LAB University of Applied Sciences

Business Student's Interest Towards Modern Forms of Investing

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Abstract

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Abstract

Investing is an important skill to learn early on, it can improve personal finances and budgeting. In addition to the traditional forms of investing, such as stocks, bonds and various funds, there are also more recent forms of investing available, such as cryptocurrencies and crowdfunding. Student's investing behavior and interest towards it has been studied before, but research and empirical evidence in interest towards these "modern" forms of investing is lacking. The aim of the thesis was to determine are the business students at LAB University of Applied Sciences interested in both, traditional and modern forms of investing.

The thesis was conducted by using abductive approach. Quantitative methodology was used. Primary data was collected by a survey, which had 22 respondents. Secondary data was collected from already existing literature, such as books, and electronic sources including journals and reports.

The most important findings from the thesis were that students were interested in both traditional and the modern forms of investing, and that they would like more possibilities to learn in school, especially about the more recent innovations. Most of the respondents claimed that the modern forms were more interesting compared to the traditional forms.

Keywords

investing, cryptocurrency, crowdfunding, investing innovations

Contents

1 Introduction

1.1 Research Background

Personal finance is a topic that should be important for everyone, and it is related to a common goal of many students: financial stability. Deeper knowledge about instruments available to achieve this goal is always desirable. According to a survey conducted by Investopedia, only 37% of wealthy millennials are confident enough in their skills to invest. They know investing is a smart thing to do, but feel that it is complicated, overwhelming, intimidating, and risky. (Gobell 2019.)

As we all know, the world is constantly changing and evolving. Everything is more accessible to more people, thanks to internet. This also applies to investing. Back in the old days, you had to go to a physical exchange to buy securities. The fees were high, and everything was done with simple tools, pen, and paper. In the modern days you can be an owner of securities almost instantly via online stock exchanges. The methods, tools and forms have evolved since. From pen and paper to computers doing analyzes. The focus for this thesis is on more recent forms of investing, such as crowdfunding and digital currencies.

Since crowdfunding and digital currencies are new phenomenon, both becoming more popular in the 21st century, there is a limited number of studies and knowledge about them. That is why it is important to study how interested students are in them, as these studies can point out if it would be a good addition to already running education material regarding to investments and saving.

This thesis studies the attitudes towards investing and its various forms. The target group is the students at LAB University of Applied Sciences, more precisely the business students. The topic is chosen because of personal interest and the current popular interest towards investing. This thesis seeks to provide valuable information about the newer forms of investing, if there should be more options available for those who want to learn or deepen their knowledge about them. In addition, the thesis possibly expands the already existing knowledge or can be a first step for someone interested in learning more.

1.2 Objectives, Limitations and Delimitations

This sub-chapter states the aim, limitations, and delimitations of the thesis. It introduces the main research question and the sub-questions.

Objectives

The aim of thesis defines the intentions, and what you hope to achieve, while being clear and explicit. The objectives are related to the aim, they explain how it is achieved. (Lempriere 2019.) The aim of this study is to get to know how interested students are in investing, its forms, students already existing knowledge, and their investing habits. The main emphasis is on the modern ways of investing.

The objectives go hand in hand with the aim, in this case it is to gather data about interest in more recent forms of investing, such as crowdfunding, and digital currencies. The results indicates if there is interest about the subject and is there enough education available about the field of investing, perhaps with more emphasis on the newer forms of it. The thesis also raises awareness of investing in different options, together with the traditional instruments and possibly lower the gap of starting investing.

Research Questions

A research question answers to the question that the project demonstrated. Their objective is to achieve new observation about something. A good research question gives new insight and data, that can be analyzed and interpreted. (Mattick, Johnston & de la Croix 2018.)

The main research question in this research is:

-How interested are students in investing, especially newer forms of investing?

Sub-questions are more narrow questions, which assist with the main research question. In this study they are:

-How interested students are in learning more about investing in general?

-How satisfied are students in their knowledge about investing?

-How satisfied are students with the possibilities of learning about investing in school environment, and should there be more options available to learn?

-Are students who are interested in investing in general also interested in the modern forms of investing?

Limitations and Delimitations

Limitations in a study are systematic bias, often uncontrollable or disregarded by the author, and can affect the results. Delimitations are systematic bias, controlled by the author and is brought onto the research on purpose. (Price & Murnan 2004.) In this study the limitations are the background of the students, and small sample size.

The survey shows results of how interested the students are in the subject. However, the reality is that students come from different financial backgrounds. Some of them might be very interested, but their financial capability is lacking. Some of them might have the resources but zero knowledge. There is a bias that investing requires huge amount of wealth, which is not necessarily true, and it can affect the attitude towards it, which can be a limitation.

If the sample size is small, it can lead to problems, such as variability and voluntary response bias. To avoid these, the survey's sample size needs to be as large as possible. Small sample size often causes larger standard deviation, which leads to inaccurate results. Voluntary response bias is the case when the survey gets responses only from students who are already interested in the topic and do it out of curiosity towards it. (Simmons 2018.)

The only delimitation for the thesis is the target group, business students at LAB University of Applied Sciences. By targeting students from just the business field, we can better understand if there should be more options to learn about modern forms of investing or is there already enough.

1.3 Theoretical Framework

Theoretical framework to a study can be considered as a blueprint to a house, if built without one, the outcome is poor. It must be thought of and planned before the building starts. It provides foundations for the literature, and analysis and methods. (Grant & Osanloo 2015.) It can be followed as a guide which to follow during the thesis and what are your own theories based on.

To come up with theoretical framework, it requires studying previous research and theories related to the subject, or similar, if there are any. It is possible to find a connection between theories and make predictions, how something might affect the outcome (Sinclair 2007).

As mentioned before, the goal of the thesis is to find out how interested students are in newer forms of investing, and at the same time give insight to the general interest in the field of investing and saving. The main theme of this thesis is recent forms of investing and the interest towards it, which are presented and analyzed.

Based on the literature, the more commonly thought forms of investing and the modern ways, their definitions and history, are explained. In addition to that, millennials as investors are briefly described.

1.4 Methodology and Data Collection

This chapter introduces the approach, methodology, and data collection and how it is analyzed.

Research Approach

There are three major types of research approaches: deductive, inductive, and abductive. They differ from each other on their logic, their ability of generalization, how they use data, and what they do to theories. Deductive approach states that if the premises are true, conclusion must be true. It generalizes from general to specific, data is collected to assess hypotheses connected to existing theories, and it is used to test if a theory is true or false. Inductive approach differs from deductive in several ways, it uses the known premises to come up with new untested conclusions and comes up with new theories. Its generalization is the opposite, from specific to the general, and data is used to explore phenomenon, patterns and to identify certain themes. Abductive approach aims to generate a new theory, or modification of an existing one, or even to combine a new theory with an existing one. It could be called a combination of both deductive and inductive approach. (Saunders, Lewis, Thornhill & Bristow 2019, 153.)

Choosing a research approach is a very important part of the study. It gives you the tools how, where, and what kind of evidence is collected and how it is interpreted to ensure it gives you good answers to the research question. The correct approach helps to think of the methodological, and research strategies, that accomplishes your goals. Often, it is not possible to purely use one approach, but instead combining them, depending on factors such as available literature and theories about a subject, or a timeframe of study. (Saunders et al. 2019, 152-157.)

As explained above, when taking into consideration that there have been studies conducted before about students and investments, and this thesis is closely related to those, the best approach is abductive. Using this approach, it is possible to form a new theory or make modifications to an existing one.

Research Methodology

There are two main research methodologies, quantitative and qualitative. The distinct difference between these two is the way they gather data. Quantitative methodology is based on collection of numerical data, is often deductive and is preferred for natural science approach. Important characteristics of it are generalization, causality, measurement, and replication. In qualitative methodology, instead of numbers, words are emphasized to collect

and analyze data. It is often characterized as interpretivist, inductivist and constructionist. It is fair to note, that it is not commonly agreed, what qualitative research is. (Bryman 2012, 160, 380.)

Quantitative research methods aim to collect and analyze numerical data to predict, describe, or control variables of interest. It gathers the data often by doing experiments, with outcomes that are either numerical or categorizable data. Qualitative research methods goals are to study the objects in their natural settings and understand the social reality behind it. Interviews are often conducted as a method to gather data, but qualitative data can also be videos, photographs, and recordings. (McLeod 2019.)

As this thesis focus on gathering empirical, numerical data, the appropriate research method for it is quantitative methods. Conducting a survey with closed-ended questions gives countable, numerical data, which can be analyzed and eventually make generalized facts about the topic. Closed-ended questions have a fixed number of options to choose from, and the answer choices must be mutually exclusive and exhaustive (Lavrakas, 2008, 96).

Data Collection

Data can be grouped in two categories, primary and secondary data. Primary data refers to data gathered by the author, new information that is not available to be used yet by others. Secondary data includes the already existing information, which are raw data, or complied data such as published articles, journals, and studies. The main purpose for both, primary and secondary, is to support the outcome and answer, or partially answer to your research question. (Saunders, Lewis & Thornhill 2009, 256.)

Data collection methods work as instruments for the author to form knowledge and drive the research process forward, ultimately to answer the main research question. These methods can be structured or unstructured. Examples for a structured method would be a questionnaire, it has a strict reasoning and logic behind every question asked, what needs to be found out for the study to give a conclusion. Some methods can be less structured, such as observation of participants. In such case, theories and concepts can emerge out of the data. (Bryman 2012, 12.)

Summarization of these details are included and demonstrated in the following figure.

Figure 1. The research approach, methodology and data collection of this thesis.

Data must be collected according to the nature of the study. As usual in theses, both primary and secondary data is needed to fully answer and understand the research question. Primary data in this case is formed using a closed-ended survey to find out the opinions of a certain group of people, students. It is necessary to come up with a new theory. The data is analyzed using SPSS, program used for statistical analysis.

In addition to primary data, secondary data is gathered for its crucial role in supporting and analyzing the study and results. It comes from credible sources, such as peer-reviewed journals, articles, electronic sources, and books.

2 Forms of Investing

2.1 Traditional Forms of Investing

In this sub-chapter the most common traditional forms of investing are explained. These are the instruments that immediately comes to mind when thinking about investing. These have been classified by the author as the traditional forms, as they have been around for a long period of time, as opposed to the modern forms. The most popular traditional forms of investing include instruments such as equities, bonds, different funds, and derivatives (CFI 2021). As with any instrument, each of them comes with their own qualities, risks, and returns.

2.1.1 Equities

Equities are arguably one of the most known way to invest. There are two equity securities, common stock, and preferred stock. Stocks in general usually refer to common stock, rarely to preferred stock. (Jordan & Miller 2009, 76.)

A common stock is a security, that provides you a fraction of ownership of a company that has issued the stock. This also means that you are entitled to assets and possible profits the company makes, which depends on the amount of stock owned. In addition to that, stock owners often have a right to vote on important matters in the company. Stocks are traded mostly in stock exchanges, where the buyers and sellers meet. (Hayes 2021.) The exchanges are mostly online, as it is much more convenient way for everyone, compared to historical stock exchanges where you had to physically be involved.

Preferred stocks differ from common stocks in few different ways. The dividends it ensures are often fixed at a certain value, with no changes done to the value. It is also higher on the hierarchy of payments; the company must pay dividends to preferred shareholders before common shareholders. Preferred shares are often considered as fixed-income security, but it is not a debt obligation. (Jordan & Miller 2009, 75.)

There are two main ways to financially benefit from owning stock: dividends, and changes in the value of the stock. Dividends are distributed to the owners from the earnings of the company. It is not mandatory for a company to distribute dividends, often depending on the financial capabilities of the company. The decision to distribute dividends is made by the board of directors, which is formed using election, voted by the stockholders. (Jordan & Miller 2009, 75.)

The second main way to benefit from stocks is the changes in its value. If the company does well and its future looks bright, the price of the stock can rise. To make it simple, this means that the value of a share is now higher than it was before, so if it is sold, it leads to profit. On the other hand, if the company is not doing good, the value might drop, and the potential profit becomes a loss. (Jordan & Miller 2009, 75.)

There are benefits and disbenefits when investing in equities, as with any instruments. Variables such as holding time and risk needs to be considered when making decision to invest in stocks. There are more detailed qualities that stocks have such as volatility, simplified meaning is how much the price swings. The main benefits are capital growth, dividends, and stocks often are easy to trade. Risks can never be fully avoided, but it is possible to avert them, for example by diversifying your portfolio. Some of the disbenefits include the possible high risk, time needed to research and investigate possible companies you want to invest in, and most importantly capital losses. (Jordan & Miller 2009, 167-194.)

2.1.2 Bonds

Governments and companies need money to finance their new projects, operations, and possible expansions. One common way to raise the funds is to sell bonds. They are also commonly called fixed-income securities, as the name indicates, they give set income at a certain agreed date (Jordan & Miller 2009, 73). Essentially, they are loans, that the seller is obligated to repay to the one who invested in them. They are often low risk investments, but as the risk is low, so is the return, especially when compared to other investments. The main components of bonds are coupon rate, maturity, and face value. There are many types of bonds, such as municipal and corporate bonds. (O'Sullivan & Sheffring 2007, 277-282.)

Coupon rate is the yield paid to the payer annually and is usually fixed. Face value is the value of the bond, as stated by the issuer. Maturity means when the bond matures, a date when the issuer pays the face value back to the investor. As an example, if the face value is million euros, coupon rate 5 %, and maturity two years, the investor is paid annually 50 000 €, and after the bond matures, he is paid back the face value, altogether profiting 100 000 €. (Jordan & Miller 2009, 73.) This is just a simplified example highlighting the most common characteristics of bonds to give an idea how they work.

Bonds can be bought and sold before the maturity. Important factor for the investor in this case is the overall yield, the annual rate of return if it is held until maturity. It is also possible to buy bonds at a discount price, which might sound counterintuitive. This has to do with fluctuating interest rates of the market. (O'Sullivan & Sheffring 2007, 278.)

As an investor, the gains of investing in bonds come in two main ways. First one is the fixed payments and the payback of face value of the bond. The second is if the interest rates move in a positive way for the investor. If the interest rates go down, the price of bonds rise. And vice versa, if the rates rise, the price goes down. (Jordan & Miller 2009, 75.)

The interest rate risk can be explained with an example. You bought a bond with 10-year maturity, yielding 5 %. After a few years you decide that you want to sell it, however the interest rates for a similar maturity bond are now 10 %. Nobody will buy the bond at the same value you bought it, as they profit more from buying a new one. The only option you have is to sell the bond at a discount, therefore losing money. This can be averted by buying bonds with shorter maturity. (Thau 2001.) Another possible risk is if the issuer does not pay the promised payments. This rarely is the case if the issuer is a government or municipality, but if a corporation issues a bond and gets in financial problems, it is a possibility. When comparing bonds to equities, they are not as liquid as equities, they are harder to sell and buy. (Jordan & Miller 2009, 75.)

As with investments in general, it is rarely short-term, but long-term instead. That is why bonds are a good instrument to invest in, since the maturity can be, for example, 30 years. They are considered a low-risk investment. (O'Sullivan & Sheffrin 2007, 277-285.) However, there are always risks included when investing, the key point is to adjust your decisions based on what risk-level you feel comfortable.

2.1.3 Investment Funds

Investment fund is a collective effort by many individual investors to pool their supply of capital to purchase securities, and at the same time still hold control and ownership of own shares. It allows the individual to invest even with a small amount of capital into securities, which might not be possible if done alone. Funds yield more possibilities of investment, possibly better management, and lower fees of investing. The individual does not manage how and where the investments are made, it is done by the fund manager, an expert on the field. The fund is chosen based on its qualities such as risk, goals, and fees. (Chen 2020.) There are different types of investment funds, such as mutual funds and hedge funds. They can also be divided into open-end and closed-end funds.

Open-end funds sell new shares constantly to anybody who wants to buy them. They can issue new shares immediately when there is a new investor who wants to invest in it. If an investor wants to sell their shares back, the fund sells a portion of its assets and uses the capital to redeem the shares back from the investor. This leads into constantly fluctuating

number of shares in the fund. (Jordan & Miller 2009, 98.) Open-end funds are often referred as mutual funds (Closed-End Fund Center 2021).

Close-end funds have a fixed number of shares, which never changes, and buying and selling of these shares happens between investors. Therefore, the main difference between open-end and closed-end funds is the method how the shares are traded. (Jordan & Miller 2009, 98.)

Mutual funds collect and manage the capital of many investors. As the money is pooled, it is invested in many different securities, such as variety of bonds, stocks, and other financial assets. As an example, if an individual investor only has enough money to invest in just a few stocks of a company, it can be risky as there is no diversification at all. The other option in this case is to invest in a mutual fund, which itself invests not just your money, but others money at the same time, to wide range of stocks. (O'Sullivan & Sheffring 2007, 272.)

The main attractiveness of mutual funds come from their benefits, such as diversification, expert management, and the low amount of capital required to entry. When investing in a mutual fund, you are not investing in a single bond or a stock, but instead hundreds or even possibly thousands of securities. This always helps to reduce the risk, by diversifying the portfolio. If the value of a company dives drastically, you do not lose all the capital invested, as the fund has invested in numerous amounts of other companies. Important factor is to keep in mind that not all mutual funds diversify, some are specialized in different industries or countries. As the fund is managed by an expert in the field, the investor does not have to make decisions, which saves a lot of time, and ensures that the decisions made are rational and calculated. (Jordan & Miller 2009, 97.)

Even if the portfolio is diversified to the fullest, it still bears a risk. It is not a bank deposit, it can lose value and become worth less than the original amount invested, and there are no guarantees of the value of mutual fund backed by any government or agencies. As great as diversification is, it has also a downside to it. It eliminates the returns from the chance that one of the securities invested has a great increase in its value. This is often considered as a cost worth to take. Other disbenefits to mutual funds are the fees and expenses, which might not occur when investing in securities individually directly, and taxation depending on the country's legislation. (Jordan & Miller 2009, 98.)

Another common type of fund is the hedge fund. The basic principle is same as mutual funds, the manager of the fund collects money from investors and invests it forward. However, hedge funds are much less restricted in the options where and how to invest, compared to mutual funds. There are no requirements for diversification or liquidity, and there is no obligation for the hedge fund to redeem shares if there is a need. Trust plays a big

role, since hedge funds often only accept investors who have the required net worth, capital and experience, and securities are not available for the public. (Jordan & Miller 2009, 123.)

The purpose of both hedge fund and mutual fund, is to maximize the returns for the investor, while simultaneously make the risk as small as possible. The difference is that hedge funds are considered to be riskier and more aggressive, and above all, very exclusive. Main benefits for hedge funds are like other funds, profits from markets and diversified portfolio to control the risks. Major difference is that they are managed by the best of the best and are not restricted to investing into just bonds or stocks. With benefits, there are always also drawbacks. When there is a lot of money in the table, the possible losses can be enormous. The liquidity of the investments is often lower, and the capital of the investors is stuck in the investments for possibly years and using leverage can result in making a small loss into a big one. (Gad 2021.)

Funds are somewhat an easy way to get into investing, as it does not necessarily require large amount of capital to invest. Even a small amount is enough to gain profits, although with a smaller investment, the returns are smaller as well. If investing alone, a small starting capital could only afford one or two shares of a corporation, but if a bigger sum is pooled from many individual investors, diversification is easier. Another main benefit or attraction of funds is that they are managed by professionals. However, it does not mean that the managers never make mistakes and losses can always happen, but the risk is possibly smaller. Some disadvantages of funds in general are the fees, and potential disagreements with the management. (Haegele 2021.)

2.1.4 Derivatives

Derivatives are financial instruments whose value is based on other variables. These variables could be for example the price of the traded assets. The variable in theory could be almost anything. (Hull 2015, 1.) Some of the most common derivatives are forwards, futures, and options. As with any instrument, they come with a set of benefits, disbenefits, and risks.

One of the simplest derivatives are forward contracts. It is an agreement between two different parties to buy or sell an asset at an agreed time. It is traded in over-the-counter market, as opposed to exchanges, usually between financial institutions or from a financial institution to their client. One of the participants assumes the short position, and the other long position. The short position simplified means that they owe assets to someone but does not own them yet, long position is when someone has bought and owns the assets

(Kramer 2021). The long position buys the assets for a certain price, on a certain date, meanwhile the short position sells the asset on that day for the certain price. (Hull 2015, 6.)

A forward contract grants the possibility for the seller to sell something to a buyer before the product itself has been produced. This also works as risk management, it eliminates possible price uncertainty, as the price is already set and agreed upon. This is a mutual benefit for both the seller and the buyer. (Jordan & Miller 2009, 437.)

If forward contracts are one of the simplest derivatives, futures contracts are the next step. Its basic principle is very similar to forwards contracts, an agreement between two participants about selling or buying an asset at specified price at specified time in the future. Futures, however, are traded in exchanges. As the participants are most likely anonymous to each other, it provides a system, where both guarantee that they will honor the contract. Another difference is that futures contracts have standardized features, in comparison to forward contracts, where the features of the contract are negotiated. (Hull 2015, 8.)

Options are a type of derivatives that are traded in both exchanges and in the over-the-counter markets. Options are divided into two groups, call options and put options. Former means the holder has the right to buy an underlying asset by a specific date for a specific price, and latter means the right to sell the asset by a specific date for a specific price. Important factor that differs options from forwards and futures is that is not an obligation, but a right to do as they wish. As this is the case, there is costs to acquire an option. (Hull 2015, 9.)

Stock options are a common way to invest in options. One call option contract could allow the owner to buy 100 shares of a stock, meanwhile one put option contract allows to sell the same amount. A very simplified example of an everyday situation of using options is if you wanted to buy a car for 5000 €. You pay the dealer 100 € to hold the car for you for a week. This is not an obligation to buy the car yet, so if for some reason you decide not to buy the car, you lose the 100 €. As mentioned before, it is not an obligation, but a right to buy. This cost is called option premium. (Jordan & Miller 2009, 85.)

Derivatives have been historically very successful. The reason behind this is that it attracts different kinds of investors, who use them for a different purpose, such as hedgers, speculators, and arbitrageurs. Another important factor in the attractiveness of these instruments is that they are very liquid, there are often somebody who is willing to be part of the contract. (Hull 2015, 11.)

Hedgers are traders who want to move the price risk to another party by taking futures position opposite to an existing position in the instrument, which the contract is based on

(Jordan & Miller 2009, 444). Hedging can be done by using forward contracts or options. Forward contracts are used to neutralize the risk by using a fixed price that they are willing to pay or receive, for whatever instrument or asset the price is based on. Option contracts are used to grant safety, insurance. They protect the investor from disadvantageous price changes, while simultaneously makes it possible to benefit from positive price change. Options require an upfront fee. (Hull 2015, 11-14.)

As the name suggests, speculators are either individuals or companies, who are willing to take the risk of loss and chance at profit, by speculating the prices of something in the future. Correct speculations can lead into great financial gains, but on the other hand incorrect speculations can lead into great losses. Forecasting future prices is not an easy task. (Jordan & Miller 2009, 443.)

Speculators use futures and options, as they are both similar for their purposes, providing leverage. However, there is a big difference between these two. When a speculator uses futures, both the potential gain and loss, is significant. If using options, the loss is always limited to the fees paid for the options. (Hull 2015, 16.)

An arbitrageur is investor, who uses market inefficiencies to their advantage. They look for risk-free profits by making trades that offset each other. As an example, buying stocks which are listen in multiple exchanges for undervalued price, and short selling them to another exchange for a higher price. (Chen 2019.) The opportunity for arbitrage is short, as the prices eventually become equal between exchanges (Hull 2015, 17).

A problematic thing about derivatives is the fact that they are such versatile instruments. They have many different purposes, such as hedging, speculation and arbitrage. As they are so versatile, a trader who is hedging risks, or using an arbitrage strategy, could become a speculator, either accidentally or on purpose. This has historically led into situations where the losses have reached billions of euros. (Hull 2015, 14-18.)

2.2 Modern Forms of Investing

In this chapter the modern forms of investing are explained. The label modern forms are described by the author as the forms that have surfaced recently, in comparison to traditional forms which have been around for a longer time. The modern forms focused on this research are cryptocurrency and crowdfunding.

2.2.1 Cryptocurrency

One of the most notable investment instruments in the recent history are cryptocurrencies. There is a shroud of mystery involved in them, as it is not an easy concept to understand. In this sub-chapter the basics of cryptocurrencies are explained, what are the mechanisms behind it and how it works.

Blockchain

To understand how cryptocurrencies work, basic understanding of blockchain is necessary. It is a distributed ledger, meaning that it is basically a database for assets, which can be shared across networks of numerous sites, countries, or institutions. All the parties involved can have their own copy of the ledger, which are identical. Changes to the original ledger also affects the copies in matter of minutes, possibly even in seconds. As what makes it secure, the assets are maintained cryptographically with so called “keys” and signatures. These allow the control of who can do something in the shared ledger, updates can be made by individual or several individuals, depending on the rules of the network. (Hancock & Vaizey 2016.) As the name implicates, it consists of “blocks”, records of information, such as transactions between parties. They are cryptographically linked to each other, making an unchangeable ledger. Blockchains come with different policies. Access policy regulates who can read the data. Control policy regulates who can take part in the blockchain, and how new blocks can possibly be attached to the chain. Consensus policy regulates what is the valid state of the blockchain, resolving possible disputes. (Sherman, Javani, Zhang & Golaszewski 2019.)

Not every blockchain is the same, they come with their own characteristics, but the most crucial ones are if they are open or closed (public or private), and what permissions are needed to add information to the blockchain. Public blockchains, as the name implies, are public and anyone who wants to check it, can do it. Famous example is Bitcoin. On the contrary, private blockchains can only be read and viewed by certain people. Permissioned blockchain allow only specific people to write and commit, permissionless allow anyone to contribute. (OECD 2018.)

One of the most important characters related to blockchains and cryptocurrencies is Satoshi Nakamoto, an unknown person, or a group, who remains anonymous. He released an influential paper, “Bitcoin: A Peer-to-Peer Electronic Cash System”, laying the foundation for his creation, bitcoin cryptocurrency. He used blockchain to solve a problem of creating distributed storage of timestamped assets, where nobody can meddle with the data, or timestamps, without getting caught. Using a digital signature between parties creates a link

just between the party and the asset, ensuring that the signing was intentional, and the asset has not been changed. (Di Pierro 2017, 92.)

Every piece of data in blockchain has a unique code which consists of a set of letters and numbers, called a hash. When users do a transaction, they insert information such as the name of sender and receiver, and the amount they want to transfer. This is when cryptographic hashing algorithm comes into play. If nothing changes in this input, it always generates the same hash. Even small changes to input, such as lower-case letters or a simple misspelling provides a different hash. If the input is different in any way, it is not compatible with the rest of the chain. This system of security ensures the trustworthy of ledgers. (OECD 2018.)

Another important factor of blockchain is the fact that it does not need a third-party to create, manage, or verify transactions. It is often transparent, and all the information is available for the public. When there are no intermediaries working as middlemen in between trades or transactions, the fees are reduced. (OECD 2018.)

Trust plays a big role in any transactions. When buying a house, the owner can be defined as the person who last bought the house. The buyer can only be verified by going through the papers, documents and transactions related to the house. These documents are kept by companies, which means that there is a risk for fraudulent action. The same risk of trust arises from every financial transaction, from the sale of cryptocurrencies to traditional instruments. The problem can be solved by recording all the data in a trusted, centralized ledger. Although a good option, but it does not scale to big numbers of concurring transactions, and there still must be trust for the maintainer of the ledger. A blockchain divides this trust to numerous parties keeping the record of transactions. They can also check and verify the order and timestamps, which ensures that nothing has been meddled with. (Di Pierro 2017, 92-93.)

Common misunderstanding concerning blockchain technology is its anonymity. It is often considered as totally anonymous, but this is not the case. Public blockchains are pseudonymous, users can be anonymous, but their accounts are visible to other users. They allow the accounts to be made without identification of the user. Permissioned blockchains, on the other hand, might require the user to provide their identity to take part in the blockchain. (OECD 2018.) As it is not completely anonymous, there is always chance that someone is able to connect the dots between blockchain transactions and real-life events.

Blockchain is not just used in cryptocurrencies, but it has a lot of different uses. It provides a ledger system to compile data, which can be very transparent, and secure for the users. Blockchain has been compared to be as big invention as the internet, if not even bigger.

(Viitala 2019.) However, opinions differ, but certainly blockchain will be used in various fields and will be continued to be researched.

Bitcoin and Altcoins

Bitcoin is the first decentralized cryptocurrency and is often used as a loose synonym for cryptocurrency, as it is the most known cryptocurrency. It was created by Satoshi Nakamoto in 2009 and it offers a good example to study the behavior and characteristics of cryptocurrency. Nakamoto is an unknown person, or possibly a group. There is a lot of speculation who this pseudonym might belong to, along with his net worth. (Bernard & Kay 2021.)

Altcoins, or alternative Bitcoins, are other cryptocurrencies than Bitcoin. While they are like the original cryptocurrency, they can have different mechanisms to produce blocks in their blockchain or to validate transactions. They can also have new qualities. Altcoins price usually imitate bitcoins movements, as they have derived from it, but there are also differences. (Frankenfield 2021.) Biggest cryptocurrencies by their market value in early 2021 are Bitcoin, Ethereum, and Binance Coin (CoinMarketCap 2021.) Because Bitcoin is the first cryptocurrency, the market leader, and the movements of altcoins are like it, the theory of cryptocurrency in this thesis is based on it.

According to a conceptual study conducted by Gazali, Ismail and Amboala (2018), conclusion that the intention to invest in cryptocurrency comes from four factors: attitude, subjective norm, financial risk-tolerance, and perceived benefits. The lack of third-party intervention gives Bitcoin generally positive attitude, and as the price kept growing, public can suffer from fear of missing out. This kind of behavior can lead into unreasonable decision making. From the perspective of investor, the more positive attitude they have towards Bitcoin, or another cryptocurrency, they are more prone to invest in it.

Social media plays a crucial role in making cryptocurrency an accepted form of investment. The reach is worldwide, and it becomes a subjective norm, more people jump on the bandwagon of investing in cryptocurrency. If a certain social circle reaps the benefits from investing in it, it makes it an attractive option for someone who has not already done it. People feel safe when they follow social norms, in opposite of being different. (Gazali et al. 2018.) As the study was conceptual, there is no concrete, empirical evidence which supports these claims. Although, they are very reasonable. In the future, the claims are possibly supported with empirical data, as there will be more of data available.

A study on individual German investors investing on cryptocurrency showed that 77 % of the investors are male, and the average age 38 years old. The sample size of 225 investors averaged return of 300 % in one to ten years, but less than half could outperform the market.

Another important thing they noticed, was that self-learned knowledge tends to generate better revenue from the investment, as they are more confident in their own skills. The level of education did not have significance. (Ante, Fiedler, von Meduna & Steinmetz 2020.)

Value of Bitcoin

A common question regarding Bitcoin is, where does the value come from? It has been growing exponentially in the recent years, but it has also crashed. Figure 2 demonstrates a graph of the highs and lows of Bitcoin through its history (CoinMarketCap 2021). Bitcoin gained a lot of attraction as the value climbed higher and higher, giving birth to first bitcoin-millionaires. As it is new phenomenon, it is still studied and discussed to find out what are the internal and external factors which affects its value.

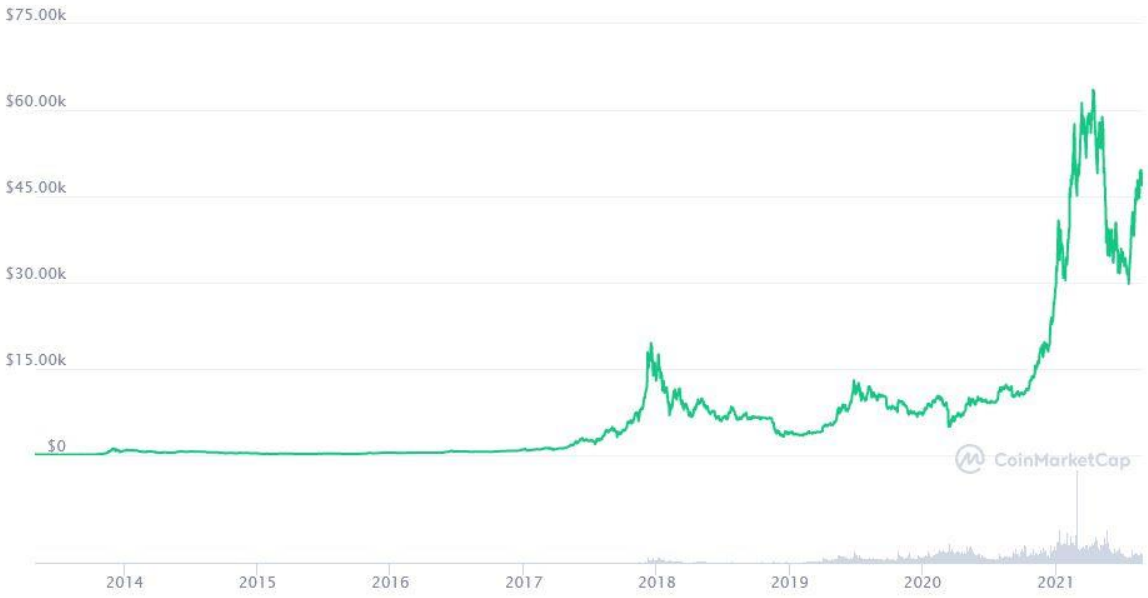

Figure 2. Historical values of Bitcoin (CoinMarketCap 2021).

The law of supply and demand applies to everything, even Bitcoin. The supply grows as it is mined more, but the mechanics of it makes mining a new Bitcoin slow down eventually. This can lead into demand being higher than supply, making the price climb up. Another important note of the supply side is that it is not infinite. The number of available Bitcoins is capped at 21 million units. However, it is estimated that the last one will be mined in 2140, if the rate of mining stays same. After all Bitcoins are in circulation, the price will depend on different factors, such as its practicality, legality and regulations, and its demand. (Bloomenthal 2021.)

Internal factors such as supply and demand, especially for instrument such as Bitcoin is very hard to determine and predict. In the future this can become easier task, as the

practicality might increase, as cryptocurrencies can gain more practical uses in everyday life as a currency. This also depends on the laws and regulations concerning them, which can become a sticky situation, because there is no control over it, no central authority. Often heard concern is the use of cryptocurrencies in illegal activities, but on the other hand, illegal activities have historically been done, and still is, with cash.

A study conducted by Polasik et al. (2014) found a connection between the price of Bitcoin, and its attractiveness and popularity. It was done with empirical research on how the price changes, when there are more Google searches related to it, and as there has been more media coverage about the topic. The results indicated that the returns grow as it gains more attraction, depending on the tone: negative news about bitcoin decreased the price, and positive news increased the price. Another note was that demand grows higher as there are more uses for Bitcoin, which confirms the connection between payment and investment functions of it. Another study found out with similar methods, the correlation between Google trends and Bitcoin price, in short term and long term. Another additional finding was that Bitcoin can work as a safe haven asset in times of crisis, as society seeks for safety. When there are a lot of searches for news about world economic crisis, the price of Bitcoin rises. (Hakim das Neves 2020.)

The popularity and how it affects the price of cryptocurrencies does not come as a surprise. It can be assumed that as there is the hype, it attracts more curious individuals to invest or purchase them, just to perhaps test the waters, which increases the demand. This is supported by evidence provided by investigating the search trends. Figure 3 demonstrates a graph about the number of searches with the term “Bitcoin” (Google Trends 2021). When comparing the graph to Figure 2, similarities between the price peaks and searches can be seen. Early investors who bought Bitcoins in its early stages with very low price, compared to what it is now, have talked about becoming millionaires. This media coverage can influence others who seek to become rich by purchasing them.

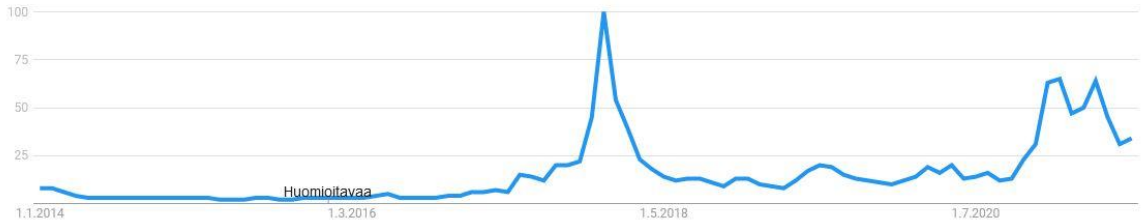

Figure 3. Search trend of the term "Bitcoin" (Google Trends 2021).

There is a relationship between the price of Bitcoin and the cost of producing it. If the cost of production grows, so will the price of Bitcoin. If producing becomes cheaper, so will Bitcoin. Therefore, as the technology, or energy efficiency, grows, it lowers the price. But as this happens, the limited supply becomes smaller, so mining becomes less efficient in terms of monetary gain, and the price of Bitcoin increases. It is a constant battle of these two factors, and depending on which one is winning, the price follows that trend. Also, because Bitcoin is the most valuable cryptocurrency, someone who wants to profit from producing cryptocurrencies will only produce Bitcoin, unless there are altcoins that are more profitable, which boosts the price of Bitcoin even further. (Hayes 2017.)

As the legislation and regulations related to cryptocurrencies is still under work, they will have more impact on the price in the future. Some countries allow them, some have even completely banned them. As the accessibility of different cryptocurrencies become better, they can attract more investors who believe them to be a worthy instrument to invest in, possibly driving the prices higher. As they are very volatile right now, it might be reduced as investors make predictions how the price might shift (Bloomenthal 2021).

2.2.2 Crowdfunding

In this subchapter crowdfunding is explained. The types of crowdfunding are often divided into two different groups, depending on the purpose. The groups are non-monetary return crowdfunding, and financial return crowdfunding. Non-monetary crowdfunding is often used for charities and other nonprofit ventures, which does not give back any financial returns for the investor. As this thesis is related to investing with financial returns, only crowdfunding with financial return is discussed.

Crowdfunding simplified means asking people to fund your project in exchange for something. This method makes it possible to skip long and tiresome processes of gathering the interest of investors or debt based financial solutions. Instead of marketing your project or idea to them, you introduce it to individual internet users. If someone is interested in it, they might invest into it, which gives validation if the project is good, and gives a rough estimation of the target market. (Steinberg & DeMaria 2012, 2-3.) The term crowdfunding is an umbrella term, it is used for to cover many concepts which belong to a certain common category. In this case, it is a way to fund a project by a crowd using the internet. Crowdfunding makes possible to gain funds for projects, that would not necessarily otherwise get it. In addition to providing funds, it also allows for example pre-sale marketing and research of potential new customers. (Gierczak, Bretschneider, Haas, Blohm & Leimeister 2016.)

Traditional way to raise capital for a new business or product is to go through a long process which involves plans, research, prototypes, and then presenting these to financial intermediaries or wealthy investors. This limits the possible options opposed to crowdfunding, where the platform allows you to gain the attention of thousands of smaller interested parties. (Fundable 2021.) As it gathers more eyes, it also works as a marketing strategy. It can lead into a snowball effect, as people see it is an interesting concept and see that others have also backed it up, making them also want to contribute.

Equity and debt crowdfunding is generally only used by companies, mostly limited liability companies, to achieve funding. Those contributing to the funding are the investors, as they gain either shares of the company, or bonds, depending on if it is equity or debt crowdfunding. As with all investments, it bears a risk of losing the invested amount, meanwhile also possibility of profiting. These methods are relevant for companies that already have earnings and look for more growth. (Invesdor 2021.)

Equity crowdfunding is often compared to business angels, but there are some major differences. Crowdfunding, as the name implies, makes it possible for the target to gather crowd of investors, with even small amount of capital, if there is no minimum investment barrier. The second difference is that as the investment amounts can be small, there is no point to make a complicated contract between the two parties. Instead, the third-party, the crowdfunding platform, works as a connection between the investor and the entrepreneur. (Landström & Mason 2016, 392.)

Profit-oriented crowdfunding types often target funding of start-up companies. When investing in them, the investors are offered returns such as interests or shares. Platforms such as FundedByMe and Prosper offer these kinds of services. The mechanisms are somewhat flexible for the needs of start-ups, so they have different pledge levels, and minimum pledge amounts. (Gierczak et al. 2016.)

One of the main advantages of crowdfunding is that it is available for everyone, from individual persons to companies. It can be used to test your idea to find out if there is a market for it if people are interested in it enough to turn the idea into reality. Platforms such as Kickstarter and Indiegogo have become very popular and have been used to launch thousands of different projects on various fields. Disadvantage is that they often take some sort of fee to use their platform, but it can still be far more beneficial as compared to setting up a company.

3 Brief History of the Modern Forms of Investing

3.1 History of Cryptocurrency

One of the earliest mentions of cryptocurrency, not with this term although, comes from the year 1983. David Chaum (1983, 199-203) wrote a paper that discusses electronic payments and personal privacy. It was during the times when electronic services were coming more available for individual consumers. As there is a third party involved in transactions, it is possible to get significant knowledge about the customer, where are the transactions made, personal data and their lifestyle. If transactions are made with cash, there is lack of control and security. That is why he proposed a new method using cryptography: blind signatures. Using this method, it would eliminate the third party's ability to determine who is the payee, when and how much is the payment made by an individual. Another property of blind signature is that the individual can provide proof about the payment, and under specific circumstances the identity of the payee. He summarizes the system being able to allow untraceable payments, with better auditability and control, while simultaneously advancing personal privacy.

Chaum's emphasis and the main idea behind cryptocurrency was security. Everything requires trust towards the other parties involved in transactions and if it were possible to eliminate this, transactions could be safer. Eventually he made the jump from theory to reality through his company DigiCash in 1989. The idea was so convincing that he got over $10 million investments, including David Marquardt, who was one of the early funders of the company Microsoft. As it was very ambitious and very modern project, the world was not ready for it. Digital currency was in a battle against credit cards, and credit cards won. There were not enough users and eventually DigiCash filed for bankruptcy in 1998. (Pitta 1999.)

The National Security Agency published a paper which discusses the electronic cash systems, which provide individuals anonymity untraceable payments using cryptography to deal with issues such as multiple spending and token forgery. Their main concern was that as there is not a main authority in the middle of transactions, anonymity could be used for illegal activities, such as tax evasion and money laundering. The issue of multiple spending can be solved by tracking and maintaining a database of the currency if it is used online. If the electronic cash system is secure, it should solve the token forgery. The paper concludes by stating, that the risks grow as there is anonymity involved. The problems can be avoided if the system provides privacy, but not anonymity. (Law, Sabett & Solinas 1997, 1131-1162.)

The opinion of anonymity and security differs depending on your status. As an individual these properties are valued highly, but as a government official it brings a lot of risks. The

possibilities to be untraceable makes it possible to be involved in criminal activities. One of the most famous examples was the criminal marketplace Silk Road (United States Department of Justice 2021). On the other hand, nobody wants to give out information of your private life to any third party, who might use it in a way you do not want it to be used. Since the beginning, one of the aims of cryptocurrencies has been to be a safe and secure way to do transactions without a third party surveilling every movement (Bitcoin 2021).

In 2009, Bitcoin was introduced by Satoshi Nakamoto. His idea for bitcoin was a system using electronic transactions between parties, without relying on trust. Digital signatures, which essentially are the coins, gives a control of ownership. Double-spending is eliminated by a peer-to-peer network using proof-of-work for recording a public archive of transactions, which are computationally impractical for malicious attempts to change them. (Nakamoto 2009.) The appeal in bitcoin is that you deal with fewer intermediaries, such as banks. As it is peer-to-peer, the trades are between two parties, without a central authority who controls it. As banks store their data in a centralized ledger, it allows it to be a weak point for hackers and cyberattacks, which is not so easy with Bitcoin or blockchain (OECD 2018). As of now, there are over 9000 different cryptocurrencies in the market, and their overall market cap is over $2 trillion (CoinMarketCap 2021).

3.2 History of Crowdfunding

Over 100 years ago, in 1885, the Statue of Liberty was waiting in pieces in a harbor in New York. They were missing a pedestal for it to stand on, in addition to the funds needed to assemble it. Different cities offered to pay for them, in exchange that the statue itself will be relocated in their cities. This did not sound like a good idea to Joseph Pulitzer, so he launched one of the first crowdfunding campaigns to keep the statue in New York. In exchange for money, he offered miniature models of the statue, and their names to be published in his newspaper The New York World. He used the newspaper as an intermediary, to publish information and instructions how the individuals can donate to the cause. (Warf 2018.) And as it is common knowledge that the Statue of Liberty is in New York, it is safe to say that the campaign worked.

The funding of the pedestal for the Statue of Liberty is considered be one of the first examples of crowdfunding. It has all the characteristics of crowdfunding, pooling small amounts of money from many individual investors in exchange for a reward. The newspaper was used as an intermediary to publish the idea, which could be compared to nowadays crowdfunding websites, where you introduce ideas and project.

One of the first examples of modern-day crowdfunding comes from musicians, a band called Marillion, from United Kingdom. They have been called pioneers, as they realized the potential of the internet early enough. The band did not have a record contract, nor the money to go perform overseas to the United States. What they had, was around 1000 contacts in their mailing list, and a great idea to gather funds. They would ask the fans for funding, as investors, as they would lose around $60,000 if they came to perform in North America. If they could not pool up enough money, it would be returned. The plan however came short, as only $20,000 was raised in few weeks. The money was returned to the investors, in addition to that a bonus cd was made to show their gratitude towards those who invested. Followed by the somewhat successful campaign of crowdfunding, they tried it again in 2001. This time they tried to finance an album, by pre-order sales 12 months before the release. As a reward, they promised specially packaged CD, and the investors name in a list. The list consisted of over 12,000 names, which made it a very successful campaign. This gave them the confidence to do it again, and they have since funded many more albums this way. (Strähle 2018, 252.)

The band used crowdfunding to fund their albums. It would not be possible without proper marketing and loyal fanbase. Therefore, they were pioneers not just in the field of crowdfunding, but also connecting it with music industry.

Shortly after the first crowdfunding platform came to be, ArtistShare, in 2001. It made possible for fans to fund artists projects in exchange for rewards, making way for other platforms in the future to use this system. (ArtistShare 2021.) Some of the most famous platforms which follow similar business model nowadays are, for example, Kickstarter and GoFundMe.

Followed by the global financial crisis in 2008, there was a need for new, alternative forms of financing, as the banks were not trusted, and loans were generally harder to get. This lead small and medium sized enterprises to seek for funding from somewhere else, which gave crowdfunding a foothold. It offered flexibility, and more tailored way of funding for their needs, compared to services administered by banks. (Kuti & Madarász 2014, 355.)

In 2012, equity crowdfunding became legalized in the United States. The former president Barack Obama signed “Jumpstart Our Business Startups”, which included so called CROWDFUND Act (Robles 2012). Its final version was adopted in 2015, which allows individuals to invest in equity-based crowdfunding. The act also gives rules and regulatory framework. It was designed to help smaller companies to raise funds, while simultaneously the investors got better protection and security. (SEC 2015.)

Crowdfunding is an old concept, which dates hundreds of years to the past. However, the modern-day form version using the internet dates to early 2000s, even if it was not called crowdfunding back then. Internet makes it easier for the parties to get in contact with each other, and possibly form a deeper connection between them.

4 Millennials as Investors

The purpose of this chapter is to give the reader some background knowledge about millennials as investor, explaining financial literacy and their investing behavior.

4.1 Financial Literacy

Financial literacy means the skillset and knowledge, to understand and use different skills related to finance, such as managing personal finance, investing, and budgeting (Fernando 2021). It is an important thing to learn, as it can impact one's life dramatically. Being able to make smart decisions, being it in the field of investing, or just making a reasonable budget for everyday life, is something that everyone needs. Not being able to take care of your financial status can lead into a lot of trouble, and often is the case when someone is financially illiterate.

There are several factors that can impact the level of financial literacy. One important factor is parents. If they taught their offspring how to do budgeting, or how to save money, it has a substantial impact on becoming literate. There is also correlation between having experience with money as a child and financial literacy when becoming an adult. Another important factor is school, the quality of education and learning economics have a direct relationship with financial behavior. In addition to that, education and understanding of economics lead to better numeracy, which enhances financial literacy. (Grohmann & Menkhoff 2015, 407–412.)

As one cannot pick their parents, a lot of the responsibility falls into the hands of education. That is why it is important that schools offer enough mandatory and optional material to learn, making sure that the students are equipped with tools to become financially literate. Grohmann et al. (2015) suggests four different possibilities to improve the literacy: development of better general numeracy, higher levels of education, teaching economics in schools, and making sure that parents know of their impact on their children when educating their children about money.

According to a study conducted in 2009, among the young people, financial literacy is low. The data showed that less than third of young adults had essential knowledge about risk diversification, interest rates and inflation. As in Grohmann et al. (2015) research, it is stated that financial literacy has a strong connection to sociodemographic aspects and family's financial background. (Lusardi, Mitchell & Curto, 2009.)

4.2 Millennials Investment Behavior

Comparing the financial goals of millennials to Generation X and Baby Boomers show some differences, as expected, since different times and circumstances create diversity in the goals. They also differ depending on the fact if the individuals are investing or not. When non-investing millennials were asked their top 3 financial goals, 40 % chose not living paycheck to paycheck, 33 % chose to have savings for unexpected events, 21% chose to have saved enough money to retire whenever and live comfortably, and 31 % chose to have enough money to travel. Comparing these statistics to the millennials with taxable investment accounts, 21 % chose to not live from paycheck to paycheck, 37% chose to have savings for unexpected events, 46 % chose to have saved enough money to retire whenever and live comfortably, and 39 % chose to have enough money to travel, as can be seen in Figure 4. (FINRA 2018.) The biggest differences were living paycheck to paycheck, and retirement. This indicates that that non-investing millennials are not as ambitious with their goals, instead focus on surviving on daily basis. The retirement on behalf of investing millennials means that investing is a mean to be able to retire possibly early, which could not be necessarily an option if they had not invested.

	Millennials			Gen Xers with Taxable Accounts (n=505)	Boomers with Taxable Accounts (n=509)
	Non-Investing (n=610)	Retirement Accounts Only (n=603)	Taxable Accounts (n=601)		
Not living paycheck to paycheck	40%	34%	21%	15%	17%
Having savings for unexpected expenses	33%	39%	37%	39%	57%
Saving enough to retire when I want & live comfortably	21%	39%	46%	63%	56%
Having enough to travel	31%	35%	39%	44%	59%

Figure 4. Financial goals of different Millennials (FINRA 2018).

Common reasons why some millennials have not invested into taxable investment accounts are that they are paying off debt, or simply do not have enough income or savings to make it worth it, and they do not have enough knowledge or lack confidence in their knowledge. On the opposite side of things, those who have invested, listed their major factors for the decision to invest to be interest or curiosity, different external sources such as family, and it being a part of their education. (FINRA 2018.)

A report made by Bankrate.com surveyed millennials investing in the stock market and found out that compared to Generation X and Baby Boomers, millennials own less shares. 33 % of the respondents claimed to own shares, meanwhile 51 % of Generation X and 48 % of Baby Boomers owned shares. It was worth noting also that older millennials were more likely to own shares compared to younger millennials. As other studies also point out, common reasons to not invest were lack of money and lack of knowledge. Higher education and income lead into bigger participation in the stock market. (Bankrate 2016.)

Age and maturity are factors in making financial decisions. As one grows older, more knowledge and wealth are accumulated, which is backed up by the evidence that older people tend to have bigger participation in the stock market and investing in general. (Bankrate 2016.)

The report made by FINRA (2018) also asked how familiar the millennials were with investment innovations, modern forms of investing. Only 2 % had invested in crowdfunding and 6 % into cryptocurrencies. Crowdfunding was less familiar than cryptocurrency, 16 % were very familiar with both. 14 % had never heard of cryptocurrencies, 33 % had heard of them and 28 % claimed to be somewhat familiar. For crowdfunding, 26 % had never heard of them, 28 % had heard of them, and 28 % were somewhat familiar. Only 19 % of millennials were very interested to use or invest into crowdfunding, and 18 % into cryptocurrencies. The interest towards the modern forms was relatively higher among the millennials who had taxable investment accounts.

A more recent survey done by The Motley Fool found different results: 40 % of the respondents, aged 18 to 40, who had invested in stocks owned cryptocurrency, and 39 % of the millennials claimed to own them. The most common forms of investments the millennial respondents owned were stocks by 66 %, mutual funds by 47 %, cryptocurrency by 39 % and bonds by 35 %. Another key finding was that millennials tend to invest into technology sectors. Differences between genders were also found, information technology stocks were owned by 45 % of males and 34 % of females. (Caporal 2021.)

The differences between the surveys of FINRA (2018) and The Motley Fool (2021) could be simply explained by time. The modern forms of investment have become more mainstream matter in the recent years, and they get more publicity by the day. The participation in the stock market does not come as a surprise, as it is easier to access than ever. As the millennials are very used to technology in their hands, it is very convenient to make investments.

5 Empirical Research

This chapter consists of the empirical data gathered for this thesis. Quantitative methodology was chosen; therefore, the results are displayed in numbers and/or percentages. The survey “Interest in investing and its forms” was conducted for the business students at LAB University of Applied Sciences. The survey was available in Yammer, a platform used for social networking inside an organization. It was open for approximately 2 weeks, from April 14 to April 30. The survey received 22 answers, and it can be found in Appendix 1.

The data was analyzed using Microsoft Excel and SPSS. Excel was used to visualize the responses, showing whether the respondents were agreeing or disagreeing with the asked statement. Using the data from the responses, the research questions were answered. SPSS was used to find out if there was a correlation between general interest in investing and interest towards the modern forms.

5.1 Presentation and Analysis of the Results

In this sub-chapter, the results are presented and analyzed in a neutral fashion. To make the answers easy to read and understand, the data is entered into Microsoft Excel and made into visual graphs and charts.

5.1.1 Investing in General

The second part of the survey is an inquiry about the student’s interest and knowledge about investing in general. A 5-point Likert scale was used, ranging from “Strongly disagree” to “Strongly Agree”, with “Neutral” being in the middle of the extremes.

In the first question the respondent was asked if they were overall interested in investing to give a general idea of the level of interest they have, as can be seen on Figure 5. 5 of the respondents were not interested in investing at all, 1 of them strongly disagree with the statement “I am interested in investing”. However, most of them agreed with the statement, 7 agree and 5 strongly agree. 7 of the respondent’s preference was neutral, neither agree nor disagree.

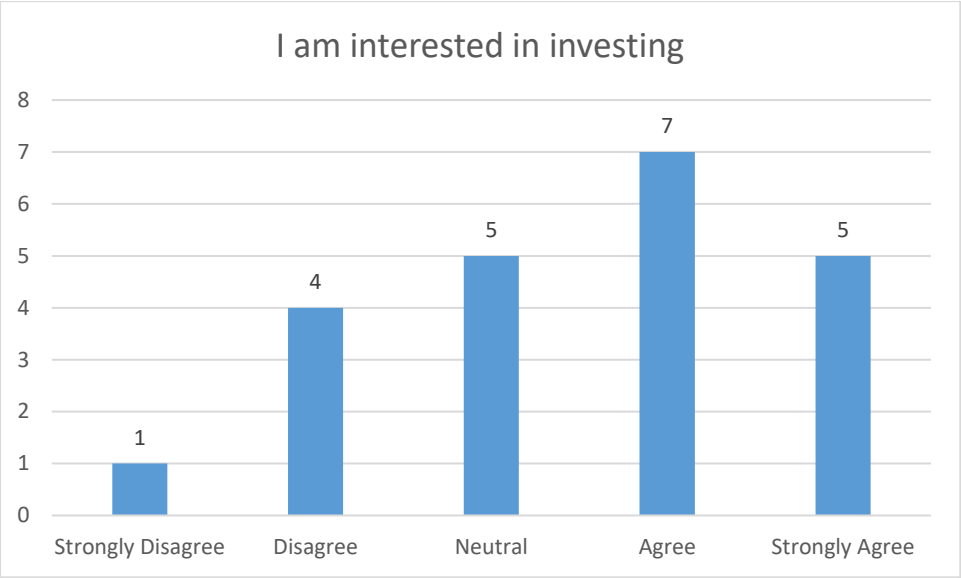

Figure 5. Interest in investing.

Figure 5 demonstrating a bar chart on how interested the respondents were in investing.

Further collection of information about the respondents was gathered. The second question was how satisfied the respondents are with their current knowledge about investing, as can be seen in Figure 6. It gathered similar results as the previous question. 9 of the respondents agreed with the statement “I am satisfied with my knowledge about investing”, while 2 of these respondents strongly agreed. 7 in total were not satisfied with their knowledge, 3 even strongly disagreed. The neutral option was chosen by 6 of the respondents.

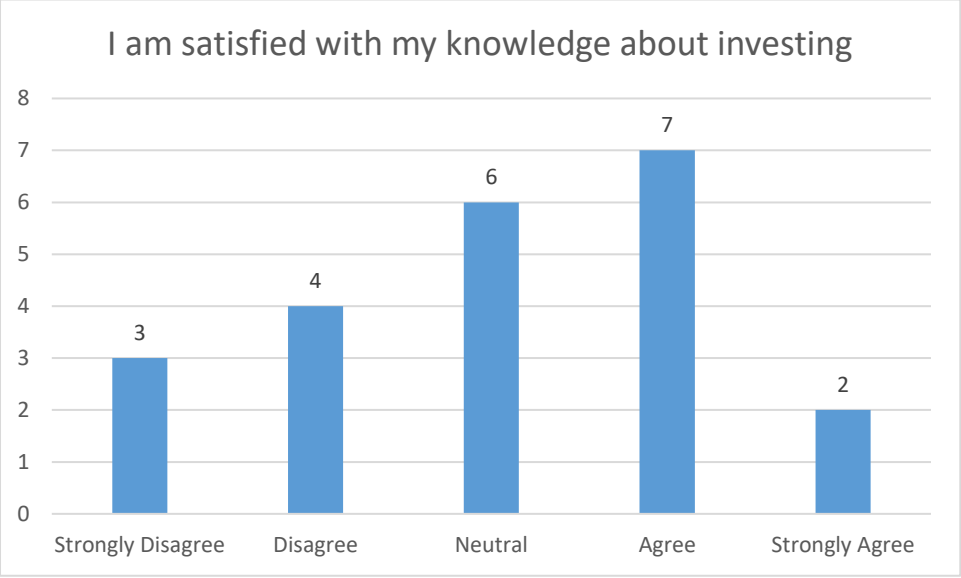

Figure 6. Satisfaction of knowledge about investing.

Figure 6 demonstrating a bar chart on how satisfied the respondents were in their own knowledge about investing.

The next question was if the respondents were keen to learn more about investing, the outcome can be seen in Figure 7. The question gathered the most positive answers from the respondents, 7 agreed and 7 strongly agreed with the statement “I would like to learn more about it (investing)”. Only 5 of the respondents disagreed with it, and 3 did not have an opinion, choosing neutral as their answer. This does not contradict the previous question, it just shows that even if you are satisfied with the knowledge, there is always more to learn.

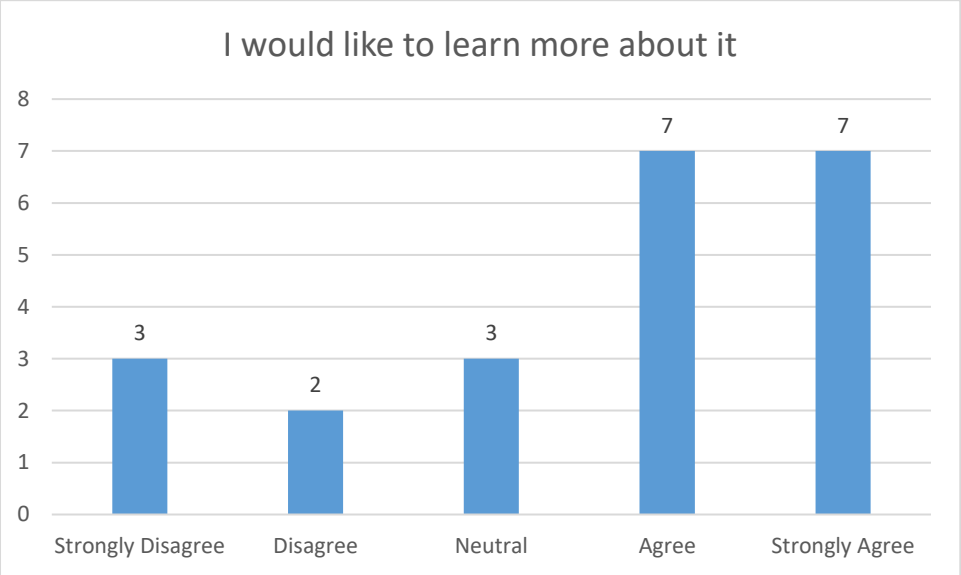

Figure 7. Interest in learning more about investing.

Figure 7 demonstrating a bar chart on if the respondents would like to learn more about investing.

Further research was conducted about the respondents’ opinions about the current possibilities of learning about investing in school, as seen on Figure 8. This gathered the most neutral answers, as it can be hard to estimate if there are enough possibilities to learn about investing in school. 13 of the respondents chose neutral as their answer. However, only 1 respondent disagreed with the statement “School offers enough possibilities to learn about it (investing)”. 7 agreed and 1 strongly agreed, so it is safe to say that these respondents are happy with what is currently offered.

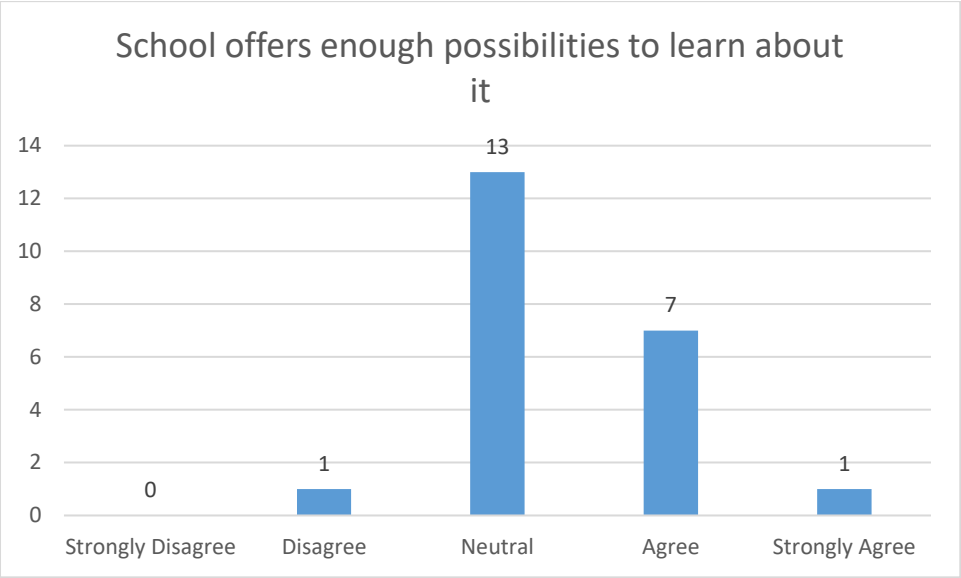

Figure 8. Does school offer enough possibilities to learn about investing?

Figure 8 demonstrating a bar chart on the respondents' opinions if school offers enough possibilities to learn about investing.

Respondents were further asked in the final question of the first part of the survey if the school should offer more courses related to investing, as can be seen on Figure 9. Like the previous question, the neutral option gathered the most responses, 8 of the respondents chose it. 5 of them disagreed with the statement "School should offer more courses related to investing". In total 9 agreed with it, 5 of them strongly. This could indicate that even if there are enough possibilities to learn, there could be more courses with different purposes, as opposed to the current courses.

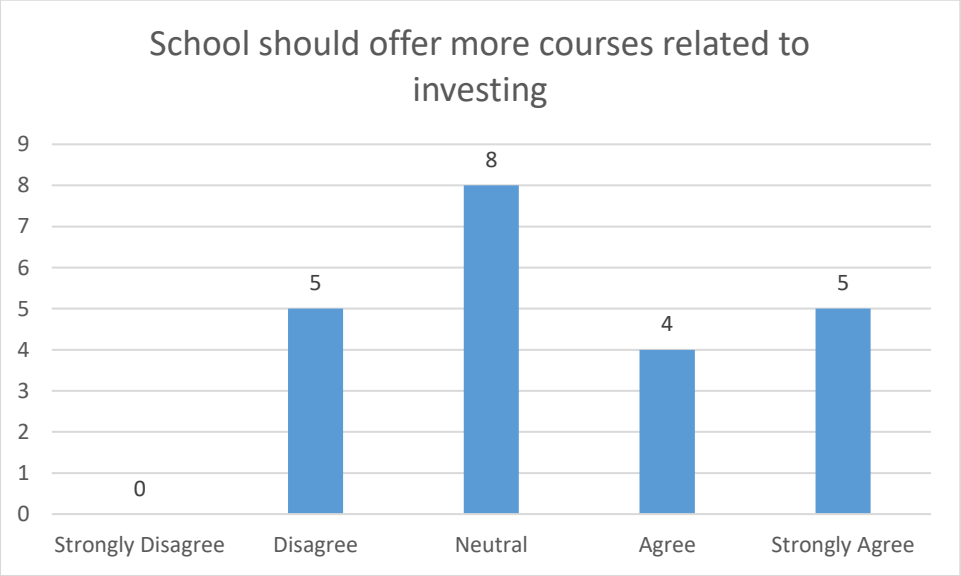

Figure 9. Should school offer more courses related to investing.

Figure 9 demonstrating a bar chart on the respondents' opinions if school should offer more courses related to investing.

5.1.2 Experience in Investing

Researching the experience in investing the respondents were asked if they have experience, and if yes, what did they invest in, the outcome can be seen in figure 10. The question "If you have experience in investing, what did you invest in?" was a multiple-choice question with predefined options to choose from. It contained some of the most popular investment options and a possibility to give an answer in their own words. 11 of the respondents stated that they have not invested. 7 stated that they have invested in stocks/shares. Surprisingly, bonds were not a popular option, only 2 respondents had invested in them. Cryptocurrencies was also an option, and it gathered 2 answers. 1 of the respondents left their answer in their own words in Finnish, having invested in various funds, while 5 chose the various funds options, making it in total 6. The question had an option to choose crowdfunding, but none of the respondents had invested in it.

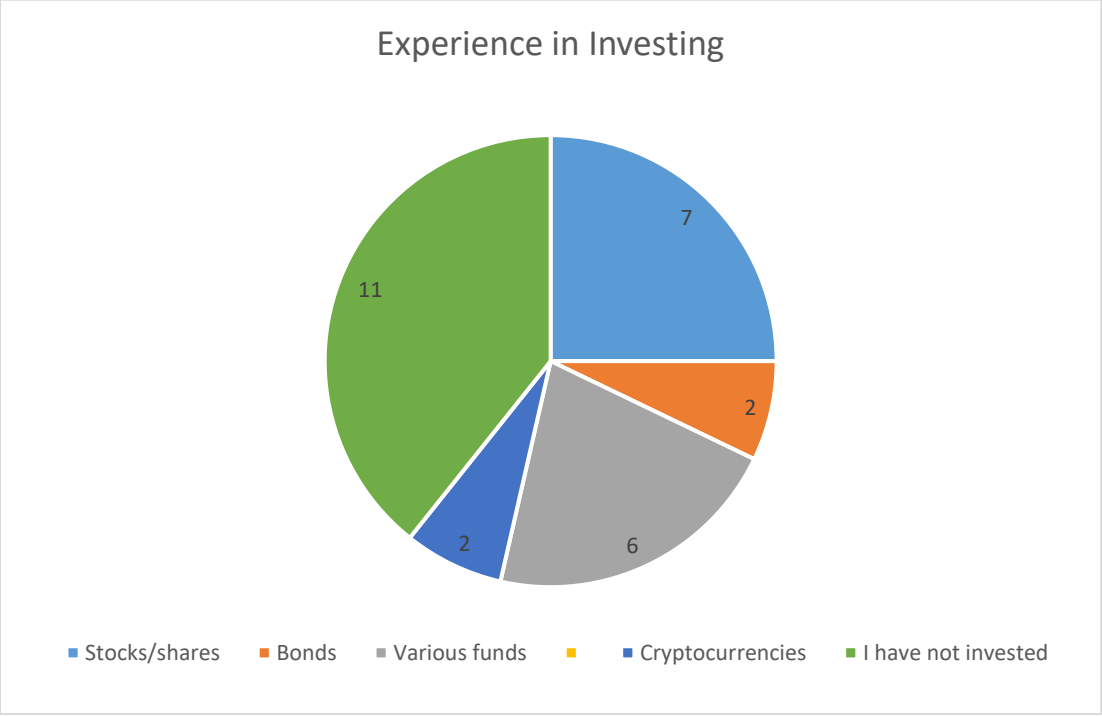

Figure 10. Respondents experience in investing.

Figure 10 demonstrates a pie chart of the respondent's experience, or lack of it, in investing.

5.1.3 Modern Forms of Investing

The final part of the survey was about modern forms of investing. It starts with a brief introduction to what are classified as the modern forms of investing, and what are classified as traditional forms, by the author. It is followed by questions similar to the “Investing in general” part, with the addition of the respondents’ opinions if modern forms are more interesting compared to the traditional ones. It also uses 5-point Likert scale ranging from “Strongly disagree” to “Strongly Agree”, with “Neutral” being in the middle of the extremes.

In the first question, the respondents were asked if they are interested in the modern forms of investing, as seen on Figure 11. 8 of them in total agreed, while 4 of them strongly. The neutral option once again gathered the most responses with 6 respondents choosing it. Equally to the agreeing respondents, 8 disagreed, with 3 of them strongly disagree with the statement “I am interested in modern forms of investing”.

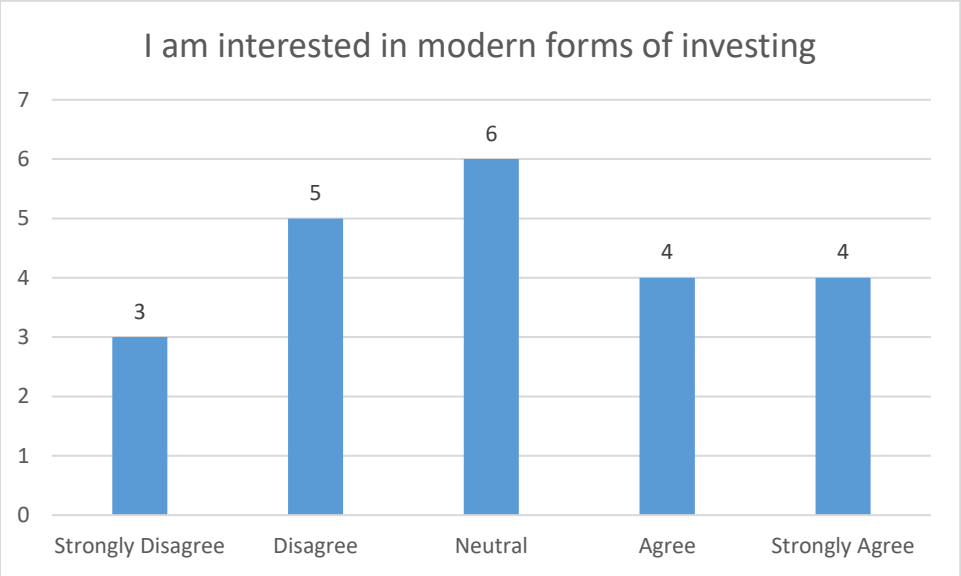

Figure 11. Interest in modern forms of investing.

Figure 11 demonstrating a bar chart on if the respondents are interested in modern forms of investing or not.

Further information gathered from the respondents in next question, in the form of their satisfaction of knowledge about modern forms of investing, as seen in figure 12. Only 1 of the respondents strongly agreed with the statement “I am satisfied about my knowledge of modern forms (of investing)”. 2 of them agreed with it. Neutral was quite popular option; it was preferred by 6 of the respondents. It does not come as a surprise that most of the respondents were not satisfied with their knowledge, considering how new and complicated

these new forms can be. In total, 13, over half of the respondents, were not satisfied, with 9 strongly disagree with the statement.

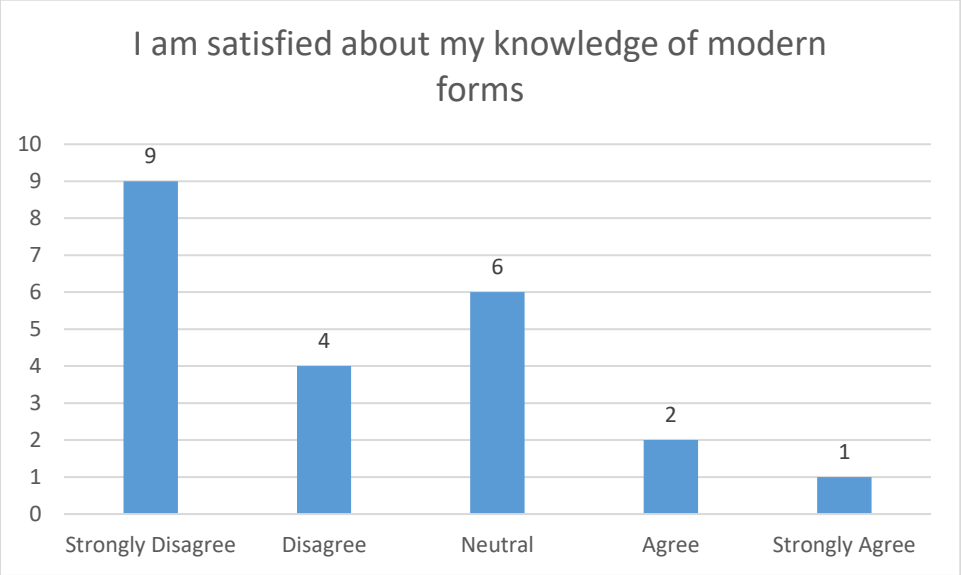

Figure 12. Satisfaction of knowledge in modern forms.

Figure 12 demonstrating a bar chart on the satisfaction of the respondent's own knowledge about modern forms of investing.

The previous question was followed by a question considering if the respondents were interested in learning more about the modern forms, the results can be seen on Figure 13. It gathered mostly positive feedback; the respondents would like to learn more. In total 15 of them agreed with the statement "I would like to learn more about modern forms (of investing)", from which 5 strongly agreed. 2 of the respondents did not have an opinion about it and chose the neutral option. Only 1 disagreed with the statement. There were 4, who strongly disagreed.

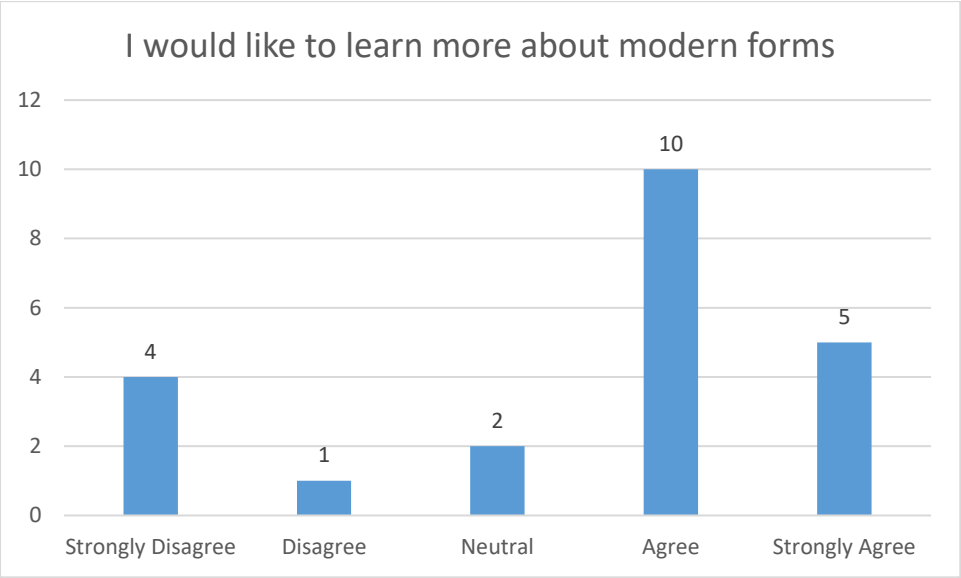

Figure 13. Interest in learning more about modern forms.

Figure 13 demonstrating a bar chart on if the respondents are interested in learning more about the modern forms of investing.

Respondents were asked next if they consider modern forms to be more interesting than the traditional forms, with the outcome seen on Figure 14. 10 of them did not have an opinion about this and chose the neutral option. In total, 9 agreed with the statement “Modern forms of investing are more interesting than traditional forms”, where 3 of them were strongly agreeing. Only 3 respondents disagreed, and none strongly disagreed with the statement.

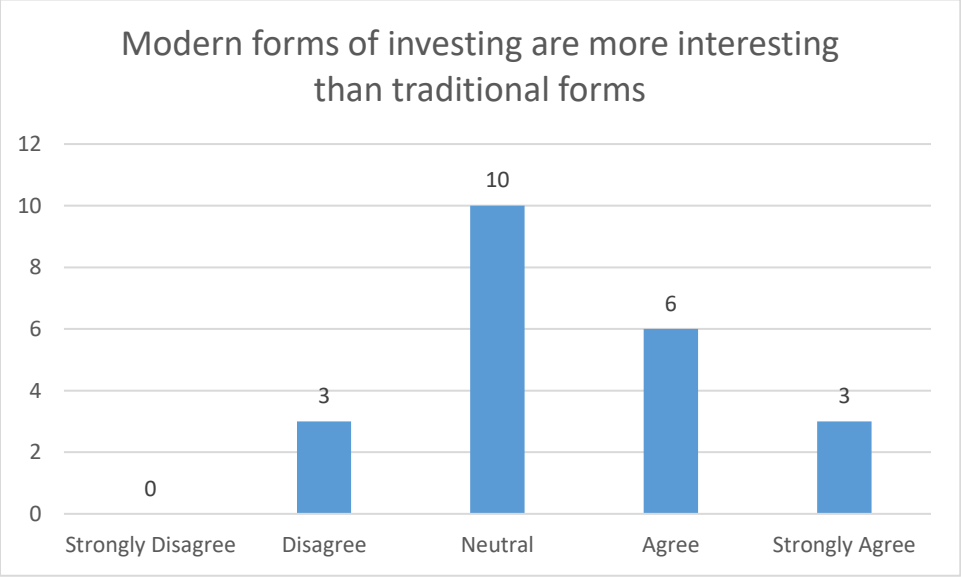

Figure 14. Respondents' opinion on if modern forms of investing are more interesting than traditional forms.

Figure 14 demonstrating a bar chart on if the respondents consider the modern forms of investing to be more interesting than the traditional forms.

Further information was gathered, respondents were asked if they are satisfied what they can learn about modern forms of investing in school, as can be seen on Figure 15. Only 2 of the respondents strongly agreed with the statement “I am satisfied what I can learn about modern forms in school”. 7 of them disagreed with the statement, and 1 strongly disagreed. Neutral once again gathered the most responses with 10 of the respondents choosing it. This indicates that there could be lack of material offered regarding modern forms of investing.

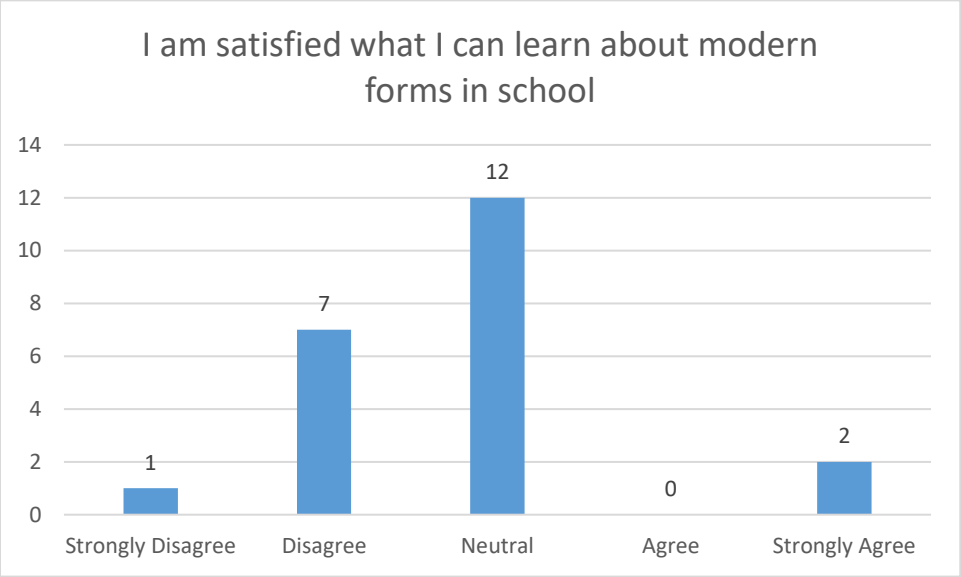

Figure 15. Satisfaction of possibilities to learn about modern forms in school.

Figure 15 demonstrating a bar chart on the respondent’s satisfaction of possibilities of learning about modern forms of investing in school.

The final question was if the respondents feel like school should offer more courses related to modern forms of investing in school, results can be seen on Figure 16. The question generated mostly positive feedback, 8 of the respondents strongly agreed, and 7 agreed, with the statement “School should offer more courses related to modern forms of investing”. Only 1 strongly disagreed, and 1 disagreed with the statement. 5 of the respondents preferred the neutral option.

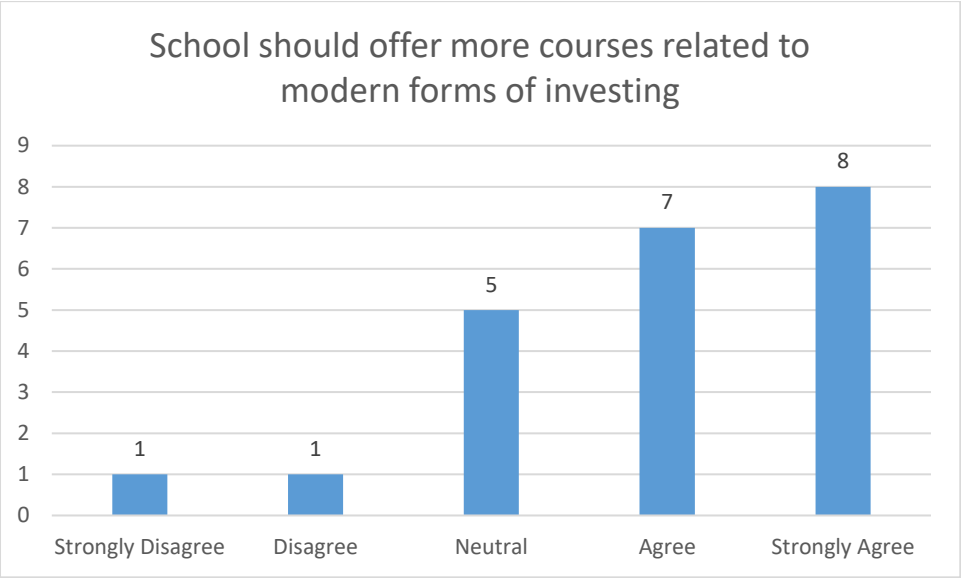

Figure 16. Should school offer more courses related to modern forms of investing?

Figure 16 demonstrating a bar chart on the opinions of respondents, if the school should offer more courses related to modern forms of investing or not.

5.1.4 Experience on Investing in the Modern Forms

Researching the experience of respondents on investing in the modern forms was simply done with a question “Do you have experience investing in the “modern forms”?”. Predefined answers were “Yes” and “No”. It was followed by questions regarding if they had invested or not, with different predefined multi-choice options to choose from, and an option to answer in their own words.

Most of the respondents did not have experience investing in the modern forms, as it was indicated already earlier. 19, or 86 %, out of the 22 answered “No” to the question “Do you have experience investing in the “modern forms”?”. 3, or 14 %, of the respondents had experience, as can be seen on Figure 17. However, as Figure 10 shows, only 2 respondents had invested in cryptocurrencies, and none had invested in crowdfunding, there is an error. The author concluded that the error most likely did not happen in this question, but in the earlier, since the upcoming reasoning on why the respondents had invested in the modern forms also has 3 answers.

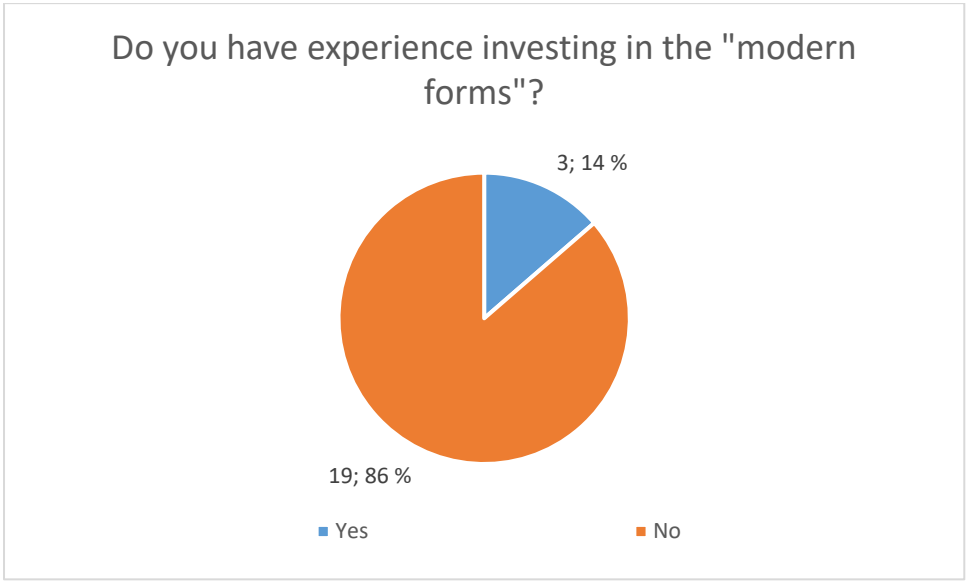

Figure 17. Experience on investing in the modern forms.

Figure 17 demonstrating a pie chart on if the respondents have experience on investing in the modern forms.

If the respondents answered “Yes” to the previous question, meaning that they had experience on investing in the modern forms, they were asked their reasons behind the decision. All the 3 respondents chose the option “Out of curiosity”, and 1 of them also chose “For the returns”, as seen on Figure 18. This indicates that most of the respondents who had experience in the modern forms, were mostly just curious about the instruments, not necessarily looking for a profit or anything else but just an experiment.

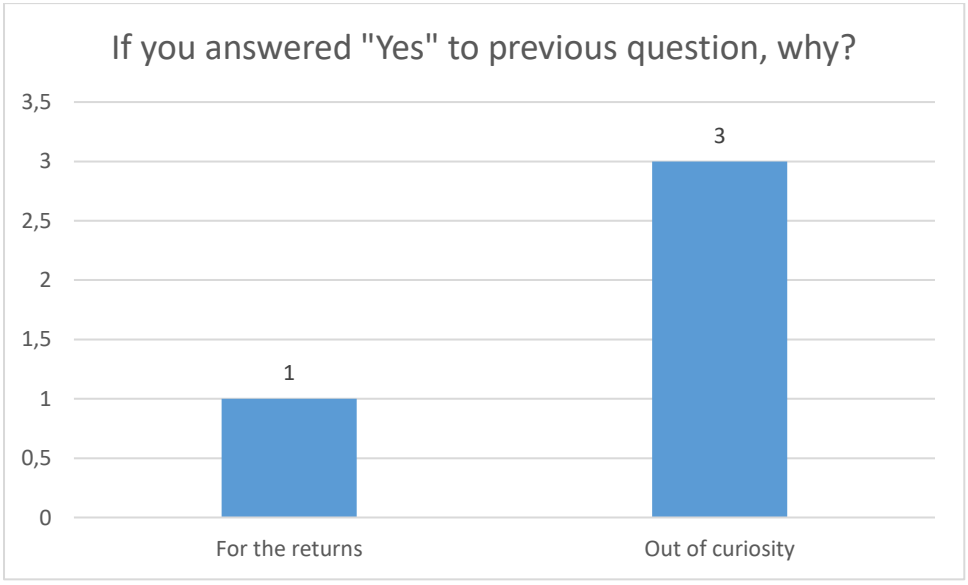

Figure 18. The reasons for investing.

Figure 18 demonstrating a bar chart on the respondents' reasons behind making the decision to invest in modern forms.

If the respondents answered "No" to the previous question, meaning that they had no experience on investing in the modern forms, they were asked for the reasons behind that decision as well. The results can be seen on Figure 19. This question confirms that the respondents were either lacking information, or confidence on their own skills. 12, or %, out of the 19 who had not invested in the modern forms, chose the option "I am not confident enough in my skills". The second popular option was "I don't have enough information about the topic", with 11, or %, respondents choosing it as a reason. Only 3, or %, claimed that they cannot afford to invest right now. Some respondents consider it to be too risky, with 5, or %, choosing the option. 7, or %, of the respondents felt that there is not enough information available on the topic. The rest of the respondents just were not interested in investing in modern forms.

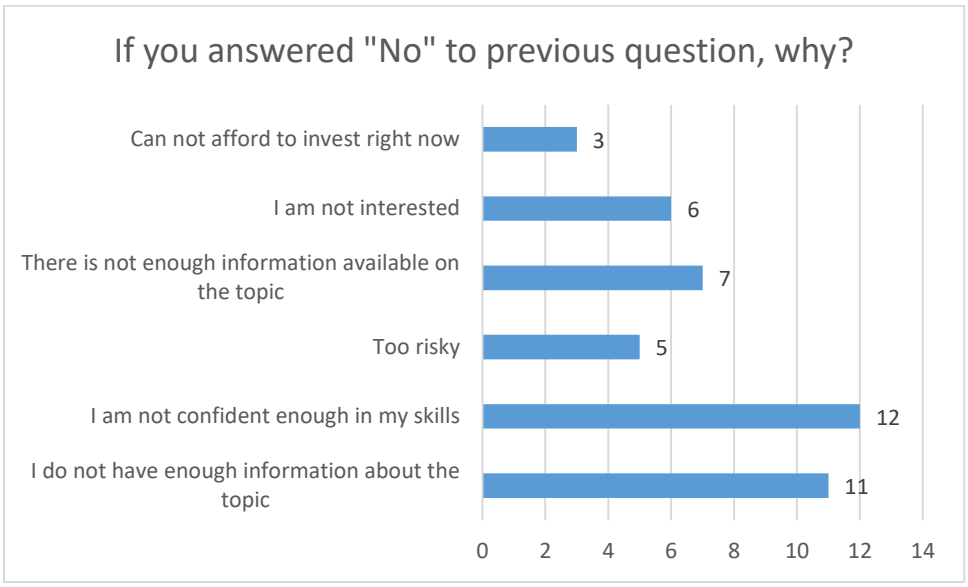

Figure 19. The reasons for not investing.

Figure 19 demonstrating a bar chart on the respondents' reasons behind the decisions why they have not invested in the modern forms.

5.2 Correlation Between "Investing in General" and "Modern Forms of Investing"

In this sub-chapter the author wanted to see if there is a correlation between the respondent's answers in the two different categories of questions, "Investing in General" and "Modern Forms of Investing". This was done by doing a Pearson's correlation coefficient test.

22 students participated in the survey, and all of them were usable answers for analysis. The number of respondents were low, a bigger sample size would have been better. Minor

difficulties on distributing the survey occurred, as the only way it was shared was using Yammer, which is not necessarily the most popular platform from a student's perspective. As there were no questions related to background, no comparison between gender, age, or level of education could be made.

Before any analysis could be made, the data needed to be inspected for missing parameters, or errors, in SPSS. Also, the data needed to be modified in the proper form for SPSS. This meant that the Likert-scale used needed to be changed into numerical values. The option "Strongly disagree" became "1", "Disagree" became "2", "Neutral" became "3", "Agree" became "4", and "Strongly agree" became "5". For simplicity and readability, terms "Investing in General" and "Modern Forms of Investing" were abbreviated into "IIG" and "MFOI".

Both IIG and MFOI was transformed into a proper form to determine their means. For each respondent, the mean was calculated from their answers, followed by merging them into one variable. There is discussion whether mean or median is better for Likert-scale analysis, as the steps from, for example, 1 to 2 are not necessarily equal in distance as 2 to 3. For this study, the author decided to use the mean. The mean for IIG was 3,3818, which was more on the positive side, as 3 would have been neutral. For MFOI the mean was also over 3, but slightly lower at 3,1439, as seen in Figure 20.

Descriptives

			Statistic	Std. Error
IIG	Mean		3,3818	,14707
	95% Confidence Interval for Mean	Lower Bound	3,0760	
		Upper Bound	3,6877	
	5% Trimmed Mean		3,3798	
	Median		3,3000	
	Variance		,476	
	Std. Deviation		,68981	
	Minimum		2,20	
	Maximum		4,60	
	Range		2,40	
	Interquartile Range		1,30	
	Skewness		,153	,491
	Kurtosis		-,920	,953

Descriptives

			Statistic	Std. Error
MFOI	Mean		3,1439	,12127
	95% Confidence Interval for Mean	Lower Bound	2,8917	
		Upper Bound	3,3961	
	5% Trimmed Mean		3,1591	
	Median		3,0000	
	Variance		,324	
	Std. Deviation		,56880	
	Minimum		1,83	
	Maximum		4,17	
	Range		2,33	
	Interquartile Range		,71	
	Skewness		-,252	,491
	Kurtosis		,397	,953

Figure 20. Table showing descriptive statistics for IIG and MFOI.

Figure 20 demonstrating a table showing descriptive statistics for both IIG and MFOI, including the means.

Followed by that, a conclusion if the data was normally distributed or not was needed. Normal distribution indicates that data closer to the mean is more frequent to occur compared to data further away from the mean, which in graph form would appear as bell curve (Chen 2021). Skewness and kurtosis could have been used to get the result, as they are closely

related to the normal distribution, but the author instead decided to use a test of normality and visual cues, as it is highly recommended to use such tools (Ghasemi & Zahediasl 2012). Shapiro-Wilk test of normality was used, and Q-Q plot for visually checking the normality.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
IIG	,171	22	,092	,944	22	,238
MFOI	,156	22	,175	,958	22	,447

a. Lilliefors Significance Correction

Figure 21. Table showing the results of Shapiro-Wilk test of normality.

Figure 21 demonstrating a table showing the results of a test of normality.

The null hypothesis for the test of normality (Shapiro-Wilk test) was that: the variable is normally distributed in some population. Some population in this case were the respondents. As usually, the null hypothesis will be rejected if p <0,05. For IIG the p=0,238, and for MFOI the p=0,447, as seen on Figure 21. Therefore, the null hypothesis was retained, as the values were higher than 0,05, meaning that the data is normally distributed in both cases. In addition to that, a Q-Q plot was inspected, which should have a somewhat straight curve if the data is normally distributed. The curves for both were straight, as seen on Figure 22. Some minor exceptions can be seen on the curves, which are often expected, showing some skewness.

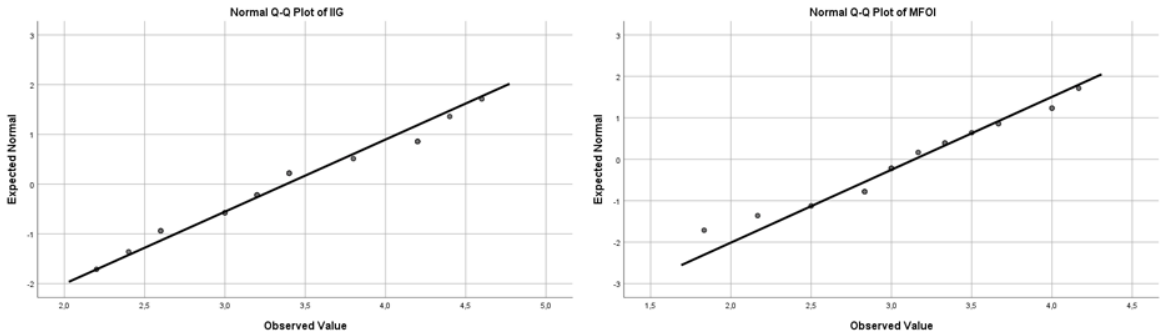

Figure 22. Q-Q plots for IIG and MFOI.

Figure 22 demonstrating the Q-Q plots for both IIG and MFOI.

As stated before, the conclusion was that they were normally distributed, therefore, generalized linear model was applied. The important part in this model was the odds ratio. It measures how common is the association of two variables together (Szumilas 2010). The

odds ratio for IIG was 13,091, which was statistically significant since the p<0,05. The results can be seen on Figure 23. Odds ratio higher than 1 proposes that as the values in the independent variable increase, in this case the IIG, there is a higher probability of being on a higher level on the dependent variable, in this case MFOI. The value demonstrated that every single unit increase on IIG, the odds for MFOI being in a higher level increased by a factor of 13,091.

Parameter Estimates

Parameter		B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
				Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Threshold	[MFOI=1,83]	4,613	2,4240	-,138	9,364	3,622	1	,057	100,810	,871	11662,100
	[MFOI=2,17]	5,566	2,4119	,838	10,293	5,325	1	,021	261,294	2,313	29521,239
	[MFOI=2,50]	6,122	2,4182	1,383	10,862	6,410	1	,011	455,935	3,986	52153,619
	[MFOI=2,83]	7,217	2,4754	2,365	12,068	8,499	1	,004	1361,717	10,642	174236,092
	[MFOI=3,00]	8,832	2,6496	3,639	14,025	11,112	1	,001	6852,252	38,065	1233494,563
	[MFOI=3,17]	9,101	2,6796	3,849	14,353	11,535	1	,001	8961,336	46,936	1710954,225
	[MFOI=3,33]	10,024	2,8118	4,513	15,535	12,709	1	,000	22560,171	91,191	5581238,935
	[MFOI=3,50]	10,371	2,8619	4,761	15,980	13,131	1	,000	31906,155	116,903	8708116,953
	[MFOI=3,67]	11,280	3,0169	5,367	17,193	13,980	1	,000	79212,008	214,199	29293006,78
	[MFOI=4,00]	12,785	3,2467	6,421	19,148	15,506	1	,000	356787,712	614,864	207033639,8
IIG		2,572	,7784	1,046	4,098	10,918	1	,001	13,091	2,847	60,194
(Scale)		1[a]									

Figure 23. Table showing odds ratio.

Figure 23 demonstrating a table, with the odds ratio shown on column Exp(B).

Correlations

		IIG	MFOI
IIG	Pearson Correlation	1	,715**
	Sig. (2-tailed)		,000
	N	22	22
MFOI	Pearson Correlation	,715**	1
	Sig. (2-tailed)	,000	
	N	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 24. Pearson's correlation coefficient test.

Figure 24 demonstrating the Pearson’s correlation coefficient test.

Finally, a Pearson’s correlation coefficient test was conducted. It was the best choice, as relationship between two variables, related to interest, was studied. The results of the test showed a strong correlation between MFOI and IIG, with a value of 0,715, which was statistically significant as p<0,05. The results can be seen on Figure 24.

6 Conclusion

This chapter concludes the study and demonstrates the key findings. First, the research questions are answered. The sub-questions are answered first, as they strengthen and assist with the main research question, followed by the answer for the main research question. After the questions are answered, the validity and reliability of the study is discussed.

As mentioned before in the study, there were no background questions asked in the survey. For further research purposes, the differences between genders, age, and background, would be important to cover. In addition to that, more modern forms, such as sustainable investing and the use of robo-advisors for investing, and how knowledgeable and interested students are in them would be valuable addition to the research.

6.1 Answers for Research Questions

The aim of this study is to get to know how interested students are in investing, the forms of it, their already existing knowledge, and habits. The main research question is: How interested are students in investing, especially newer forms of investing? It is answered after the sub-questions are answered.

How interested students are in learning more about investing in general?

The results for this question were very clear: the respondents generally would like to learn more about investing. Only 5 students either disagreed or strongly disagreed, and over 60 % either agreed or strongly agreed, with the statement. As there are no limits to knowledge, there is always more to learn, and the respondents showed that this is the case with investing as well. Sometimes more is better.

The results from the same question but instead of investing in general, learning more about the modern forms of investing, were even more clear. 15 out of the 22 respondents, almost 70 %, either agreed or strongly agreed to wanting to learn more. This clearly showed that there is interest towards the modern forms, or at least interest to learn more about them.

How satisfied are students in their knowledge about investing?

Most of the respondents claimed that they were satisfied with their knowledge about investing. Agreeing options gathered 9 votes in total, while disagreeing gathered 7. There were 6 students who could not tell if they were satisfied with their knowledge or not, choosing the neutral option. These results could mean that the students, at least the ones who responded, were happy with the amount of material they have available to learn and gain knowledge.

Compared to the results of the similar question, but how satisfied the respondents were with their knowledge about modern forms of investing, they were the opposite. This question got most strongly disagreeing choices out of all the questions, with 9 students choosing it. In total 13, or almost 60 %, of them disagreed. There were only 3 agreeing choices, and there were only 3 students who had experience investing in the modern forms, which shows that more knowledge could lead into taking a calculated risk and investing in them.

How satisfied are students with the possibilities of learning about investing in school environment, and do they feel there should be more options available?

Investing in general and the possibilities of learning about it in school gathered mostly agreeing and neutral choices from the respondents. 8 students in total agreed with it, and only 1 disagreed. The neutral option was the most popular one, with 13 respondents deciding to choose it. Overall, it seemed that students were satisfied with the possibilities available.

The similar counterpart, but focused on modern forms of investing, also gathered a lot of neutral answers, over 50 %, with 12 respondents choosing it. Only 2 students agreed that they were satisfied what they can learn about it at school, both even strongly agreeing. Altogether 8 respondents were not satisfied with what they could learn in school environment.

The consensus, for both investing in general, and investing in modern forms, was that school should offer more courses related to investing. In the general part, 9 students were agreeing and only 5 disagreeing. 8 of the respondents could not either agree or disagree. However, when the students chose their answers for the modern forms of investing and should there be more courses offered, the results were almost all either agreeing, with 16 choices, or neutral with 5 choices. Only 2 students disagreed. This means that there certainly is a certain degree of interest towards courses, that are strictly, or mainly, related to modern forms of investment.

Are students who are interested in investing in general also interested in the modern forms of investing?

Connection between the modern forms of investing and investing in general was found. It was expected, as it makes sense that if someone is already interested in investing, it is not a surprise that they would be also interested in modern forms of investing. But on the other hand, if somebody has no experience nor interest in traditional forms of investing, it does not seclude the fact they could be interested in modern forms, as they have been trending in the recent years.

How interested are students in investing, especially more recent forms of it?

The students who responded to the survey were generally interested in investing. Over 50 % of them either agreed or strongly agreed to being interested in investing in general. Less than 25 % disagreed. It is safe to say that investing is a topic that interests most of the students according to the data. When comparing the results to how interested the respondents were in modern forms of investing, there were more neutral answers, meaning that they could not say whether they were interested or not. This could be because of lack of knowledge about the topic, or just because it is a new thing linked with a lot of uncertainty. However, both disagreeing and agreeing answers in total were equal, but there were more strongly agreeing opinions than strongly disagreeing.

If the respondents had not invested in modern forms, they were asked for their reasons behind the answer. Over half of the respondents claimed that they were not confident enough in their skills or have enough information about the topic itself. This could indicate that there is lack of knowledge which leads into disinterest towards the modern forms.

In addition, the students were asked if they consider modern forms of investing to be more interesting compared to the traditional forms. This question gathered mostly neutral answers, as expected since it was not necessarily easy question to answer to. As there is much more knowledge available about the traditional forms, and less on the modern forms, it could be hard to be interested in something you do not simply know about. 9 of the respondents agreed, which 3 of them strongly, that modern forms are more interesting. Neutral option gathered 10 choices from the students. Only 3 of them disagreed, claiming that traditional forms are more interesting. Therefore, conclusion was that yes, students are interested in investing, and there is a lot of curiosity towards modern forms of investing as well.

6.2 Reliability and Validity

The goal of this study is to find answers to the main research question and the sub-questions. The answers are established and explained in a professional manner; therefore, the goal is achieved. The data for this study is collected from primary and secondary sources. Primary sources are drawn from the survey concluded, which gathered 22 student's answers from the field of business in the LAB University of Applied Sciences.

The purpose of a thesis is to give reliable and trustworthy information about a subject. The reader should not be given false information, the evidence needs to be valid. It is the authors job to provide the reader with basic knowledge about reliability and validity and how they are being considered in the work. Reliability demonstrates how reliable the results are: if

the same procedure is replicated, the results should be similar. Validity is a concept that describes what the author accomplishes with the thesis, and what they were supposed to accomplish. (Roberts & Priest 2006.)

Reliability in a study cannot be exactly calculated, but it is possible to estimate it. Reliability comes with three attributes, homogeneity or internal consistency, stability, and equivalence. Internal consistency can be tested using Cronbach's alpha. Stability requires testing the instrument, in this case the survey, to be repeated more than once, therefore it cannot be done. Equivalence can be measured using inter-rater reliability. (Heale & Twycross 2015.)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,700	,632	11

Figure 25. Cronbach's alpha.

Figure 25 demonstrating the Cronbach's alpha of the survey.

Cronbach's alpha measures internal consistency and is used to test reliability. A result of 0,70, or higher, is considered acceptable in scientific research. (UCLA Statistical Consulting Group 2021.) As figure 25 shows, the alpha for the survey is 0,70. It barely reaches the acceptable level, but the survey is internally consistent.

Intraclass Correlation Coefficient

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	,175[a]	,076	,351	3,337	21	210	,000
Average Measures	,700[c]	,474	,856	3,337	21	210	,000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Figure 26. Test of Intraclass Correlation Coefficient.

Figure 26 demonstrating a test of intraclass correlation coefficient.

As mentioned before, equivalence can be measured with inter-rater reliability. In this case, intraclass correlation is used, as there are more then two "raters" (Glen 2021). A table shown in figure 26 demonstrates the test of intraclass correlation coefficient. As the figure

indicates, the intraclass correlation for the survey is 0,700, which means moderate reliability. (Koo & Li 2016.)

As for validity of the thesis, the author concludes that the goal of the thesis was achieved. The method to gather data was a survey, gathering information on how interested students are on investing. The methods and tools used were proper, as the goal was achieved. The questions in the survey were carefully thought, and they measured what they were supposed to measure. In addition to that, the sample chosen was business students, as this is the field that this thesis mainly is connected to. Therefore, the thesis is reliable and valid.

7 Summary

The aim of this study was to get to know how interested students are in investing, the forms of it, their already existing knowledge, and habits. The main emphasis was on the modern ways of investing. The main research question was how interested are students in investing, especially newer forms of investing?

The answer for the research question was formed by using an abductive approach, as previous research has suggested that students, or millennials, are interested in modern forms of investing. Quantitative method is used to gather primary data, which is supported by secondary data from literature.

The thesis introduces the modern and traditional forms of investing and briefly discusses the history of the modern forms. The history was used to give more background information about the phenomenon. Crowdfunding and cryptocurrency were labeled as modern forms of investing. Millennials as investors were researched giving insight on their investment behavior compared to other generations. In addition to that, key concepts such as financial literacy is discussed and how it could be improved.

To be able to get data of student's interest towards investing, a survey using Likert-scale was conducted. The target audience was students at LAB University of Applied Sciences, more specifically the students in the business field. The result of the survey showed how interested the respondents were in investing, both the more recent forms of it and the traditional ways. Also, data about their experience in the field of investing was gained.

The results of the survey were presented and analyzed, concluding with the answers to the research questions, and suggestions for further research are made. The answer to the main research question was that students are interested in investing, and there is generally interest towards the modern forms, and most of the respondents stated that modern forms of investing are more interesting than the traditional forms. Students who were already interested in investing, were generally more interested also in the modern forms of investing. The conclusion is that students are interested in modern forms of investments, would like to learn more, and feel that there should be more options available to learn at school about them. Recommendations for further thesis was to include more instruments under the label of modern forms of investment, such as sustainable investing.

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Appendices

Survey Questions

1. Investing in General

- I am interested in investing
- I am satisfied with my knowledge about it
- I would like to learn more about it
- School offers enough possibilities to learn about it
- School should offer more courses related to investing

If you have experience in investing, what did you invest in?

- Stocks/shares
- Bonds
- Various funds
- Crowdfunding
- Cryptocurrencies
- I haven't invested
- Something else, what?

2. Modern Forms of Investing

- I am interested in modern forms of investing
- I am satisfied about my knowledge of modern forms
- I would like to learn more about modern forms
- Modern forms of investing are more interesting than traditional forms
- I am satisfied what I can learn about modern forms in school
- School should offer more courses related to modern forms of investing

Do you have experience investing in the "modern forms"?

- Yes
- No

If you answered "Yes" to previous question, why?

- For the returns
- Out of curiosity
- It was a good investment option for me

- Something else, what?

If you answered "No" to previous question, why?

- I don't have enough information about the topic
- I am not comfortable enough in my skills
- Too risky
- There is not enough information available on the topic
- I am not interested
- Can't afford to invest right now
- Something else, what?