Virtual Currencies
- Real Opportunities?

Sara Selldahl
Abstract
The European Central Bank defines virtual currencies as “unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community.” (European Central Bank, 2012, p. 5) The interest in virtual currencies has increased immensely over the last few years as they become increasingly prevalent in our society across many different industries. Up until now, the field of virtual currencies has been mainly uncharted land and despite interest in specific currencies, few attempts have been made at understanding or structuring the entire landscape.

The main research question in this thesis is related to the previously mentioned dilemma: understanding and structuring the virtual currency ecosystem, today and in the future. How can the virtual currency landscape currently be analyzed in a structured manner and what framework can be used to reflect and make predictions on the future development?

The thesis is based on four different sources of information: a literature study of existing material, corporate interviews with companies dealing with virtual currencies and consumer interviews with potential early adopters, an online survey and a case study performed at Ericsson M-Commerce. The case study of Ericsson M-Commerce has provided valuable insight into understanding how companies reason when considering adopting virtual currencies into their product portfolio and greatly helped the process of structuring the virtual currency market in a comprehensive manner. In return, the thesis has also provided decision material for the department concerning virtual currencies.

This thesis divides virtual currencies into five groups: Prepaid Value, Loyalty Points, Monetization Currencies, Gaming Currencies and Value Encoded Currencies. This model has been developed as a framework for the analysis of the current situation in this thesis. However, the analysis in the thesis has shown that as virtual currencies evolve, it will probably become more relevant to instead consider their functions. It is likely that virtual currencies will consolidate into three distinct functional types: virtual currency as a unit of account, virtual currency as a business model for monetization, and virtual currencies as a product that can be sold.

As virtual currencies evolve, the future is not only filled with many challenges, but also many new opportunities. In this thesis, an attempt to gain an abstract understanding of how the field is developing has been made, but it remains to be seen what the real impacts of virtual currencies will be as they continue to gain traction.

Key-words
Virtual currencies, electronic money, market analysis, case study, Ericsson
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<thead>
<tr>
<th>Abbreviation</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>BU</td>
<td>Business Unit</td>
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<tr>
<td>BUSS</td>
<td>Business Unit Support Systems</td>
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<td>ECB</td>
<td>European Central Bank</td>
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<td>FFP</td>
<td>Frequent Flyer Program</td>
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<tr>
<td>MMORPG</td>
<td>Massive Multiplayer Online Role Playing Game</td>
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<td>MNO</td>
<td>Mobile Network Operators</td>
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<td>NFC</td>
<td>Near Field Communication</td>
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<td>SA</td>
<td>Solution Area</td>
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<tr>
<td>TELCO</td>
<td>Telecom Driven market. A market where the development of mobile financial services are mainly driven by the mobile network operators.</td>
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1 INTRODUCTION

1.1 OVERVIEW OF THE AREA

Virtual currencies are becoming real. No longer is it a matter of “monopoly money” used to buy digital content, but an evolution towards a society where virtual money can be used to purchase physical goods and services. The European Central Bank defines it as “unregulated, digital money” and the implementations and functions are numerous across many different industries. Today, virtual currency schemes are a real alternative to credit cards for micropayments, for prepaid solutions for many types of services and are an attractive solution for companies to build their loyalty programs around. Players such as Amazon, American Express and PayPal are all trying to take a piece of the virtual cookie that former only belonged to the gaming industry and frequent flyer programs. (Button, 2011)

As the virtual currencies become more sophisticated and complex, so do the problems related to them. It is clear that a virtual currency can pose some real life issues. (Dax Hansen, 2010) Because virtual currencies still operate outside the normal regulatory framework, many industries, such as banking and in many cases telecom, are unsure on how to proceed. (Button, 2011) The legal grounds surrounding issuing and trading with virtual currencies are still quite new territory and open to much interpretation, but both issuers and retailers may be subject to severe legal reprimands depending on how the currency is implemented. (Electronic Money Regulations, 2012) Nevertheless, there are many success stories of using virtual currencies as a monetization strategy to generate revenue and the interest is still very high in developing new solutions. (Preece, 2011)

Today, there is a multitude of different implementations of virtual currencies in many different industries. However, over the recent years, the types of virtual currencies have begun to consolidate and new patterns emerge. In this thesis, the current landscape will be mapped and analyzed in order to understand in which direction the evolution is going. The end result will be a hypothesis of how the ecosystem will evolve and what the factors that will facilitate the change will be. In essence, the thesis will try to answer the question of how the virtual currency landscape is structured and how this will change over time.

Since virtual currencies are a relatively new area, many of the players on the market come from neighboring industries such as telecom or software development. For instance, mobile payments is an area that is very closely related to virtual currencies; in fact, electronic money is the regulated equivalent of virtual currencies according to the ECB. Nevertheless, there are many interesting differences between the two and it is vital for players within the field of mobile payments to be aware of the development within the field of virtual currencies.

In this thesis, a case study of a new player from a neighboring industry wishing to enter the virtual currency market has been performed. The purpose of the case study was to guarantee that the research also has direct practical applications and to ensure that the theoretical framework reflects reality to the greatest extent possible. The M-Commerce department at the telecommunications company Ericsson was chosen as the subject for the case study since it fits the profile very well; it is a department of a company in a neighboring industry wishing to enter the virtual currency market. The practical case study at Ericsson M-Commerce was of outmost importance for the iterative process of developing the structural framework for virtual currencies used in this thesis.

Virtual currencies are indeed a very real opportunity for many industries today, but in order to proceed many companies require more information. However, the material on virtual currencies available today is scattered across the internet and few attempts have been made at addressing the entire field in its unity. Hopefully, this thesis can help to bridge the gap between virtual currencies
and the real world by providing a theoretical framework for analysis and an attempt at a structured analysis.

1.2 BACKGROUND

Virtual currencies may have started out as fictional money in the gaming industry, but many analysts argue that they are becoming a force that might one day challenge government-backed national currencies. The definition of virtual currencies as “unregulated, digital money” is arguably wide and involves everything from the money used to buy virtual goods in online games such as World of Warcraft to bonus points and Facebook credits. What is interesting about the current situation is the trend that virtual currencies are expanding from avatars and virtual kingdoms to buying physical products or to be used in actual trade. The use of virtual currencies is still fairly limited, but with huge companies such as Amazon launching their own currencies and international virtual currencies such as Bitcoin and Ven earning traction, speculators argue that they will indeed have considerable impact on real-world economies in the near future. In short, virtual currency gets real.

Depending on how you define virtual currencies, the concept dates back either to the early days of the Internet or to the first customer loyalty programs where one earned mileage for flying with a specific company. In short, everything which is a virtual representation of a value could be considered a virtual currency. This thesis will use the same denotations for types of implementations (Type 1= fictional currencies, Type 2 = closed loop currencies and Type 3= open loop currencies ) as the European Central Bank. (Dax Hansen, 2010) In fictional currencies, there is no interaction between the virtual currency and the real world; the money is created and kept within the confines of a specific virtual environment only. A closed loop virtual currency is bought with real money in exchange for a virtual representation used only by that specific company or application. The exchange rate does only apply to buying the virtual currency since the money is not transferable as it cannot be exchanged into real money again. SAS EuroBonus points (EuroBonus, 2012) and Skype credits both belong to this category. Open loop virtual currencies can be traded just like any other currency and have exchange rates for both buying and selling the currency, such as Bitcoin, Linden Dollars or Ven.

Nevertheless, the concept of virtual currencies is very complex and understanding the nature of the market, as well as the interactions between virtual currencies and real money, is equally challenging. This thesis will seek to understand and explain the virtual currency ecosystem with its many different stakeholders and also try to extrapolate the trends that are evolving within the industry in a structured manner.?

1.3 RESEARCH QUESTION

The main research question in this thesis is related to understanding and structuring the virtual currency ecosystem, today and in the future.

_How can the virtual currency landscape be analysed in a structured manner and what framework can be developed to reflect and hypothesize on the future development?_

In order to answer this question, a comprehensive approach must be taken. Instead of looking at a single implementation of a virtual currency, this thesis looks broadly across the entire field of virtual currencies to be able to get a more thorough understanding of the concept in its unity. What theoretical frameworks can be used to understand and classify virtual currencies? Where are the main trends evolving and what functions will be covered by virtual currencies in the future?

Many of the players on the virtual currency market come from neighboring industries such as the ICT, the financial or software development industry. These players have great impact on the virtual currency landscape and understanding how they can relate to the field is therefore very interesting.
How can companies from neighboring industries analyse if they should enter the virtual currency industry? This thesis contains a case study of the telecommunications giant Ericsson and the Solution Area M-Commerce, a company in the position of considering entering the market. This case study has helped ensure that the frameworks developed in this thesis indeed are relevant for companies in neighboring industries that seek to understand the virtual currency concept.

1.4 PURPOSE

The purpose of this master thesis is to review and synthesize existing knowledge to be able to draw new conclusions concerning the current, and future development, of virtual currencies. The hope is to add to the current academic research by providing structured frameworks and models for analysing the entire virtual currency area. Therefore, the primary contribution of the research will be filling in the gaps between the different isolated virtual currencies as well as to provide new models for analyzing and categorizing virtual currencies. Most researchers have focused solely on virtual currencies used in the gaming industry and this approach does no longer covers the current situation. In order to gain a good understanding of the concept of virtual currencies, the scope must be wider to fully capture how the different currencies and stakeholders interact and create the market conditions.

In addition, another important objective is to provide Ericsson M-Commerce with business decision material and recommendations concerning how to view the virtual currency market.

1.5 SCOPE/DELIMITATION

The scope of this master thesis is limited to only covering areas directly linked to virtual currencies and not to the area of mobile billing or mobile banking applications. For this reason, mobile payment technologies or applications such as mobile wallets will only be briefly covered when relevant. Since earlier studies mostly have covered the gaming industry, this knowledge will be leveraged in the thesis and not a main focus of research.

Furthermore, technologies such as NFC and different cryptographic technologies used in certain virtual currencies are also considered outside the scope of this thesis.
2 METHODOLOGY

This chapter will reflect on the choices of research methodology used in this paper. This section will first cover the methods for data collection used; an in-depth literature study, interviews and a consumer survey. The second part will reflect on the use of a case study whilst the last part will cover the ethical considerations made in this thesis.

2.1 METHODS FOR DATA COLLECTION

The data that the analysis in this thesis is based on comes from three different sources: a literature study, in-depth interviews as well as an internet based survey to gain consumer understanding. The reason for using this method of triangulation is to capture as much information as possible about this relatively new concept. Since virtual currencies are a new phenomenon in many cases, the information that currently exists is very fragmented or alternatively, very focused on one specific aspect of the concept. By combining a thorough literature study with more empiric research, the hope is to capture both the academic aspects already covered by previous researchers, but also to contribute to the creation of new knowledge. More information concerning the methods and the reasoning behind the choices made follows in the next chapters.

The information used within the case study at M-Commerce comes from participating in the daily work; sitting in on meetings and workshops, speaking with the different strategic product managers concerning their products as well as reading marketing material concerning the products developed.

2.1.1 Literature study

The literature study is mainly based on online sources, due to the novelty of the concept, and gathered from many different places. The information comes from online journals, report from governments, documents written by attorneys specialized in internet law, expert blogs, conference papers and many other sources. It is extremely hard to find unbiased information concerning such a controversial topic. The only exceptions are the legal documents cited in this work, even though these also are subject to interpretation in many cases. Instead, much focus has been put on trying to balance different opinions and always being clear when someone is expressing a personal opinion. Nevertheless, the literature study can be divided into three distinct phases based on their different focuses.

In the early stages of the literature study, much effort was put into scanning the internet to find good sources of information. Methods such as using normal search engines, google scholar, KTH’s Primo library database and Google alerts have been used to find material worldwide. After identifying a few online journals and organizations who published relevant material, these have been followed more closely not to miss any new publications. Examples of these are for instance Javelin Strategy and Research, a strategy and analysis firm, who has published two larger reports and follow the subject closely.

After the initial wide scan of information, a second phase of deep diving into different companies and organizations related to virtual currencies rendered a better understanding of the market dynamics. During this period, much focus was put on corporate information and understanding the organizations working with virtual currencies. The information gathered in this phase came both from the companies themselves and also from articles written about their businesses. An example would be Linden Labs who is a central player when it comes to understanding virtual worlds. The information gathered on Linden Labs comes both from their own publications and Terms of Services, but also from articles published about the company and its main product: Second Life.
The third and final phase was finding information which might give hints concerning new trends and developments. Following specific blogs and using Google Alerts were very useful during this time since they react very quickly to new material in the field. Even though the quality of the information is questionable, it is often possible to find the source of the rumour and therefore find new information quickly.

A few sources of information have had a greater impact than others. The single most important work for this thesis has been the European Central Bank’s report on virtual currencies from October 2012. It is called Virtual Currency Schemes and has already been influential in affecting general opinion and giving guidelines to national banks and other interested parties. It is important since it is one of the first official reports to look at virtual currencies as a broader concept and they also cover two case studies on two of the most important virtual currencies in their opinion: Bitcoin and Linden Dollars.

The publication Virtual Currencies: Real Legal Issues for Retailers by J.Dax Hansen and Sheppard Mullin’s Making Sense of Virtual Dollars have been used to get an overview of the many legal issues that arise when dealing with virtual currencies. Both of these publications have been considered reliable sources of information since they are public material offered by two renowned law firms. Mr J.Dax Hansen is a Partner of the law firm Perkins Coie LLP and is the head of the firm’s Electronic Financial Service practice. Thayer Preece is an associate at Sheppard Mullins LPP and focuses on intellectual property rights. Due to this, both of these sources have been considered valid sources of information for this research.

Since one of the main goals of this master thesis is to understand the landscape of virtual currencies and to predict where the evolution might be taking the industry, many different sources have been used to understand the recent changes on the market. Publications such as Virtual Currencies, Real Potential from the American Banker have been used to get an insight into the changing landscape of the electronic currencies as it accounts for recent important acquisitions by the major players.

2.1.2 In-depth interviews

Merriam claims that the decision to use interviews as a primary method for data collection should be based on a careful consideration of what kind of information you need and if interviews are the best way of achieving this goal. (Merriam, 1994) In this thesis, the main purpose of the interviews is to get an overall understanding of how people looking at virtual currencies. The goal was to get qualitative insights and this is why interviews fitted the research very well in this case.

There were two main reasons for choosing to do in-depth interviews over focus groups or triads and these are mainly related to the knowledge and experience of the researcher herself and the sensitivity of the topic. First of all, focus groups (and also triads to some extent) require much experience from the moderator to be able to steer the discussion in such a way that no person completely takes over the leadership in the group and thus suppresses the other participant’s opinions. Furthermore, both a moderator and an assistant are required in order to be able to perform both the task of guiding the discussion and observe the outcome and this is a resource that is not available.

Secondly, the nature of the topic might make people not want to disclose personal information. Most people do not feel comfortable sharing information about their payment habits or insecurities with a larger group of people. This would severely affect the quality of the information that could be obtained from a focus group. A triad might be a better option due to this reason, but the author judged also in this case that sharing the information might be a sensitive topic. In order for this to work, the moderator must be able to build trust into the group and this might not be possible in all cases depending on the group. For these reasons, in-depth interviews seemed a better option as it also allows the interviewer to ask more probing questions to each individual. The downside being, of course, the amount of time required to perform, transcribe and analyze all of the interviews. (Kvale,
Despite the time requirements, interviews still seemed the better choice to fit the purpose of this thesis.

There were two different studies that were covered within the scope of this thesis: interviews with corporate representatives and consumer interviews with users.

**Settings and participants**

An full list of all the interviewees can be found in appendix, but over twenty people shared their opinions on virtual currencies as a part of the research for this thesis. Sixteen different interviews were made with representatives from different companies and organizations. The choice of interviews was based on a desire to target as many different positions and roles as possible on the virtual currency landscape as to get a good market overview. The interviews were held either at the interviewees’ offices, using Skype or through a phone call. The reason for the different mediums of interactions was the different geographical locations of the interviewees.

Four in-depth interviews with consumers (or possible consumers) on one hour each was made to try to understand the demands and wishes. Here, the focus was on people aged 20-40 with a background of using technology in their everyday life. Due to the limited timeframe, it was not possible to perform interviews that would represent statistically significant opinions, but the focus was on obtaining significant knowledge from a few subjects. This was also hindered by the fact that the technology is its early adoption stages. These interviews do not seek to explain consumer attitude as a whole, but to serve as a proxy for the views of early adopters. The consumer interviews took place at a neutral locations or the respondents own office. During the first ten minutes of the interview, the respondent got to take part of the survey to provide some background information. After this, the focus was on answering more open questions of more reflective nature.

**Instrumentation and procedure**

The interviews were 60 minutes long each and recorded using both the built-in recorder of Windows 7 and an iPhone. The interviewee was not given the questions in advance as to capture the individual’s opinions. Extensive notes were also taken during the interview to capture as many elements as possible of the interview. The choice was made not to video record the interviews.

**Analysis of the information**

All interviews were carried out by the researcher herself since there were no other available resources. One of the main sources of criticism against qualitative interviews as a research method is that interviews are biased by nature and, for that reason, not trustworthy. However, bias is not always a problem when it comes to research. According to Kvale, unacknowledged bias might completely invalidate the result of an interview. However, when one recognizes the bias and takes it into account for what it is, a personal opinion based on personal experiences, it might serve the purpose of the research very well. Kvale continues to state that:

“A recognized bias or subjective perspective, may, however, come to highlight specific aspect of the phenomena investigated, bring new dimensions forward, contributing to a multiperspectival construction of knowledge.” (Kvale, 1996, p. 286)

In this manner, the interviews was a very good fit for this thesis since the purpose of the study is to gather many different opinions in order to draw conclusions on the roles needed in the future. The information from the interviews has also been analyzed from this point of view: as reflections of personal opinions.
2.1.3 Survey

In addition to the interviews and the literature study, an online survey was carried out to also try to capture some general feelings and opinions from the end-consumers. It was a challenge to design the questions in the survey due to the novelty of the concept and the fact that very few people know what virtual currencies are. For this reason, the questions had to be asked in a manner that they did not explicitly ask about virtual currencies.

The survey was created using an online tool called SurveyMonkey which is a standard choice for surveys of this type. The survey was later shared through social media, email and various online locations. There were in total 42 questions in the survey, even though not all respondents answered all questions due to built-in question logic.

The purpose was again to gain an understanding of the feelings of potential early adopters of new technologies such as virtual currencies. 68.8% of the respondents had heard about virtual currencies before, so in this sense, the survey managed to capture the right target audience, even though the response rate was low. Forty-nine people filled out the survey in total and out of these 49% were women and 51% men. 89.7% of the respondents were born 1984-1990 and a majority (57.1%) came from Sweden.

2.2 CASE STUDY OF ERICSSON M-COMMERCE

Collis and Hussey define case studies as "a methodology that is used to explore a single phenomenon (the case) in a natural setting using a variety of methods to obtain in-depth knowledge." (Collis & Hussey, 2009, s. 332) In this thesis, the case study was understanding how a company in a related industry should structure, analyse and assess the virtual currency ecosystem to make a decision on market entry. The purpose of the case study was to ensure the relevance of the models developed in the thesis and to provide a structure for analysing the virtual currency market that companies in similar situations could reuse.

Choosing to study this situation for Ericsson was a good choice since the company itself was an interested stakeholder in taking a place in the market and therefore is interested in supporting a market analysis that would cover all aspects of the ecosystem.

A case study was useful given the novelty of the concept of virtual currencies and the fact that there is not much previous academic research made in the subject. Actually, the fact that case studies allow to capture the interplay between different factors is highlighted by many researchers.

"Case studies typically examine the interplay of all variables in order to provide as complete an understanding of an event or situation as possible. This type of comprehensive understanding is arrived at through a process known as thick description, which involves an in-depth description of the entity being evaluated, the circumstances under which it is used, the characteristics of the people involved in it, and the nature of the community in which it is located." (Colorado State University, 2012)

Both the researcher and Ericsson were interested in this type of extensive and, hopefully, complete understanding of the topic. The focus of the case study was therefore the M-Commerce department at Ericsson and the information that comes from the research will be used as decision material prior to market entry. The unit was suitable since it is the organization at Ericsson responsible for developing and selling services related to mobile commerce. Furthermore, M-Commerce has had previous experience of working with virtual currencies as they conducted a pre-study in virtual gaming money earlier this year.
Merriam discusses the problem with defining and narrowing down the scope of the case study, but also claims that an entire department could very well be the unit of analysis for a research question. (Merriam, 1994) M-commerce at Ericsson is a unit of 28 employees, but the scope of this thesis was narrowed down to only look at the product management side and not sales or marketing. The main challenge lied in identifying the department’s strengths and weaknesses to be able to map their capabilities to the roles in the virtual currency ecosystem.

Individuals participating in the case study were selected using purposive sampling on the criteria that they had expertise within the area of virtual currencies or the business processes related to the area at Ericsson M-Commerce. (Merriam, 1994) In this case, also a few individuals from other business units, such as Business Intelligence, were included. The interplay of variables also comes in when it comes to selecting individuals participating in the case study, for instance, close partners and customers to the M-Commerce department are also considered to belong to the case study since these relations explain the work of the unit as a whole.

The case study was extremely instrumental in guiding the iterative process leading to the creation of the theoretical framework and the models for analysis used in this thesis. However, the business material provided to the M-Commerce department was also an important part of the thesis. The analysis made of the company and its current situation was based on own observations, interviews with employees and internal documentation. All suggestions made in this thesis, such as recommendations and potential actions, have been made using a combination of analysing the business capabilities and trying to match these with the requirements of different roles in the field of virtual currencies.

2.3 ETHICAL CONSIDERATIONS

The goal has been to do the research in the most ethically appropriate manner possible. This entails that all respondents participating in any interview or questionnaire should be fully informed about the purpose of the thesis and its stakeholders and have a good understanding of how the information should be used. Fowler argues that: “it is a basic premise of ethical survey research that respondents should be informed about what it is that they are volunteering for.” (Fowler, 2009, p. 164) Both the interviews and the survey will start with a short explanation stating what the purpose of the research was, who was conducting it and what Ericsson M-Commerce’s roles was.

On the same note, Ruan thinks that it is perfectly fine for researchers to align themselves with a research sponsor but that they: “in order to maintain the ethical high ground, however, should make their allegiances known to their audience.” (Ruan, 2008, p. 27) This has of course been taken into consideration when conducting the interviews and respondents were made aware that Ericsson was sponsoring the study before accepting the offer to participate in the study. This argument is also supported by Fowler. (Fowler, 2009)

It should be very clear that no information is shared without the full consent of the individual interviewed. As stated in Essentials of Research Methods, informed consent is a key concept when it comes to research and interviews. (Ruan, 2008)
3 THEORETICAL FRAMEWORKS

This chapter will cover the theoretical frameworks used within this thesis. The section will start with a chapter on the definition of virtual currencies and then continue with different implementations of currency schemes. The third part will introduce a model for classifying virtual currencies that will be used throughout the thesis. The fourth and final section will list a few existing virtual currencies and provide a more in-depth knowledge of six specific currencies.

3.1 DEFINITION OF A VIRTUAL CURRENCY

The definition of virtual currencies used in this paper comes from a report published by the European Central Bank in October 2012. According to this definition, the concept can be defined as:

*A virtual currency is a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community.* (European Central Bank, 2012, p. 5)

The definition was chosen since the European Central Bank was one of the first large organizations that tried to define the concept of virtual currencies in a holistic manner. The definition is a result of the trying to define money after their legal status and format, as seen in Table 1 below.

*Table 1: A money matrix (European Central Bank, 2012, p. 11)*

<table>
<thead>
<tr>
<th>Legal status</th>
<th>Unregulated</th>
<th>Certain types of local currencies</th>
<th>Virtual currency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated</td>
<td>Banknotes &amp; coins</td>
<td>E-money</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Commercial bank money</td>
<td>Commercial bank money</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical</td>
<td>Digital</td>
<td></td>
</tr>
</tbody>
</table>

The main benefit of this definition is that it highlights the difference between E-money and Virtual currencies, which is usually a grey zone. It is quite common that both virtual currencies and electronic money are put in the same basket and labeled “digital money”, despite their many differences. According to the European Central Bank:

> “Virtual currency schemes differ from electronic money schemes insofar as the currency being used as the unit of account has no physical counterpart with legal tender status.”
> (European Central Bank, 2012, p. 5)

In other words, electronic money is always backed by a national currency with legal status, while virtual currencies are not.
3.2 CLASSIFYING IMPLEMENTATIONS OF VIRTUAL CURRENCIES

There are two main ways of defining the implementations of virtual currencies: Type 1, Type 2 and Type 3 or Open/Closed virtual currency schemes. Both will be explained in this section to provide the reader with an understanding of how virtual currencies are usually categorized. In essence, the types defined by the ECB are basically the same as open or closed loop systems; however the denotation of open and closed is slightly different. Below is an attempt to explain the differences between the two ways of classifying the virtual currency implementations.

The only confusing aspect with the two different ways of looking at virtual currencies is that “closed” can have two different meanings. In the ECB model, closed refers to the fact that the currency has no contact at all with the real economy. In most other definitions, a closed system refers to the situation where money can be exchanged into a virtual currency, but not be exchanged back into real money again. The two approaches are covered more in detail in the two following chapters.

3.2.1 ECB’s types of virtual currency schemes

The classification used by the European Central Bank is based on the virtual currencies’ interaction with the real economy and the money flow. In the figure below, the virtual currency scheme’s interaction with the real world economy is showed in better detail.

3.2.1.1 Type 1

Type 1 implementations have extremely limited interaction with the real economy. They can be considered “in-game only” schemes since the currency is used only within the confines of a specific
game or social community. (European Central Bank, 2012) However, a subscription fee is usually charged by the issuer of the currency.

One example of a Type 1 currency is Gold, used in the online-role playing game World of Warcraft (WoW) and issued by the game designer Blizzard. This currency can only be spent in the game to purchase virtual goods and services. Furthermore, trading with WoW Gold in the real economy is strictly forbidden according to the end user agreement between the players and Blizzard. However, there is usually a black market associated with Type 1 schemes, where players illegally sell currency for real money to make a profit. In this case, the implementation continues to be Type 1, but with a Type 3 black market.

3.2.1.2 Type 2

Type 2 currencies are schemes with unidirectional flow, meaning that the virtual currency can never be exchanged back into real money. According to the ECB:

“The virtual currency can be purchased directly using real currency at a specific exchange rate, but it cannot be exchanged back to the original currency. The conversion conditions are established by the scheme owner.” (European Central Bank, 2012, p. 14)

Examples of type 2 currencies are for instance Facebook credits, SAS EuroBonus points and Farmville Cash. Facebook credits was introduced in 2009 as a way of buying virtual goods in all applications available through Facebook’s platform. The users would buy Facebook credits using their credit card or Paypal at an exchange rate set to the dollar. However, no conversion back to real money was possible. However, Facebook has as of July 2012 stopped issuing their virtual currency in favor of payments in national currencies. (Facebook Inc, 2012)

Loyalty programs and Frequent Flyer Programs are also considered type 2 schemes. The consumers/users are rewarded points which later can be spent in a closed system, but never exchanged back into the original currency. (European Central Bank, 2012, p. 15)

3.2.1.3 Type 3

Type 3 currencies are special because of their interoperability with the real world economy. The ECB states that:

“Users can buy and sell virtual money according to the exchange rates with their currencies. The virtual currency is similar to any other convertible currency with regards to its interoperability with the real world.” (European Central Bank, 2012, p. 14)

Examples of type 3 currencies are Bitcoin and Linden Dollars. In both cases, the currencies can be purchased through an official currency exchange and also be converted back into the original currency at any moment. Type 3 virtual currencies can be used to purchase both virtual and physical goods.

3.2.2 Open and closed loop virtual currencies

The most commonly used method of classifying implementations of virtual currencies prior to the ECB’s report from October 2012 is to distinguish between open and closed loop schemes. (Korolov, 2012)

3.2.2.1 Closed loop

In closed loop currencies, the flow of money is unidirectional and the virtual currency earned/bought can never be exchanged back into real money.
Closed loop currencies are the same as Type 2 currencies, and examples include Loyalty points, many gaming currencies such as Farmville Cash and Facebook credits.

3.2.2.2 Open loop

In open loop currencies, the virtual currency can be used in a similar manner to real money. The virtual currencies can usually be spent on both virtual and physical goods as well as for person to person transactions.

Open loop currencies are the same as type 3 currencies and examples of implementations are Ripple, Bitcoin and Linden Dollar.

3.2.3 Combining the two models

Both the model used by ECB and the notions of open and closed money schemes will be used in this report. The figure below summarizes the differences and similarities between the two models.
In this thesis, Type 2 currencies will be referred to as “Closed” and Type 3 will be referred to as “open”. Type 2 and 3 implementations are considered the most interesting within the scope of this thesis, but Type 1, or Fictional currencies, will also be briefly covered.

3.2.4 Transaction types of the virtual currency market

Virtual currency can be spent in three different ways. The transactions can be classified into three different types of actions: Buying Digital Goods and Services, Buying Physical Goods and services and buying or transferring cash and credit.

Depending on how the virtual currencies are implemented, the currencies can be used for one, two or all three of these different ways of spending money.

3.2.5 Neighboring industries to virtual currencies

Considering the novelty of the virtual concept, many of the larger players in the market originate in different industries somewhat related to virtual currencies. Below is a representation of a few of the most important neighboring industries where it is likely that they are considering adopting different kinds of virtual currency models.
Figure 6 Neighboring industries

These industries are more likely than many others to consider moving into virtual currencies because their current businesses already have certain elements in common with virtual currencies, but also since they could see a potential profit from the portfolio extension.
3.3 MODEL FOR CLASSIFYING VIRTUAL CURRENCIES

Differentiating between the different types of implementations based on their interaction with the real economy is a good starting point, but it is not sufficient to be able to compare different virtual currency schemes and their usage. Therefore, an effort has also been made to also classify the currencies after how they are used and the purpose behind their implementation. The model differentiates between five groups of virtual currency schemes: Prepaid Value, Loyalty points, Monetizing currencies, Gaming Currencies and Value Encoded currencies (Vescent, Future of Transactions Research Brief, 2012). The model is based on both existing groups of currencies and own conclusions regarding how the currencies should be grouped together. Vescent’s notion of Value Encoded Currencies has been adopted as is, but the currencies have been divided into two main groups: centralized and decentralized currencies. This model is seen in Figure 6 below.

![Figure 7 The five groups of virtual currencies](image)

This division between the six main groups of virtual currencies is based on the purpose of their implementation and the role they play for the owners of the virtual currency schemes. In the next section, the five groups of virtual currencies are explained more in detail.

### 3.3.1 Prepaid value

Prepaid value currencies are type 2/closed loop virtual currency schemes. Prepaid value refers to different implementations of airtime accounts and other types of systems where the virtual currency is the product that is used by the consumer. As an example, for prepaid air time accounts, the minutes stored at the user’s account are the virtual currency. These minutes are bought using real money and then consumed at a fixed, or variable, rate by the consumer.

Prepaid value- currencies are especially important in emerging markets, such as in many African countries, where prepaid minutes are considered to have a more stable value than other real
currencies. Airtime minutes can usually be stored in SVA, Stored Value Accounts, and also transferred between different accounts. Value saved in Stored Value Accounts can only be used within the same mobile network operator, thus limiting the prepaid value currencies to closed loop /type 2 solutions.

3.3.2 Loyalty points

**Implementation:** Type 2 (closed loop)

In the recent years, it has become increasingly popular for companies to implement loyalty programs to gain a competitive advantage over their competitors. There are two main ways of implementing virtual currencies as loyalty points: in loyalty programs (store points) and in Frequent Flyer Programs. The two types of programs seem very similar at first glance, but the underlying business models differ significantly from one another due to the differences in incentives for implementing the programs.

Apart from the issuer of the loyalty points and the members, there can also be additional parties involved in the programs. The role of the loyalty point issuer is self-explanatory since it is this organization/enterprise that creates the loyalty program and hence also the virtual currency. Partners use the same virtual currencies within their businesses as a way of taking part of the existing member database of the loyalty program and to create even better incentives for their customers to join the program. Suppliers help supply the member rewards when these are not directly linked to the loyalty program itself. However, suppliers usually only exist in frequent flyer programs but this will be covered more in detail in the following chapters.

3.3.2.1 Loyalty programs

**Implementation:** type 2

Loyalty programs are structured retailer/merchant marketing programs aimed at rewarding loyal customer purchase behavior. Different ways of rewarding customer loyalty have existed since 1700th century, but a new era of loyalty programs started with the creation of card-based loyalty programs. The importance of having to swipe a card to receive the loyalty points was enormous since it allowed the companies the opportunity to learn more about their customers shopping behavior, and, therefore tailor targeted marketing deals accordingly.

Beck, Henderson and Palmatier define loyalty programs as: “institutionalized incentive system that attempts to enhance consumers' consumption behavior over time beyond the direct effects of changes to the price or the core offering.” (Beck, Henderson, & Palmatier, 2011, p. 258)

Implementing a system of loyalty points is one way of ensuring true customer loyalty by “delaying the reward” for being in the program. The common feature for loyalty programs using this model is that the points are accumulated over a period of time via purchases and that they later can be redeemed by choosing products from specific merchants. (Kwong, Soman, & Ho, 2010)

Loyalty programs are usually very attractive to consumers and in the US, the average household subscribes to 12 separate programs. (Beck, Henderson, & Palmatier, 2011) The fact that most consumers are in fact “polygamous” has prompted much discussion concerning the effectiveness of these programs as marketing mechanisms.

There are two main reasons for a company to create a loyalty program: to gain knowledge and data concerning their users and to promote customer loyalty. (Sandberg, Head of IT, Medmera Bank, 2012) Gaining better consumer understanding is achieved by the fact that members agree to share their purchase information with the store each time they buy a product by swiping a card or identifying themselves in some manner. Customer loyalty is achieved by reducing the incentives to
switch stores for members. By ensuring that members are rewarded for loyal behavior, for instance by earing points for each product bought, the members will get incentives to continue to make all purchases within the same chain of stores. In most implementations of loyalty programs, the rewards are paid as either dividends or vouchers.

Examples of loyalty programs are for instance the Tesco Clubcard, where customers/members are awarded points for each purchase that they later can redeem in a variety of ways with different partners and at Tesco itself. (Tesco, 2012) Stadium, a Scandinavian chain selling sport clothes and equipment, also uses loyalty points to promote customer loyalty. In this program, each Stadium Member gets 1 point for each SEK spent within the store. The members are rewarded with vouchers as they reach a certain level of loyalty points. (Stadium Sweden, 2012)

3.3.2.2 Frequent Flyer Programs

**Implementation:** type 2

Frequent flyer programs are the second large group of implementations where a virtual currency (loyalty currency) is used as a foundation for running a loyalty-based business.

The development of Frequent Flyer Programs was prompted by the deregulation of the domestic US air transport passenger market in 1978 and was further encouraged by the centralization of reservation systems that removed the technical barriers. American Airlines was the first to launch their loyalty program called the AAdvantage program, but many huge airline companies quickly followed in their footsteps. (de Boer & Gudmundsson, 2012) Over the last 30 years, the programs have developed from loyalty programs to coalition programs linking ecosystems of companies from different industries.

The concept of the loyalty program was simple in the beginning. High frequency customers were rewarded by being given a free ticket after they had reached a certain threshold and thus creating the incentive to concentrate their travel to a single carrier. (de Boer & Gudmundsson, 2012) The passengers were rewarded “miles” based on distance flown and the class of the travel, i.e. loyalty points. However, the loyalty programs have evolved much during the last thirty years.

Co-marketing turned out to be an excellent external source of revenue and one of the first examples was with Herzt in the US. Following co-marketing of services, the co-branded credit cards soon followed. This was of enormous economic impact for the airline companies: in 2008, American Airlines earned $1.0 billion by selling pre-paid loyalty points to Citibank. (de Boer & Gudmundsson, 2012) Nevertheless, the demand grew beyond the supply of non-used flight seats and the FFP needed to revise their business model to accommodate more members in the programs and start using partners and suppliers in a much more sophisticated manner.

Frequent flyer programs today are no longer only bonus programs for airline companies, but involve a network of different partners and suppliers. The partners are players such as airline companies, car rental firms, credit card companies, retail companies amongst others. The partners buy loyalty points from the frequent flyer program to give to their customers that are members of the frequent flyer program as a way of gaining a competitive advantage. The business offer is both as a way of attracting new customers, but also access to the database of the FFP to be able to perform targeted advertising fit for the customers. (Kapil, 2012)

The main ingredient of the frequent flyer program business model is the way points are sold to partners and redeemed by the members. The frequent flyer programs make their profit by controlling the revenue per point, i.e. the price points are sold at to the partners, and the cost per price, i.e. the amount of money spent to pay for the member reward. The partner companies buy the points from the frequent flyer program. These points are then rewarded to the members of the
program when they make a purchase from one of the partner companies. The points are then stored in the members accounts until the time when they are redeemed. The member can then choose between a number of products and services that are worth a certain number of points. After the member has done the selection, the points are withdrawn from the account and the frequent flyer program’s debt to the member is settled. At that point, the FFP buys the reward chosen by the member using normal currencies, however to a discounted price.

One of the key aspects of the FFPs is their access to distressed inventory due to their close cooperation with the airlines. Airline tickets and hotel nights have very high perceived value by the member and unsold tickets have no value at all for the airline companies. Selling unsold tickets (distressed inventory) to the frequent flyer program allows for the airline to get some revenue for otherwise unused tickets and whilst not having to lower the prices of business class seats to fill up the aircraft. In essence, this allows for the airline to maintain their pricing strategy and still fill the aircraft with passengers.

The frequent flyer program’s profit is realized at two different points in time: when the point is bought by the partner (SAS, American Express etc) and when the point is redeemed by the member. This is due to the fact that the point is also noted as a debt to the members in the books at the moment of purchase and this debt is paid back when the frequent flyer program buys a reward for the member for less than the debt’s value.

SAS EuroBonus is one of the most known frequent flyer programs in Scandinavia, but most non low-fare airlines are part of some type of coalition program. British Airways has a program called Executive Club using different tiers of memberships for different levels of rewards. The points used within the program are called Avios points and can be collected and spent in similar manners to SAS Eurobonus. (About the Executive Club, 2012)

**Example: SAS EuroBonus**

**Implementation:** Type 2

**Classification:** Frequent Flyer Program Currency

EuroBonus points are the virtual currency used within the frequent flyer program SAS EuroBonus. The virtual currency is at the heart of the business model and the profit comes from being able to control the cost per point and the revenue per point.

In the frequent flyer program SAS EuroBonus, the loyalty points are the product sold. Every time a point is “earned” by a member, the company where the transaction takes place (SAS, Lufthansa, Amex, Scandic, Hugo Boss) a few cents per points to EuroBonus as a profit share. When the points are redeemed, EuroBonus will buy a reward for the member and then withdraw a number of points from the member’s account. EuroBonus makes its profit from the difference in Revenue/point and the Cost/point at the time of redemption. (Kapil, 2012) Furthermore, the points which are not redeemed within the time frame stated will also be considered breakage and thus constitute a profit to the frequent flyer program.

The points are considered debt between the time when the points are earned and redeemed by the member. 2011 this debt to the members was more than 1,3 billion SEK. (Kapil, 2012)

According to Michael Kapil, Director Program Development Airlines & Rewards EuroBonus, the loyalty currency is one of three main assets for frequent flyer programs such as EuroBonus. The main assets of a frequent flyer loyalty program are:

1. The database of the customers. The database represents a direct communication channel with the members as well as all the information concerning their transactions. This allows
for very accurate segmentation of the customers to be used in targeted advertising and product development.

2. The partner deals. The partners represent a source of income when the loyalty points are earned by the members, but they also allow attractive deals concerning rewards for the members.

3. The loyalty currency. The loyalty currency is a possibility to persuade members to increase their purchases by using EuroBonus points as a stimulating market mechanism. The fact that the partner deals are mutually beneficial allows the program to buy rewards for their members that have a higher perceived value than the actual costs.

In other words, loyalty currency is very highly valued by both members, partners and the frequent flyer program itself and it is very often one of the most profitable divisions of the airline industry.

### 3.3.3 Monetization currencies

**Implementation:** type 2

There are two main kinds of monetization currencies: application monetization currencies and advertising currencies. The two types can be used separately or together in a combined variant for using virtual currencies as a monetization tool. In this case, the advertising currency is considered an additional feature of the application monetization currencies.

#### 3.3.3.1 Application monetization currencies

**Implementation:** type 2

Application monetization currencies are implementations of virtual currencies where the main functionality is to facilitate in-app payments in a user-friendly and cost effective manner. By ensuring that the user exchanges real money into virtual currency, there are no further costs for micro-transactions within the applications and the virtual currency can also serve as a user-engagement tool by rewarding the players for “good behavior”.

Monetization currencies have developed as a result of the new requirements for in-app payments and to ensure that developers can get paid for developing new applications. The popularity of social games such as Farmville has seen a tremendous increase over the last few years and this is the key driver of the increase of virtual currency in applications.

The business model behind monetization currencies is based on the sheer number of people playing games on their mobile devices. Even though only a small percentage of the users playing the games actually pay for virtual currencies, the amount of people playing still makes it a very profitable enterprise. (Willis & Park, Social media games have become big business, 2012)

Monetization currencies are often used together with “freemium based” business models where most content is free, but the user can gain “extra experiences” by paying to buy virtual currency that can be used within the game to buy virtual goods or unlock hidden features. Most companies differentiate between two types of virtual goods: “consumables” and “unlockable”. Consumables are for instance fertilizer in Farmville that the user can buy in order for his/her crops to grow faster. Unlockables are new venues or virtual goods that can be used within the game but that do not get depleted or used up.

Farmville Cash is a typical example of a virtual currency used as a monetization model. In Farmville, there are two types of currencies: Coins and Cash. Coins are in-game currencies that are type 1, whilst Cash is type 2. Certain goods within the game can only be acquired with Cash and the players can also buy Farmville Cash to help speed up the pace of the game.
3.3.3.2 Advertising currencies

**Implementation:** Type 2

Advertising currencies, or offer-based currencies, is a type of business model where the users get rewarded in virtual currencies for taking part of advertising material, such as watching a trailer, taking part of a survey or downloading an application. The virtual currency can later be used to acquire different rewards within a closed system, typically different types of gift cards.

The main parties involved are the issuer of the currency, their partners, advertising agencies, the company wanting to market something and the user. The issuer of the currency owns the technical platform where the advertising activities take place. Offer based currencies, or “offer based payments” is only one aspect of in-app advertising used by application developers to monetize their apps. The issuers of the currencies are also often involved in other types of in-app advertising offers, such as selling white label solutions for virtual currencies or in-app banners or ads.

The companies wanting to market their products can usually choose how they want to reward the people watching their advertising content. However, usually they are rewarded in advertising currency that can be used to buy gift cards or vouchers. Advertising agencies usually take the role of intermediary in between the company wishing to market their products and the advertising currency solution provider, just like with any other marketing channel. Offer based payments are considered digital marketing and the advertising agencies that mediate the marketing are usually focused on below the line marketing. The users who view the advertising content are rewarded for their actions in virtual currencies. When they have reached a certain level, they can then redeem their points with the partners of the virtual currency scheme. The partners can either be companies that want to market their products and also offer their own products “as rewards”, or external parties such as companies selling gift cards.

Examples of companies using advertising currencies are Bamboo Wallet and Shopkick. Bamboo Wallet is an advertising currency application, where users have their accounts in the Bambo Wallet and gather JunoCredits to be able to redeem gift cards. (Bamboo Wallet, 2012) Shopkick is an American company that brings a physical element into the world of virtual currencies. Using the Shopkick application, the users get “kicks”, a virtual currency, for physically visiting stores and taking part of advertising content in person. (Shopkick, 2012)

**Example: Farmville Cash**

**Implementation:** Type 2

**Classification:** Application monetization currency

Farmville is one of the most popular social games currently available created by the game developer Zynga. Currently Farmville has more than 15 million players through Facebook. There are two types of currencies available in the games: Farmville coins and Farmville Cash. The first is a purely fictional currency used as part of the company’s freemium based business model. The latter, however, is available as a closed loop currency that can be earned or bought using real money. This model of an attention based and a money based virtual currency is quite typical for social media games and a tool for the developers to earn money from the small segment of users willing to pay to advance faster in the game.

There are three main ways of earning Farmville Cash: buying, reaching a new level or by taking part in offer based advertising which rewards the users in the virtual currency. Farmville cash can be purchased through Zynga’s own platforms as well as through Facebook using a variety of payment
methods. However, there are also other methods of earning the virtual currency. One example is to take part of advertising content, but the players also get rewarded for reporting glitches to Zynga.

American Express made an agreement with Zynga where the credit card company will award Farmville Cash to give to their members when making certain purchases or take part of certain offers. (Ryan, 2012)

3.3.4 Gaming currencies

Implementation: Type 1, 2 and 3

Gaming currency is money used within a game to purchase virtual goods or services to drive the game forward. Examples of these are for instance World of Warcraft Gold or Farmville coins in Farmville. There are two main groups of gaming currencies: Currencies used in massive multiplayer online role playing games and in virtual worlds.

3.3.4.1 Massive Multiplayer Online Role Playing Game Currencies

Implementation: Usually Type 1, but increasingly type 2

MMOGs have played a very important role in the development of virtual currencies and are still considered one of the major types of contexts where virtual currencies are used. The most popular type of MMOG is massive multiplayer online role playing games, with titles such as World of Warcraft, but real time strategy games, simulations and first person shooter are also very popular implementations of MMOGs.

The first massive multiplayer online role playing game (MMORPG) was the multiplayer flight combat simulation game Air Warrior by Kesmai on the Genie online service from 1986. (Game Axis Unwired, 2007) This market a major milestone for the online gaming industry and MMORPGs took off during the late 1980’s and early 1990’s.

Virtual currencies have previously usually been used as a unit of account in MMOGs and not as a monetization strategy, however an increase in the latter has been seen the recent year. The games are often type 1 implementation of currency schemes, meaning that the interaction with the real world economy is very limited. The gamers usually only pay a monthly subscription fee and in most cases, no further money can be spent in a legal manner.

However, there is a huge black market for played avatars and virtual goods that exist outside of the gaming environment. These black markets sometimes trade in fiat currencies such as dollars or euro, but also in various virtual currencies. Since selling virtual currencies outside of the system in the game usually is against the terms of service of the games, the game developers are taking actions to limit the practice as much as possible.

Example: World of Warcraft Gold

Implementation: Type 1

Classification: Massive Multiplayer Online Game currency

World of Warcraft (Wow) is one of the most popular games with more than 9 million subscribers worldwide in 2012. The number of players has nevertheless been declining since 2008 where Wow’s popularity peaked with more than 12 million subscribers. (BBC Technology, 2012)

The money used in the Massive Multiplayer Online Role Playing Game World of Warcraft is probably one of the most well-known virtual currencies out on the market. The currency is earned in-game by performing different task such as killing monsters or retrieving objects. Gold, as the currency is
called in the game, is a closed loop currency that cannot legally be traded outside the confines of the game. However, there is a big black market for the in-game currency which is gathered and sold through a process called gold mining.

Gold farming is the process where one player acquires virtual currency that later is sold to another player in real currencies. Usually the Gold is sold through a third party website or through traditional forums such as eBay. Gold Farming is against the conditions set out by Blizzard in the Terms of Service, but it is hard to completely ban all players due to the ease of accessing a new account under a different name. (Gold farmer, 2012)

3.3.4.2 Virtual world currencies

Implementation: Usually type 3

Virtual worlds are one type of massive multiplayer online games that focus on the human interactions rather than the achieving game specific goals. Virtual world currencies are normally type 3 currencies and many virtual worlds have their own currency exchanges to handle the transactions. In the virtual worlds, the virtual currencies are used just like real money in the real world: to buy property and goods, to reward labor and to store value.

The virtual economies are usually governed by the users within the community and the value of different goods usually depends on how difficult they are to obtain and how useful they are. Edvard Castronova, one of the most prominent researchers in the field, prefers the term synthetic worlds to virtual economies. Castronova defines synthetic worlds as: “an expansive, world-like, large-group environment made by humans, for humans, and which is maintained, recorded, and rendered by a computer”. (Castronova, 2005, p. 11) The first visual virtual world was Meridian 59, which was the first of its kind to have a 3D game engine. (Kirmse, 2000) Lineage from 1998, on the other hand, was the first to hit 1 million subscribers. Today, there are several different virtual worlds with millions of subscribers, with the most popular on being Second Life. The Swedish company MindArk’s virtual world Entropia is also of great interest due to their interesting economical models in their virtual world.

The companies behind the virtual worlds, MindArk and LindenLabs, earn money in several different ways. Two key ways highlight the importance of the implementations of virtual currencies: in-game purchases of virtual property and exchanges between real world currencies and the currencies used in the virtual worlds. Players can earn virtual currencies by buying and selling virtual goods and property as well as performing jobs for other players.

Buying and selling virtual property, creating virtual goods and tourism are standard ways of earning virtual currencies in the synthetic worlds. One example of a business in a synthetic world was the banking licenses sold in Entropia in 2007 where five avatars bought the right to lend PEDs to other players in a structured manner. (Neverdie, 2007) Based on how the game is implemented (Type 2 or 3), it is sometimes possible to also exchange the virtual currency back into real money and thus make a real world profit from virtual labor.

In Entropia, the currency used is PED and the economy is based on interaction between players. Second Life is the biggest virtual world right now and the virtual currency used in Second Life is Linden Dollar. The owner of the game, LindenLabs, also operates the currency exchange Lindex. (Second Life, u.d.) More in-depth detail of the business model behind the linden dollar used in Second life will follow in the next chapter.

Example: Linden Dollar

Implementation: Type 3
Classification: Virtual World Currency

Linden Dollars is the virtual currency used in the virtual world Second Life. The currency is named Linden Dollars after the company that owns and operates the synthetic world: Linden Research. Linden Research is based in San Francisco and launched its three-dimensional modeling tool, the basis for the massive multiplayer online game, already in 2003. (European Central Bank, 2012, p. 28)

According to Linden Labs, Linden Dollars are:

“*The unit of currency for all monetary transactions in Second Life. Linden Dollars are a micro currency and can be traded for real world currencies (USD, EUR, GBP, JPY) on the official Lindex and on other third party exchanges.*” (Linden Research, 2012)

However, Linden Labs do not consider the virtual currency as real money, but licensed virtual tokens.

“*Each Linden dollar is a virtual token representing contractual permission from Linden Lab to access features of the Service. Linden dollars are available for Purchase or distribution at Linden Lab’s discretion, and are not redeemable for monetary value from Linden Lab.*” (Second Life, 2010)

This means that buying and selling the virtual currency is to be considered transferring or bartering of a “Linden Dollar License”.

Linden Dollars were not introduced until two years into the existence of Second Life, in 2005. Up until that point, the virtual world existed without any virtual currency. (Linden Research, 2012) In other words, Linden Dollars is to Second Life what the Euro is for all the EMU-countries: a unifier for the economy.

The main idea behind Second Life is that it gives the users the opportunity to live their lives in a different manner in a virtual environment, thus getting the opportunity to change all the things they do not like about their own life. The users, called the Residents in Second Life, can engage in all types of activities in their virtual environment. These activities are ranging from daily tasks such as meeting friends or playing to business projects such as buying property or starting virtual companies. (Linden Research, 2012)

To be able to become a resident in Second Life, the users need to register and install software on their computers to be able to access their Second Life account. Opening an account is free of charge, but premium memberships with additional technical support cost USD 9.95 per month. Premium members are also awarded a weekly sum of Linden Dollars to spend in the game. (European Central Bank, 2012)

The residents within Second Life create virtual goods that they can sell within the community for profit. The economy within the synthetic world is self-sufficient but shares most other features with most real life economies. The factors of production are the same as in real life (labor, capital and land) and pricing is a result of the resource allocation. In 2009, the transactions between Second Life residents amounted to around USD 600 million. (European Central Bank, 2012)

Linden Dollars is entirely open loop and the currency can be bought and sold using LindeX, a currency exchange own and operated by Linden labs, or through third party exchanges. Since Linden Labs can control the amount of Linden Dollars in existence, the company has kept the exchange rate at around 1USD = L$ 260 by injecting new Linden Dollars when needed. It is stated in the Terms of Service that: “Linden lab has the right to manage, regulate, control, and/or modify the license rights underlying such Linden Dollars.” (Second Life, 2010)

### 3.3.5 Value Encoded Currencies

**Implementation:** Usually Type 3 but also sometimes Type 2
Value Encoded Currencies are mainly type 3 currencies, but they can also be Type 2. Value encoded currencies are named after the fact that they have values encoded in the “DNA of the currencies”. Value Encoded Virtual Currencies are currencies that try to fill an empty niche in the monetary ecosystem based on their values. According to Heather Vescent:

“It (the virtual currency) is good if it aligns with your values. It will be used by those who ascribe to the values encoded in the currency.” (Vescent, Future of Transactions, 2011)

For instance, Ven is a value encoded virtual currency that is global and environment friendly due to its pricing based on carbon futures. (Ven by HubCulture, 2012) Bitcoin is a decentralized peer to peer currency based on open source which stands for anonymity online and freedom from bank regulations. Value encoded currencies are divided into two kinds in this thesis: centralized and decentralized virtual currencies.

3.3.5.1 Centralized currencies

Centralized value encoded currencies are currencies that have a central node controlling the scheme. Examples of centralized currencies are for instance Ripple (Ripple Project, 2011) and Ven. (Ven by HubCulture, 2012) Both of these currencies have values (trust and environment friendly) encoded in them apart from the functionality of money and they are both based on the concept of a central control unit that keeps track of all the transactions made.

Example: Ven

Implementation: Type 3
Classification: Centralized Value Encoded Currency

Ven is a virtual currency used by the social community HubCulture online and at the community’s physical meeting places, the Pavilions. It is an open loop value encoded currency which promotes global reach and an environment friendly perspective. HubCulture introduces Ven as a social global currency and it is used by members of HubCulture to buy, share and trade knowledge, goods and services within the HubCulture community. Currently there are around 8 million units of Ven in circulation worldwide. (HubCulture, 2012)

Ven can be bought directly at market prices, but also transferred between users within the social community. It is also available on Facebook. One of the most interesting aspects of Ven is its pricing. HubCulture states that:

“The value of Ven is determined by the financial markets in a weighted basket of currencies, commodities and carbon futures trading against other major currencies at floating exchange rates. Ven is the first digital currency to float, and the first to include carbon in its pricing, making it the only environmentally linked currency in existence.” (HubCulture, 2012)

The fact that Ven includes carbon futures in their pricing mechanism helps the currency to profile it as a “greener” alternative to other virtual currencies. Furthermore, HubCulture states that the fact that Ven is priced from a basket of currencies makes it more stable and thus a good store of long term value.

Ven was created to support interaction between the HubCulture social network and this remains one of the most important aspects of the currency. The founder of HubCulture says that:

“The trading of goods and services in the hub network is based on Ven, the world’s first peer-to-peer social currency. It floats against other global currencies and is tradable online and redeemable at all Pavilions. Ven functions as a karma wallet – somewhere between thank
you’s and payments – and is used for good deeds, introductions, or as a way to acknowledge positive social action.” (Dryza, 2009)

The notion of additional values associated to the payments is what makes value encoded currencies stand out from other types of virtual currencies. Ven is in other words a clear example of this due to its marketing as social, green and stable.

Ven can be transferred between HubCulture members through an internal trading platform and is accepted at HubCulture Pavillions. HubCulture claim on their website that:

“Members are using the currency to accelerate everything from pricing produce in localized community gardens to micro-funding for development projects, high level knowledge sharing, even as incentives for villa rentals in the Hamptons, Bali, Mexico, Switzerland and other resorts around the world.” (HubCulture, 2012)

The currency can in other words be used for both physical and virtual goods and services. Businesses and normal users can accept Ven by adding a Ven-button linked to an account. The API is also available for other social networks such as Facebook, Twitter and LinkedIn to integrate the transaction option.

3.3.5.2 Decentralized currencies

Decentralized virtual currencies are based on the idea that the control should be shared between the nodes in the scheme and that no central actor/organization should be able to control the currency. Peer-to-peer networks work in this manner and the decentralized currencies that exist today are all based on P2P technology. The fact that a currency is decentralized has many implications, but the most important one is the difficulty to control the currency.

The most important decentralized currency is Bitcoin, which will be covered in more detail in the next section, even though there are several similar implementations based on the same idea of decentralized control. The fact that the currency is decentralized is one of the main reasons for both the currency’s popularity as well as the concerns raised against it.

Example: Bitcoin

Implementation: Type 3

Classification: Decentralized Value Encoded Currency

Bitcoin is one of the most well know value encoded virtual currencies. It was implemented in by Japanese programmer Satoshi Nakamoto in 2009 and has a global span. The currency can be used to pay for both virtual and physical goods as well as services. (European Central Bank, 2012, p. 21) The currency can be used both offline and online and is completely open loop. Bitcoin is a decentralized peer to peer currency and bitcoins are transferred directly from person to person without any intermediary actors such as banks or clearing houses. This allows for lower transaction fees than traditional currencies. (Bitcoin Wiki)

According to Heather Vescent, Bitcoin represents what makes value encoded currencies different from other currencies: “Bitcoin is the perfect example of a value encoded currency. People using Bitcoin all have a similar set of beliefs.” (Vescent, Strategist, 2012)

It is a decentralized currency with a high degree of anonymity is due to its use of encryption considered a crypto-currency. Bitcoin is entirely open source and based on the concept that central control is not by default a necessity for a currency.

“Building upon the notion that money is any object, or any sort of record, accepted as payment for goods and services and repayment of debts in a given country or socio-economic
context, Bitcoin is designed around the idea of using cryptography to control the creation and transfer of money, rather than relying on central authorities." (Bitcoin, 2012)

Bitcoin is to date the only large-scale decentralized crypto-currency currently in use. Bitcoins are generated at a predictable and limited rate by an algorithm ensuring that inflation does not occur in the system. Bitcoins are generated by a process called mining which is designed to be resource intensive to ensure that the blocks created each day remains at stable levels. In this process, transaction records are added to Bitcoin’s public ledger of transactions, the block chain. The block chain is used to distinguish legitimate Bitcoins from fake ones and ensure that no coins are double spent. The maximum amount of Bitcoins created is set to 21 million and it becomes increasingly difficult to generate new coins in the network with time. (Bitcoin Wiki)

To be able to use Bitcoins, the users need to first download the open source software. The Bitcoins are saved in digital wallets and transactions are instant across the network. All transactions are verified by miners around the globe and these are then permanently stored in the code of the currency. (We use coins, 2011)

Bitcoin is the most widely used value encoded currency and is therefore also the one with most value when translated back into national currencies. The current market capitalization of the currency Bitcoin is around $120 million.

Bitcoin is not only the most widely used value encoded virtual currency, but also the most controversial. The fact that the currency is decentralized makes it extremely difficult to regulate from a government perspective. Most organizations are unsure of the implications of using Bitcoin and therefore refrain from using it. The Electronic Frontier Foundation, working to promote digital freedom, has decided not to accept Bitcoins, with the motivation being that:

“Bitcoin raises untested legal concerns related to securities law, the Stamp Payment Act, tax evasion, consumer protection and money laundering, among others.” (Electronic Frontier Foundation, 2011)

The high degree of anonymity also makes the currency a very attractive currency of choice for individuals with reasons to hide their transactions. Bitcoin can be used in similar manners as cash, and therefore have alternative uses for drug dealing, money laundering and terrorist funding. (European Central Bank, 2012)

One example of where Bitcoin has gained much popularity is the drug dealing site Silk Road, which makes use of Bitcoin’s anonymity to conceal the identities of the buyers on the site. The site and Bitcoin’s role in its operations has gained much negative attention and prompted two American senators (Charles Schumer and Joe Manchin) to call for shutting down Bitcoin to target Silk Road. (VanDyke, 2011)
3.4 LEGAL ASPECTS OF VIRTUAL CURRENCIES

The purpose of this chapter is to equip the reader with an understanding of some of the legal aspects affecting virtual currencies. The first section will provide an introduction to some of the legal challenges related to virtual currencies. In the second part, the consequences of different types of implementation will be covered. In the third section, the definition of the concept from a legal point will be covered whilst the laws affecting virtual currencies will be presented in the fourth and final part.

3.4.1 Introduction to the legal challenges

The developing field of virtual currencies has caught banks and regulators by surprise and it is just now that they are starting to react. As a direct consequence of this, the regulation of virtual currencies is still largely an untested field. (Preece, 2011) It is important to be aware that even though virtual currencies as a concept are not regulated, there are still many laws and legal frameworks that might apply to different implementations. It is the maze of navigating through the many different laws that virtual currencies may, or may not, fall under which makes this topic so complicated from a legal perspective.

Most regulators agree that the way the currency is implemented is the most important aspect when it comes to determining what laws it falls under. The main distinction is between type1, 2 and 3 currencies. Nevertheless, there are also clear differences between the different groups of virtual currencies. In this section, the difference between open and closed loop currencies from a legal perspective will be handled, followed by a section covering the different types of laws that might affect the virtual currency depending on the implementation.

To begin with, the fact that the European Central Bank defines virtual currencies as a concept as being “unregulated digital money” is an interesting starting point. The European Central Bank writes in their report that:

“Virtual currency schemes differ from electronic money schemes insofar as the currency being used as the unit of account has no physical counterpart with legal tender status. The absence of a distinct legal framework leads to important differences as well.” (European Central Bank, 2012, p. 5)

According to the ECB, this has several important implications. For instance, the fact that traditional financial actors such as central banks are not involved and that “Typical financial sector regulation and supervision arrangements are not applicable”, creates many new challenges. (European Central Bank, 2012, p. 5) Important to note here is that ECB refers to regulation concerning virtual currencies as a concept and not legal framework such as for example taxation laws.

There are no set of rules that will apply for all virtual currency schemes, i.e. no regulation which applies to all virtual currencies, but there is legal framework that might be applicable in specific use cases. In other words, the laws depend on the implementation and the actors involved. For virtual currencies, the issuer is typically a non-financial private company and the rules that these organizations have to abide are very different from those of financial institutions. Compliance is another important question that arises, since corporate laws often differ between countries.

Another interesting question that arises from this view of virtual currencies is that there is no fixed connection between virtual currencies and traditional currencies.

“The link between virtual currency and traditional currency (i.e. currency with a legal tender status) is not regulated by law, which might be problematic or costly when redeeming funds,
if this is even permitted. Lastly, the fact that the currency is denominated differently (i.e. not euro, US dollar, etc.) means that complete control of the virtual currency is given to its issuer, who governs the scheme and manages the supply of money at will.” (European Central Bank, 2012, p. 5)

In many cases of virtual currencies, this is actually the purpose of the scheme. One clear example is frequent flyer points, where the frequent flyer program actually earns the profit by controlling the cost per point and the revenue per point, i.e. the exchange rate to the national currencies.

Much concern has been raised concerning the implications of the virtual currency schemes. It has primarily been due to the concerns regarding Bitcoin and the like where normal regulations cannot seem to be applied. Bitcoin’s usage as a method of payment for illegal goods such as drugs has made it infamous even in the confines of the American senate. Two senators have in fact demanded that Bitcoin should be evaluated from a security standpoint, and shut down to prevent further drug trade. The DEA responded that they are, “evaluating and analyzing new technologies and schemes perpetrated by drug trafficking networks.” (VanDyke, 2011) Nevertheless, no attempts to shut down Bitcoin or other schemes have been made to date.

3.4.2 Legal consequences of different implementations of virtual currency

The main distinction between different types of virtual currency schemes is if the scheme is fictional, open or closed. (Type 1, 2 and 3 according to ECB) For most well established closed loop systems, there are existing laws and regulations that govern how the users should be able to redeem their virtual currency. For open currency schemes, however, this is still largely unknown territory and most regulators are still struggling to understand how they should define virtual currency legally before they are trying to regulate its usages.

The functionality and implementation of virtual currencies depend on what it is used for and how it will be used. For this reason, there are specific legal aspects that are more or less relevant to the different types of currencies. At the moment, there is most legislation concerning loyalty points since these have been around the longest.

**Type 1 (Fictional currency) implementations**

Type 1 currencies are considered the least risky implementations of virtual currencies from a legal standpoint. The main benefit is that the interaction with the real economy is strictly limited and the transactions are limited to a subscription fee. Since the virtual currency cannot be redeemed in any way, most of the more tricky regulatory aspects of virtual currencies can be avoided. Nevertheless, the company issuing the currency scheme must still be compliant with data security laws and make sure to handle their members’ payment information in a correct manner.

**Type 2 (Closed loop) implementations**

Closed loop currencies mostly fall under the same laws as closed loop payment cards. This means that the user never will be able to exchange the virtual currency back into national currencies and that there are end-user agreements stating how long the company issuing the virtual currency agrees to guarantee that the virtual currency is available and redeemable on the account.

Examples of types of implementations that are affected by gift card laws are for instance many types of prepaid cards, such as prepaid phone minutes, but also most gaming currencies and monetization currencies. Airline mile programs (such as SAS EuroBonus) are other examples of closed loop currencies with strict regulations concerning redeeming the virtual currency. (Korolov, 2012)
Nevertheless, there are many different laws that might affect the currency schemes. The issuer of the currency scheme is usually very clear in stating that the currency operates within a closed loop system and that the virtual currency cannot be exchanged back into real money in their Terms of Service contracts. For instance, Facebook explicitly forbids transferring virtual currencies outside of the closed loop system in their Policy document giving guidelines to app developers.

“You may not utilize Facebook Payments to sell virtual currency or other stored-value item that can be used outside of the app where the transaction was completed. You may not accept electronic value from a user in one app and then deliver or transfer the purchased item to the user in another app without our prior authorization.” (Facebook, 2012)

Facebook is not the only example, but most owners of virtual currency schemes strictly limits the currency to closed loop implementations for both financial and legal reasons.

**Type 3 (open loop) implementations**

Open loop currencies are interesting with the new opportunities that arise from the added flexibility. There are two main groups of virtual currencies that have open loop implementations: value encoded currencies and virtual world currencies. In both cases, the virtual currency is used as a “money substitute” and just like with real money, the profit comes from the transactions made using the currencies rather than from the currency itself as well as on differences in exchange rates.

Many value encoded currencies are open source projects with no single responsible party interested in ensuring compliance with the many different laws around the globe. Currencies such as Bitcoin have up until now mostly managed to avoid regulation simply because they have a relatively small user base and that no financial institutions have had a good reason to push for stricter regulation. However, currencies such as Bitcoin allow for new ways of money laundry which has gained much attention the last few years. (Bastian, 2012)

In virtual worlds, the virtual currencies are more strictly controlled by different legal framework. In most implementations, the currency is considered a software license and treated in this way. Since companies such as Mindark and LindenLabs need to act within the confines of the law, they have also driven much regulation around the usage of virtual currencies and ownership of virtual property. Nevertheless, many question marks remain and there is still much room for individual interpretation of the laws.

### 3.4.3 Defining virtual currencies from a legal point of view

Even though virtual currencies are defined as unregulated, digital money in proprietary schemes in this thesis, there is still much confusion regarding how virtual currencies should be considered from a legal perspective. Furthermore, there is a duality between how the customers and the regulators view the currencies as well as the fact that legal instances view virtual currencies in different ways. The lack of homogenous regulation is one of the major challenges, as well as opportunities, for companies and individuals dealing with virtual currencies right now.

The section below will cover a few of the most common ways of looking at virtual currencies from a legal perspective such as virtual currency as real currency, property, as a software license and of course, as a service.

#### 3.4.3.1 Virtual currency as a currency

Most national laws do not define the term “currency” as a concept in a way that is any useful for classifying virtual alternatives, but rather link the term to its use as a widely accepted medium of exchange. Many actors have requested framework for the taxation of transactions involving virtual currencies, but it is not sure that a virtual currency can qualify as a real currency from a legal stand
point. (Carr, Hoerner, & Kaplan, Virtual Currency in Virtual Economies, 2011) The concept of currency is quite unclear, but what is important to remember is that virtual currencies are invented currencies without legal tender status and without supervision from a central neutral body. (European Central Bank, 2012)

In many ways, virtual currencies are similar to electronic money and national currencies, but a few very important aspects differ between the two. For instance, companies dealing with electronic money are not able to set a time frame that the money is valid. (E-money, 2011) This is however the case for many virtual currencies which are issued with a time limit for redeeming the value.

3.4.3.2 Virtual currency as property

There has been much debate whether virtual currency should be considered property or not. Carr, Hoerner and Kaplan argue that:

“It is unclear whether virtual currency qualifies as property for nontax, legal purposes, even though players can transfer virtual currency to third parties for digital goods or services and real currency.” (Carr, Hoerner, & Kaplan, Virtual Currency in Virtual Economies: Income Characterization Issues for Social Media Companies, 2011, p. 582)

First of all, in the case of gaming currencies, monetization currencies and virtual world currencies, the companies issuing the currencies could choose revoke the virtual currency at their own choosing. Secondly, users of virtual currencies issued by any type of company generally need to sign an agreement stating that the virtual currency is not real money or considered a financial instrument.

3.4.3.3 Virtual currency as a software license

Virtual currency is often considered a software license that can be bought, spent and transferred within a system. This is the most common implementation for most gaming, monetization and virtual world currencies. Linden Research’s Linden Dollars is one clear example where the virtual currency is a software license.

“When you acquire a Linden dollar, Linden Lab hereby grants you a limited license ("Linden Dollar License") to use the Linden dollar as a virtual token to be held, bartered, traded and/or transferred in Second Life with other users (and/or Linden Lab), in exchange for permission to access and use Content, applications, services, and various user-created features, in accordance with these Terms of Service.” (Second Life, 2010)

In this case, Linden Labs has the ability to consider the currency as a license that can be revoked if the user violates the conditions set in the Terms of Service.

The application giant Zynga, who owns and operates Farmville, also consider their virtual currency a license:

“You do not in fact "own" the Virtual Items and the amounts of any Virtual Item do not refer to any credit balance of real currency or its equivalent. Rather, you may purchase a limited license to use the Service, including software programs that occasionally manifest themselves as these items.... Any virtual currency balance shown in your Account does not constitute a real-world balance or reflect any stored value, but instead constitutes a measurement of the extent of your license.” (Zynga, 2012)

In other words, the size of your virtual bank account represents the extent of your software licenses according to this legal stand point.
3.4.3.4 Virtual currency as a service

There are great national differences between what laws are applicable for virtual currencies. One interesting example is Mindark and how they have to try to understand the Swedish national laws concerning financial services.

There is a challenge of defining virtual currencies and many regulatory instances have different views in the matter. For instance, it is practically impossible to denote a virtual currency as a service under class 36 in a process for trademark applications. However, the Swedish Tax Agency still considers virtual currencies as being an ordinary digital service, implying that the issuer of the scheme should pay VAT when exchanging between the virtual currency and real money, if the virtual currency can be translated into real money. (Skatteverket, 2009)

Nevertheless, the Swedish Financial Supervisory Authority has in several cases considered virtual currency as “other financial activity” according to Law (1996:1006), meaning that companies need to report when they issue virtual currency. Edlund also states that this brings complications in terms of compulsory actions against money laundering and fraud.

3.4.4 Laws affecting virtual currency

3.4.4.1 Gift card laws

Virtual currencies are quite often affected by gift card laws since these apply to promises to provide goods and services of a certain value. Loyalty point, prepaid value and advertising currencies are usually in some way concerned by these laws that govern aspects such as expiration dates, inactivity/service fees and cash backs.

In the US, the gift cards fall under the Credit Card Accountability Responsibility and Disclosure Act of 2009 (CCARDA), but the different states can impose even stricter controls for the retailers and issuers of virtual currencies. (Kobus & Schurko, 2011)

3.4.4.2 Prepaid access Laws

Virtual currencies also sometime fall under the laws of prepaid access. In some countries, governments take actions to control the flow of money through the virtual currency schemes to avoid money laundering and terrorist funding activities. (Bastian, 2012)

In the US, the Financial Crimes Enforcement Network has identified prepaid access cards as a source of money laundering and therefore issued new rules governing the area. One objective with making the prepaid access laws stronger is to make it impossible to use the virtual currency without verifying the customer information. In this way, the risk of money laundering decreases due to the lack of anonymity. (Rubenfeld, 2011)

3.4.4.3 Financial services Laws

Financial services laws could pose some very problematic challenges for retailers using virtual currency systems. J.Dax Hansen at Perkins Coie LLP claims that:

“As virtual currency shifts from being a prepayment for goods or services redeemable with one company to a widely-accepted proxy for real currency or a means of transmitting money between various participants, issuers need to consider state and federal services laws such as money transmitter laws and money service business laws.” (Hansen, Virtual Currencies: Real Legal Issues for Retailers, 2010)

In other words, the new uses of virtual currencies open up for entirely new regulatory issues for the retailers. Hansen claims that the implications for breaking these laws could be severe since financial
service laws involve costly licensing agreements and strict compliance demands. Failure to comply with the legislation results in both civil and criminal penalties for the involved parties, so most companies avoid trying to avoid this design of virtual currency schemes. (Hansen, Virtual Currencies: Real Legal Issues for Retailers, 2010)

There are cases where companies dealing with virtual currencies also need to apply for electronic money licenses or even banking license, but this is usually not necessary. (Carr, Hoerner, & Kaplan, Virtual Currency in Virtual Economies: Income Characterization Issues for Social Media Companies, 2011)

### 3.4.4.4 Unclaimed Property/Escheat Laws

Unclaimed property laws usually become relevant when the virtual currency has not been used for a specified period of time. Typical state laws in the United States usually set the period to 3-5 years.

The consequence of failing to comply with escheat laws might result in the company issuing the virtual currency having to turn over the stored value on the unused account. (Kobus & Schurko, 2011)

### 3.4.4.5 Gambling/Sweepstakes Laws

Virtual currencies can also fall under gambling or sweepstakes laws if the game that is using the currency scheme is designed with an element of choice or “luck” in it. According to attorney J. Dax Hansen:

> “Any game play that involves these three elements (consideration, valuable prize and chance), is generally an illegal lottery or constitutes gambling, and therefore must be re-structured to eliminate one or more of these elements.” (Hansen, Legal risks with virtual currencies in online games, 2010)

If users are allowed to earn virtual currency that they can redeem in an open loop setting for physical goods or real money in a game with the previously mentioned attributes, the company might very well be considered illegal lottery or gambling.

Hansen claims that this problem can be avoided by designing the games differently. By avoiding the element of consideration (sweepstake games) as well and the element of chance or luck, the game designer can avoid being considered illegal lotteries or gambling sites. (Hansen, Legal risks with virtual currencies in online games, 2010)

### 3.4.4.6 Sales tax

The question on how to handle virtual currencies from a tax perspective is relevant to many stakeholders. The problem has its roots in the fact that most regulators still have not decided on how to characterize virtual currency in a consistent manner from a legal point of view. Thus, most governments are still unsure of how to proceed in this matter, even though some general guidelines have been made. In a statement made by the Joint Economic Committee (JEC), the indication was that virtual world transactions only should be taxable when virtual currency is exchanged for cash, i.e. only for open loop implementations. (Carr, Hoerner, & Kaplan, Virtual Currency in Virtual Economies: Income Characterization Issues for Social Media Companies, 2011)

The Swedish Tax Association writes in a statement that if the transactions for a purchase of virtual goods or services between two players in a virtual world can be translated from the virtual currency to a national currency, then this should be taxed as a digital service. (Skatteverket, 2009)

Furthermore, the Swedish law differentiates between professional and recreational activities since earnings from virtual currency also can be taxed as an income.
3.4.4.7 Privacy/Data Security Laws

Virtual currency schemes will be affected by the same privacy and security laws that are in effect for e-and m-commerce. This is due to the fact that the customers need to fill out their payment information in the same ways for virtual currency purchases as for any other e-commerce endeavor.

In the US, the handling of the information must be in compliance with the Payment Card Industry Data Security Standard, but most countries have similar laws governing how sensitive payment and consumer information should be handled. (Hansen, Legal risks with virtual currencies in online games, 2010)
4 EMPIRICAL FINDINGS

In this chapter, the current ecosystem will be described. The information is based on the consumer survey, an in-depth literature study as well as from the interviews performed. The first section will cover the results for each group of virtual currency whilst the second part will go into the current situation in the regulatory landscape.

4.1 1.1 RESULTS FOR EACH GROUP OF CURRENCY

In this section, the current landscape for each group of virtual currency will be portrayed with regards to the current ecosystem. The result will be presented from two different perspectives: consumer perspective and from a corporate point of view. Each of the five different groups of virtual currencies will be presented separately.

4.1.1 Prepaid value

Airtime is an unofficial currency in many developing regions that has developed due to the need to send money over distances. It is used to pay for goods and services between people using the same operator.

Consumer perspective

Airtime is an unofficial virtual currency for the sole reason that it fulfills a very real need: to send value across distances and to simplify transactions. It is being used as a currency in almost all developing countries where there are no mobile money schemes and where transfer of airtime is allowed between users by the operator. (Fourie, 2012) In emerging markets such as Africa, many people are connected via mobile phones since the infrastructure for fiber-based internet still has not developed enough to allow a wider spread of computers and thus, mobile banking. Furthermore, when the local currencies fluctuate and there are trust related problems due to high degrees of corruption in the financial sectors, airtime transfer remains a stable and interesting option. (Kabweza, 2011)

However, consumers have therefore created their own way of sending money using their mobile phones. Since airtime only can be transferred within the same operator, many consumers have multiple SIM-cards and thus achieve a level of interoperability.

Corporate perspective

There are many operators in emerging markets that offer airtime transfer as part of their product offering. One example is the operator MTN, which exists in many different countries. Sharing airtime is marketed as a way to share the ability of staying in touch, not in any way as a unit of account. (MTN, 2012)MTN’s M2U service is free for its users and therefore a very convenient way to transfer amounts without any banking costs. Airtime is not an optimal solution to use as a currency from a corporate view point since it is unregulated. In fact, most operators do not consider their airtime transfer opportunities in any way a legal tender but it is a feature that consumers are very interested in.

There are a few interesting business models that have developed as a consequence of airtime transfer possibilities. One example is TxtEagle (or MCent depending on country) which has a global platform which it uses to gather market intelligence through surveys. The company has implemented an ‘airtime compensation platform’ on over 220 mobile networks globally and pays compensation in 50 currencies through airtime. (MCent, 2012)
The airtime transfer functionality is not usually part of the offering when a mobile network operator buys technology from suppliers such as Ericsson, but the solutions is usually built by the MNOs themselves or by third-parties. When asked about the possibilities of prepaid as a virtual currency, Jaco Fourie, a senior expert at Ericsson Billing services stated that:

“We know that people do it, but we don’t want to encourage it in any way.” (Fourie, 2012)

The reason for the skepticism concerning airtime transfer is partly due to its possible uses for money laundering and other illegal activities. In addition, it is not a very profitable addition to the product portfolio since most operators provide this service for free. For this reason, most telecom equipment vendors instead try to promote different mobile money products to implement instead.

4.1.2 Loyalty points

Consumer perspective

According to the results of the consumer survey, 80.5 % of the respondents were part of at least one loyalty program. (Virtual currencies - Survey as part of a master thesis in Industrial engineering and Management, 2012) From a consumer perspective, being in a loyalty program should be easy. If the program is too complicated or requires any effort from the customer’s side, chances are high that it will not be as attractive anymore. Loyalty programs are implemented to drive recurring customers to the stores and to increase the frequency of visit. If the program is badly designed, this will not be the case and the costs for the program will be sunk costs. For this reason, it is important to always consider the customer perspective when designing and implementing schemes with loyalty points.

Consumers generally wish to limit the number of cards they have in their wallets. The wallet has traditionally been a limiting factor when it comes to how many active loyalty programs a customer can be part of, but this is something that is changing. In all the interviews, the interviewees complained over how much they disliked the plastic cards. Comments such as: “I hate bringing cards.” (Interview with analyst at Accenture, 2012) came from almost all of the interviewees.

Consumers are generally very positive to having the loyalty points stored in a mobile application instead of carrying a plastic card. As stated by one of the interviewees: “The best thing would be to have everything at the same place.” (Interview with analyst at Accenture, 2012) This is also supported by the fact that 56.1% of the respondents in the survey claimed that they would use their loyalty points more if they could access them through their smartphone. Convenience is valued very highly by consumers of this segment and the ideal scenario for most people would be to have both the payment cards and loyalty points in the same mobile wallet. Some people are even willing to wait with joining different loyalty programs until they are card-free. One interviewee said that: “There are too many cards to carry. I’ll wait until I can have it in my smartphone.” (Interview with Strategic Sourcing Manager, Ericsson, 2012) Today, few people leave the house without their phone and 90.5% of the respondents claim that they use their smartphone daily. By keeping the loyalty cards, the consumers thus do not risk forgetting them when visiting the store. Even though most larger retailers have their own brand-native applications for smartphones, the consumers still consider it a hassle to have to download one application per store. In this manner, the smartphone is overloaded in the same manner as the traditional wallet is flooded with plastic loyalty cards. This desire has fuelled the development of multi-loyalty wallet applications where the consumer can store information from several different retailers simultaneously.

The last few months, an increase in initiatives connecting several closed loop currencies into open loop systems have emerged on the market. Such initiatives are welcomed by consumers, who are interested in new ways of using the loyalty currencies. The company PointsPay is one example where loyalty points are exchanged for real money which can later be spent over the VISA and
Mastercard payment networks using a plastic payment card or using a virtual equivalent. (PointsPay, 2012) The interest for such business models is confirmed by the survey made as part of this thesis, where 51.2% said that they would find it “extremely interesting” to be able to exchange a loyalty currency into real money. (Virtual currencies - Survey as part of a master thesis in Industrial engineering and Management, 2012)

Another survey also shows the business incentive for the companies with this model. According to a survey carried out by Loyologic in March 2012, 67% would like to use points to pay at Point-Of-Sale and 96% said that they were likely to try to earn more points as a result. (Loyologic, 2012) This solution is of course in many ways counter-intuitive to the coalition model promoted by larger airlines, however, not towards the loyalty element itself of rewarding loyal customers for a single airline.

However, other usages for the loyalty currencies are also interesting for consumers. In fact, 70.7% of the respondents of the survey thought that the idea of being able to buy a coffee during the flight using the frequent flyer miles would be “interesting”, very interesting or “extremely interesting”. In addition, the idea of being able to share loyalty points with family and friends was appreciated by more than half of the respondents.

Corporate perspective

From a corporate perspective, there are several reasons to implement a loyalty program based on virtual currencies. The two main incentives remain the same as for any loyalty program using a plastic card: to collect data concerning consumer habits which can be used to tailor more effective direct marketing and to drive recurring traffic to the store. Furthermore, members in loyalty programs generally shop more than normal customers, according to Gustaf Hansson at Ikano Bank. Hansson states that members of IKEA’s loyalty program, shop 3-4 times more than a normal customer. (Hansson, 2012)

The high consumer interest in being able to store both payment information and loyalty cards in the same way has prompted merchants to respond to this opportunity. MCX, Merchant Consumer Exchange, is an alliance of American merchants such as Walmart and 7-Eleven which have created a new solution for mobile commerce using a smartphone that will be endorsed by all members of the alliance. (Merchant Customer Exchange, 2012) The French retailer chain Auchan has also responded to the consumer need with a solution that they believe will increase the roll-out of mobile payment in France: flash’N pay. The mobile application is independent of mobile operators and banks and will incorporate payment as well as loyalty elements for the retailers using the service. (Auchan, 2012) Even though neither of the services has been commercially launched, the interest is high from both consumers and retailers.

An interesting initiative concerning limiting the members’ memberships to only a few comes from the MEGA supermall in Russia operated by the Ikano Bank. The concept is interesting because an entire supermall shares the same loyalty point system. (MEGA, 2012) In this case, the incentive is to bring customers to the entire shopping mall and not to individual stores. The concept is simple, the consumers have one card where they receive loyalty points from all of the shops they visit and they can later redeem their points at any of the stores in the supermarket. This is a clear example of how a loyalty point system is created to bring customer satisfaction whilst still driving traffic to the stores. Ikano is responsible for operating and issuing the loyalty currency used in the mall. (Hansson, 2012)

Applications focus on highlighting the new benefits of coalition programs and EuroBonus claims that the most difficult aspect is to get the users to understand the new ways of redeeming the bonus points. (Kapil, 2012) In old fashioned loyalty programs, the company could always consider that most
customers would not use the loyalty coupons and offers sent out. With mobile applications keeping track of the accounts in the smartphone, the redemption rate goes up dramatically. However, this does not seem to be a problem for the retailers, rather the opposite. Hansson argues that:

"Loyalty programs are created to drive traffic to the store and if the points are not redeemed, then you have not been able to reach that goal." (Hansson, 2012)

In other words, the increased cost for points redeemed is not considered a sunk cost but rather a proof of concept.

Nevertheless, the virtual currencies can also be way for the companies to interact further with their customers. Services such as being able to buy music during a flight using virtual loyalty currency have for instance received great critics. Loyalty marketing commentator Bill Brohaugh notes:

"This is a redemption option that can be appreciated while frequent flyers are traveling and while engaging with the brand right there in-flight, hopefully appreciative of the reward that’s entertaining them at that moment." (O’Neill, 2012)

Paying with your frequent flyer program points is no new solution, but it is now that it is taking off. The interesting point is that many members are interested in being able to cash out on their frequent flyer miles, even though the value/point is significantly lower than if they used the reward option.

It is becoming increasingly common with several loyalty programs joining together in a coalition, both on the retailer side, but primarily for FFPs. The programs can either all use the same virtual currency or separate ones but be market together. One great example is Coop/Medmera with its huge network of partners covering 50% of the population in Sweden. There are several reasons for being in coalition programs, such as access to existing networks and communication channels and to be more attractive from a consumer point of view. (Sandberg, 2012) Important to consider is the way the coalition programs are put together in terms of mix of industries. The partners within a coalition program cannot be direct competitors and need to be chosen with great care as to not have cannibalizing businesses. (Hansson, 2012) (Sandberg, 2012)

New applications for handling multi loyalty program information are being launched every month for different operating systems. Examples of new apps include MyLoyalOne, CardStar, LoyaltyCard and CheckOut. The functionality of the mobile applications differ, however most only include storing vouchers and barcodes. The loyalty wallet applications differ from store-native loyalty applications where the store itself has its own application. There are two main implementations: storing loyalty information and/or storing entire programs (including virtual cards etc). The first implementation is less sophisticated and it is easy to add a new voucher from a new store. However, in the second case, a deal needs to be made between the application owner and the company issuing the loyalty program.

Skipp is an application developed by Ikano Bank to manage the loyalty programs of several big retailers such as Ikea, Hemtex and Volkswagen Group. Ikano is owned by the Ikea group, but run as a separate company and they have loyalty as a main part of their business. The business model is flexible and partners pay either to use services such as financing through the Ikano Bank, or just to use the loyalty system with the loyalty currency, the information gained through the loyalty system or now also access to Skipp. In this case, the loyalty currency management is a third party service that is sold. For the individual retailers, being part of a larger coalition might seem contra productive from a marketing standpoint. However, Gustaf Hansson at Ikano Bank states that applications such as Skipp facilitate maintaining a good contact with the customer. He argues that:
In order for the loyalty cards to be seen, they need to have the right packaging.“ (Hansson, 2012)

What Hansson is referring to is that being able to access the loyalty program through the phone will make the customer more satisfied and help avoid the frustration when he/she has forgotten the plastic card. However, he notes that the partners within the coalition are all leading within their respective branches and that the system would not work if there were several companies competing for the same customers within the program.

4.1.3 Monetization currencies

Application monetization has been a buzz word in the industry for a few years now, and for good reason. The business model has become incredibly successful with the increasing popularity of social media games played on handheld devices. PlaySpan, one of the leading companies in providing virtual currency/payment solutions agrees:

“The in-game/in-app mobile payments space is heating up rapidly since more and more people are adopting smartphones and also spending more time on their phones.” (Butcher, 2010)

Using virtual currency for in-app payments is a solution which decreases transaction costs, but also has many other advantages, both for consumers and companies.

Consumer perspective

Using virtual currencies as a way of monetizing applications has become a very common business model and something that is not foreign to users anymore. Most players of social media games such as Farmville or AngryBirds are casual players who play for their own amusement and do not consider it unacceptable to pay for a few virtual items that they desire in a game.

In fact, 31.7% of the respondents of the survey answered that they could imagine paying for virtual goods but only 7.3% claimed that they already had bought virtual goods using virtual currency in a social media game.

Concepts such as crowdfunding and use cases such as buying individual songs instead of entire albums has created the need for making smaller purchases online. Traditionally, this has been very expensive due to transaction cost for each individual purchase. However, this can be avoided using virtual currency since the transaction cost actually occurs only once, when the virtual currency is initially bought.

Corporate perspective

From a corporate perspective, virtual currencies are very interesting business model since they offer the opportunity to charge for micropayments within a game. However, if micropayments are the consumer benefit, one of the most important aspects from a corporate standpoint is that the virtual currency usually is pre-paid in larger amounts to decrease the transaction costs. Wired’s analyst Eliot Van Buskirk argued that:

“Virtual currencies are a promising way to sell because users buy them in pre-paid chunks, rather than plunking down a credit card for each individual purchase, which increases transaction costs. Skype credits are a classic example: Users don’t add just enough credits for each call, as they did with payphones; they re-up periodically with payments of $10 or so.” (Van Buskirk, 2010)

This is of course extremely interesting for the companies who can assume that a certain amount of the virtual currency will never be utilized. (Van Buskirk, 2010)
There are many companies using different virtual currency monetization solutions and in all cases, it is a matter of ensuring that a high enough percentage of people are paying for virtual goods within the game. Scott Steinberg, chief executive of TechSavvy Global, a consulting and market analysis firm, claims that virtual currencies are a great business model for developers even though the game itself is for free.

"There are just so many people playing that the numbers actually not only work out positively for publishers, but in many cases can actually meet or exceed what they would have gotten had they chosen to sell the title as a full-priced retail project" (Willis & Park, Social media games have become big business, 2012)

The key for companies to stay profitable with a business model where payment is optional is to ensure that as many as possible choose to purchase virtual goods. To encourage users to do so, ensuring a seamless payment option is key. PlaySpan is one of the larger companies selling entire virtual currency solutions, and they stress that the integration between the game and the payment must be very easy to access. The claim that their product is:

“A micropayments platform that brings a one-click payments experience to mobile users without them ever having to leave the game. “ (Butcher, 2010)

By making it as easy as possible to pay for goods within the application, the threshold to make a purchase decreases and thus increases the companies opportunities to get more paying players.

According to a report made by Inside Virtual Goods, the overall market for virtual goods in the US is headed towards $2.9 billion for 2012. This represents an increase from $2.2 billion this year, and from $1.6 billion in 2010. Furthermore, everything indicates that the market is still growing. (Smith, 2011) The business of selling virtual goods is more than ten years old, but it took off when Facebook started to offer developers the opportunity to build social games on the platform in 2007. After this point, sales of virtual goods have been one of the fastest growing markets and mainly facilitated by virtual currencies as monetization tools.

4.1.4 Gaming currencies

Out of the respondents in the survey who had played massive multiplayer online games, 50% claimed that they had bought virtual currency from another player. Furthermore, 55% claim to be positive to purchasing virtual goods to progress in the game, but only 30% have already done it. These numbers highlight the differences in in-game behavior for people playing leisure games on their smartphones and for players of more time consuming online games such as MMORPGs and virtual world games. (Virtual currencies - Survey as part of a master thesis in Industrial engineering and Management, 2012)

4.1.4.1 MMORPGs

Consumer perspective

There is a massive shift in business models going on within the massive multiplayer online role playing game community. From being subscription based, many games are moving into free-to-play business models to attract new players. The game developers’ profit will be based on in-game purchases using virtual currencies or alternative in-game purchase options or hybrid models where some parts are for subscribers only. The consumers’ responses to this accelerate the adoption of the business model. Craig Morrison, creative director at Funcom Montreal, the studio behind Age of Conan sees this development as a challenge for the industry:

"Eventually it only stands to reason that people’s thought process is ‘Oh, well, I’ll wait till it’s free-to-play,’ and that’s not something we want as game developers. You don’t want players to be going, ‘I really want to play that game! ... But I’m going to wait.’" (Nutt, 2012)
The consumers are very enthusiastic of the new business model and 50% of the respondents find the model “extremely interesting” whilst 33.3% rank it as “interesting” or “very interesting”. This shift in business model is also facilitated by the players need for easy access. Morrison adds that free-to-play models are what players come to expect:

“I think you can definitely see Western games being designed to start at the gates as free-to-play games, because that’s what the market will expect. That’s what the users will want, from an accessibility point of view.” (Nutt, 2012)

From an accessibility perspective, the threshold to start is much easier with a free-to-play model than when a subscription is needed to try the game. The line between free-to-play games and pay-to-win, i.e. where you only can win by purchasing different premium products, is quite thin and problematic. Still, the differentiation between the two different models is of enormous importance for the players of MMORPGs. Usually one can define pay-to-win as if the game’s market offers items with superior power and offer nothing of equal power that can be acquired through normal gameplay. If it is possible to acquire the same level of potency as everyone else, without paying money, it should not be considered pay to win. In many cases, a Pay-to-Win game will try to prevent players from advancing beyond a certain point without purchasing in-game options. (Oynette, 2012)

However, the new business models are not appreciated by all players. Some players of MMORPGs consider it cheating to buy special items instead of earning them through in-game achievements. In other words, it is cheating and less honorable than playing to advance your player yourself. (Virtual currencies - Survey as part of a master thesis in Industrial engineering and Management, 2012)

Pay-To-Win can of course be implemented in many different ways and some companies focus on squeezing as much profit out of the game as possible in a short period of time. The consumers’ opinion towards different implementation of Pay-To-Win mainly depends on the restrictions put by the developers.

Corporate perspective

Falling MMORPG subscriptions is one of the major trends seen during 2012, prompting many companies to change their business models to cope with the new situation. (Rose, 2012) Electronic Art’s (EA) Star Wars: The Old Republic was a clear example of the current trend. Following the release of the new title, the game lost more than 700 000 subscribers in the following year at what point the owners decided to re-launch the game as a free-to-play alternative. (Cifaldi, 2012)

World of Warcraft is the most popular Massive Multiplayer Online Role Playing Game with more than 9.1 million subscribers worldwide. This represents a decrease since the peak at more than 12 million subscribers two years ago. Blizzard, the company behind Wow, revealed that its net income fell to $185m - down 45% on the previous year. However, (BBC, 2012) Wow still remains the most popular MMORPG worldwide.

Most MMORPGs have had the same type of subscription based business model since the first games were introduced on the market. However, due to decreases in subscriptions several MMORPGs have considered other options, such as different types of Freemium and Free-to-play models. (Rose, 2012) One example is EA, the company behind the MMORPG Star Wars: The Old Republic, has decided to offer a free-to-play option in an attempt to lure back users after a 40% drop in subscriptions since beginning of 2012. The new business model will be based on a freemium model where EA will try to get revenue from selling premium content to already active users. The Secret World, Dragons Online, Lord of the Rings Online and Turbine’s Dungeon have all taken similar steps to cope with the decreasing subscriptions. (BBC, 2012) (Rose, 2012)

To handle the in-game purchases, many games introduce new virtual currency schemes to be able to handle micro-transactions in a more cost-effective manner. One clear example is Star Wars: The Old Republic which introduced a new virtual currency scheme as it went free-to-play. (Cifaldi, 2012) In
other words, one can see a shift from subscription-based online business models to free-to-play with a whole range of different business models in between.

4.1.4.2 Virtual World Currencies

Consumer perspective

Virtual worlds today still require downloading software to your computer and have quite a high threshold to get started. Compared to many social media sites, the complicated user interfaces scare off users.

“It’s still easier to navigate Facebook’s notoriously abstruse privacy controls than it is to find, buy, and wear a new outfit in Second Life.” (Wallace, 2012)

The fact that virtual worlds such as Second Life are complicated to get started with is supported by many experienced players. Karin Willison, a professional Second Life player selling virtual property, freely admits that “SL has a high learning curve.” (Second Life and the future of virtual worlds, 2010) Even though she still sees many features that are unique to virtual worlds, she still sees the threshold to get up and running.

Since the introduction of virtual worlds, much has happened on the internet. Virtual World Review lists six different functions that all virtual worlds have in common: shared space for many users, graphical user interface, immediacy and real time actions, interactivity, persistence (that the world continues regardless of individual users) and socialization/community. (Book, 2006) However, virtual economies and virtual worlds are no longer the only ones to offer these functions and the feel the competition from social media, forums and other online communities. In other words, the promises that were once made by the virtual worlds are now realized by other organizations and forums.

However, there are still new virtual worlds emerging with different focuses. Virtual economies continue to have a role when people wish to step outside their normal personality and meet people in the form of a self-created avatar. Virtual economies also still push for the educational and professional uses of virtual worlds in schooling and for businesses to have online meetings.

Corporate perspective

Most virtual worlds have seen a decrease in number of registered members since they peaked a few years ago. More problematic is however that the concurrency, i.e. the number of online people at a given moment in time, is decreasing. Since most virtual worlds are private companies, they do not have to release any financial information. However, several layoffs in the industry provide an indication concerning the profitability of the business model. (Clark, 2010) However, many virtual worlds still claim that they are doing well even though the hype has passed. (Cremorne, 2011)

As a direct consequence of the decreasing number of users, the profitability of the virtual economies is going down. Several virtual worlds have made significant redundancies and are currently downsizing the business. In 2010, Linden Labs, the company behind Second Life, announced a reduction of the workforce with 30% claiming that the reason is restructuring of the company after an initial investment phase. (Linden Labs Layoffs, 2010)

4.1.5 Value Encoded Currencies

This section will try to depicture the current landscape when it comes to Value Encoded Currencies. In the section on decentralized currencies, the focus will be on Bitcoin, since this is the only large-scale decentralized Value Encoded Currency that has gained any traction so far.
4.1.5.1 Decentralized currencies

Consumer perspective

Bitcoin is still considered a new innovation in the mobile payment sector and is still largely unknown by the public. Only 26.8% of the respondents in the survey knew what Bitcoin was. The fact that the currency is unknown creates both opportunities and also problems when it comes to convincing the general public about its properties. The main concerning is regarding the safety of using the application. 53.7% of the respondents in the survey claimed that doubts concerning the security of the system would be the main factor for not trying Bitcoin. (Virtual currencies - Survey as part of a master thesis in Industrial engineering and Management, 2012)

One of the main challenges that Bitcoin faces today is that the system is too complex for most users. Many of the applications that exist today that use Bitcoin are not simplified enough to be user-friendly to a wider audience. Henry Brade, CEO of the Bitcoin start-up Bittiraha agrees that Bitcoin:

“It is not on the usability level it could be.” (Brade, 2012)

Brade also argues that the Bitcoin community needs to work together to simplify the conversations around Bitcoin to attract the public.

“The Bitcoin network is a bit too complex. We need to show how easy it is to use it, not talk about the technical stuff. If we only talk tech, only geeks and nerds will use it.” (Brade, 2012)

Brade suggests that despite Bitcoin’s advanced technical architecture, this should not be the focus of the discussion since it scares normal users away and creates a threshold for starting to use Bitcoins for the public.

The high degree of anonymity of the Bitcoin system makes it a very attractive choice for illegal activities such as buying drugs online and other restricted items. Furthermore, the risk of money laundry and terrorist funding are also frequently listed as activities that Bitcoin would be suitable to sustain. Bitcoin also enable easy money laundry by sending the Bitcoins to a number of addresses in a mixing system to create greater anonymity. There are several similar solutions available online and the Bitcoin network itself has no functionality to prevent mixing “dirty coins” with legal ones. Silk Road is an internet site specializing in selling illegal substances using a torrent network which operates a black market for buying and selling mainly drugs. The site uses Bitcoin for all purchases in order for deals to be harder to track and thus maintain the anonymity of the buyers. (Chen, 2011)

Corporate perspective

Bitcoin has been operational for two years now and new solutions are being developed at a rapid pace. The fact that the virtual currency is entirely open source allows the pace of innovation to be even faster.

There are existing payment solutions available for merchants that involve paying with Bitcoins for physical goods at the Point of Sales. (Merchant Tools, 2012) There are mainly two kinds of payment providers: Bitcoin-only and those with built in exchange to other currencies. Bitcoin-only solutions such as WalletBit and AcceptBit only handle payments in Bitcoins and have solutions for payments in-store, through a mobile wallet and for online web sales. (WalletBit, 2012) Solutions such as BitPay, Paysius and Bitspend also include some exchange possibilities together with the Bitcoin enabled functionality. (Merchant Tools, 2012)

There are also solutions building onto the payment providers to add extra functionality, such as Bittiraha, a finish Bitcoin start-up, which uses BitPay to build their own solution in Finland. Henry Brade claims that the low cost is one of the most important features of Bitcoin:

“If your business can benefit from international reach, then Bitcoin is good. It is especially good for small companies.” (Brade, 2012)
Since the Bitcoin system is open source, everyone could theoretically build their own solution around it. Transactions using Bitcoins are generally cheaper than for the credit card networks, around 1% for Bitcoin transfers instead of 3% for card networks. (WalletBit, 2012) (BitPay, 2012)

One of the most important security risks is the risk of placing the virtual currency in a non-secure location. For Bitcoin, there has been much controversy caused by hacked Bitcoin exchanges, places where users store Bitcoins and do exchanges between real money and Bitcoins. (Mick, 2012)

In 2011, the price of Bitcoins at the leading Bitcoin MtGox exchange fell from $17 to pennies in a matter of minutes due to a security breach. The accident was a result of MtGox and not the Bitcoin system itself, but it still affected the value of the entire ecosystem. Prices at competing bitexchanges fell around 25% in a reaction to the event. However, MtGox is not the only compromised site. (Lee, 2011)

In other cases, hackers have managed to transfer Bitcoins to other accounts and steal the currency. One of the most successful Bitcoin exchanges, Bitcoinica, was hit by hackers who stole 43,554 coins, worth $87,000 at the time in 2012. (Superior Court of California, 2012) Bitfloor, another big exchange, had about US$250,000 worth of Bitcoins illegally transferred from their accounts after a served had been compromised. As a consequence, the Bit exchange shut down for a period of time, but is now up and running again. (Kirk, 2012)

4.1.5.2 Centralized currencies

Consumer perspective

Centralized currencies are fairly unknown and usually used within a closed group or social network. Ven and Ripple, the two most well-known Centralized Value Encoded Currencies, have still not gained any widespread usage due to the fact that they only can be used within specific social networks. Only 9.8% of the respondents in the survey knew what Ven was, despite it being one of the most relatively well-known virtual currencies.

This means that the use and knowledge of the centralized value encoded currencies still have not managed to spread outside of the boundaries of the social groups using them in any greater extent.

Corporate perspective

Due to the fact that centralized value encoded currencies have a single point where they can be targeted, they are also easier to regulate from a legal perspective. In other words, it would be possible for a government to shut down the entire system if they wanted to do so. However, even centralized value encoded currencies question the identity of money, even though in a less radical manner. As the Founding Director of HubCulture explains the concept:

“To understand this, it helps to think of money as language. When societies assign value to something it is as a function of language to label and value exchange. If this is true, then it means money is really just information, and information is ripe for digitisation in all its forms.” (Stalnaker, 2012)

Centralized value encoded currencies are usually branded in line with their issuing organization and help promote their cause. Stalnaker continues to claim that:

“The carbon angle helps to make Ven greener because invested reserves of the currency include carbon assets, providing upward pressure on these markets, and help to pay for protection of forests, oceans, and natural habitats.”

In this manner, centralized value encoded currencies have a complex role to play and it will be interesting to learn what the future holds for this type of virtual currency.
Virtual currencies are by many people considered as “less secure” than normal money or electronic money. This is mainly due to the novelty of the concept of virtual currencies and the initial problems experienced by Bitcoin with the Bitcoin exchanges being hacked and money stolen from the users. However, also questions concerning the virtual currencies’ ability to affect the stability of the national economies frightens analysts worldwide.

One of the main aspects that make governments nervous is the question of stability of the virtual currency itself and its ability to affect the stability of the national fiat currency. In October 2012, the European Central Bank issued a report called Virtual Currency Schemes where they analyse virtual currencies and their own role as catalyst for the payment systems. The report, which covers Bitcoin and Linden Dollar in particular, also focuses on addressing concerns regarding virtual currencies’ ability to affect the stability of national fiat currencies as well as other related risks.

In this report, the conclusion was that virtual currencies are still at such a low level that they do not constitute a real threat yet. The ECB states that:

“It can be concluded that, in the current situation, virtual currency schemes: tend to be inherently unstable, but cannot jeopardize financial stability, owing to their limited connection with the real economy, their low volume traded and a lack of wide use acceptance.” (European Central Bank, 2012, p. 6)

In essence, the risk is limited due to the limited usage of virtual currencies today. However, the European Central Bank acknowledges that they have a responsibility to follow the development since virtual currencies should fall within the central banks’ responsibility as a result of characteristics shared with payment systems. ECB also argue that whilst the risks of virtual currency systems today only affect the users of the schemes, this could easily change if usage would increase.

Bitcoin is one of the most controversial virtual currencies mainly due to its decentralized structure based on peer-to-peer technology. The Bitcoin exchange Bitcoin-Central is the first bit-exchange to partner with a registered Payment Service Provider (PSP) to create new solutions involving both Bitcoin and normal money. Paymium, the company owning Bitcoin-Central, has entered into a partnership with a registered PSP, Aqoba. Being a registered PSP allows Aqoba to keep payment accounts (i.e. accounts which cannot be used for investments and without overdraft capability). Even though these accounts will not be bank accounts, they still have separate IBAN numbers and can be associated with debit cards. Aqoba and Paymium are then both intermediaries when the users wish to transfer Bitcoins. (Aqoba Partnership, 2012) It is important to understand that despite the partnership, it is not Bitcoin itself which has been granted a PSP-license but the case of a single Bitexchange which has made a partnership with a PSP.

Bitcoin is infamous for being very well suited for illegal activities due to its high degree of anonymity. Silk Road is an internet site specializing in selling illegal based on a torrent network which operates a black market for buying and selling mainly drugs. Bitcoin is the currency used to make payments on the site. (Chen, 2011) This fact has caused much dispute and even calls for regulation of Bitcoin to address these problems. This has caused Senators Charles Schumer (New York) and Joe Manchin (West Virginia) to call for shutting down the Silk Road by targeting Bitcoin. (VanDyke, 2011) The DEA has responded saying that they are: “evaluating and analyzing new technologies and schemes perpetrated by drug trafficking networks.” (VanDyke, 2011) So far, no action has been taken against the use of Bitcoin at Silk Road.

In addition, there have been several lawsuits related to Bitcoin that have prompted calls for regulation. The virtual currency has had its fair share of incident where accounts have been hacked with stolen Bitcoins as a result. These events change public opinion about virtual currencies and the
publicity they create stimulate new regulation in the area. In some of these cases, there have been lawsuits as a result when users have fought in court to get their worth of Bitcoin back. One example is the Bitcoin exchange Bitcoinica which was sued by four former users who claimed that they lost nearly half a million dollars-worth of the virtual currency. (Superior Court of California, 2012)

However, it is not only value encoded currencies such as Bitcoin that are cause of legal problems, but many monetization currencies also have issues. Zynga, the developer of applications such as Farmville, filed a lawsuit against a third-party site called PlayerAuctions.com for advertising and selling virtual currencies using player-to-player features. Zynga’s Terms Of Service clearly prohibits players and third-party from selling virtual currency and goods. Playerauctions.com is a website that acts like a clearinghouse for virtual currency, virtual goods as well as users’ accounts, taking a middleman position similar to eBay. (Arsenault, 2010)

Sites such as Playerauctions.com are violating against the Terms of Service of many large games such as WoW, World of Tanks and are causing losses for the companies developing the games. (Playerauction.com, 2012) Nevertheless, due to the complexity of defining virtual currency, the question is not an easy one from a legal point of view.

In addition to hacked exchanges, virtual currency can also been stolen within virtual environments such as virtual worlds or within MMORPGs and in applications. Due to the fact that virtual currency still is not classified as property, these situations present a challenge since there is little chance for the virtual currency to be returned to its owner. Javelin Strategy and Research who has issued several reports on virtual currencies, recognizes the problem and points out that victims of theft of virtual currencies seldom get any value back.

“Justice for victims and the remediation available to them have been noticeably absent from the conversation, and for good reason. Law enforcement and the courts have yet to reliably establish a way to identify and prosecute those responsible for virtual currency theft or to compensate victims for their loss, often failing to even affirm that virtual currencies have any value in the “real world”.” (Pascual, 2012)

Even though discussions concerning the need for regulations around ownership of virtual goods and virtual currencies have been on-going for more than 10 years (Loftus, 2005), there is still no sign of a good solution from a legal point of view.

The growth of virtual currency has already driven some new regulation. In 2009, an explosion in the trade of prepaid cards for online services and the selling of gaming currency prompted China’s Ministry of Culture and Ministry of Commerce to issue a rule banning the exchange of virtual currency for real goods and services. (Courtland, 2012) China is also a huge market for MMORPGs such as World of Warcraft and the Chinese Government suspected that tens of thousands were trading virtual goods and currencies in exchange for real money, which would not be positive for the normal economy. In addition, the QQ-coin, a virtual currency issued by the Chinese Internet giant Tencent, saw a tremendous increase in value against the Chinese renminbi. (Barboza, 2009) This caused alarm at the central bank of China and prompted regulation restricting trading and using virtual currencies, especially in exchange for goods. The government stated that whilst virtual currencies promoted online gaming, they have also: have “brought new economic and social problems.” (Barboza, 2009)
The aim of this section is to analyse virtual currencies today and in the future. The first part will start with a general analysis of the current situation and the landscape seen evolving today. The second part will include an individual analysis of each class of virtual currency as to see how they fit into the general ecosystem as well as in what direction the current trends are evolving. The third and final part will cover the future of virtual currencies and try to make an extrapolation of how the concept will evolve in the years to come.

5.1 SITUATIONAL ANALYSIS

Despite their increasing popularity, there are many industries and sectors that are just starting to realize the potential benefits and risks of virtual currencies. Many consider that both the regulators and the financial industry are lagging behind in the race and cannot keep up with the rate of development and this is an understatement. At Javelin Strategy and Research, strategist James Van Dyke claims that they are surprised at the fact that virtual currencies have not received the attention they deserved.

“At Javelin we’ve published two research reports on virtual currencies, and the surprisingly sparse attention they received shows that the payments and banking industry is failing to look far enough ahead. Our conclusion from research of consumers combined with review of the industry triad of gaming, banking and payments found that virtual currency is surprisingly advanced for something that has escaped the spotlight. Because some virtual currencies can be converted to traditional currency right now, this represents an unregulated area with potential significant mainstream impact.” (Van Dyke, 2012)

According to Van Dyke, the reports concerning the opportunities and challenges with virtual currencies are not treated in the way they should be considering their potential impact on the real economy. Considering the potential impact of virtual currency schemes on the real economy, Van Dyke is right to claim that certain industries are lagging behind. However, the European Central Bank’s report released in October 2012 could be considered an indication that the central banks are becoming aware of the fact that virtual currencies present a very real element of the financial world today. The report can be seen as an sign that the interest in virtual currencies is increasing and that the central banks need to keep themselves updated on the subject.

Tomas Öberg, at the Financial Stability Department/Financial Infrastructure Division of the Swedish National Bank, already expressed a desire to know more about the concept prior to the report since there had been previous questions concerning the National Bank’s stand on virtual currencies. Öberg explained that:

“One of the main tasks of central banks is to maintain price stability and the value of their currencies. It is very difficult to predict how the value will be affected by new currencies that are developing in parallel to the national currencies.” (Öberg, 2012)

Despite the difficulties in predicting the future scenarios, it is still an important step that national banks are becoming aware of virtual currencies. In their report, the ECB concluded that virtual currencies currently do not pose any threat to the normal economy, due to their limited interaction with the real economy. This might very well be the case, however, the impacts on the financial industry might still be large. Even though the virtual currencies seen today might never reach a critical mass, they might still generate enough attention to question certain aspects of the financial system and its price levels. Furthermore, one drawback of the ECB report is that they do not manage to capture the entire spectra of virtual currencies. In fact, by only looking at one value encoded
curreny (Bitcoin) and one virtual world currency (Linden Dollar) they are in fact ignoring several large areas of virtual currencies.

In fact, one of the most important groups of virtual currencies: monetization currencies. It is also these currencies that Edward Castronova, a professor of telecommunications at Indiana University Bloomington who has specialized in virtual economies, believe have the real power to disrupt the system. In essence, Castronova believes virtual currencies could pose a threat to world economies because of their purchasing power. In a reaction to the Chinese Governments ban of virtual currencies, he wrote that:

"As virtual currencies take over more and more purchasing power, control over the effective money supply shifts from the central bank to the game developers." (In China, New Limits on Virtual Currency, 2009)

The reason for his concern was that he argues that the sheer amount of money circulating in virtual currency schemes gives the issuing party much control. Castronova has a valid point that monetization currencies indeed will have a large impact just because of their size and relative low complexity. Not including monetization currencies in their report is a big error in the EBC report since they fail to capture one of the largest group of virtual currencies.

Despite the different opinions concerning the possible impact of virtual currencies, it is clear that they at least have the potential to spur new ideas and drive innovation in many industries, and not only the financial sector. The financial industry and different national governments are just now starting to become aware of the opportunities and risks related to virtual currencies and it will be most interesting to see what the future holds.

5.2 ANALYSIS FOR EACH GROUP OF CURRENCY

5.2.1 Prepaid

Airtime is currently an option for transferring credit in emerging markets, but many argue that it will soon disappear. Considering the many potential problems for the mobile network operators for using airtime as a virtual currency, this seems a very possible evolution. Due to the legal limitations and risk with unofficial currencies, it is a quite probable scenario that the airtime transfer programs will be replaced with mobile money solutions in the near future.

Mobile money schemes are more interesting than airtime transfer for MNOs due to both financial and regulatory reasons. Furthermore, it is also more interesting to the consumers in the long term as mobile money implementations also will provide interoperability between different MNOs in the future. However, airtime transfer might still be the only means of sending value over distances for another few years in areas where there is great financial instability or lack of coverage.

The main problem with the business model is that prepaid often is a very bad deal for the operators. The MNOs have to provide the service free of charge to keep up with the competition whilst still paying a transaction based cost to the system provider. Furthermore, it is also hard for technology providers to earn any profit from the service. In addition, due to the fact that airtime transfer is not considered a legal currency in any manner, it is not in the MNO’s interest to promote its usage as a currency due to legal complications.

Airtime transfer is, in other words, a virtual currency with great limitation when it comes to large scale uses from both an operator and technology service provider perspective.
5.2.2 Loyalty points

All evidence points towards that the future of loyalty points will take place in the smartphone. This means that the retailers and other players in the loyalty industry need to adapt to changes in the market conditions. As Gustaf Hansson from Ikano bank stated in an interview, the battle is no longer about being “top of wallet, but top of phone.” (Hansson, 2012) Considering both the recent development of mobile wallets and smartphone applications, but also the consumer opinions expressed in the survey, this is a very likely scenario. This is also most probably true also for Frequent Flyer Programs, even though these have not come as far in the development of mobile payments as many merchant/retailer supported programs.

However, not everyone is convinced that the mobile phone is the solution for the future of the loyalty programs. Clemens Wantchura at Visita claims that moving into a mobile application system is not always a good move from the companies’ perspective. He claims that plastic cards have: “lower frequency of being redeemed and a higher marketing value.” (Wantschura, 2012) Wantschura has a valid point, however it might be important to divide the merchants into different segments. For certain small merchants, it might not be worth the cost of switching to a smartphone based loyalty points. However, for larger merchants and retailer who are driving new standards, it might very well be a competitive edge to provide payment alternatives using virtual loyalty currency and mobile wallet solutions combined. With the battle for the mobile wallet entering the arena, it will probably take some time before mobile payments are in full bloom and the winners and losers have been identified. Most mobile wallets today include some sort of loyalty card functionality and it will no doubt be a very convenient solution to have both payment cards and virtual loyalty cards stored in the same mobile wallet.

As a direct consequence of the new struggle to be “top of phone” it is also important to again consider consumer behavior. Even though a mobile app takes less space than a plastic card, few customers wish to have a multitude of different application in their wallets. This is where different constellations of loyalty cards stored in the same mobile wallet come in. As a consequence, seems a logical conclusion that the market will continue to be filled with new multi-brand loyalty applications such as Apple’s passbook or Ikano’s Skipp.

Naturally, it is important that the loyalty program has good ways of redeeming the points. With the transition from plastic cards to mobile applications, the possibilities for new ways of using the loyalty points interest the consumers. Ideas such as being able to easily transfer loyalty points between family members or to pay for a coffee at the supermarket are all ideas that most consumers would find interesting and these will most likely shape the development of new services.

For frequent flyer programs, the main applications today are made for tracking the points, and not using them. However, most programs have plans to further develop the mobile applications to be able to also spend the miles in real time. PointsPay, as mentioned earlier, provides an interesting solution for further increasing the turnover of the miles by enabling users to convert them into cash. With the mobile phone being the interface for loyalty currency, the concept “Earn and Burn” (Hansson, 2012) seems a very suitable description of the current development.

Here the opinions are very divided concerning what should be the development of the FFPs in the future. Michael Kapil at SAS EuroBonus claims that the business model undermines the entire purpose of frequent flyer miles. The way he sees it, it does not enable the FFPs to offer their members rewards with higher value than the actual cost for the company, such as distressed inventory in the form of flight seats. In addition, it would most probably decrease the number of unused frequent flyer points. Nevertheless, it is again important to remember that consumer demands have a very strong influence on the development of new payment services. As proven by the survey, many consumers are very interested in solutions for cashing-out their loyalty points since they do not use them to the full extent today.
FFP are indeed moving from cost-centers to becoming Cash-cows run as completely separated companies from their core airline. This represents a huge shift in the business model which also needs to be communicated to the members of the program. If the consumers are not aware of the possibilities, there is little use for advanced services. The success of the frequent flyer different new implementations of virtual currency solutions will therefore to a large extent depend on how well the companies manage to communicate with their members.

5.2.3 Monetization currencies

Application monetization currencies will most probably continue to be successful over the coming years and the use of virtual currency as a business model will increase with it. This assumption is based on two main facts: 1) transaction costs are too high for the same micro-transactions to take place using national currency and 2) users are becoming accustomed to the free-to-play/freemium models that are becoming more and more popular both in MMORPGs and for mobile applications.

The usage of smartphones is changing the market and games such as Farmville are increasingly often accessed through handheld devices. Individual players have access to a much greater choice of applications and games available through the smartphones. The increased diversification of smartphone applications creates more fierce competition between developers who need to fight for the players and provide value in new ways. Using virtual currencies as a monetization tool and allowing the game to be free to play provides a way of ensuring that new players get “hooked” before they need to make any purchase decision. However, this model also puts great stress on the app developers to keep development costs down and focus on their core activities.

One way of ensuring this focus is to outsource the virtual currency management and this is likely to increase as well with increasing specialization. There are many companies willing to take an end-to-end responsibility for handling the virtual currency; offering everything from payment to transfers between users and in-game purchases. It is quite probable that this evolution will continue and that more and more companies will invest in virtual currency solutions that include everything from the white-label currency, to payment options (such as credit card or PayPal), to including offer-based advertising. Virtual currencies are no longer build-it-yourself home-made business model, but it is also becoming a product that can be bought to allow for developers to focus on their core activities.

In the future, the use of offer based advertising will most probably be even more common for all virtual currencies, but especially for Monetization currencies. Using virtual currencies as a way to pay users for completing a task has many advantages. For instance, the user can get rewarded virtual currency for filling out a survey on customer satisfaction or to be asked to view advertising content. By paying in virtual currency, the user is encouraged to use the currency within the system, i.e. promoting loyalty, and also perform a task wanted by the issuer of the company. In other words, this solution offers the possibility for many interesting business models in the future.

5.2.4 Gaming currencies

One can see a massive shift going on in the gaming industry as game developers change from subscription based business models to free-to-play revenue models based on in-game purchases. This shift will also represent a shift in the implementations of virtual currency schemes in the games as the purpose and function will change from being a fictional unit of account to part of the business model for the game developers.

If correctly implemented, Free-To-Play business models allow the players to pay in accordance to how much they play the game and in what manner. To handle this change, game developers need new tools to handle micro-transactions and it is therefore a likely development that the importance of virtual currencies will therefore increase as a result.
The recent increasing popularity of the free-to-play models in traditional MMORPGs will most probably result in a merge between the categories of Gaming currencies and Monetization currencies. Subscription based games usually contain fictional virtual currency schemes (Type 1) and these will most probably either be replaced, or co-exist, with Type 2 implementations to be able to handle micro-transactions. It is quite plausible that free-to-play implementations will mimic social games such as Farmville where there are two currencies that co-exist. Farmville coins are the Type 1 currency that can be earned in game whilst Farmville Cash needs to be purchased to be able to access premium content. Regardless of how the new business models done, it is clear that it will come with many changes for the in-game virtual currency schemes.

When it comes to the development of virtual worlds, it is no longer a buzz word in the same way it was 2003-2008. Many stated that companies moving into virtual worlds would be the next big step for the virtual economies, but today this seems like an unlikely evolution in the next few years to come. Even though some virtual worlds remain, they do not have the same status as before and companies are no longer investing in maintaining a virtual presence within virtual worlds to ensure product placement and marketing. In fact, most aspects that are unique to virtual worlds are covered by other services and sites today.

Nevertheless, the graphical elements of representing a new personality as an avatar remains the same and will most probably continue to be interesting for those who wish to explore other personalities in a virtual format. Based on the information gathered during the literature study, it is seems a plausible evolution that virtual worlds will continue to exist in similar manners as before and continue to be attractive to its current user base. Virtual worlds appeal to a very specific audience and today it seems quite clear that the concept will not likely evolve further than to meet the needs of its current audience.

### 5.2.5 Value Encoded Currencies

Value Encoded Currencies remain the most conceptually challenging group of virtual currencies. This is because currencies belonging to this special group mimic the functionality of real money in a way other alternatives do not. Value Encoded Currencies seek to exist in parallel as an alternative to, or even in some cases, replace the national currencies. They are also the most interesting ones since the concept itself represents a real disruptive change in the financial system.

A key take-out from reading this thesis should be the importance of the word “value” in value encoded currencies and it cannot be stressed enough. Whilst Ven is green and international, Ripple was based on trust and Bitcoin on decentralized governance and anonymity. The name Value Encoded Currencies refers back to the fact that they have a value encoded into the DNA of the currency itself. It is not a far stretch to assume that the values represented by the different currencies will most probably determine their success; just consider the case of Bitcoin and the strenght of the beliefs within the community compared to the relative failure of Ripple.

Centralized Value Encoded Currencies such as Ven are used within a specific society that uses the currency as a mean of transferring value. It is therefore important to keep in mind that the currency has other uses apart from transferring value. Sending Ven is not only a way of transferring money, but it is also a signal to the rest of the world that the person, by using the currency, stands for certain values. In the case of Ven, this would be a manner of supporting values such as global knowledge sharing, environment friendly alternatives and entrepreneurship. Using the currency is, in other worlds, a social statement, and not only for convenience. Since many of the Value Encoded currencies in this way target a specific group of people, it is quite likely that many of them will never be accepted by the general audience as a means of payment.

In some cases, the audience for the values and properties of the virtual currency just might be large enough to get off the ground. Bitcoin is a virtual currency with a very strong support from a
community of technical developers and people who see benefits in having a currency and decentralized from the national currencies.

The interest in Bitcoin is huge and many are very positive about its properties due to lack of trust in the current financial system due to the financial crises and instability of the national currencies.

Fredrik Strömberg, an IT-entrepreneur with long experience of virtual currencies, states that:

“Bitcoin is the best thing that has happened since the Internet. Virtual currencies are the future, and Bitcoin is the most interesting of the ones in existence today.” (Strömberg, 2012)

Even though everyone might not be as positive as Strömberg, he does have a valid point in highlighting that Bitcoin is an important financial innovation. The decentralized system and artificial scarcity in Bitcoin highlight many flaws in the current financial system and question mechanics and fees built into the fundamentals of our financial industry. One clear example is the card network fees. Bitcoin has much lower fees and there is no monopoly situation as is the case with Visa and Mastercard.

However, a currency needs to have merchant support and be able to be used in many different places in order to be an interesting alternative for the consumers. Today there very few legal uses for Bitcoins and this is most likely one of the key limiting factors in the development.

Many argue that virtual currencies such as Bitcoin have enormous advantages for merchants due to the lower fares than traditional card networks. The threshold is not in terms of initial investment, since it costs almost nothing for a small company to start accepting Bitcoins. Nevertheless, being the first ones to start accepting Bitcoins is a huge step for a small merchant. This might be true, but it is also naïve to consider the cost of payment as something that on its own could persuade merchants to start accepting Bitcoins without hesitation. The fact that Bitcoin is so suitable for illegal purposes is an important reason for merchants to stay away from the currency. From a marketing perspective, it is possible that managers feel the risk of being guilty by association just by accepting Bitcoins. However, there are still many questions unanswered concerning the usage of Bitcoins, not only from a consumer side, but also in terms of security.

Both the results of the consumer survey and the many different interviews have highlighted that security is a key aspect when it comes to dealing with virtual currencies. The security aspect is also very interesting since there are two different sides to the story: security at a system level and end user security. It would therefore seem appropriate to strongly differentiate between the two cases in order to evaluate the security in a more realistic manner. Security, from a technical point of view, is in fact one of the strengths behind the Bitcoin network, yet due to many scandals involving Bitcoin exchanges, the general audience gets concerned by such events. It is lack of adequate security measures by people implementing Bitcoin based services that have caused all the problems which have reached the media. As all transactions are logged in the block chain, which is the basis of the algorithm, there can be no such thing as doubles pending. Due to the enormous effort required to rewrite part of the block chain, it is very unlikely that even the biggest supercomputer would be successful in recalculating it. However, actual security levels are not interesting if the public does not feel comfortable using the new technology. Here it is important to consider the fact that Bitcoin only has been operational for a few years and that most new technology needs a few years to become widely accepted.

Furthermore, one can also see that another challenge for Bitcoin lies in increasing the pace of circulation of money spent within the network. Today, almost 30% of all Bitcoins mined are kept as an investment. (Brade, 2012) This is good since it means that there are many people believing in the technology, but this also limits the flow of money within the system. In order to become more useful, it is vital that the turnover of Bitcoin increases and that the currency actually is being used for making purchases.
It is suitable to end the chapter on Value Encoded Currencies with a short discussion concerning the new businesses that could be created using virtual currencies since the concept actually would have the possibility to step-change many industries, including the entire telecom industry as well as the financial sector. The most important change comes from the fact that virtual currencies are ideal for micropayments that are impossible to handle using the current card-network model. The transactions could be smaller than 1 euro and should therefore rather be considered nano-payments rather than micropayments. This concept of nano-entrepreneurship is applicable in many different industries and could be enabled by Type 3 virtual currencies such as Bitcoin and the likes. In the future, data capacity and computing power could be used in a much more flexible way than today, resulting in new markets forming. In other words, virtual currencies as an enabler of nano-payments have enormous potential for revolutionizing industries and also in creating new markets that cannot exist today due to the limits of our financial system. Furthermore, even if virtual currencies never reach this far, the competition will force the financial sector to develop new and better services to keep up with the consumer demands.

Using Value Encoded Currencies, new ways of charging for services can be created. For instance, it would be possible to imagine paying a few cents for individual things online due to the fact that the transaction costs are so low. Crowd funding would be much easier since every person could contribute as small amounts as he or she wishes. This would also allow for new artists to sell their music much cheaper to a wide audience. If it was possible to pay only 5 cents for a song, it is quite possible that more people would choose to pay directly to the artist rather than download it illegally or even buy it from a store.

The opportunities for the telecom industry are also vast. As Strömberg points out, it would be possible to use virtual currencies to revolutionize the billing systems used for mobile traffic in the networks. (Strömberg, 2012) The mobile phone could be in constant contact with the surrounding networks and choose networks depending on the criteria that are important at the time. After choosing the best network, for instance the one with the lowest latency, the mobile phone would pay a few cents for using the service to that particular base station. In this way, the mobile phone could make intelligent decisions concerning network properties and after this make choices concerning how much it should cost by choosing between base stations instead of paying a fixed subscription.

This concept could also be transferred to the energy sector. Smart grids where individual producers of energy could contribute to the backbone are becoming a real possibility. Using virtual currencies, the individual producers could get paid for providing energy in a very flexible day to day basis.

Last but not least, it is clear that Value Encoded virtual currencies have much potential, but it is only the test of time that will prove if they will be a force to reckon with in the future. Legal aspects such as regulation regardless of the outcome. Nevertheless, the concept and ideas associated with the Value Encoded Currencies will without a doubt have an effect on the financial industry and the demands put on the financial sector by the consumers.
5.3 THE FUTURE OF VIRTUAL CURRENCIES

This section will focus on analyzing where virtual currencies are heading in the future, covering possible future scenarios, drivers of the change and an analysis of organizations with the capabilities to take on the future developments.

5.3.1 A possible scenario

Today, virtual currencies are being used and implemented in a multitude of ways depending on industry and purpose. However, as the sector matures and the concept becomes more widely accepted, the currencies will continue to evolve and later converge in a few, very specific, functions that they provide to users and companies. The development could be illustrated in the form of three different phases that will be undergone by the virtual currencies before the sector is mature. Below is an abstraction of a probable evolution of virtual currencies that will serve to guide the train of thought.

![Figure 8: Possible evolution of virtual currencies](image)

**First phase**

The first phase has been a period of finding the different uses for virtual currencies and trying out different ways of implementing them. As represented by the groups classifying the currencies today below, the virtual currencies have very specific vertical areas where they are used.

![Figure 9: Phase 1](image)
There are a multitude of different implementations of virtual currencies available today together with just as many interpretations of regulations and laws. In essence, this represents a landscape with many separated vertical types of virtual currencies, with little or no interaction between the currencies. As one can learn from the model used in this thesis, the five groups of virtual currencies, the different groups are very separate from each other and even sometimes show large internal differences in terms of business model used and technical implementation. The wide spread creates difficulties for all involved parties in terms of understanding what virtual currencies really are and how they should be defined. Furthermore, the very same reason also proves it hard to create suitable regulatory framework that is wide enough to cover the entire field, yet loose enough to be able to profit from the many benefits of virtual currencies.

**Second phase**

Nevertheless, with the increasing usage of smartphones in everything from playing games previously only played on larger computers to keeping track of the number of air miles using a specific application, the virtual currencies will begin to converge more and more. During the second phase of the development, currencies will converge and consolidate into fewer usage areas and fewer implementations as seen in the picture below:

![Figure 10: Phase 2](image)

The consolidation will be a direct consequence of the increasing awareness and knowledge sharing concerning virtual currencies. Industries will learn from each other and adopt each other’s business models’ when appropriate. Two very clear examples are for instance Gaming currencies and Monetization currencies being consolidated into one type of business model currency used to monetize games on both handheld devices for social media games as well as on stationary computers to be used in MMORPGs. Furthermore, loyalty points and frequent flyer points are merging further since both are in-fact also adopting the same business model. Both retailer loyalty programs and frequent flyer miles are converging towards a model where loyalty, regardless how it is used, will be treated as a profitable business on its own and not only as a marketing tool. The way of achieving this goal will be through strategic coalitions spanning across industries to offer the members the best possible mixture of offerings.

As far as Prepaid value concerns, it is quite probable that this group will divest from the other virtual currencies as the emerging markets get more and more advanced in terms of mobile banking. Thus, it will probably not be considered a virtual currency in the future as it is today.

**Third phase**
In the third phase, the virtual currencies will have evolved into horizontal functions. During the third phase, it will have become clear what exactly the uses for virtual currencies should be which will also help in creating a more clear definition of virtual currencies as a concept. A clear definition of what virtual currencies are will help legislators in creating better regulation and guidelines for the different industries that use virtual currencies. With three very distinct functions, the legislation can be created to fit each horizontal function and therefore be both clearer and more relevant.

A distinction will be based on what the currencies are, instead of their implementation or technical functionality. It is quite probable that three different definitions will emerge: Virtual currency as a unit of account, virtual currency as a business model and virtual currency as a product sold.

In figure 10, it is shown how the different current groups of currencies fit into this new future. Value Encoded Currencies such as Bitcoin and Ven will continue to be used in a way that mimics the functionality of real money. In other words, the currencies will be used as units of account and bought and traded separately from the normal economy. The reason for adding Fictional (Type 1) currencies into this division is due to the fact that virtual currencies also will be used in free games and applications that need money substitute to represent value in a closed system.

The second horizontal is virtual currency as a business model. This includes both monetization currencies and gaming currencies (both MMORPGs and in virtual worlds) since the current development shows evidence of a merging of the different groups of currencies. Using virtual currency as a business model is increasing in popularity, both for computer based games and in social media games. The development is towards adapting a model similar to monetization currencies to be able to create frictionless in-game payments for micro transactions. The value chain already exists today, with companies such as PlaySpan offering white label currencies to be used by application developers. The step from providing white label currencies to social media game developers to larger MMORPGs is not wide and a likely development of an already existing structure.

Virtual currencies will also be products in the future. Loyalty programs and frequent flyer programs are both already offering other retailers and merchants to join their programs and use their virtual currency to create coalitions. In this model, partners of the programs can buy the virtual loyalty currency to provide to their customers as to earn an extra competitive edge towards their competitors.

5.3.2 Drivers of the shifts

There are a few critical events that will affect the evolution of virtual currencies and that will be important in bringing about the shifts. The first shift from Phase 1 to Phase 2 was driven by smartphone applications being available to monitor and send virtual currency via the internet in closed loop systems. The success was due to the widespread adoption of smartphones and the rapid increase in social media games such as Farmville and Angry birds. These types of games and applications facilitated a new way of interaction with virtual currencies.
The second shift, however, will be brought on by the adoption of mobile wallet on a society wide basis. Virtual currencies are currently entering the second phase of the development with several applications out on the market to monitor and store the virtual value. In the second phase, the virtual currencies can be used in closed loop systems, such as within Facebook or within a game. However, the market is not mature enough to handle integrating virtual currencies into the real financial world.

The second shift from Phase 2 to Phase 3 will be depending on merchant adoption of mobile payment solutions to be successful. Despite the consumer desire for mobile payment services, few will use the mobile wallets until there is widespread adoption of a standard technology amongst the largest merchants in a given country.

![Figure 12: Paradigm shifts](image)

Mobile wallets are just taking their first baby steps into becoming a viable method of payments both online and offline. Whilst retailers are starting to drive the development of mobile wallets and mobile payments, the technology is still at an early stage of adoption from the general audience. The battle of the mobile wallets will continue to rage for a few years before the market has stabilized itself, but the increasing adoption will provide a foundation for virtual currencies to be used in a more frictionless manner, both online and especially at Point-of-Sale.

5.3.3 Organizations with the capabilities for the future roles

As discussed in the previous chapter, in order to be able to make any predictions of what organizations will take the roles in the new market, it will be necessary to look at what functions virtual currencies will have. By looking at how the groups of currencies are currently consolidating, it is possible to make assumptions concerning the future horizontal roles as well. For this reason, all three functional groups will be analysed to see what organizations would have the capabilities to take on the roles needed in this segment.

5.3.3.1 Virtual currencies as a unit of account

Virtual currencies used as unit of account will most likely be different types of value encoded currencies that bring new functionality into the payment instrument. For this reason, it is probable that larger, non-governmental, organizations will continue to develop the concept. An organization such as HubCulture is a great example of the types of organisations that would use virtual currencies as a unit of account since they benefit from the global reach. Furthermore, organizations benefitting from crowdsourcing and donations are other types of players that could benefit from the lower transaction fees of using virtual currencies as unit of account instead of real money.
In order to be successful, the organizations must either have very strong values or beliefs associated with the culture or a very specific need for a certain currency. People will not start to use a virtual currency without a valid reason: either the functionality of the virtual currency itself must offer something unique or the values transmitted by the issuing party can serve as a motivation to use the currency.

5.3.3.2 Virtual currencies as business model

Virtual currencies as monetization tools will most probably be the most common function in the foreseeable future. The entry threshold is very low and the function can be used by many different industries. The gaming and social media industry will continue to be a good match, but also various other forms of internet based products such as digital content will use the functionality.

Successful companies using this functionality of virtual currencies have economies of scale. Virtual currencies are excellent for microtransactions and therefore the main requirements for fitting into this category would be that the organization has a product that is attractive to a large user base. Companies using virtual currencies as monetization model are dependant on scale and the fact that many consumers pay a small price for the services. In other words, the product offering must be made to suit the payment model. For this reason, companies that have a product that can have a trial-part that can be offered for free are therefore also better suited for this niche, which mostly are software developers.

Game and application developers such as Zynga, Blizzard and Rovio and thousands of smaller companies are of course very well equipped for using virtual currencies as a business model, and many do already today. Nevertheless, advertising companies with a large user base are also in a good position. The music, movie and publishing industries are also potential good matches since their products are digital and sought after by a large group of people.

5.3.3.3 Virtual currencies as product sold

In order to sell virtual currencies as a system, there needs to be more to the product than the currency itself. The currency must be part of a larger system that provides aspects such as reaching new customers, targeted advertising or have types of cross-marketing activities that are attractive to the customer. Looking at the cases of Ikano and SAS EuroBonus, brand name and consumer knowledge are two main ingredients in order to be able to sell the virtual currency system to other merchants/retailers.

However, there are many organizations with such capabilities. Larger merchants and retailers, mobile network operators, frequent flyer programs and larger technical companies such as Apple, Google and Facebook all have the brand name and reach in order to create virtual currency systems where the currencies also can be sold to other companies in different types of alliances.

Success is defined by the issuing organizations ability to attract other merchants and retailers. A strong brand name and a large data-base of members are therefore the two largest individual drivers of success.
6 CASE STUDY: ERICSSON M-COMMERCE

A case study of Ericsson M-Commerce has been performed to capture the situation and needs for structured analysis of a company from a neighboring industry that wishes to enter the virtual currency market. The purpose of the case study was to guarantee that the research also has direct practical applications and to ensure that the theoretical framework reflects reality in a correct way. The M-Commerce department at the telecommunications company Ericsson was chosen as the subject for the case study since it qualifies as a department of a multinational company in a neighboring industry wishing to enter the virtual currency market. In this case study, the departments capabilities were assessed to be able to map them against potential opportunities related to virtual currencies. The practical case study at Ericsson M-Commerce helps the iterative process of developing the structural framework for virtual currencies used in this thesis and also resulted in business decision material for the department.

This section will provide an attempt to map Ericsson M-Commerce’s internal capabilities with the possible future roles the company could take in the virtual currency ecosystem. First, Ericsson M-Commerce will be introduced to give an overview of the organizational structure and business. The chapter will then continue with an analysis of Ericsson M-Commerce and its capabilities related to virtual currencies. The third section will cover different potential roles that the company could take on the market, whilst the fourth and final part include a few recommended actions for Ericsson M-Commerce.

6.1 OVERVIEW OF ERICSSON M-COMMERCE

6.1.1 Organisational structure

M-Commerce is a Solution Area (SA) at Ericsson AB which focuses on mobile financial services. M-Commerce is a department which belongs to Business Unit Support Solutions which is one of three large Business Units of Ericsson. Business Unit Support Systems is the smallest one with Business Unit Networks being the largest, followed by BUGS Business Unit Global Services.

![Figure 13: Ericsson’s organizational structure](image-url)
6.1.2 Brief overview of Ericsson

Ericsson was founded in 1876 in Stockholm, Sweden. Ericsson started out as a pure telecommunication company but now the business has grown to include providing communication networks, services to network operators and enabling service providers. Despite being a global company, the headquarters are still situated in Stockholm and the company has around 105 000 employees worldwide. With customers in more than 180 countries, the net sales in 2011 amounted to SEK 226.9 billion in 2011. (Ericsson M-Commerce, 2012)

6.1.2.1 Ericsson’s view of the M-Commerce market

M-Commerce is considered to be a new focus area for Ericsson in the future. Ericsson sees that payments are going mobile and MNOs, financial institutions and merchants are looking for mobile solutions when it comes to handling payments. Ericsson sees a great opportunity in “banking the unbanked” in emerging markets and the mobile network operators are considered a cost-efficient way of addressing the unbanked. (Ericsson M-Commerce, 2012)

The battle of the mobile wallet is another important aspect of the M-Commerce market. Currently, a consolidation of payment solutions and brands is ongoing, but there is still much differentiation on the market with many big and small players. However, Ericsson believes that the dominant players are likely to dominate where they dominate today.

Entering the battle of the mobile wallet with their own motives, the merchants worldwide are looking to reduce their dependency of the card networks and the associated costs. This had led to several merchant-driven initiatives where companies or alliances have established their own native payment methods.

As one can understand, the M-Commerce market is very dynamic and fast moving. With the many new initiatives being launched worldwide, Ericsson identifies a need to create interconnection between the mobile wallets. By linking local closed loop networks together, open payment networks can be created with greater interoperability and better functionality for the end-users.

6.1.2.2 Focusing on mobile operators

Ericsson’s main customers are the mobile network operators and this is also the case for Ericsson SA M-Commerce. The company identifies the synergy effects that can be attained through bundling offers:

“With mobile money integrated with the Ericsson Charging System, operators can provide attractive cross-promotion and service bundling, such as voice/data, wallet and value-added services. They can leverage existing operator assets and accelerate the evolution from airtime accounts to mobile wallets. Electronic-money transactions, including person-to-person money transfers, people-to-business payments, ticketing, metering, real-time charging and much more, will be a foundation for service enablement. “ (Ericsson M-Commerce, 2012)

By providing M-commerce services to the existing customer base, the SA can build upon the extensive cooperation with their customers and provide better services to help the MNOs to develop their service propositions even further.
6.1.3 SA M-Commerce at Ericsson

6.1.3.1 Overview

M-commerce is one of the youngest departments at Ericsson Business Unit Support Solutions. The goal is to bridge the gap between the mobile and financial industry by providing services that create the foundations for mobile payments worldwide.

“The focus of Ericsson M-Commerce is to accelerate access of and interconnection between the m-commerce ecosystem and the financial world to fast-track next-generation mobile financial services.” (Ericsson M-Commerce, 2012)

Solution Area M-Commerce currently has three business offerings: The Ericsson Wallet Platform, the Converged Wallet and M-Commerce Interconnect. Out of the three products, the wallet platform is the most mature product with the first customer implementations in 2012. The converged Wallet and Interconnect are both planned to go live 2013.

The SA M-commerce currently consists of 28 employees based in Stockholm and Karlskrona. Portfolio and product management, deployment, sales, marketing and finance are all based at the headquarters in Stockholm whilst most of the development and RnD is based in Karlskrona.

6.1.3.2 History of the department

M-Commerce is a relatively new department at Ericsson operating within a field that is new to the company as a whole. Over the last two years, there have been many changes in the department, both concerning business offerings, organization and leadership.

Ericsson M-commerce previously went under a different name: Ericsson Money Services. Ericsson Money Services had a slightly different business proposition with a focus on providing business-to-consumer mobile wallet Services (Ericsson Money) and a business-to-business service (Ericsson Interconnect). Ericsson Money Services went live in 2011. (Ericsson Money Services brings connected mobile money to Europe, 2011) Today, Ericsson Money Services does not exist anymore and the consumer service has been discontinued.

6.1.4 Commercial products

6.1.4.1 The Wallet Platform

Ericsson Wallet Platform provides solutions and services that enable financially regulated services such as money transfer or payments to be carried out using a mobile phone. Ericsson states that the wallet platform will be:

“Enabling secure financial services from mobile devices including person-to-person transfers, bill and merchant payments and micro loans.” (Ericsson M-Commerce, 2012)

The Wallet Platform is sold to MNOs worldwide to replace old wallet solutions or implement new functionality in their network. The main selling point is that the MNOs will increase their profit per user with additional revenues coming from handling transactions and international remittance. Furthermore, a service such as a mobile wallet would also serve to increase traffic in the network and attract new customers while retaining old ones. (Ericsson, 2012)

6.1.4.2 Converged Wallet

Ericsson Converged Wallet is a product that will enable instant transactions between mobile wallets. It is an integrated solution which combines both a mobile wallet and a charging system, thus enabling bundled telecom and financial services. According to Ericsson, the aim is to:
“Provide Ericsson Charging System customers with mobile financial services by converting pre and post-paid accounts into mobile wallets.” (Ericsson M-Commerce, 2012)

The service allows the operator to re-use existing implementations without making further changes to the systems.

6.1.4.3 M-Commerce Interconnect

M-Commerce Interconnect aims to become a global money transfer network connecting the key stakeholders in mobile money transfer and bridging the gap between traditional payment solutions and the mobile wallet implementations. Ericsson M-Commerce describes their offering as:

“A service that acts as a hub in the ecosystem for money transfers and payment transactions between mobile network operator customers and other service providers.” (Ericsson M-Commerce, 2012)

It is a mobile wallet centric network which addresses the need for interoperability and reach. Currently there are 124 mobile money schemes covered in emerging markets, but most have little, if any, interoperability. Interconnect aims to take the part of the man in the middle, or a super-hub, and to be the missing link between banks and MNOs to be able to have all parts of the mobile remittance value chain covered. (Centellini, 2012)

6.2 ERICSSON CAPABILITY ASSESSMENT

6.2.1 General analysis

Ericsson is an international company and the global reach with over 175 local offices is one of the company’s major strengths. The technical competence within the field of ICT is another key strength. It is therefore important that these strengths can be utilized when it comes to entering new markets such as virtual currencies.

Mobile financial services are nevertheless a relatively new area to Ericsson and the company has been trying to get such services off the ground for a long time. Virtual currencies are also a new area with many unanswered questions both when it comes to future prospects in terms of possible profit, but also in terms of consumer adoption. Given the fact that virtual currencies still struggle to fit in with the current regulatory framework, it is not a given fact that a company the size of Ericsson should try to enter the arena. The risks might very well be too large given the possible gains. However, the risks are of course very much dependent on what model that is chosen. Currently, the focus of Ericsson is to continue to build on the core asset: the MNO relations.

Ericsson is in a unique position to profit from their close MNO relations. Due to the good contact with operators worldwide, Ericsson has the chance to get the foot into the door where other players might have a much harder time getting their voice heard. Nevertheless, it is not certain that mobile network operators will be the leading players when it comes to virtual currencies in the future, and if this is the case, Ericsson will have little help from these relationships.

In the next section, a more thorough SWOT-Analysis will be made of the Solution Area M-Commerce at Ericsson as to gain a better insight into the potential strengths and weaknesses the department has when it comes to reaping the opportunities and dealing with the threats in the field of virtual currencies.
6.2.2 SWOT of Ericsson M-Commerce capabilities in the area of virtual currencies

**Strengths**

The close relationships with the mobile network operators and the sheer size of the company are two major advantages that Ericsson has over its competitors. Christina Bäck, Head of Portfolio Management at Ericsson M-Commerce considers these amongst the core strengths of the company.

“The core strengths differ depending if we are looking at a company whole level or at our different offerings. We are a global company with local offices in more than 175 countries.
and we have a very close relation with most of the world’s mobile network operators. Apart from this, we have a service organization with more than 50000 employees. This can sound very generic, but if you consider the fact that most competitors are smaller companies that have a hard time even getting a meeting with the mobile network operators.” (Bäck, 2012)

These relationships have been forged over many years and resulted in a large base of installed charging and billing systems worldwide, which serve both as proof of concept but also as the foundation for developing the relationships further. Bäck continues to add that the customers believe Ericsson can deliver on their promises and that is a great strength:

“Another important part and feedback we have received from several customers is that they trust that we can handle scaling up and developing the solutions, which some of the smaller more niche-specific companies can have a hard time managing.” (Bäck, 2012)

The proven end-to-end solutions in turn have created brand credibility and trust. The history has also resulted in many relationships with large banks worldwide. Global presence is another key aspect of Ericsson and the many local offices help make Ericsson a relevant player on many different markets.

Weaknesses

Ericsson’s strong focus on MNOs results in a lack of experience, and expertise, in attracting other customers from new segments, such as merchants and end-consumers. Ericsson does not have a strong brand name when it comes to building merchant relationships and would therefore have to start from scratch if the focus was on other customers than MNOs.

Ericsson would be entering a new business area if they decided to proceed with developing services related to virtual currencies. Currently, Ericsson has no current offering for virtual currencies, despite a few pre-studies. Furthermore, the recent divestment of IPX, a service for in-app payments, weakens the department’s capabilities in terms of developing virtual currency related product offerings. Virtual currencies are in other words not a core business to Ericsson and the divestment of IPX is also an indication of the management’s choices in terms of investment.

Opportunities

Ericsson has the opportunity to build on its strengths and develop solutions using its current capabilities to take a position in the virtual currency ecosystem. Bäck argues that the relationships with the mobile network operators as well as Ericsson’s knowledge about mobility represent two great opportunities. (Bäck, 2012) Through the MNO relationships, Ericsson has over 5 billion subscribers connected through their networks. The reach of the Ericsson network is therefore a great asset and opportunity to build upon. Furthermore, the current focus of the M-Commerce department to bank the unbanked also provides an opportunity for a more developed proposition using both national currencies and virtual currencies. Ericsson’s current services, the Wallet Platform and the Interconnect Hub for international remittance, both have the technical potential to be expanded into also involving virtual currencies.

Virtual currencies are also a way to develop new relationships with other customers that are not MNOs. Considering the many uncertainties of how the market for mobile payments will develop, virtual currencies might be a way to mitigate the risk of only having one type of customer, depending on which approach that the company takes.

The fact that virtual currencies are still fairly unknown to the ICT sector is another source of business opportunities. Ericsson has the opportunity to be one of the first large players from the telecom sector to enter into the field of virtual currencies with a viable business offering.
Threats

Since virtual currencies are new to Ericsson and to the industry as a whole, there are many potential risks involved. To begin with, the complexity of the legal situation makes it extremely hard to predict what the regulation will look like in the future. Considering that Ericsson is an international player with very high demands on compliance and security, this could present many challenges in terms of developing a product that could be offered on several markets. Scale and size are two of Ericsson’s greatest strengths, so the ability to be compliant with regulations cannot be stressed enough.

Another threat is the fact that the market itself is not mature yet. The market still needs time to mature and consumer uptake will take time considering the novelty of the concept. It is very likely that the traditional payment networks and solutions will continue to prevail for a long period of time.

Furthermore, a great threat to Ericsson’s position in the virtual currency landscape is the question of the mobile network operators and their role. Today, it is not possible to say whether the MNOS will have a strong position in the either in the battle for mobile wallets or for virtual currencies. This development, as well as the MNO’s wishes to focus on virtual currencies or not, will have a great effect on Ericsson.

Summary of SWOT

To summarize, Ericsson M-Commerce has many strengths that will be useful if they would decide to enter the virtual currency arena, such as global reach and technical prowess. Their weaknesses mainly come from a lack of experience within the field of finance, but also from inexperience with business models that are not MNO-centric. The opportunities are many and mainly based on their strengths as a global player and further expanding their horizons. The threats come from entering into a completely new market with many unanswered questions concerning regulation, competition and future development.

Considering the situation, it is therefore vital to consider how Ericsson best could enter into the virtual currency battle, if the interest was there. There are many different roles that the company could take as well as different approaches to the concept of virtual currencies. In the next chapter, a few of these roles will be considered and mapped against the capabilities of the M-Commerce department at Ericsson as considered in the SWOT-analysis.

6.3 ASSESSING VIRTUAL CURRENCY ROLES FOR ERICSSON M-COMMERCE

In this chapter, a few possible roles that Ericsson M-Commerce could choose to pursue will be described as well a short analysis of how well these roles would fit with the company’s current capabilities and future vision.

6.3.1 New business models

Developing products within the field of virtual currencies might involve new business models that are not MNO-based. Given Ericsson’s strong focus on the operators, pursuing a new model with new customers is therefore a very large project. Bäck argues that Ericsson generally should refrain from pursuing:

“Business models where we cannot use our strengths as global players as well as our technical skills and mobile operator relations.” (Bäck, 2012)
However, mobile commerce is a new field within ICT where innovation is needed. Bäck also agrees that:

“Trying out new business models is a must in order to be innovative and to develop the company and the business. Our sales mechanism at Ericsson is built for the operators and has so far proven to be ineffective on other target groups. In other words, if we decide to target other customers we need to think twice about how this should be done. Maybe another sales funnel is needed.” (Bäck, 2012)

The fact that Ericsson has a very well developed sales organization is a huge advantage, but it is always a question of how much of the structure that can be re-used for other customers. The mobile network operators are usually large organizations and normally limited to a few very large ones in each country. If one were to compare a typical MNO with a small software company using virtual currencies to monetize their social media games, it is clear that the businesses are very different.

Bäck therefore argues that approaching new customers with a similar structure as the MNOs would be easier.

“I personally believe that it could be a great success if it would be possible to use the existing strengths towards a new target group, as long as the sales channel is there. If we should approach new customer groups I also believe that it should be groups that are similar to our operators, i.e. a few big ones per country and not many small ones.” (Bäck, 2012)

Nevertheless, there are many different roles developing in the field of virtual currencies. Some are suitable for larger organizations and others are best served by smaller companies that can respond quicker to changes overnight. In the next section, a few of the roles that Ericsson M-Commerce might choose to pursue will be discussed.

### 6.3.2 Possible roles in the virtual currency landscape for Ericsson M-Commerce

Amongst the roles that are developing related to virtual currencies, there are some that are more generic than others. Certain roles are currency specific, such often in the case of Value Encoded Currencies, whilst other are more general and less depending on complex technical solutions. The roles suggested in this sections are still in the second phase of the development; it is not the roles that will change with the development, but rather the way that the virtual currency is considered.

One of the most obvious roles is the integration with the mobile wallet. Today, there are several different services in existence that provide storage for loyalty cards and different ways of cashing in vouchers at the retailers shops.

Ericsson Wallet Platform is a technical platform for mobile network operators to enable them to provide mobile financial services to their customers. A natural extension of this offering would be to integrate payment in other currencies, such as frequent flyer miles or loyalty points, into this offering. The business model would be the same as for the wallet platform, i.e. Ericsson enables the mobile network operator to offer the service to their users. It would therefore not be Ericsson’s role to handle merchant or retailer relations in each country, but to provide the service to the operator.

The figure below is a visualization of different roles that Ericsson could take. The figure seen below shows a consolidated view of both existing roles that Ericsson could choose to take, but also future ones. The different roles are the result of different brainstorming sessions, both by the researcher herself, but also in collaboration with the portfolio team at Ericsson M-Commerce. Nano-payments is a result of the discussion with Fredrik Strömberg concerning the future uses of Bitcoin and other virtual currencies.
It is impossible for Ericsson to try to take on all roles in the virtual currency landscape. For this reason, it is important to prioritize between the different roles available. In the chart above, the services Ericsson could provide, and thus the roles they could take, are visualized. On the vertical axis, the impact of the product offering is measured from low to high. On the horizontal axis, the difficulty level, or implementation complexity, is a reflection of how much work Ericsson would have to put into providing this type of offering.

The risks involved with the different approaches have been visualized using different colors. Green is an indication that the risks involved are relatively low whilst orange symbolizes a medium risk. The color red serves as an indication that the endeavor has a very high element of risk involved in it and that it is very hard to predict the future evolution of such services. This means that the two upper quadrants represent ideas with high strategic importance with increasing implementation complexity as one move from left to right. These are concepts with interesting elements from a strategic point of view. Nevertheless, there is also a clear indication that increasing implementation complexity also comes with higher risks. Three examples will serve to explain how the different ideas have been classified.

The Bitcoin wallet is marked red and considered to have high strategic impact and high complexity. Supporting Bitcoin as a virtual currency in the mobile wallet would have enormous strategic implications, but is also very risky due to the nature of Bitcoin and the uncertain legal status of the virtual currency. With the value encoded currency comes many different ideological standpoints and such a product would have huge implications for Ericsson brand name and reputation since it is not only promoting a new business model, but a new financial system.

White label currencies that are managed just like multiple wallet platforms for large gaming sites or retailers would be an interesting new business for Ericsson, however still quite risky and challenging.
It is marked orange due to the fact that it is a large step away from the mobile network operators and therefore would involve building an entirely new sales force. Furthermore, the market is consolidating this moment and there are many smaller software companies that are more versatile than Ericsson. In this area, the company would not be able to profit from its widespread local presence nor from its current customers. However, the market for white label currencies is stable and quite predictable and it is therefore considered a medium risk project.

Airtime transfer is green since it is based on the wishes of current customers and already has a market. Furthermore, the technical complexity of implementing the solution is low compared to other scenarios and it is therefore an easy target.

6.3.3 Different roles per group of virtual currency

6.3.3.1 Prepaid Value

Airtime transfer: Low risk

Product description

The service would be to allow airtime transfer between users in a mobile network integrated to the Wallet Platform or as a part of the normal charging and billing systems already on the market. The service already exists in many countries and it is not intended to be a service for transferring virtual currency, but to share airtime. Nevertheless, the service is used as an unofficial virtual currency and this would most likely be the main usage. Airtime transfers are attractive for users in emerging markets since this service usually is offered for free by the MNO.

Ericsson’s role and business model

Ericsson’s role would be to provide the technical solution for transferring airtime between different users. Considering the amount of airtime transfers that might be a result in the networks, it would be wise for Ericsson to consider a transaction based model for payment of the service. This would result in being able to get paid for increased usage in the networks whilst still providing a good quality of service to the end users. If the usage of airtime transfer increases, this would also create a financial incentive for the mobile network operators to try to migrate its users to a full mobile wallet solution instead of prepaid airtime transfer.

Airtime transfer is in line with the strategy so far as it helps bring more users to the Ericsson networks. Nevertheless, in the case of M-Commerce, the goal should be to move people to real mobile financial services and not to promote an unofficial currency that disrupts this development.

Business opportunity

The main reason to implement this service from Ericsson’s perspective would be to satisfy their existing customers’ wishes and demands. Today, airtime transfer is a service that is requested by many different MNOs in developing regions and it is an area where Ericsson so far has chosen not to provide this service. As a result, third party solutions have been integrated into the Ericsson charging and billing systems. By instead providing this service in-house, linked to the wallet platform, Ericsson can solidify their position with their customers even further.

Furthermore, it also facilitates the shift into mobile commerce and more sophisticated mobile financial services. Jaco Fourie, an Ericsson expert in this matter, argues that Ericsson should push for their mobile financial services, the Wallet platform, instead of facilitating airtime transfer. Nevertheless, Firooz Badiee, Strategic Product Manager of Wallet Platform at M-Commerce, argues that it might be necessary to implement this service for the sole reason of blocking out potential competition and securing the market for the future.
There are few technical difficulties to consider in the choice of implementing airtime transfer so the decision would be based on desired strategy and customer relations solely.

**Risks and challenges**

There are two main risks involved with developing solutions around airtime transfer: the risk of legal implications for supporting the development of an unofficial currency and the potential cannibalization with mobile financial services such as the Wallet Platform. The first risk mainly falls on the mobile network operator since it is they who in turn offer it as a service to the end users. The second potential downfall is more related to the development in the country and the stability of the national currency. If the national currency is very unstable, the use of airtime as a currency is more likely since it is more stable.

**Summary**

The main reason to develop airtime transfer as a service related to the wallet platform would be to block out competition and to further nurture the relationships with the MNOs. It is probable that the sales force and the account responsible would be able to provide an indication of how important this service is to the MNOs. If it is extremely important in their decision between different systems providers, then Ericsson would be able to implement such an offering without much technical difficulty.

### 6.3.4 Loyalty points

**MNO loyalty point integration: Low risk**

**Product description**

The concept of allowing the mobile network operators to integrate systems for rewarding their users with their own, native, loyalty currency would be an extension to the current wallet platform offering. By integrating loyalty points in for instance prepaid systems, the operator could try to build a more attractive business offering as well as reduce churn. The loyalty points would be stored within a specific account in the wallet platform that the users could redeem when buying top up or additional services.

**Ericsson’s role and business model**

Ericsson M-Commerce’s role would not differ from the current business model: providing the technical platform and services. The company would therefore not be involved in running any loyalty program but only provide the technical support required by the operator.

**Business opportunity**

The main business opportunity comes from providing a service that would benefit Ericsson’s key customers: the MNOs. In this manner, the existing sales organization could be utilized and there would be a guaranteed customer for the product.

Furthermore, the service is not complex from a technical point of view. Due to the technical experience within the development team from the wallet platform, and on a company-wide level from the billing and charging system, setting up a service that can handle transactions with loyalty points is not very hard to implement.

**Risk and challenges**

The main risk is associated with the relevance of the product and whether or not it would be financially wise to implement the service. It is possible that such an extension to the Wallet Platform would only be considered an upgrade to the current system that the operators are not willing to pay extra for. In this situation, it is important to reflect if this feature, or rather lack of it, would be
something that would push MNOs to choose another provider for their mobile wallets, or if the money could be more wisely invested.

**Summary**

To conclude, the decision to implement such a service should be based on an estimate of its relevance to the key customers. If it is a service that is needed in order to stay competitive on the market, then it should be considered. Benchmarking is needed in order to estimate the value of the service and to try to gain an understanding of the additional value it could add to the current offering.

**Loyalty hub provider – enabling the MNOs to create their own loyalty hubs** *Medium risk*

**Product description**

The loyalty hub service would allow the mobile network operators to create their own hubs of loyalty programs linked to their wallet service. This offering differs from the previous in so far as the MNO would not only have their loyalty points in the wallet, but be able to display, and transfer, other merchant and retailer loyalty currency schemes as well.

The product would differ from other applications available that collects and monitors loyalty points in so far as the points also could be spent at the Point of Sale together with the mobile wallet.

**Ericsson’s role and business model**

Ericsson M-Commerce would also in this offering take the role as technical service provider and not be involved in the management of merchant and retailer relations and contracts. Nevertheless, since the traffic in the system increases as the number of connected merchant rises, the business model should take this into account. It would for instance be possible with a transaction based business model also for each loyalty point transaction made over the network. It is important that the model is suitable for scaling up considering the potential differences in size between MNO implementations of the service.

**Business opportunity**

Offering the mobile network operators the opportunity to create their own loyalty hubs is interesting since it is something that stands out from the other platforms on the market. Ericsson has a long expertise in billing and charging systems as well as a sound technical solution in the Wallet Platform.

Considering the fact that loyalty point management shows strong indications of migrating to the smartphone, it is an important part of many mobile wallet products. Nevertheless, the mobile network operators have so far not taken the step in creating their own systems and therefore this solution could add value to their service.

**Risk and challenges**

This service is primarily interesting in developed regions and since Ericsson M-Commerce has a current focus on emerging markets, this service might not be very relevant for the target customers yet.

Another risk is of course that the MNOs are not equipped to deal with this type of merchant relations and therefore would consider it too much work to maintain such an extensive program.

Competition in the form of smartphone applications is another very viable threat since these are not operator dependant and therefore can be moved more easily. In essence, it is not clear if the MNOs will be the most suitable players for the loyalty management from a consumer perspective.

**Summary**
Creating a loyalty hub service as a complement to the mobile wallet platform would be a more daring move from the MNOs’ perspective. It adds additional value to the mobile wallet platform, but is today an unnecessary feature in the emerging markets where Ericsson M-Commerce today puts most of its efforts. Nevertheless, such a service would add considerable more weight to the product offering of the mobile wallets in developed regions. In emerging markets, these services will develop rapidly and would therefore be relevant within a few years.

**Ericsson Loyalty Service - consumer service: High risk**

**Product description**

In this offering, Ericsson M-Commerce would offer merchants and retailers the possibility to connect to their loyalty service. The service would be connected to the wallet platform since the MNOs would get the additional feature as a bonus.

**Ericsson’s role and business model**

Ericsson would provide the service and maintain the relationships with the merchants in different countries. In this manner, the expansion of the offering would be faster if an agreement is reached with a multi-national retailer. The MNOs would offer the service to their customers as a point of difference from the competition.

Ericsson would maintain the contact with the merchants/retailers and charge per country the service exists in. Ericsson would also be responsible for managing a good mixture of retailer/merchants that do not cannibalize too much on each other. The merchants/retailers would in this manner outsource the management of their loyalty program to Ericsson and have many more options for how to manage loyalty through the smartphone. Ericsson would therefore also have to manage integration with the retailers’ current loyalty scheme providers.

The MNOs would benefit from a stronger product offering which would persuade new users to try out the wallet software and help attract new users.

**Business opportunity**

The service has the potential to be profitable since it is depending on two sources of incomes: the retailers/merchants and the MNOs. Loyalty programs are a huge business with billions of dollars at stake. By helping the retailers/merchants to manage these more efficiently, great sums could be achieved as well as saved in terms of economics of scale. By centralizing the service, it would be easier to attract larger retailers and merchants and the service would be easier to scale.

**Risk and challenges**

The business model is not a typical Ericsson-model. The company has little, or bad, experience with managing many new merchant/retailer relations and does not have the experience or organization to do this. Furthermore, it is possible that the retailers/merchants would not be positive towards joining such as service. First of all, Ericsson has no experience from managing loyalty programs. Secondly, most retailers and merchants are probably more familiar with companies such as Google and Apple’s products. Again, it might be hard to convince merchants in the developed markets that MNOs have a secure place in the mobile payment ecosystem or in the loyalty business.

The MNO-based wallet also allows the loyalty program to reach only a portion of the country’s population. For this reason, it is more likely that merchants and retailers either would launch their own MNO/operating system neutral solution to handle payment with loyalty points.

**Summary**

To summarize, a loyalty hub service where Ericsson takes the central role would be unwise. The company has not had success with similar business models before and it is a step away from their
normal MNO-based symbiosis. Considering the probably hesitation from the retailers/merchants, it is currently not a suitable path for Ericsson M-Commerce.

6.3.5 Monetization and Gaming currencies

**Wallet to store virtual currency:** *Medium risk*

**Product description**

The idea behind this product is to gather many different virtual currencies in the same place, namely in the mobile wallet. The idea is to visualize monetization currencies in the normal mobile wallet as to increase the functionality in the game, provide even easier purchase of the virtual currency and to remind the users about their available virtual value.

**Ericsson's role and business model**

Ericsson would offer the service to larger gaming/social media companies and the service would be available through the mobile network operators' wallet services. There are many legal aspects that need to be considered since most issuers of monetization currencies have very clear limits of the usage. Agreements with the respective companies would therefore be necessary in order to be able to provide the service to the end-consumers.

**Business opportunity**

Virtual currencies as monetization tools are only beginning to reach their full potential. Their usage as a business model is increasing rapidly and spreading into many different industries. Both gaming currencies and social media sites are adapting the new model and create a user-base of many million unique users worldwide.

Monetization currency issuers could see the benefit of having the virtual currency more easily accessible and new opportunities for advertising and interaction between an in-game environment and the everyday life would increase.

**Risk and challenges**

The main challenge comes from the fact that monetization currencies are proprietary models designed to give their issuer a profit. The incentive to share that profit could therefore be low if the service isn’t able to provide a unique value for the end-user that results in increased revenue. Many sites that use virtual currency as a business model today are already accessible using a smartphone today, so it would be imperative to create a unique value combining it with the wallet platform.

This might not be the best idea for Ericsson considering the effects such a gaming-focus would have on the brand name and reputation.

**Summary**

Despite the interesting concept of using virtual currencies as a monetization model, it is unclear how Ericsson M-Commerce would fit into the equation. The fact that the wallet is currently MNO-focused is one limiting factor, together with the lack of experience in dealing with such fast-moving markets as social media/gaming are. Adding to this are the legal challenges with terms of service and the lack of incentives for the currency issuers to provide any currency exchange. It would be wise to let the role of a monetization hub to a smaller player and instead focus on building on the strengths within Ericsson.
White label currency provider: **Medium risk**

**Product description**
The role as white label currency provider already exists today and will continue to be important in the future as well. The role includes issuing and managing virtual currency schemes that could be implemented in various settings, for instance by social media or retailers without a currency based loyalty program. The virtual currency would be technically managed by Ericsson and would basically be a mobile wallet software only for virtual currency that could be rebranded by the user.

**Ericsson’s role and business model**
This product does not limit Ericsson M-Commerce’s customers to only mobile network operators, but opens up for a variety of new relationships. The business model would be similar to running a wallet platform system and the customer should be charged based on the number of transactions done.

**Business opportunity**
Ericsson has the size and technical knowledge to design and run a large scale white label system. The service would indicate a strategic shift which might be interesting for the company as a way of increasing the customer base and making the company less depending on the operators. Furthermore, given the sheer size of the gaming and the social media industry, the transactions would be numerous enough to present an interesting business case.

**Risk and challenges**
There are many risks related with a possible focus on providing white label currencies. First of all, Ericsson would be entering into a market with already existing products and where the competition already has existing services. Securing the larger contracts would therefore most likely require replacing a current service, which might prove complicated given the lack of experience. Furthermore, the competition also has very complete product offerings that range from providing the virtual currency to include offer based advertising and targeted marketing.

In addition, the financial aspects of a white label virtual currency offering are quite vague. Games and applications using virtual currency as a monetization model usually only have a low percentage of paying players. The exception would be online poker where the chips are virtual currency and the players need to buy these in order to play the game.

**Summary**
Considering the heavy competition and the fast moving characteristics of the industry, the match with Ericsson might not be perfect.

6.3.6 Value Encoded currencies

**Mobile Bitcoin-enabled Wallet: High risk**

**Product description**
The idea behind a Bitcoin enabled wallet is conceptually simple to visualize since it would be enabling sending, receiving and storing Bitcoins together with the normal functionality of the Wallet platform. The product should be a light weight version of the Bitcoin client where not all of the calculations are made in the smartphone in order to ensure faster performance. Using the Bitcoin-enabled wallet, the end users should be able to pay and transfer Bitcoin just as easy as using the national currency in the mobile wallet.

**Ericsson’s role and business model**
Ericsson’s role would be the same as for the Wallet platform; to be a service provider. It is not unthinkable that Ericsson would have to enter into partnerships with other established players given the novelty of the concept for Ericsson.

**Business opportunity**

Considering the low transaction fees in the Bitcoin network, the currency would have lower fees than for transferring the national currencies. Given the fact that the card networks are removed from the equation, the currency is cheaper to use for smaller transactions. Ericsson already has a technical foundation in the Wallet Platform and could easily partner with one of two smaller Bitcoin wallets to provide a well-functioning product.

Ericsson has the chance to be the first larger corporation to support Bitcoin and this would have many different implications. The company would be able to quickly take a large part of the market and to drive adoption of the virtual currency as a viable unit of account.

Furthermore, Bitcoin is an interesting alternative in emerging markets where the national currency is unstable. There have been several reported cases of people using Bitcoins in areas where financial transactions are very closely monitored by the government or when the national currency is not stable enough. Here Bitcoin could be an alternative instead of resorting to, for instance, airtime as a currency.

**Risk and challenges**

There are several substantial risks involved in also allowing Bitcoin in the wallet platform. First of all, the concept is new to the general audience and many do not trust the currency. The marketing efforts of persuading users to pay with Bitcoins instead of their national currency would have to be substantial.

Secondly, the legal situation is still complicated when it comes to dealing with Bitcoins. Finland is the country with the most progress in terms of legislation for developing services, but the legislation is very vague even there. Ensuring compliance between countries would be a challenge.

The security at the application levels have been less than perfect and resulted in several incidents that have proved that the value of the currency could be very unstable. Given Ericsson’s size and reputation, it might be unwise to pursue a technology which still is so young.

Last, the matter of branding also becomes relevant as Bitcoin has a tendency to be associated with illegal uses. Even though there are many legal uses for Bitcoins, it might be unwise for Ericsson to risk its reputation by providing services using Bitcoins.

**Summary**

To conclude, Bitcoin is a very interesting concept and a promising technology. Nevertheless, it is questionable if Ericsson should be the first larger company to endorse this new technology. The option might be very interesting for the future, when the technology is more mature and legislation has progressed more, but it is most likely a too risky service to enable for the moment. Considering Bitcoin’s properties and reputation, it would not be the best strategic fit for Ericsson M-Commerce at this point.

**Charging systems using nano-payments in virtual currency: High risk**

**Product description**

Virtual currencies have great potential to be used in nano-payments due to their low transaction fees. By creating open loop networks of virtual currencies, it would be possible to charge as little as a few cents for a product or service. The product would be a system with a virtual currency that acts as in-between layer between the many products/services and the money the user pays. The product
could either be based on an existing virtual currency, such as Bitcoin, or using a new virtual currency scheme.

**Ericsson’s role and business model**

Ericsson’s role would be to provide the system to handle the currency and to handle end-user relations. The customer, for instance an alliance of many music artists, would sell the virtual currency to the end-consumers which they could store in an online account. The end-users would after that use the virtual currency to buy music from many different artists around the world and pay as little as a few cents, depending on the artist’s choice of price. At purchase, the virtual currency would be transferred to the artist’s account and he/she could cash out into real money at any given time. The exchange rate would be determined centrally as a function of sold virtual currency. Ericsson’s part would come from a percentage of the sum paid when the end-user buys the virtual currency. This model differs from monetization currencies used by for instance Apple in so far as it is individuals who use the system to provide a service in a peer-to-peer inspired manner.

The same model would be applicable for mobile network operators and individual providers of connectivity. Instead of operators providing connectivity even in remote areas where no one lives, individuals could provide base stations that cell-phones in the vicinity could use. Using a virtual currency, it would be possible for a base station to charge a few cents for making a phone call. A virtual currency such as Bitcoin would be an interesting alternative or otherwise the virtual currency scheme would be owned collectively by the people providing the base stations. These would then be able to cash out based on the real money put into the system.

**Business opportunity**

The business opportunity of this model is very large since it allows for co-creating and micro-funding. The concept is not new, similar models are used to charge for single products, but using a virtual currency allows for much lower amounts to be charged. In real money, the credit card company usually has a limit of how small transactions that can be processed, but this limit does not exist for virtual currencies.

**Risk and challenges**

Considering the recent divestment of the IPX department for in-app payments, M-Commerce is not in a perfect position to consider this role. Furthermore, it also represents a model that is not based on MNO relationships. Furthermore, developing such a service might also be frowned upon by their operator customers since this model is not very compatible with their own model.

**Summary**

The radical idea of focusing on nano-payments in virtual currencies is not directly in line with Ericsson M-Commerce current focus. Despite the interesting aspects of the concept, it is plausible that the solution instead should be developed by smaller start-ups who don’t have the same limitations in terms of compliance and safeguarding their reputation in the charging/billing industry.
6.4 RECOMMENDATIONS

The purpose of this chapter is to provide Ericsson M-Commerce with a few recommendations concerning how to proceed with their actions related to virtual currencies. The aim is to provide decision material for the senior management of the department.

6.4.1 Rationale behind the recommendations

The recommendations in this chapter are based on the previous analysis of Ericsson M-Commerce’s capabilities and strategic focus together with the analysis of how the different groups of virtual currencies are evolving. After mapping these capabilities and roles together, the outcome has become recommended actions that are related to transfer of pre-paid value as well as loyalty point.

There are three main arguments for choosing such a conservative route; the novelty of the concept of virtual currencies, the strong emphasis on mobile network operator relations within Ericsson and the focus on emerging markets within M-Commerce. The recommendations are visualized in the figure below:

![Figure 15: Recommendations](image)

The fact that virtual currencies are a relatively new concept that is just beginning to get above the radar of the regulatory instances makes it a challenging and risky area for an international company such as Ericsson. However, not all aspects of virtual currencies are as challenging. Even though Value Encoded currencies hold the key to the most radical changes in the financial system, concepts such as airtime transfer and transfer of loyalty points are less complex and therefore easier to productify. Furthermore, given the fact that Ericsson M-Commerce is a new department which is just releasing its first products on the market, it is important to present a strong and secure product portfolio.

By focusing on the mobile network operators, Ericsson can build on their strengths in the new market of mobile payments whilst still investigate the concept of virtual currencies. Furthermore, by developing services related to the MNOs it is also possible to take on a role within virtual currencies without having to develop a new sales organisation.

The recommendation is also based on Ericsson M-Commerce’s current focus on emerging markets. Given the enormous competition for mobile payments in developed regions, it is a sound decision to
focus the strategy on emerging markets both for mobile payments and for virtual currencies. In most emerging markets, the development of mobile payments is driven by the telecom industry. This is due to the fact that the 3G networks are being rolled out much faster than the land based fibre, thus giving the mobile network operators an advantage over the banks in these regions. For this reason, it makes sense to also focus the efforts within virtual currencies on supporting the MNOs to make their offers even more attractive.

To sum up, the relative novelty of virtual currency as a concept and M-Commerce own “youth” within mobile payments are both good reasons for a conservative step-by-step approach when it comes to entering the field of virtual currencies. Furthermore, the strong MNO emphasis within Ericsson and the strategic focus on emerging markets also suggest an approach based on these two aspects.

6.4.2 Suggested offerings within virtual currencies

The three suggested future offerings within virtual currencies are enabling airtime transfer for the MNOs in the African regions, allowing loyalty points for the MNOs within their systems as well as building a platform for creating MNO-centric loyalty hubs.

6.4.2.1 Airtime transfer

The main reason for adding airtime transfer to the product offering would be to satisfy the MNOs demand for the service and thereby blocking out potential competition. As emerging markets often are Telco-driven markets, this service is requested by many users in the regions and therefore requested by the customers. However, it is important even if airtime transfer could be used as a virtual currency, this should not be the primary focus of the service. Both the operator and Ericsson should promote mobile payment services such as the mobile wallet for financial uses due to legal and profit reasons. Airtime transfer should be marketed as a way of transferring airtime between family members, not as a virtual currency used in commerce.

6.4.2.2 MNO loyalty points

Enabling the mobile network operators to issue loyalty points to the users within their networks is a way of trying to reduce churn and create brand loyalty, which is generally low amongst MNOs in emerging markets. Since it is not uncommon for an individual to have up to three different SIM-cards in these regions, the operators have strong financial incentives to try to reduce churn.

MNO loyalty points are not a new service and many operators already have the service in their current system. The product is therefore a requirement for a player such as Ericsson in order to have a product offering which is as strong as the competition’s. The service should be linked to the Wallet Platform in an easily managed way as to create a good user experience for the operator.

6.4.2.3 Loyalty hub provider

After taking the step of providing a loyalty program system for the mobile network operators, it is not farfetched to consider offering the same service to retailers and merchants through a MNO centric hub system. Building on the Ericsson Wallet Platform, the operators would gain the opportunity to build loyalty hubs around their wallet offerings to make them more attractive to the users. By integrating mobile payments and loyalty point management, the offer becomes more complete from a consumer standpoint and also further creates a lock in effect.

The service would be based on the mobile operator acting as the man in the middle and dealing with the interested merchants and retailers directly. The different loyalty programs could then be linked to the wallet platform, either by integration or by offering management of the loyalty program.
through the operator. The merchant/retailer would in that case outsource the loyalty program to the operator who would manage the entire program and not only the wallet-enabled part of the loyalty program.

Since the mobile network operators in the different countries have good knowledge of what type of constellations of merchants/retailers that would be interesting for the end-customers, it has a much higher chance of success than an Ericsson centric approach to loyalty management.

### 6.4.3 Possible Go-To-Market plan

Based on the nature of the market of mobile payments and Ericsson’s strategies in this area, a step-by-step approach to integrating virtual currencies into the product offering would be advisable. This assumption is supported by the fact that the recommendations are following a logical chronological order for their implementation which would fit in nicely with the evolution in the markets. A figure illustrating how the recommendations build upon one another is shown below.

![Recommendations Diagram](image)

**Figure 16 Recommendations**

The reason for this order of implementation is the demand from the market. Airtime transfer is a service that is currently requested by operators in emerging markets and it is a service several competitors offer. In order to block out competition and secure the relationships with the operators, this would be a good first step. Furthermore, it also makes sense from a technical point of view. In order to handle airtime transfer, there must be functionality in place for handling transfers of virtual currencies between stored value accounts. This functionality would pave the way for another implementation of moving virtual currencies between stored value accounts for a single operator: MNO loyalty programs.

MNO loyalty programs give the operators an advantage and help create a lock in effect to the mobile wallet and to the operators as a whole. By being able to bundle offers, the operator can increase its attractiveness from a consumer perspective. The functionality would also be important in ensuring that Ericsson has a competitive offer when it comes to wallet platform software.

Last but not least, the Loyalty Hub service is a service suited for a more mature market in terms of mobile payments, even if the service itself would be a great incentive for adoption of mobile payment systems with retailers and merchants. The MNO centric loyalty hub creates incentives for merchants and retailers to join the race for the adoption of mobile payments. Furthermore, whilst the two first recommendations were mostly relevant for emerging markets, the concept of MNO centric loyalty hubs is also something that could help the operators to gain a competitive advantage also in the bank driven developed regions. The service itself builds on the technical knowledge and structure of implementing a single MNO loyalty program and integrating this with the mobile wallet. Nevertheless, the step to providing a fully functioning hub service for loyalty program is large and would require a substantial amount of work from the development team to create.

Below is a possible timeline could look like for implementing all three recommendations:
Figure 17 Timeline for implementing recommendations

The timeline is based on approximations of when the services could be integrated into the portfolio. Ericsson M-Commerce’s role would therefore change from being a mobile payment provider to providing a more complete landscape around mobile payments. With a platform that provides the MNO not only with the tools to do mobile payments, but to also create the incentives for the surrounding ecosystem of merchants and retailers to join the development, Ericsson could be able to further secure their position as market leading in these regions.

In conclusion, the recommendations for Ericsson M-Commerce are based on the analysis of the department’s current capabilities as well as the development of the groups of virtual currencies. Considering the fact that Ericsson M-Commerce’s core business is mobile financial services, it is imperative that the strategy chosen for virtual currencies support the core business and does not add unnecessary risk to an area which already is a relatively new market for the company. By focusing on loyalty points, Ericsson can enter the virtual currency arena whilst still profiting from their relationships with mobile network operators worldwide. Given the size of the loyalty business in developed regions, it is a fair assumption that the business also will blossom in emerging markets as mobile payments take off and the countries are becoming richer. In other words, securing a place in the loyalty business through the operator relations would be an important strategic decision for the future.
7 Conclusion

The aim of this section is to summarize the findings in this thesis and to propose suggestions for future work within the field of virtual currencies.

7.1 Summary

Virtual currencies are growing year on year and they are used in numerous transactions across industries and markets. However, the increased popularity of virtual currencies now call for new structures to guide analysis and debate. One of the major outcomes of this thesis is a model to classify the virtual currencies currently in existence. The model seen below adds a new capability to the field of virtual currency: overview and a structured approach to guide further analysis. Today, virtual currencies can be divided into five large groups of currencies based on industry and stakeholder: Prepaid value, Loyalty points, Monetization currencies, Gaming currencies and Value encoded currencies. The groups are shown again in the figure below:

**Figure 18 The five groups of virtual currencies**

Apart from categorizing the virtual currencies according to their usage as seen above, it is also interesting to consider their different implementations. A virtual currency’s built-in ability to interact with the normal economy is an interesting and useful way to further tell the currencies apart and the classification used in the European Central Bank’s report (Type 1= fictional, Type 2= closed loop and Type 3= open loop) is therefore a also a great tool to further classify the currencies.

Out of the five groups, Value Encoded Currencies are by far the most important and interesting currencies from a conceptual point of view. As the name of the group suggests, these currencies seek to add additional properties rather than just transfer value. In the case of Bitcoin, the technical properties and the manner in which the system functions indicate the values which the currency wishes to support. The entire concept of paying with something other than national currencies is a radical shift that can have huge implications across industries.
Even though virtual currencies today can be grouped into five groups according to their usage, this will not be the most appropriate way of categorizing them in the future. The second contribution of this thesis to the field of academic research is the possible future scenario for virtual currencies developed as a result of the empirical data and analysis. The outcome of the analysis shows that virtual currencies most probably are evolving towards filling very specific functions. Therefore these will be more interesting to consider in the future, rather than a classification by industry or implementation. The sequence of events is visualized in the figure below:

Figure 19 Possible evolution of virtual currencies

The evolution of the concept will not happen overnight, but the changes are already noticeable. The change can be divided into three distinct phases: a vertical industry specific phase, a consolidation phase and a horizontal functional phase. The first phase is what we have seen already: five specific groups of virtual currencies scattered across diverse industries. In the second phase, which the virtual currencies just have entered, there is an increasing level of consolidation between industries to operate currencies such as Loyalty points and frequent flyer miles and Monetization currencies and MMORPG gaming currencies. The end result will be three functional areas where virtual currency will either be classified as a unit of account, a business model or a product that can be sold. These three distinct functions will be separated in the future, regardless of industry.

By understanding the different functions that virtual currencies can fill, it will also be easier to develop suitable regulation per function. Up until now, regulation has either been blocking the development of new business or ignored due to a lack of clear guidelines. In the third phase, a more in-depth understanding of what virtual currencies are will help facilitate the development of appropriate laws that allow for economic innovation whilst still protecting the currencies from money laundry and fraud.

The shifts between the phases are not sudden, but brought on by continuous technical development and gradual adoption of mobile payment. The first shift that brought on the second phase was the development of smartphone applications to store and monitor virtual value and virtual currency could then be used in closed systems using the smartphone. The second shift, however, will be brought on by the wide scale adoption of mobile wallets and mobile payments becoming standard. This will present many new opportunities and also allow for virtual currencies to be further merged with the real economy. As virtual currencies can be used at Point-of-Sales to pay for physical products alongside or together with real money, a real paradigm shift has occurred. At this point, it will become very clear what different virtual currencies are and how they are used.

For companies within neighboring industries such as ICT or the financial sector, this evolution presents many opportunities and challenges. Virtual currencies have the potential to have enormous
impact across industries and their evolution should be monitored regularly. In order to succeed in the virtual currency landscape, it is important to choose a few aspects and excel within these. The case study at Ericsson M-Commerce proved the value of the framework developed in this thesis, as the new model for analysing virtual currencies provided the overview of the landscape which has not been accessible before. Ericsson M-Commerce has an enormous advantage to have close relations with mobile network operators worldwide and should use this opportunity if they wish to enter the virtual currency arena. In other words, instead of building new internal organizations to adapt to a niche within virtual currencies, Ericsson should profit from its well-established role as a technical platform provider in mobile financial services and just increase the offering to also include loyalty points and airtime transfer. Loyalty points are already a driving force for mobile wallets and by enabling their customers to create a profitable business including virtual currencies, Ericsson would secure a good position for the future.

To conclude, virtual currencies are indeed a very interesting topic and more relevant to the transaction economy and ICT industry than ever before. It is very likely that they will play a significant role in the future of mobile payment, not only pushed by retailers and merchants wanting to increase sales, but also due to increasing number of supporters for alternative currencies such as Bitcoin. Many believe that in the future, virtual currencies could prompt radical change within the financial sector and within many other industries, but only time will tell how large these changes will be. However, it is clear that virtual currencies are becoming real opportunities, not only in the future, but already today.
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8.2 INTERVIEWS

Below is a list of all the people who were interviewed as part of this project. Nevertheless, meetings with representatives from Ericsson M-Commerce are not part of this list.

8.2.1 External interviews

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8.2.2 Ericsson M-Commerce

Below is a list of people within the M-Commerce department who, on numerous occasions, have provided information used within this thesis.

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<td>Firooz Badiee</td>
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</tr>
<tr>
<td>Martin Tiberg</td>
<td>Strategic Product Manager Portfolio Extension</td>
</tr>
<tr>
<td>Patrik Centillini</td>
<td>Strategic Product Manager Ericsson Interconnect</td>
</tr>
<tr>
<td>Victor Leong</td>
<td>Strategic Product Manager Ericsson Converged Wallet</td>
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9 APPENDIX

This section contains the appendix material of the master thesis.

9.1 EXAMPLES OF EXISTING VIRTUAL CURRENCIES

Below is a table listing an example of different existing virtual currencies to give the reader an idea of the many different kinds of virtual currencies. The currencies are sorted by their implementation and after their classification according to the five main groups of virtual currencies. The table below does not present a weighting between the different classes of virtual currencies, but should serve as a presentation of some of the most well-known virtual currencies.

Table 3 Overview of a few existing virtual currencies

<table>
<thead>
<tr>
<th>Virtual currency</th>
<th>Type</th>
<th>Issuer</th>
<th>Group</th>
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<tbody>
<tr>
<td>Starbucks Coins</td>
<td>Type 2</td>
<td>Starbucks</td>
<td>Loyalty points</td>
</tr>
<tr>
<td>Bonga points</td>
<td>Type 2</td>
<td>Safaricom</td>
<td>Loyalty points</td>
</tr>
<tr>
<td>Advantage Miles</td>
<td>Type 2</td>
<td>American Airlines</td>
<td>Loyalty points</td>
</tr>
<tr>
<td>Avios</td>
<td>Type 2</td>
<td>Club</td>
<td>Loyalty points</td>
</tr>
<tr>
<td>Microsoft Points</td>
<td>Type 2</td>
<td>Microsoft</td>
<td>Monetization currency</td>
</tr>
<tr>
<td>Farmville Cash</td>
<td>Type 2</td>
<td>Farmville</td>
<td>Monetization currency</td>
</tr>
<tr>
<td>Facebook credits</td>
<td>Type 2</td>
<td>Facebook</td>
<td>Monetization currency</td>
</tr>
<tr>
<td>LINE Coin</td>
<td>Type 2</td>
<td>NHN Japan</td>
<td>Monetization currency</td>
</tr>
<tr>
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<td>QQ</td>
<td>Monetization currency</td>
</tr>
<tr>
<td>GetJar</td>
<td>Type 2</td>
<td>GetJar</td>
<td>Monetization currency</td>
</tr>
<tr>
<td>Ven</td>
<td>Type 2</td>
<td>HubCulture</td>
<td>Value Encoded</td>
</tr>
<tr>
<td>Open Metaverse Currency</td>
<td>Type 3</td>
<td>VirVoX</td>
<td>Gaming Currency</td>
</tr>
<tr>
<td>Linden Dollars</td>
<td>Type 3</td>
<td>Second Life</td>
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<td>POD Entropia</td>
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<td>Bitcoin</td>
<td>Value Encoded</td>
</tr>
<tr>
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<td>Ripple Project</td>
<td>Value Encoded</td>
</tr>
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