unraveling earnings management by the ability to make comparisons with other companies in the industry (Dichev et al. 2013, p. 1). The possible lack of verifiability can lead to a decreased ability to detect earnings management and at the same time as it can be used as a means to conduct earnings management since the chance of being detected is smaller.

Timeliness means that information should be available to decision-makers in time to be capable of influencing decisions (IASB, 2010, QC29, p. A31). Timeliness is most likely not a big challenge when it comes to cryptocurrencies, however, what is important is that measurements of values are updated which is important when it comes to cryptocurrencies because of their fluctuating nature. The importance of having updated measures was highlighted by several of the respondents who argued that measurements of the value should be made as close to the transaction date as possible. Consultant 1 for example, suggested that the valuation should be made as soon as the cryptocurrency is deposited to the digital wallet. Additionally, in the case of impairment testing the timeliness is important, then at the end of each reporting period an impairment test must be conducted to determine whether there is a decrease in value. This matter was discussed by Consultant 4 and IFRS-expert 1.

Finally, for information to be useful for financial statement users, understandability is needed. In the Conceptual Framework it is stated that "*some phenomena are inherently complex and cannot be made easy to understand"* (IASB, 2010, QC31, p. A31). In addition, it is stated that by excluding information about those complex phenomena, it will make the information in financial statements incomplete. The complexity of cryptocurrencies was discussed by most of the respondents which can serve as an indication that information is needed to make transactions and events occurring from cryptocurrencies understandable for users of financial statements. However, the active decisions made by some of the participants to not disclose any information in financial statements about the company using cryptocurrencies goes against the need of understandability to enhance the usefulness of financial information. Based on the requirements in the Conceptual Framework there is a need for extensive disclosures and communication of financial information for it to be useful.

In general, there seem to be several issues with the usefulness of financial information and its surrounding characteristics when it comes to cryptocurrencies. This can be a threat

to the quality of financial reporting and may result more opportunities for earnings management. Nevertheless, entities can increase the usefulness of financial information by communicating and disclosing as much information as possible to create a transparency and trust from users of financial statements. However, even if the suggested standards are applied to for example asset classification, there is no guarantee that the asset classification itself provides relevant and useful financial information. It is suggested that such is the case when cryptocurrencies are classified as intangible assets since IAS 38 is not designed to encompass assets held for speculative investment purposes or assets which have cash-like features (AASB, 2018, p. 13). Thus, there may be issues to resolve which are outside the scope of financial standards, or which need to be included in standards to provide useful financial information.

6.7 Summary of analysis

The foundation of financial information is that it should provide relevant and useful information for the users of financial statements. To provide such relevant and useful information there are many challenges which need to be resolved when accounting for cryptocurrencies. It is evident that there are issues when accounting for assets and revenues and in the disclosures made about the financial information, and these issues results in risks for stakeholders and for financial markets. The informants and the researchers believed that if there are no mandatory standards issued these challenges will increase in the future and its consequences will be even more significant. Furthermore, it may impair accounting quality and have consequences for financial markets at large as it is an unregulated area. It can also decrease the trust in accounting regulatory bodies if no official standard is issued, resulting in a general distrust of financial reporting standards. A majority of the informants thought that there will be an accounting standard regulating cryptocurrencies in the future. However, the possibility of amending one of the existing standards such as financial instruments was also discussed by the participants, which could provide more relevant and useful financial information than fitting cryptocurrencies into existing standards as it is done today.

As mentioned previously there are two approaches to financial reporting which perceive accounting quality in different ways, the income statement approach and the balance sheet approach. Moreover, a decreased accounting quality can have consequences for financial markets since trust is reduced. The business model of an entity and the purpose of holding cryptocurrencies may affect the appropriateness of either a balance sheet approach or an income statement approach. Dichev (2008, p. 458) argues that a balance sheet approach is appropriate for entities whose earnings are gained by acquiring, storing and growing assets, and for other entities the income statement approach is superior. Following this logic, the purpose of holding or accepting cryptocurrencies and the business model affects the suitable approach to an entity's financial reporting. Furthermore, based on the focus of the literature it seems like the balance sheet approach is suitable as assets are most widely discussed. However, based on the interviews, the informants had more knowledge or could speculate more on accounting for revenues from cryptocurrencies which may indicate that the income statement approach is of importance. Nevertheless, there seem to be more issues to resolve when it comes to accounting for cryptocurrencies as it is argued that the asset classification do not provide relevant and useful financial information which may harm accounting quality. However, many of the discussions revolved around the valuation of cryptocurrencies both assets and revenues, and this is

perceived to be one of the biggest challenges. Based on this, one could argue that the balance sheet approach is of more importance as there are more issues related to assets, and by providing a solution to the valuation problem the main issue with accounting for revenues from cryptocurrencies can also be solved. Moreover, as financial reporting standards are based on a balance-sheet approach today, accounting quality is most viewed from that perspective.

Chapter 7: Conclusions

The concluding chapter contains general conclusions which were uncovered while comparing the literature and the data gathered. Furthermore, the chapter discusses the practical and theoretical contributions that the study provides together with societal and ethical aspects. Lastly, the limitations of the study are widely discussed and suggestions for future research are provided.

7.1 General conclusions

The research question which this research aims to answer is "*What are the practical accounting issues and challenges for the preparers of financial statements related to cryptocurrencies?"*. Based on interviews made with a variety of informants with accounting knowledge it is evident that there are many challenges related to the accounting for cryptocurrencies. Furthermore, there are challenges present in all the four themes. The accounting for cryptocurrencies is still at an early stage and more challenges are likely to arise before an official accounting standard is issued. Accounting professionals have some knowledge on the challenges, but limited guidance can be given, and it is still few professionals who are aware of all challenges and can provide sufficient advice for clients. The biggest challenges found in this research relates to the issues with asset classification, valuation, disclosures and associated risks. It is believed that these challenges are closely related to accounting quality and that it should be a key concern for regulators to solve the issues to enhance financial reporting quality.

Asset classification is one of the main challenges as it comes with consequences for initial and subsequent measurements and the information disclosed in financial statements. As of today, the only official guidance issued is the agenda decision made by IFRIC in March 2019. What is concluded by IFRIC and the rest of the literature is that cryptocurrencies can be accounted for as intangible assets or inventory depending on the circumstances. The empirical results provided different suggestions ranging from cash, financial assets, financial instruments, inventory and intangible assets. The classification most widely discussed by the participants was financial assets. It is evident based on the findings that asset classification is one of the biggest challenges which affects any subsequent accounting treatment. The initial and subsequent measurements depend on the asset classification, and different challenges can arise depending on the classification. Furthermore, the information disclosed in financial statements is also dependent on the asset classification which regulates what type of disclosures are required and to which extent. However, there is a discussion whether these existing asset classes provide relevant and useful financial information in the context of cryptocurrencies or if issuing a new standard or amending one of the existing standards would provide more useful financial information. Nevertheless, it has been tentatively decided that until further notice, cryptocurrencies should be classified as either inventory or intangible assets. This discussion brings an uncertainty related to the asset classification of cryptocurrencies, and it can be concluded that existing standards need to be followed. To reduce the uncertainty an entity must actively communicate information to users of financial statements to enhance the usefulness and relevance of financial information.

Another central challenge related to accounting for cryptocurrencies is valuation. Valuation methods and issues were brought up by all the informants as one of the main

challenges, and many discussions revolved around the related challenges. The challenges with valuation are evident when it comes to both revenues and assets and are present already when recognition of revenue or assets is decided upon when it needs to be decided whether the item has a cost or value which can be measured with reliability. Furthermore, additional valuation challenges occur in both initial and subsequent measurements. Some of the challenges brought up by both the informants and the literature were timing of valuation, reliability in the exchange platform and, whether active markets exist or not. There is no official guidance on such issues, but the literature provides a discussion and addresses the challenges that need to be adhered to. What was suggested by one of the informants was that some guidance should be provided on which platforms could be trusted and how valuations should be made to reduce these challenges and provide a coherence among practitioners. Furthermore, by issuing such guidance the possibilities of earnings manipulation could be reduced.

The objective of financial reporting is to provide financial information useful to existing and potential stakeholders in making decisions (IASB, 2010, OB2, p. 21). There are several means that can be used to achieve such useful information, and one way is to provide sufficient and informative disclosures which complement numerical financial information. Disclosures are one of the issues that need to be reflected upon, however, the disclosure requirements are very dependent on the asset classification. Disclosures can be seen as a means to diminish information asymmetry between management and stakeholders. Furthermore, if it is deemed that for example the asset classification does not provide relevant and useful information which reflects the nature of cryptocurrencies, then disclosures can be used as a medium to communicate additional financial information.

The final challenge which accounting for cryptocurrencies is facing are the risks associated both with cryptocurrencies at large, but also the risks resulting from the non-coherent accounting treatment. The lack of official standards results in a divergence of accounting treatments resulting in increased opportunities to pursue earnings management. These opportunities for earnings management occur because of the lack of verifiability between entities, resulting in possibilities to use the accounting treatment most suitable for management to be able to achieve its objectives. Furthermore, the high level of subjectivity and professional judgement applied to the accounting for cryptocurrencies can lead to higher incentives to manipulate earnings. Moreover, through a limited amount of disclosure requirements the possibilities of earnings management increases. Additionally, the fluctuating nature of cryptocurrencies also affect the riskiness, not only for entities but also for stakeholders. It can be concluded that the lack of official guidance for accounting for cryptocurrencies leads to risks not only for the reporting entity at large, but also for financial markets because of the increased uncertainty and possibilities to pursue earnings management.

The conclusions which can be drawn from this research is that there are a lot of challenges and issues related to the accounting for cryptocurrencies. The most significant challenges and issues found in this research relates to asset classification, valuation, disclosures and risk factors. Furthermore, what is needed to overcome these challenges is a thorough understanding of the underlying features of cryptocurrencies together with a broad understanding of accounting standards. It is evident that more official guidance is needed to increase the usefulness of financial information and to reduce possibilities of earnings management in the context of cryptocurrencies.

7.2 Contribution

This study foremost provides a practical contribution to existing literature. The thesis provides a practical perspective to the accounting challenges of cryptocurrencies together with inclusions of associated risk factors. What was expressed by several of the contacted accounting professionals was the importance of the subject and the need for an alignment of literature. In general, there has been a high interest in the research where the interest in reading the final product has been high, for example the researchers were asked to participate in a discussion which would be streamed on Youtube. This indicates that the research will be useful to several parties in the industry. Furthermore, the research can also be useful to accounting professionals in the application of existing standards to cryptocurrencies and facilitate an understanding of the faced issues that needs to be resolved. In addition, it can be useful for stakeholders to entities holding cryptocurrencies as it provides knowledge on the faced challenges and risks which can help stakeholders assess the quality of financial information. By linking the research to the risks faced an additional aspect is brought in that needs to be considered besides the actual accounting treatment. Furthermore, with a lack of academic research this study provides insights not only from academia but also from practitioners by utilizing reports from the big accounting firms together with interviews with accounting professionals.

The research brings some theoretical contributions to the existing literature. The findings are in line with previous literature, however, it is evident from this research that there is a high degree of uncertainty related to the accounting for cryptocurrencies. Uncertainty has not been mentioned explicitly in previous literature, and there are no previous empirical results which highlights the uncertainty aspect. Furthermore, this research thoroughly discusses revenues from cryptocurrencies and the related risk factors to cryptocurrencies which have not been discussed by previous research and literature. Moreover, this research can serve as a springboard for future research as new perspectives are applied.

7.3 Societal and ethical aspects

This research is not directly based on a social phenomenon that needs to be researched, however, the accounting for cryptocurrencies indirectly has an impact on society at large. The inadequacy of accounting standards applicable to cryptocurrencies results in a divergence of accounting practices in the marketplace. This comes with implications for financial markets when the verifiability of financial information is decreased which leads to fewer means of detecting earnings management. Furthermore, it leads to an uncertainty in financial markets which was expressed by one of the respondents as a big issue. The uncertainty does not only affect the reporting entities but also stakeholders at large who may not be able to make informed financial decisions when accounting practices are differing. Moreover, this may result in a reduced trust in entities holding and accepting cryptocurrencies or open up for more entities investing in cryptocurrencies to use it as a mean of manipulating earnings. This results in an increased information asymmetry between management and stakeholders. What can be found in this research is that there are many issues related to the accounting treatment which can have significant consequences for financial markets. Thus, it is not only the accounting challenges that need to be resolved, but the resulting consequences also need to be considered.

There are also ethical aspects of these problems where the inadequacy of standards may lead to management conducting unethical practices to achieve its objectives. Furthermore, investing in cryptocurrencies may be seen as an opportunity to manipulate earnings or in other ways not communicate sufficient information to stakeholders.

7.4 Limitations and suggestions for future research

This research demonstrates the issues and challenges for the preparers of financial statements related to cryptocurrencies in the Nordic countries. However, it is difficult to draw any generalized conclusion that this is the level of expertise in these countries since 7 people with different backgrounds participated in the study. Nevertheless, it is believed that due to the time and resource limitations, informants with more practical knowledge could have been found which could have enhanced the quality of the findings. The time when the interviews were conducted can also be a limitation to the study since most of the accounting firms are extremely busy in the first quarter of the year. If the research would have been conducted during the fall semester it is deemed that more people could have been found to participate to the study. The geographical setting of the study can also be a limitation. It is believed that the results would have been different if the interviewees would have been from countries that use cryptocurrencies to a larger extent. This was the intention when contacting people from around the world, but it proved to be more challenging than expected.

There are no specific standards when it comes to accounting for cryptocurrencies (IASB, 2018, p. 7) and the latest guidance released by IFRIC instructs practitioners to use the existing standards (IFRS, 2019). Furthermore, there is a limited amount of literature available which discusses the issues and challenges of accounting for cryptocurrencies which can be a constraint to this research as the academical contribution becomes limited. Moreover, there might be issues and challenges outside of the scope of this thesis since smaller companies are not required to apply the IFRS standards.

This research opens several opportunities for future research in different contexts and settings. Because of the infancy of accounting for cryptocurrencies it is deemed it would be beneficial to conduct a similar study in a few years when the area is further developed and the alignment among practitioners has increased. Additionally, since the agenda decision by IFRIC was issued in March 2019, a similar study may provide different results as the appliance of those suggestions are enforced. Furthermore, similar research could be conducted in a different geographical setting where cryptocurrencies are more widely used and accepted. Another possible extension of this study is to focus on one area of knowledgeable people, for example IFRS-experts to gain a deeper understanding of the challenges for accounting specialists. It would also be highly relevant to include a broader regulatory perspective through targeting for example IASB or other national regulatory bodies. Furthermore, to explore taxation and accounting for cryptocurrencies and its interrelatedness provides another research possibility. Another suggestion for future research is to focus on only one of the four themes brought up in this research to provide a deeper understanding of the faced challenges. Finally, a study could be conducted with a quantitative method instead of a qualitative method where accounting professionals are surveyed about the faced challenges and issues.

7.5 Criteria of quality

When the quality of a study is reflected upon reliability and validity are important criteria to establish and assess (Bryman & Bell, 2011, p. 394). Nevertheless, there has been discussion whether these are relevant for a qualitative research. For example, when measuring the validity of the study it can be associated to a quantitative study since measurement is not a major preoccupation among qualitative researchers. It is however still used to assess the quality of qualitative studies.

There are different views how to interpret the reliability and validity criteria (Bryman & Bell, 2011, p. 395). According LeCompte and Goetz (1982, cited in Bryman & Bell, 2011, p. 395) there are both external and internal reliability and validity. These four different aspects are also discussed by Saunders et al. (2012, p. 192-194). Reliability in general refers to whether the data collection technique and analytical procedures would produce coherent findings if the setting of the research is modified or it is made by a different researcher (Saunders et al., 2012, p. 192). Reliability can be further divided into external and internal reliability (Saunders et al., 2012, p. 192-194). External reliability can be measured by the degree to which a study can be replicated. However, this criterion is difficult to meet in a qualitative research since it is impossible to stop a social setting and the circumstances of an initial study and make it replicable (Saunders et al., 2012, p. 192-194). External reliability can be a problem for this research since the informants' answers differed depending on their experience and knowledge. For example, IFRS-expert 1 had more of an overall picture how cryptocurrencies should be accounted for whereas consultants had a practical perspective to the accounting issues and challenges. Furthermore, it is believed that the study is difficult to replicate because a high degree of subjectivity is required in accounting for cryptocurrencies. Moreover, the internal reliability concerns the consensus of the research team and whether it is agreed what have been heard and seen. The interviews were audio recorded which enabled the revision in case of a disagreement between the researchers.

According to LeCompte and Goetz (1982, cited in Bryman & Bell, 2011, p. 395) the internal validity evaluates whether there is a good fit between researchers' observations and the theoretical ideas that are developed. Theoretical validity is also viewed important by Ghauri and Grønhaug (2010, p. 210). According LeCompte and Goetz (1982, cited in Bryman & Bell, 2011, p. 395) the internal validity tends to be strong in qualitative studies, because a study conducted during a long period of time allows researchers to ensure a high-level congruence between concepts and observations. This study is highly exploratory and therefore the internal validity can be weaker than in a less exploratory study. The literature used in the theoretical framework goes into detail how accounting for cryptocurrencies should be conducted whereas the informants are discussing the issues and challenges from rather perfunctory view. However, this was outside of the influence of the researchers and it can be deemed that the validity is weaker because accounting for cryptocurrencies is an unexplored area of research. Furthermore, the external validity concerns the degree to which findings can be generalized across other social settings (Saunders et al., 2012, p. 194). This can be a challenge for qualitative researchers because of their tendency to employ case studies and small samples. The sample used in this study is rather small because of the complexity of finding qualified interviewees. More than 50 people with different kind of backgrounds were contacted and eventually 7 people participated. However, the purpose of a qualitative study is not to generalize the findings and therefore external validity does not concern this research.

Guba and Guba & Lincoln (1985, 1994, cited in Bryman & Bell, 2011, p. 395) have proposed other alternatives to reliability and validity when assessing the quality of a qualitative study and these are: trustworthiness and authenticity. Trustworthiness is further divided into four criteria: credibility, transferability, dependability and confirmability. To be able to establish credibility of findings the research should be carried out according to the instructions of good practice. Throughout the writing process the thesis manual has been followed as well as relevant research books and therefore it is believed that this study reaches a high level of credibility. Moreover, to the extent possible this research has utilized scientific articles and reports from accounting companies to assess relevant concepts and accounting treatments to cryptocurrencies. To be able to gain practical knowledge multiple interviews were conducted to enhance the findings. Transferability is connected to a data which is large enough for the reader to make a judgement about the possible transferability of findings to other surroundings. The population size for this study was difficult to determine due to the unidentified knowledge possessed by people. The transferability of this research can be compromised since the knowledge may be different in different surroundings.

Dependability is parallel to reliability and attempts to establish trustworthiness. It involves the assurance that complete records are kept accessible throughout the whole research process. All material gathered from the informants was retained for the entire writing process. Storing audio records and other relevant notes made it possible to go back if something needed verification later in the process. Confirmability concern the researchers' objectivity when conducting the research. It can be concluded that the researchers of this study are not completely objective since the themes presented in the study are the ones which were considered to be the most important. Assets, revenues, disclosures and risk factors were the themes which the researchers found most relevant when reading about the issues and challenges when accounting for cryptocurrencies. Other researchers could have identified different themes and therefore it can be concluded that researchers are subjective in this matter. However, when relevant theories were searched, a high level of objectivity was used. Furthermore, the other criteria Guba and Lincoln suggest is authenticity. Amongst other authenticity includes a criterion of fairness. The fairness aspect concerns whether the research is fairly presenting different viewpoints. Three different point of views are introduced when presenting the four main themes, IFRS-experts, Consultants and Entrepreneurial perspectives. In addition, IFRS-experts and Consultants had more than one representative which adds different viewpoints with different educational backgrounds. This indicated that the level of fairness is high since this research seeks to present as many perspectives as possible.

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Appendices

Appendix 1: Participation information sheet

Purpose and background of study

You have been asked to participate in an interview for a degree project at Umeå University. This study is conducted by two students at Umeå School of Business, Economics & Statistics, currently enrolled at the International Business Program at advanced level with a major of accounting. The purpose of the research is to obtain knowledge about the practical accounting issues and challenges related to cryptocurrencies. The limited research and regulation related to the accounting for cryptocurrencies serves as a basis for this study, and we wish to contribute to the limited research and serve as a springboard for future studies. Open interviews will be held with the purpose to gain a deeper and broader understanding of the complex and diverse topic. Our research question is as follows: "*What are the practical accounting issues and challenges related to cryptocurrencies".*

What your participation contains

To be able to reach our interviewees that are not located in Umeå telephone/Skype interviews will be conducted. Since the study is very exploratory the interviews are held in a broad timespan, starting March 2019 and commencing in April 2019. During the interview, only the authors of this research (Ellinor & Piia) and you as a interviewee will be present. The interview will be audio recorded if you agree and later transcribed. The participation to this study is voluntary and you as a participant will be granted full anonymity. As a participant you have the right to decline to answer a question or a set of questions or you can end the interview at any point in time. Before starting the interview, the authors will ensure the following with a request of a verbal confirmation.

How data and information will be handled

The data collected from the interviews will be only accessible to the authors of this research. The data will be analyzed, and conclusions will be presented in the thesis. After an approval from the grading committee the thesis will be published in the "Digitala Vetenskapliga Arkivet" (DIVA), and it is accessible to the general public. Your involvement includes complete anonymity.

We thank you for your time and for helping us carry out this study. If you have any further questions regarding the interview process, feel free to contact us.

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Appendix 2: Interview information

These are the broad concepts that we will discuss during the interview:

1. Personal background (e.g. work and education) and general knowledge about cryptocurrencies
2. General accounting concerns related to cryptocurrencies
3. Three central themes identified when accounting for cryptocurrencies
    a. Asset perspective
       Process of accounting for assets: Does it meet definition of asset → Asset classification → Recognition of asset → Valuation → Depreciation/Amortization/Impairment.
    b. Revenue perspective
    c. Disclosures
3. Future for cryptocurrencies (e.g IFRS standards, regulations etc.)

If you do not know some of the themes that will be covered during the interview, we will ask you to explain where you would turn to get the information or how you would act in a similar situation. We will also ask you to explain what issues you believe there are if it were to be a "normal" asset and try to relate your answer to cryptocurrencies if possible. You are not required to know all the areas, we are also interested in finding out what practitioners without experience from it believes should be done. We want to emphasize that we are not seeking a correct answer to any of the questions, but rather your perspective as an accountant on the issues. If you do not know the answer to a question, that indicates us that there is not that much knowledge on the area, which also provides useful answers to us.

Appendix 3: Interview guide

Introducing questions

Q1: Can you tell us a bit about your work experience?

Q1a: How long have you worked in this position?
Q1b: What is your educational background?
Q1c: What kind of day-to-day task do you work with?
Q1d: How much of your tasks are related to cryptocurrencies?

Q2: What is your experience from cryptocurrencies? Both from a work perspective and from a possible personal perspective?

Q3: Is cryptocurrencies something that is discussed a lot within the company (accounting firm)? If yes, how much and in which contexts?

Q4: Do you get any education on cryptocurrencies, both general education and accounting education? E.g. seminars, workshops or presentations.

Q4a: Is it mostly people with a personal interest in it that works with it?

Q5: What do you think are the challenges with cryptocurrencies? (General/regulatory/accounting)

Q5a: How do you deal with these challenges?

Q6: Do you have a lot of customers that work with cryptocurrencies?

Q6a: Type of companies? How many companies? Etc.

General accounting issues related to cryptocurrencies

Q1: What would you do if you have a customer that needs accounting advice with cryptocurrencies, but don't have the knowledge yourself?

Q1a: Would you reject accepting a client if they are trading with cryptocurrencies? Are the amounts important? E.g. increases in risk.

Q1b: Does it send warning signals related to for example earnings management if they have cryptocurrencies? (E.g. money laundry, gambling, litigation risk etc.)

a. Does the size of the holdings matter, if it is of material amounts?
b. How would you handle such warning signals?

Q2: Would you advice a customer differently depending on which type of ryptocurrency they are using? Assuming there are two companies that are identical and using different kinds of cryptocurrencies. (E.g. Bitcoin or Ethereum)

Q3: Do you know anything about the tax related issues to cryptocurrencies?

Accounting and cryptocurrencies

We have identified three central themes that the questions will be about, asset perspective, revenue perspective and disclosures. We will ask questions regarding all three areas, and we are not seeking any "right" answers, rather your experience and your beliefs on how it should be done. You are not required to know all the areas, we are also interested in finding out what practitioners without experience from it believes should be done.

Assets

The majority of literature covers the asset classification and the related issues. We will have some central questions based on the process of accounting for assets.

Process of accounting for assets: Does it meet definition of asset → Asset classification → Recognition of asset → Valuation → Depreciation/Amortization/Impairment.

Q1: Can you see any general issues or challenges related to the process mentioned?

Q2: What do you think is the most important step in the process of accounting for assets?

Q3: Regarding the classification of asset, what type of asset do you think cryptocurrencies should be classified as? Or what do you recommend your clients to classify it as?

> Q3a: What are the circumstances that affect the asset classification? E.g. type of business or purpose of holding cryptocurrencies.

Q4: How do you handle the recognition of assets? For example, problems with measurement reliability of initial cost/value and if there will be future economic benefits.

> *Recognition criteria: 1. It is probable that any future economic benefits associated with the item will flow to or from the entity and 2. The item has a cost or value that can be measured with reliability*

Q5: Do you have any knowledge or comments on the valuation of the asset?

Q6: How would you handle amortization/impairments? E.g. how often would you do impairment tests?

Q7: Is there anything regarding assets that you think we have missed? Or do you have any further comments on it?

Revenues

Q1: If a customer accepts cryptocurrencies as a payment method, how does the accounting process look like?

> Q1a: How does it differ from normal revenue process?

Q2: Are there any issues that you have to handle in accounting for revenues from cryptocurrencies? (e.g. revenue recognition, exchange valuation.)

Q3: Do you as a consultant have access to the client's revenue bases to ensure that all revenue transactions are recorded?

Q3a: If no, how can you confirm that all transactions are being transferred to the company and not elsewhere?

Q4: How are credit times handled when it comes to cryptocurrencies?

Disclosures

Q1: Do you disclose information in the financial statements that the company is using cryptocurrencies in any way? For example, a clarification in the notes of financial statements.

Q1a: What type of information is disclosed?

Q2: What do you think stakeholders would like to find out in the notes of financial statements?

Final Questions

Q1: We have identified three different themes regarding the issues and challenges when accounting for cryptocurrencies. Do you think some other perspectives should be considered?

Q2: How do you think the future looks like for the accounting for cryptocurrencies? E.g. IFRS standards, regulations etc.

Q3: Is there anything that you want to add or highlight about the topics covered in our questions?

Q4: Do you have any questions regarding what we have talked about today?

Conclusions

Thank you for your participation, the data will be transcribed, analyzed and compared to draw conclusions in our research. We will send the finished work to you if you would like to read it.

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