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Impact of Social Media on Investment Decision

A quantitative study which considers
information online, online community
behaviour, and firm image

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Abstract

While finance has been studied for several years, behavioural finance, an area that studies how psychological influences can affect market outcomes, is still relatively new, and this subject remains wide open for greater exploration.

Social media, which has experienced rapid growth and is now a fundamental part of everyday life, is recognized as key to predicting future outcomes, leading to several studies exploring this subject. Despite this, there is not a great deal of research on how the content on social media affects other real-life time-dependent events. This study addresses that concern while it also explores the field of behavioural finance.

The research aims to study the impact of social media on investment decisions, focusing on the Swedish stock market. The study uses a quantitative method, and the data is collected from questionnaires designed through Google Forms, followed by an analysis using Microsoft Excel software.

To have an improved grasp of the extent to which social media influences investment decisions and understand the elements of online social media and the depth of their involvement, we will break down this area into three dimensions, which will be assessed.

The three dimensions of social media that will be examined are information from social media, online community behaviour, and firm image.

This study's findings established a relationship between social media and investment decision, and these three independent variables positively correlate with the dependent variable (investment decision). In other words, the results of this study have proven that social media does have an impact on investment decisions.

This study aims to contribute to literature for future financial research on a relevant topic that examines the effect of social networks on movement in capital markets.

Keywords: Information from Social Media, Online Community Behaviour, Firm Image on Social Media, Investment Decision, Behavioural Finance

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LIST OF ABBREVIATION

ID: Investment Decision
IFS: Information from Social Media
OCB: Online Community Behaviour
FI: Firm Image

1. Introduction

This chapter will present the investment in the stock market and the subject of choice as well as introduce the problem background together with the research gap. The research questions are presented together with the purpose and the aim of the research.

1.1 Background

A stock market, which is also known as an equity market, stands for a collective approach of buying and selling various instruments publicly and/or privately. Volatility, which is an aspect of the stock market, makes analysing the market behaviour a challenging task (Thakkar & Chaudhari, 2021, p. 1). Fundamental analysis involves the investigation of quantitative data such as stock price and volume, and qualitative information of those organizations like profiles and strategies. Technical analysis can support the prediction of future market behaviour by using stock features and the derived correlations (Thakkar & Chaudhari, 2021, p. 1).

The most popular approach is technical analysis, and technician analysts argue that all new information, such as news and macroeconomic variables, are already represented in stock prices (Bustos & Pomares-Quimbaya, 2020, p. 1). As such, it is sufficient in analysing price trend patterns to predict the stock market. In deciding when to buy or sell stocks, these technical indicators have been studied and applied. However, other studies have also shown that trading strategies based on technical indicators have limited results (Bustos & Pomares-Quimbaya, 2020, p. 1). While a wide range of information is applied, a more recent form that has proved helpful for stock forecasting is social network analysis (Bustos & Pomares-Quimbaya, 2020, p. 1).

Investment in the stock market had been viewed as very unpredictable over the years, especially considering how limited the availability of data and analytics were to people. However, as years have gone by, the gap has been reducing, and it has become easier for newcomers to understand it to an extent. Additionally, while there have been several studies looking into predicting the future prices of stocks, the stock market is not just dependent on historical data. It is difficult to accurately predict future events because of how it is affected by the sentiments of the people (Christy Jackson et al., 2021, p. 1).

Stock price prediction has developed into an essential issue that concerns both academia and business. However, achieving a model that can fulfil this is not easy. While there are several factors affecting stock prices, in today's stock markets, future stock values are also strongly influenced by the feelings of stockholders (Derakhshan & Beigy, 2019, p. 569). Moreover, the tremendous growth achieved by the internet and social networks allow for the sharing of user opinions about company shares while there are even social networks that are explicitly designed for stockholders which allow people to share and discuss their thoughts about the future of each stock (Derakhshan & Beigy, 2019, p. 569).

Traditionally, studying public opinion in open societies was conducted through face-to-face, telephone or online surveys. The introduction and growing popularity of social

media sites, such as Facebook and Twitter, have made the collection and analysis of public opinions easier than ever before (Li et al., 2017, p. 81).

They allow for opinions on various matters, including social, economic, and political issues. Moreover, from previous studies, it is believed that the patterns embedded in social media are helpful in providing information that allows for a better understanding and prediction of social events. Previous methods of obtaining information regarding public opinions, such as the use of the questionnaire survey, have proven to be effective but expensive and time-consuming, while social media platforms, which are extremely popular and contain immense amounts of information, can provide valuable sources for sentiment provided that an effective method of analysing the data exists (Li et al., 2017, p. 81).

It is understood that the mass media has now been surpassed by the internet, which has grown into the mainstream channel for information acquisition. It is now evident that it plays a huge role in collecting, processing, and diffusing information from the public to the individual investor (Zhang et al., 2016, p. 43). As a result of the rapid development of technology, shown by the increased amount of internet use and expansion of its availability, several changes have been experienced in social areas and business life, one being the introduction of social media (Akmese et al., 2016, p. 706). A growing number of people use social media to access news every week, while some even mention it as their primary source of news. In addition to that, content relating to stock markets now contributes to a considerable share of social media (Jiao et al., 2020, p. 63).

A belief that has been around for a long time is that investors are typical and sensitive in their decision making in the stock market, and therefore, they are impassive about risk-return trade-offs and exploiting value (Bakar & Yi, 2016, p. 320). However, psychologists have discovered that human beings are not as rational as many economists think. As a result, a new area of finance called behavioural finance has emerged, which considers how various psychological traits affect how individuals or groups act as investors, analysts, and portfolio managers. It aims at understanding how behaviours of individual investors are influenced by emotions and cognitive errors while also seeking to provide an explanation to why and how investors can act beyond the boundary of rationality in ways that oppose what they are supposed to (Bakar & Yi, 2016, p. 320).

Previous research has concluded that decisions made by investors are influenced by several beliefs and preferences, which will eventually lead them to overreact to certain types of financial information and underreact to others, resulting in making irrational decisions and affecting their risk-taking behaviours (Bakar & Yi, 2016, p. 321). Sentiment analysis is an important point in big data research. It is also referred to as opinion mining and describes various computational techniques focused to discover, extract, and distil the human emotions, feelings, or opinions from textual information within the web content towards certain entities (Bukovina, 2016, p. 20).

Social media big data captures the complex behaviour of a society. This behaviour and its relation to capital markets are a dominant part of the analysis in the field of behavioural science, which is why the behavioural finance framework serves as the primary motivation for the employment of social media big data in the field of capital markets (Bukovina, 2016, p. 20).

1.2 Problem Statement

The rapid growth and involvement of social media in everyday life has been acknowledged, and social media analytics has developed into a popular research topic. Customers are relying less on expert advice and increasingly turning to fellow customers when deciding among products, which has been facilitated by the development of social media (Chen et al., 2014, p. 1368). However, an area that still provides room for exploration concerns how the content on social media affects other real-life time-dependent events.

These days most people use either WhatsApp, Facebook, Twitter, and additional forms of social media platform to interact with each other. Social media platforms provide companies with various opportunities to improve their internal and external communications while collaborating and communicating with their customers, partners, and other stakeholders, particularly investors. When one considers its importance in external communications, it is not surprising that social media data is being used to predict real-world outcomes (Siikanen et al., 2018, p. 208).

Despite the extent to which social media influences the private lives of individuals being transparent, not much research contributes towards studying the impact of social media in relation to investment behaviour. While studies have been carried out measuring investor sentiment and stock prices, this is not enough to capture the extent to which social media influences investment decisions, as well as understanding the elements of online social media and the depth of their involvement.

Some research did study the impact of social media on investment decisions. For example, one research done by Ismail (2018) studied the impact of social media on Malaysian investors focusing on investigating three independent variables of social media, and they are: information from social media, online community behaviour and firm's image (Ismail et al., 2018). In addition, another research done by Al-toom (2021) studied the effect of social media on making investment decisions for investors in the Amman financial market (Al-toom et al., 2021). However, we did not find a study that focuses on finding out if there is an impact of social media on investments decision focusing on the Swedish stock market. Thus, this study is an attempt to fill this knowledge gap.

1.3 Research Questions

The research questions are:

- Does social media affect the decision of investors?

Sub-questions:

- What is the relationship between information from social media and investment decisions?
- What is the relationship between online community behaviour and investment decision?

- What is the relationship between the firm's image and investment decision?

1.4 Research Objective

The research aims to establish an understanding of the influence of online social media on investors' decision-making behaviour, which will also contribute to an improved understanding of stock market prediction. As previously stated, an area that requires exploration is one that understands how the different elements of social media contribute towards influencing investor decision making. Doing so will require the main field of social media to be divided into various dimensions to explore it in greater depth, which will lead to a more detailed understanding of the subject at hand. In investigating how online social media affects investor decision making, social media will be divided into three categories of assessment: information from social media, online community behaviour, and firm image. These three areas are broken down not only to understand whether there is a relationship between social media and investor decisions, but to further the knowledge by comparing and understanding which elements of online social media are more responsible in impacting these decisions.

1.5 Purpose

The primary purpose of this research is to examine social media and to see if it has an impact on investment decisions.

The study aims first to establish whether there is a relationship between online social media and investor decision making, then it proceeds with investigating what factors affect investors' investment decisions and choices when they want to invest. The study also aims to add knowledge in the behavioural finance field.

Three dimensions of online social media are explored to improve our understanding further and narrow down what areas of social media are most responsible for impacting investment decisions.

The variables that are investigated throughout this research are: information from social media, the information that investors get from social media about different investments; online community behaviour, which involves how people interact with each other online, considering the opinions they share online and how this creates a climate that can influence investor's decisions; and firm image, which refers to the status of a company and the reputation that it holds, which is considered by investors when they invest.

2. Scientific Methodology

This chapter will describe the methodological and philosophical theories that are relevant to the study. Firstly, the research philosophy of the study is introduced. After introducing the philosophy, the chosen methodology is presented. The chapter also describes the research approach. Each presented scientific method is linked to this thesis.

2.1 Introduction

The research methodology, based on which this research is done, is adopted from the research “onion” proposed by Saunders, Lewis and Thornhill (2009, p.108), which summaries necessary questions researchers should answer when conducting research starting with research philosophy, following with research approaches, research strategies, research choice, time horizons and techniques and procedures for data collection and analysis. This chapter focuses on the research philosophy as well as the research type, research approach, and research strategy, which is summarised in Figure 2.1.

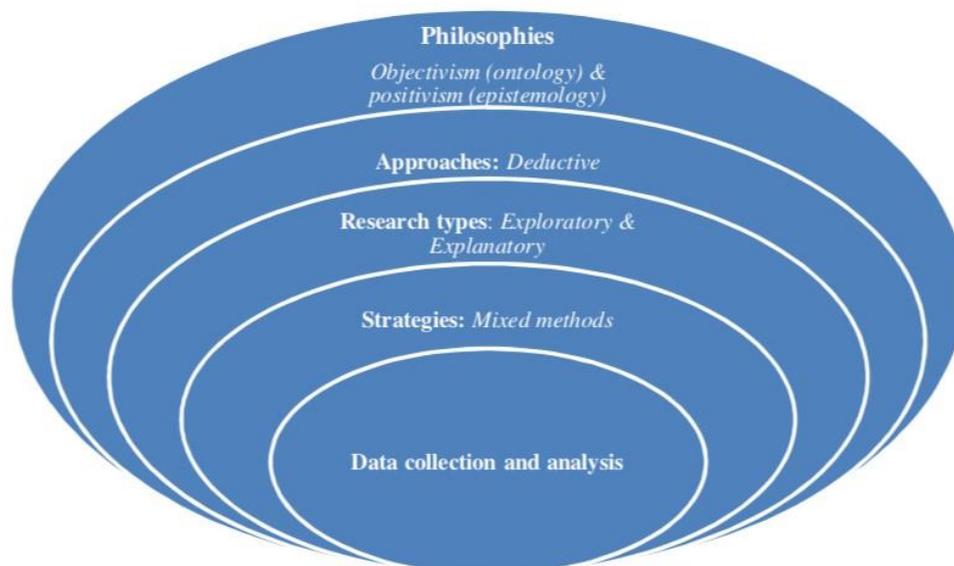


Figure 1. The research methodology adopted from the “Research Onion” (Source: Saunders et al., 2009, p.108)

2.2 Research Philosophy

2.2.1 Ontological Assumption

Ontology is a branch of philosophy in the scientific method, and it concerns showing the nature of reality (Tuli,2020). It explores the operation of the world, and the view people have in this operation. A straightforward way of viewing the ontology is by figuring out which perspective an individual views the world, objective or subjective (MacIntosh & O’Gorman, 2015, p. 55). Subjectivism and objectivism are two sides of ontology. Objectivism is referring to it sometimes as positivism or realism, and it explains the relation of social actors and social entities and argues that social actors can be found independently, externally above the social actors. On the other hand, subjectivism explains how a social event is formed by the meanings and actions of individual actors. In some contexts, subjectivism is also known as a social constructionism that perceives the world as socially constructed. This means that individuals see social situations in diverse ways according to their view of the world. In some contexts, subjectivism is also translated towards constructionism and social constructionism. Social constructionism perceives the world as socially constructed (Saunders et al., 2009).

In this study, the information of stock and investing, the online community behaviour, and the image of the firm will be studied to see if they do affect the investors’ decision. The study will be quantitative, and the data will be gathered from a questionnaire, which we will analyse using a statistical tool. Our study will not consider the subjective view as the result is taken from a collected data based on the belief of the individual. On the other hand, we find that the objective view will best serve our study where the assumption is based on that knowledge and reality are quantifiable and objective.

2.2.2 Epistemological Assumption

Epistemology assumes that networks and connections create the relationships of the social world. It also concerns how knowledge is obtained and how humans justify their beliefs (Ryan et al., 2002). Epistemology is divided into paradigms, interpretivism and positivism. The primary assumption within positivism is that an objective reality is not created by the human mind, which means that it occurs independently from human behaviour. In contrast, interpretivism is a knowledge constituted of human experience and does not see any difference between people who observe reality and reality itself. Furthermore, this later is essential to understanding the subjective meanings of people to use them as fundamental in making theories (Aliyu et al., 2014, pp. 80-84).

Our study uses the positivist research approach as it usually places a fair emphasis on the objectivity of the measurement and the repeatability that suits our quantitative study purpose.

2.2.3. Axiological Assumption

Encyclopaedia Britannica (2015) defines the term “axiology” as the philosophical study of value. Positivism embraces a value-free reality (Ryan et al., 2002, p. 17). However, even if a value-free, positivist axiological position is adopted, the motivation for research in the first-place stems from what the researcher considers important (Ryan et al., 2002, pp. 17-18). In other words, scientific facts are value-neutral, but the initial motivation for research originates from the researcher’s judgment for why the topic is meaningful, which can be said to contradict the purely objective nature of positivism. However, due to the authors’ limited pre-understanding of this topic, which will be discussed later, adopting a value-free axiological position is not problematic in this study.

2.3 Research Approach

The research approach of any study must incorporate an inductive, deductive, or abductive approach for the conduction of data (Saunders et al., 2012). Inductive reasoning is usually used to do research where conceptualization and themes are extracted from the collected data through interpretations. As Thomas (2006) also explains the inductive by the process that observes a phenomenon or examines a subject, from which theories may come out. Unlike Inductive, Deduction is breaking from the already existing theories and seeks to make a general statement for specific conclusions. The deductive approach seeks to interpret and identify the relationships among various variables and terms by developing hypotheses that can be tested (Saunders, 2012). In addition to these two approaches, there is an abductive approach that combines the inductive and the deductive. This approach involves a back-and-forth process between data and theory (Suddaby, 2006). The abductive approach is more linked to the inductive to generate new models and concepts and does not attempt to find a confirmation for earlier theories, where abduction differs from induction in the seeking to refine theories than creating new ones (Dubois & Gadde, 2002).

The inductive approach is by convention correlated with qualitative research where concepts of interest are unclear and not widely explored, while the quantitative researchers tend to instead subscribe to the deductive approach for interpreting the collected data. However, lots of researchers conduct the use of both inductive and deductive procedures for their research to fulfil the purpose of their studies (Hyde, 2000).

Since our study will be quantitative research, a deductive approach will be used in this research. The quantitative and deductive approach research focuses on contributing to the knowledge through the collection and analysis of numerical data. As a result, this will allow us to test for the relationships between our independent variables and make it possible for us to reject or accept our hypotheses.

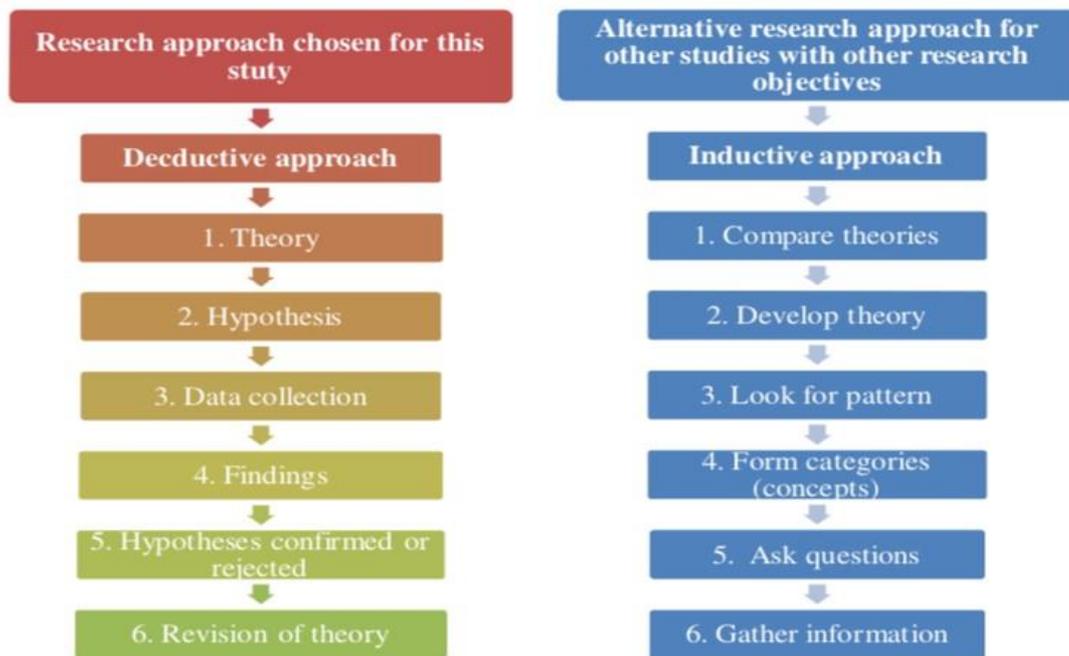


Figure 2. Steps in Deductive and Inductive Process (Source: Bryman & Bell, 2007, p.1113)

2.4 Pre-understanding

All kinds of studies require interpretation as throughout the research process, there are various choices that can be taken, all of which require that the researchers have knowledge, experience, or both in the research area (William, 2007).

The authors of this research are two business students in their final year of their bachelor's degree program from Umeå School of Business, Economics and Statistics (USBE). The authors have taken courses in finance and management and have considerable knowledge in the field of investment. However, none of the authors has an investment in any stock market. Since the knowledge and the experience of the authors is very limited in this area, this research will be barely influenced by their previous knowledge of them, which will maintain the study objective. However, the design of the research, as well as the analysis of the data, are going to be shaped according to the authors perspective and what is going to be suitable for the purpose of the study.

3. Theoretical Framework

The purpose of the theory chapter is to introduce the main theories that help the reader understand the research better. The research on behavioural finance focuses both on traditional and modern portfolio theories. In this chapter, the social media concept will also be elaborated in addition to the link between financial behaviour and social media.

3.1 The Traditional Finance

The efficient market hypothesis (EMH) states that prices of shares reflect the information of the stock market, and the stocks are always traded at a fair value. This means that it would be impossible for investors to buy an undervalued stock or sell a stock with an overvalued price. In other words, the EMH also stated that the new information is already integrated into the stock prices, and the market activities and the analysis of present and historical data cannot assist investors to predict the price of the future. As a result, the exploitation of the arbitrage opportunity is not possible.

The EMH is the proposition that dominated the understanding of traditional finance for more than 30 years. There are three different arguments that form the foundation of the efficient market hypothesis. The first is that investors and the market are perfectly rational. They receive and gather all the important information they need to make their decisions. Second, investors carefully process the unlimited information and knowledge they received without bias in which is related to internal consistency. All decisions have been made in a systematic way. Third, the market is efficient and shows the financial market's true value and investors have self-control (Nik, 2009). The Efficient market hypothesis gives an explanation that the stock market is efficient and states that the share price includes all the information that is ready to be used. Zahera & Bansal (2017) stated that, in fact, the efficient market theory built the base of the classical finance theory.

The efficient market hypothesis has been classified into three forms: weak form, semi-strong form, and strong form. The weak form is consistent with the random walk hypothesis in which states that the prices of stocks are moving randomly and independently from each other. It also states that the stock prices reflect all the market's information regarding the security. Therefore, it is impossible to earn unusual returns that are based on technical analysis (study of the past price movements of stocks to predict a future price). In the semistrong form of EMH, the prices are modified quickly according to the public and market information. So, it is impossible for abnormal return earnings to occur based on the fundamental analysis (study of financial information). Finally, the strong form of EMH states that prices reflect private, public and market information, and everybody has access to information (Naseer & Tariq, 2016).

The efficient market hypothesis has faced lots of critics. There are many reasons EMH may not hold in the following reasons. Firstly, all investors view the market differently, and therefore they have different stock evaluations. Secondly, stocks take time to respond to new information and Investors who receive or act on this information first can take advantage of it. Thirdly, stock prices are affected by human error and emotional decision making. Finally, Investors have proven that they can profit from market anomalies (Downey, 2021).

While the efficient market hypothesis (EMH) believes that no one can beat the market and the only way to earn higher returns is to take more risk. The modern Portfolio theory argue sthat investors can construct portfolios that are efficient.

Modern portfolio theory (MPT) states that the preference of the investor cannot be quantified in terms of choice because there is uncertainty in the stock market. This theory advocates that the risk of a specific stock should not be looked at alone without considering how the price of it changes in relation to the change in market portfolio prices. The theory goes on to state that a portfolio can be constructed for an investor at a preferred level of risk and maximize their expected return. This theory can also be called modern investment theory (BFM, n,d).

However, with the assessment of the return's variance and the mean, the compromise of the modern finance is shown as follows:

- Expected utility theory (Lima de Castroa et al., 2016) stated that under undetermined situations, the weighted average of all levels of benefits would best represent the benefits at any given point in time. In which individuals decide without having knowledge about which outcomes may result from that decision. The goal is to get a trade-off between the return and risk.
- Markowitz (1952) theory makes it easier for investors to achieve their optimal portfolio position and describe how the variation reduces the risk (Nik, 2009).
- Capital asset pricing model (Mossin, 1966) is an idealized representation of how securities are being priced by the financial market and thereby determine expected returns on capital investments. It can be utilized to either estimate the price of a single security or estimate the price of an entire portfolio of securities.

3.2 Behavioural Finance

The traditional finance theory that was explained by the expected utility theory and the efficient market hypothesis were unable to interpret the behaviour of the investor's preferences and the patterns of the investments under certain circumstances. This has encouraged further research in the financial field to find more reasons behind the variation of the investor's behaviour under different situations (Yusuf, 2015).

The prospect theory by Kahneman and Tversky (1979) came to challenge the expected utility theory that presumes that investors must decide between assets that are characterized by being risky by comparing the utility values measured by the probabilities of happening and if the utility is depending on the present condition of the wealth. However, prospect theory states that individuals decide between alternatives that have both risk and return in terms of the returns from the expected utility. The utility of returns is depending on the potential value of losing and gaining rather than the last outcomes, and investors apply different methods when making decisions. Investors are risk-averse in which they are keen to bet less with profits than losses. They are risk-taking toward losses and risk-averse toward gains. Soufian et al. (2014) have explained the adaptive to

the efficient market hypothesis in explaining the behavioural biases and the loss aversion of the investors. The optimal capital distribution is not shown to be fully rational by the investors. It assumes that financial theories can drive the whole economy.

The perfect market conditions that are always presented in the books of economics and finance does not usually show the reality of stock markets. This results in the form of behavioural finance, which is a recently studied area in the field of finance. It helped to answer and explain some of the motives behind the behavioural changes in the investors that diverge from rational decision-making. The various reasons for the unforeseen change in the pricing of securities and the stock market have been explained. It does not fully accept the efficient market theory nor the theory of rational investors.

In the Prospect theory that was written by Kahneman and Tversky (1979) they analyse decisions of the investor under risk. Their paper became an important study in the field of behavioural finance as the concept of prospect theory was introduced. Belsky and Gilovich (2000) have described behavioural finance as a combination of economics and psychology that try to explain why and how individuals make illogical and irrational decisions when it comes to borrowing, spending, saving and investing their money. Furthermore, Verma (2007) and Mahesh (2016) have defined behaviour finance as the influence of psychology on the behaviour of the investors and try to understand how individuals tend to fail to recall the fundamentals of the market and invest based on their emotions. Mahesh (2016) ensured in his study that the behaviour of financial practitioners is influenced by their psychology, and that has subsequent consequences on the markets. This, in return, would challenge the market efficiency theory by providing insights into how and why markets can be far from being efficient due to the irrationality of the investor's behaviour.

The theory explains how the probabilistic alternatives that involve risk affect investors decisions when the probable outcome of the investment is known. Thaler (1980) has come with a significant contribution that explains the prospect theory based on an alternative descriptive theory. The theory stated that investors act under the influences of the biases that lead them to make suboptimal decisions. As the theory of traditional finance and modern finance have faced various challenges from time to time, the behavioural finance theories have also faced several doubts and hesitations.

However, "The End of Behavioural Finance" that was written by Thaler (1999) in his paper, he gives different examples that modern finance theory cannot give an answer to various behaviours allowing the "new" behaviour finance theory to take place and explain some of the investor's behaviours.

Thaler (1999) chose five areas in the stock market where investors behaviours differ. There are dividends, volume, volatility, equity premium puzzle and predictability. Shiller (2003) has recommended solid literature with the aim of clearing uncertainty regarding efficient market hypothesis. The observations from the different irregularities in the investing patterns of the individuals have been set up with the aid of behavioural finance.

The efficiency of the stock market has been contradicted by Caginalp and DeSantis (2011), where they stated that the real drive for the efficient market is the nature of the investments and the investors or traders. However, traditional finance theories are not replaced with behavioural finance, but it is used to understand the irrationality to the

investors behavioural and the unanticipated falling and rising of the market (Raman Nair & Antony, 2015). Even if the investors would get all necessary information about the price of the securities and the asset price in the market, they tend to make irrational decisions, and that is due to the influence they get from both the potential and emotional outcomes. Investors may get influenced by the perceptions of their family members, friends or even by their rivals.

The variation in investor behaviour under different circumstances makes the combination between psychology and finance essential. Behavioural finance principles can guide investors to invest in a profitable security and draw out from losing securities keeping in mind the strategies of the investment of the market. Benefits and opportunities can be recognized and attained by rational investors while irrational investors are still unaware of the existence of profitable securities and beneficial opportunities.

3.3. Social Media

Social media has been described through numerous definitions. In one way, it has been defined as “the colonisation of the space between traditional broadcast and private dyadic communication, providing people with a scale of group size and degrees of privacy that we have termed scalable sociality” (Miller et al., 2016, p. 9).

A more straightforward description presents social media as online tools where content, opinions, perspectives, insights, and media can be shared. It facilitates the creation of relationships and enables people and organizations to connect. Some of the best-known sites that shape social media include Twitter, Facebook, and YouTube (Nair, 2011, p. 45).

A third perspective presents social media as more than just another form of media. It is described as “a movement where consumers and businesses engage in unstructured dialogue, discovery, and delivery of information, and make decisions to purchase” It is a complex combination of sociology and technology which is highly considered by organizations as its importance has been recognized in its ability to transform the organization (Nair, 2011, p. 50).

These technologies have brought change to our lives by offering us the potential for communication and interaction that we did not previously possess (Miller et al., 2016, p. 1). Before these advancements, people used two primary forms of communication through media. The two main forms were either private conversational media or public broadcasting media. Public broadcasting media included television, radio, and newspapers. This form of media accommodated any audience that could gain access to it, and the broadcasters had very little control of whom their audiences consisted of. Private conversational media allowed for private communication between two individuals as one-to-one conversations, which is also referred to as ‘dyadic communication’ (Miller et al., 2016, p. 2).

Social media has experienced tremendous growth over the years, and its use and influence extend to hundreds of millions of people. It is estimated that over 500 million people are currently making use of social media outlets such as Facebook and Twitter (Forbes, 2013,

p. 107). It is diverse and includes different expressions such as blogs, mashups, podcasts, widgets, wikis, and vlogs, which all serve different purposes and contribute to the experience provided by the Internet (Nair, 2011, p. 46).

In today's world, its importance is recognised by businesses as it presents consumers with a way of evaluating products, giving recommendations to contacts or friends while being able to link current purchases to future purchases through features such as status updates and Twitter feeds (Forbes, 2013, p. 107). Its rapid growth has resulted in it becoming a key tool that every organization utilizes. This technology is unique and provides a reflection of our social behaviour, unlike several other technologies, which tend to go against what we normally do (Nair, 2011, p. 46).

The influence of social media on consumer buying behaviour was researched and also included an investigation of the types and characteristics of products that were being recommended and purchased by social media users. It was conducted by collecting interviews of 249 consumers who made a purchase based on a social media recommendation, analysing the type of product purchased, the cost of the item, and numerous other product dimensions related to the purchase. An additional aim was to understand the extent of the role that social media plays in that recommendation process (Forbes, 2013, p. 107).

A conclusion drawn from the results of this study was that consumers were buying either very inexpensive or very expensive items, and their decisions owed to recommendations from people they did not consider as leaders or influential. Those results suggested that firms were capable of influencing future purchases, especially if they could figure out ways to get their users to post on various forms of social media (Forbes, 2013, p. 110). Moreover, another conclusion drawn was that there was a shift from the more traditional social media forms such as Facebook to the quicker ones like Twitter. This was because of peoples' preference to obtain information as quickly as possible. This also suggested that firms were better off allocating funds to that type of social media format, shifting away from the slower media formats like Facebook (Forbes, 2013, p. 110).

Due to social media's characteristics that differentiate it from more traditional media, with it being a richer disclosure channel, individuals that can gain access to the internet are able to broadcast their opinions on the operations of firms, trade decisions and share their predictions of future stock price changes. It allows capital market participants to publicly share how they process information (Cade, 2018, p. 65). Consumers are understood to prefer to engage with trustworthy and authentic firms, and they end up diving through massive pools of information obtained from various sources to ensure that this is the case. (Zanon et al., 2019, p. 29). Due to their growing interest in obtaining information, the internet has become an essential tool in facilitating this. Family firms, which tend to receive more confidence from consumers, like to explicitly communicate their family status to stakeholders and have recognized from a marketing perspective the importance of having an online presence. Therefore, they take advantage of their exclusive family status by using new media to increasingly promote it (Zanon et al., 2019, p. 29).

Twitter is a popular social media platform that allows users to create accounts and voice their opinions through tweets, which are posts that can accommodate 140 characters at a time, that are immediately shared with the followers of that user (Cade, 2018, p. 65).

Since that shared information is also publicly available through the platform's search function, investors can quickly gain access to all the posts concerning a specific publicly traded company or topic of their interest. In addition to that, social media provides unique features that display a rich level of information on different matters that can influence how a firm is perceived by investors (Cade, 2018, p. 65).

Since it has a vast reach, Twitter has drawn attention from several corporations because of the enormous potential it presents for viral marketing. News organizations increasingly use the platform to disseminate news updates, which get filtered and responded to by the Twitter community. In addition, it allows for product advertisement and dissemination of information to stockholders (Romero et al., 2011, p. 20).

3.4 The link between Behavioural finance and social media

Most investors believe that market movements are a result of a combination of factors. Their perception of the market is summarized by the term 'market sentiment'. The term 'market psychology' emerged from the belief that markets have their own way of thinking and helps traders anticipate their movements (Baker et al., 2017, p. 201).

Investors in the financial market understand the value of information and are constantly acquiring information on public traded companies in the hope that it will aid them in making sensible financial decisions. However, even those that are in possession of vast amounts of information are still capable of making wrong decisions. People that are well-informed can still disagree about firm values, and these differences in opinion are caused by confidential information or differential abilities to process information (Tetlock, 2015, p. 702).

Additionally, retail and institutional investors are increasing their attention towards the analysis of comments and opinions posted on different social media outlets as it helps them gain an improved understanding of market sentiment. However, since they also have access to these outlets and can post their opinions relating to financial matters, they also have a direct influence on market psychology (Baker et al., 2017, p. 202-203). This has resulted in an increasing number of traders switching their focus to understanding how to measure the market sentiment in order to establish whether the market psychology has a direct influence on financial market performance.

Since a characteristic of social media is its dynamic two-way exchange of user-generated content, it allows those capital market participants that are unable to communicate with management directly the possibility of interacting and voicing questions that urge responses by those managers, since they lack control over what is said about their firms (Cade, 2018, p. 63). These questions and responses also enable managers to have a better understanding of the demands of the market participants.

In a study examining how a firm's engagement after receiving negative attention on Twitter affects investors' perceptions of a firm, it was demonstrated that while a critical tweet could cause damage to investors' perceptions, this damage increased in the number of times that criticism was retweeted (Cade, 2018, p. 64). It also investigated some of the strategies that firms could possibly adopt in response to the negative attention received

on social media, which included abstaining from the conversation, as well as addressing that criticism in a public manner with a response to the individual's concern and developing ways to redirect the attention of investors away from that negativity towards positive information. However, even in combination, these techniques cannot fully eliminate that previously formed negative perception but rather lessen it (Cade, 2018, p. 64).

Research into technological advancements and their effects on financialization show the evolution of information technology extends past simply the computational aspects and now includes interactions between human beings and computers through complex information networks, as Social Machines (Ma & McGroarty, 2017, p. 243). Since various aspects of information sharing are now embedded in these social machines, business activities and society now experience their impact, especially financial innovations, which can produce both opportunities and threats for investors and alter financial market reactions. Therefore, an analysis of these social machines contributes to a better understanding of how social practices and financialization processes are continually changing (Ma & McGroarty, 2017, p. 244).

Moreover, it has been demonstrated that while these social machines can improve financial market integration by providing price predictions that are more accurate because of their ability to integrate individuals' trading decisions, social media information, and its advanced high-speed network, there are some potential negative effects as a result. These include an increase in misinformation on social networks as well as unpredictability from automated trading because of endogenous effects such as herding (Ma & McGroarty, 2017, p. 245).

Media can have an impact on market activity by directing investor attention. It had been noted that firms with small investor bases exhibited relatively low stock prices and high expected returns. Media visibility is observed to have a possible increase on a firm's investor base, which in turn would increase its market value and lower its expected return (Tetlock, 2015, p. 704).

A study conducted to understand media information's effect on stock prices showed that stocks that had public news in a chosen month experienced momentum while those that did not have public news displayed no momentum (Chan, 2003, p. 255).

Those that experienced negative returns simultaneously with the occurrence of a news story continued to underperform, while those that experienced good news showed less drift. Additionally, extreme return stocks that did not have news headlines experienced a reversal in the following month and slight abnormal performance afterwards (Chan, 2003, p. 258).

3.5 Research hypothesis

Based on the literature review above, it appears that social media may impact the investment decisions of investors in the financial markets, especially in the stock markets. Therefore, this study will try to see if social media has an impact on the investment decision of Swedish investors. The research hypothesis is as follows:

H₀: The information, online community behaviour, and firm image on social media have no impact on investor's decisions.

H_{a1}: The information that is taken from social media has an impact on the investor's decisions.

H_{a2}: The online community behaviour on social media has an impact on the investor's decisions.

H_{a3}: The firm image on social media has an impact on the investor's decisions.

4. Research method

The purpose of this chapter is to present and explain the research methods used in this study. First, it describes the sample selection process, followed by the study's research design, and includes an explanation of the literature search, data collection, design of questionnaire and measurements, data process and analysis, and ethical considerations.

4.1 Sample Selection

Since there are situations in which a study with all the elements in a population is impossible or unwanted, an alternative that exists is to extract a subset from the population under analysis, which is referred to as a sample. The sample must be representative of the population being studied since the information gathered in it, together with the relevant statistical procedures, produce results that can be used to generalize the population (Fávero & Belfiore, 2019, p. 169). Our sample was from Swedish investors who are using one of these pages to gather information about investment: Uga Aktiesparare Umeå and Aktiespararna Umeå.

4.1.1 Size

In the sample selection process, the size of the sample needs to be large enough to address the research questions. One that is too small may preclude some necessary statistical tests among the subsets within it. Thus, the greater the expected variation within the sample, the larger the sample required. Additionally, it is essential to remember that a larger sample is better at representing the population, which means, to make a generalization from your results, a requirement is that you determine the minimum sample size to reflect the size of the population (Collis & Hussey, 2014, p. 198).

The target for this study aims to attain a minimum of 200 responses, which provides enough data for the statistical tests that are carried out.

4.1.2 Method

Due to the limited amount of time available to collect enough results, a combination of stratified random sampling and convenience sampling is used to speed up this process. While convenience sampling would allow for information to be obtained in a quick and cheap way, this sample process does not guarantee that the sample is representative of the population and should only be employed in extreme situations and in particular cases which justify its use (dell' Olio et al., 2018, p. 59). The lack of time, in this case, was the reason for its inclusion.

4.2 Research Design

The research design is the general plan of how you will go about answering your research questions and should contain clear objectives derived from those research questions. Additionally, sources from which you intend to obtain data should be specified, as well as a proposal on how that data will be collected and analysed, while also discussing ethical issues and limitations that will predictably be faced (Saunders et al., 2019, p. 173-174).

The best approach here is the survey design. The general popularity of surveys is owing to their efficiency, as they provide researchers with big data at a relatively small monetary cost (Vogt et al., 2012, p. 15). In addition, surveys provide a means of drawing on representative samples to understand people's beliefs, behaviours, and experiences, which is the goal of scientific research (Abbott & McKinney, 2013, p. 205).

In positivist studies, survey methodologies are used to collect primary or secondary data from a sample, with the aim of analysing the data statistically before generalizing those results to a population (Collis & Hussey, 2014, p. 62). This choice of research design is effective in cases like this where the data being retrieved is data that is best obtained directly from the respondents, with that data being able to be collected through brief answers to structured questions, as well as expecting that data to be reliable, and knowing what you will do with the answers (Vogt et al., 2012, p. 16).

The paper examines how online social media influences investment decisions made by investors. Social media is broken down into three categories: information from social media, online community behaviour, and a firm's image. These three categories are the independent variables, while investment decision is the dependent variable.

4.3 Literature Search

The literature search conducted to gather applicable theory relating to our thesis included a Malaysian study on the impact of social media on investment decisions (Ismail et al., 2018) and one on the behavioural factors influencing investor's decision-making and performance (Luong & Ha, 2011), and other relevant sources.

The primary literature search aims to tighten our research topic on the social media influence on investors' decisions, specifically the information's relationship with an investment decision, the online community behaviour and investment decision, and the relationship between firm image and the investment decision.

Some of the fixed critical words aligned to the study include 'social media', 'invest', 'behavioural finance', 'investor sentiment', the firmly chosen searches that seemingly were relevant to our research. Other inquiries well accommodated deemed the ones found from other sources but indicated the appropriate and previously studied cited works. The impact on social media and the online investment community located on the articles read online provided concrete basements in understanding online viability towards the investor's decisions concerning finance. The determinants to explain the social-economic importance of online tools investors rely on in the stock market were among the systematic literature searches in this research.

The firm's image practices contributing to the strengthening of the investors' trading options from the lists of online firm's data available online will be far more helpful in the study. The study on the existing research (Ismail et al., 2018) relating to the independent variables, 'information', 'online community behaviour' and 'firm image', forms the relevance in this systematic process is seeking to identify the existing knowledge towards the connection between the investors and the social media and in addition the decisions made regarding investments.

4.4 Data Collection

The type of survey selected enables researchers to carry out a more effective measurement of what they aim at measuring. There are three different types of surveys: face-to-face interviews, telephone interviews, and self-administered questionnaires, which include online surveys (Abbott & McKinney, 2013, p. 206). The choice of data collection, in this case, is the self-completion questionnaire. This is due to it being cheaper and less time-consuming. However, two major problems are often associated with questionnaire surveys. They are questionnaire fatigue and non-response bias.

Questionnaire fatigue refers to the reluctance of many people to respond to questionnaire surveys because they are inundated with unsolicited requests by post, email, telephone, and in the street, while non-response bias occurs when some questionnaires are not returned (Collis & Hussey, 2014, p. 207). The distribution method is online. This makes it easy to design the questionnaire as plenty of web-based tools exist, which enable you to create your own survey online and email it or use other social media tools to reach your desired respondents. Online surveys provide various advantages, including greater geographic access, superior adaptability to respondent subgroups, and lowered costs. Additionally, computer technology is increasingly being relied on by people in their personal lives and daily work, making this method of survey a natural way to introduce a questionnaire (Abbott & McKinney, 2013, p. 211). Once the results are obtained, you can view them and export them into the statistical software package of your choice, Microsoft Office Excel being the choice in this case.

The use of online surveys allows for convenience and speed, and this method is a much cheaper type of survey to conduct than intercept, telephone, and postal surveys. However, due to the lack of an interviewer, a huge disadvantage of this kind of survey is that the respondent can avoid certain questions, misunderstand them or superficially read the instructions for filling out the form; thus, the collected data will probably be of a lower quality than the data being obtained from a survey using interviewers (dell 'Olio et al., 2018, p. 59).

Additionally, another concern is its limited access since, to correctly participate in this survey, a computer, telephone or smartphone with an internet connection is required; the survey may only access a determined socio-demographic user profile. However, this problem is increasingly losing importance as internet access is constantly on the rise. Also, if only certain groups of individuals who are either more motivated or have greater internet skills take part in the survey, then the sample could be biased, limiting its representativeness (dell 'Olio et al., 2018, p. 59).

The online survey was created through Google Forms. It was shared through social media platforms, in addition to emails being sent, and was also distributed through service providers. Once enough results were obtained, the survey was closed, and no additional responses could be submitted. Then the results were imported from Google Forms into Microsoft Excel for analysis.

4.5 Design of Questionnaire and Measurements

The data collection method was a questionnaire whereby some questions were generated, and a specific sample from the population was selected to fill in the forms. It is designed to target only individuals that invest. The analysis method was considered more accurate as the questions were developed from research done by different authors (Luong & Ha, 2011). Their studies were approved and published; thus, their information was preserved for future references. The questionnaire method was chosen because the questions are self-completed, and they will help find quantitative research. Additionally, this method is preferred over others because the questions are clearly stated.

There are several factors included that should be put into consideration when it comes to investing. The demographic variables that possibly influence investors decision making includes age, gender, education level, marital status, and income of the individual. It included various categories of social media such as Facebook, YouTube, Twitter, as well as allowing for other options to be filled.

The questionnaire is structured into three main sections. The first one contains demographic type questions, which are used to capture general data about the respondents. The second section focused on the data concerning the independent variables that affect investment decisions, and the third section measured the outcome of their investment decision. In areas 2 & 3, the respondents were asked to indicate their degree of influence by each one of them.

Table 1: The outlook of the questionnaire

Area of Focus	Questions
Personal Information (Including Demographic + Investment Questions)	Question 1-12
Information from Social Media Online Community Behaviour Firm Image	Question 13-21
Investment Decision	Question 22 & 23

4.6 Data Process and Analysis

The data is processed and analysed through Microsoft Office Excel.

This begins with a simple importation of the data from the Google Form platform into Excel, followed by a clean-up of the data to filter out unusable data and eliminate any information errors from the analysis.

4.6.1 Regression Analysis

Ordinary least squares (OLS) are a mathematical method often used to numerically estimate a linear relationship between a continuous dependent variable and one or more independent or explanatory variables using sample data. From a statistical standpoint, an estimator is a mathematical method or formula used to produce a numerical estimate of an unknown population parameter based on the extractable information contained in a sample of data. The OLS estimator produces the best linear unbiased estimate of the relationship between each independent/explanatory variable (also known as a predictor) and a continuous dependent variable (also known as the response variable) while simultaneously eliminating the linear effects of the other included independent variables (Ezell & Land, 2005, p. 943).

The ordinary least square (OLS) linear regression was run to analyse the collected data in this study.

The theoretical multiple linear regression model is written as $y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \epsilon_i$, with assumptions $\epsilon_i \sim N(0, \sigma)$, independent.

The estimated theoretical model is,

Investment decision (ID) = Information from social media (IFS) + Online community behaviour (OCB) + Firm image on social media (FI)

4.7 Ethics

This study is based on both secondary and primary data to study in depth the impact of social media on the investor's decision. This raises questions regarding the ethical use of used information. Nonetheless, most of the secondary information used in this study is public and can be found in an online library or in google scholars. However, discussion for different issues may arise when conducting Business Administration research. The version of Bryman & Bell (2007) will be used, in detail below, as a base for an outline summary of ethical issues.

4.7.1. Conflict of Interest & Affiliation Bias

Financial affiliation and sponsoring the research could affect the result of the study and create conflicts of interest and biases after or even during the research process (Bryman & Bell (2007, p. 67). This research is conducted as a requirement for the International Business Program at Umeå School of Business and Economics in order to complete the bachelor's degree project. Both the authors do not get any financial aid from any sponsors, and they chose the topic of this research themselves. Therefore, there is no external impose on the choice of the topic of the research neither on the analysing process of the result. Accordingly, this paper will have an objective analysis and interpretation of the results.

4.7.2. Harm and Wrongdoing

Bell & Bryman (2007) highlighted that the management researchers tend to have a higher possibility of wrongdoing than to harm participants. In the research wrongdoing is related to treat the participants as data that is gathered to stretch out to the result rather than seeing them as important on themselves (Bryman & Bell, 2007, p. 68). For this study the data is taken by a questionnaire as the study is applying a quantitative method. As result, it would be difficult for this study to avoid not treating the participants as data. However, the results of this study will not be connected to any individual, but it will observations and relationships within the data.

4.7.3. Confidentiality and Anonymity

According to Bell and Bryman (2007) they defined confidentiality as the protection of gathered information from participants during the research process. However, anonymity is defined as the protection of personal information from individuals and organizations (Bell & Bryman, 2007, p. 69). The data that was gathered for this study does not involve any confidential information and is fully anonymous as the questionnaires did not ask for the participants' names.

4.7.4. Misrepresentation

The ethical issues according to Bryman & Bell (2007) is "the need to avoid misleading, misunderstanding, misrepresenting or false reporting of research findings" (Bryman & Bell, 2007, p. 71). The authors of this study are aware of the harming consequences that falsity and lack of accuracy can have on scientific studies. Therefore, the authors have no incentives to manipulate the data. The accumulated data for this study can be sent upon request, and they can be available for control.

5. Empirical findings

In this chapter, the results of the study are presented. Most of the results from the questionnaire are shown in tables and charts. The results from the statistical tests are given by which the research hypotheses are either rejected or accepted. At the end of the chapter, the study model is presented.

5.1 Background of the Data

The data was gathered by questionnaires, and our sample consisted of 208 investors. Our sample was diverse and had an almost equal representation of males (43.3%) and females (44.2%) as shown in Table 2. However, most participants (51.4%) were young adults investors aged between 18-25 years old, as they are also called digital natives. The second largest investors' age group was between the ages of 26-35 (with 41%), followed by 36-45 investors' age group (9%). Finally, investors aged 46-55 and over 55 years old were the least represented (1.4%, 0.5%), respectively.

Table 2: Demographic sample characteristics.

Variable	Category	Count	Percentage
Gender	Male	90	43.3%
	Female	92	44.2%
	Prefer not to say	26	12.5%
Age (year)	18-25	107	51.4%
	26-35	88	42.3%
	36-45	9	4.3%
	46-55	3	1.4%
	Over 55	1	0.5%
Marital Status	Single	158	76%
	Married/Sambo	50	24%
Parenthood	Not parent	138	66.3%
	Parent	70	33.7%
Education level	High School and below	35	16.8%
	Bachelor's Degree	141	67.6%
	Master's Degree	29	13.9%
	Phd or higher	2	1%
	Other	1	0.5%
Monthely income (SEK)	Less than 15,000	67	32.2%
	15,000-25,000	83	39.9%
	25,000-50,000	45	21.6%
	50,000-100,000	13	6.3%

From the survey, we can see that the majority of investors (77.6%) invest in stocks, insurances (57%) and mutual funds (48.6%). That is not strange since most of the investors are young adults and tend to invest in high-risk investment ladders that have more potential for higher returns than savings accounts. However, relatively safe investments are also there with (43.5%) of them invest in bonds and (36.9%) invest in index funds. 2.3% invest in cryptocurrencies as shown in the figure 3. Note that the participants could choose more than one answers.

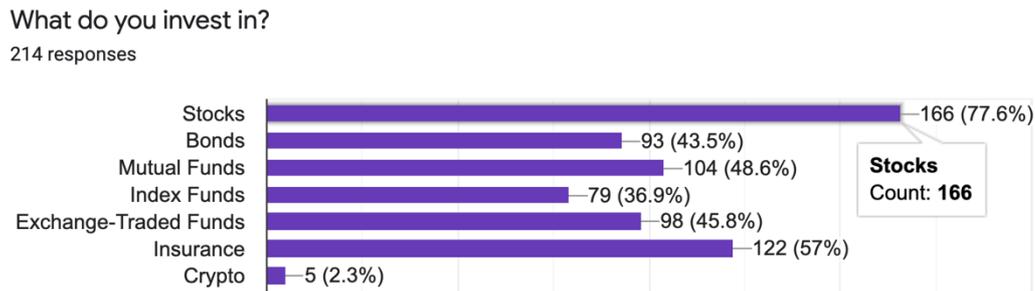


Figure 3. Type of investment of the investors

The investors seem to possess knowledge when it comes to financial-related courses, as shown in figure 4. below. In addition to the fact that more than 83% of the sample have at least a bachelor’s degree and only 16% that have a high school diploma or below which is for sure they have been hearing about the investment topic here and there in their surroundings.

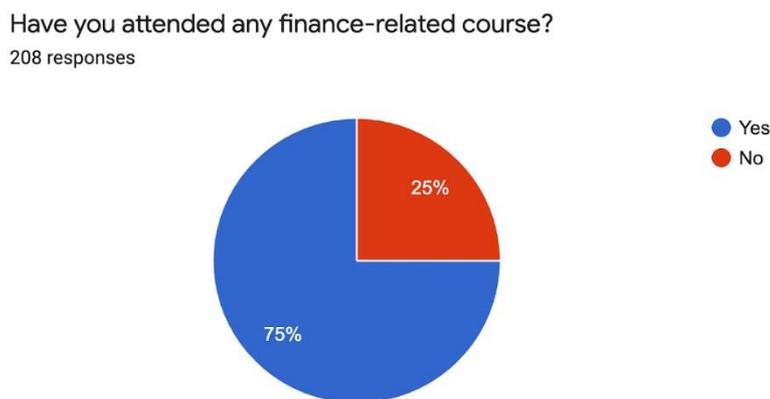


Figure 4. Knowledge in finance

However, in this study, we will investigate more and see if information, online community pressure and firm image on social media have any impact on investment decisions.

5.2 Information from social media (IFS) and investment decision (ID)

In the survey sample, 80,8% of the respondents said that they get their investment information from YouTube, 46% and 42% of the investors stated that they get their information from Facebook and Twitter, respectively. Furthermore, some investors seem to get information from different recourses, as shown in figure 5.

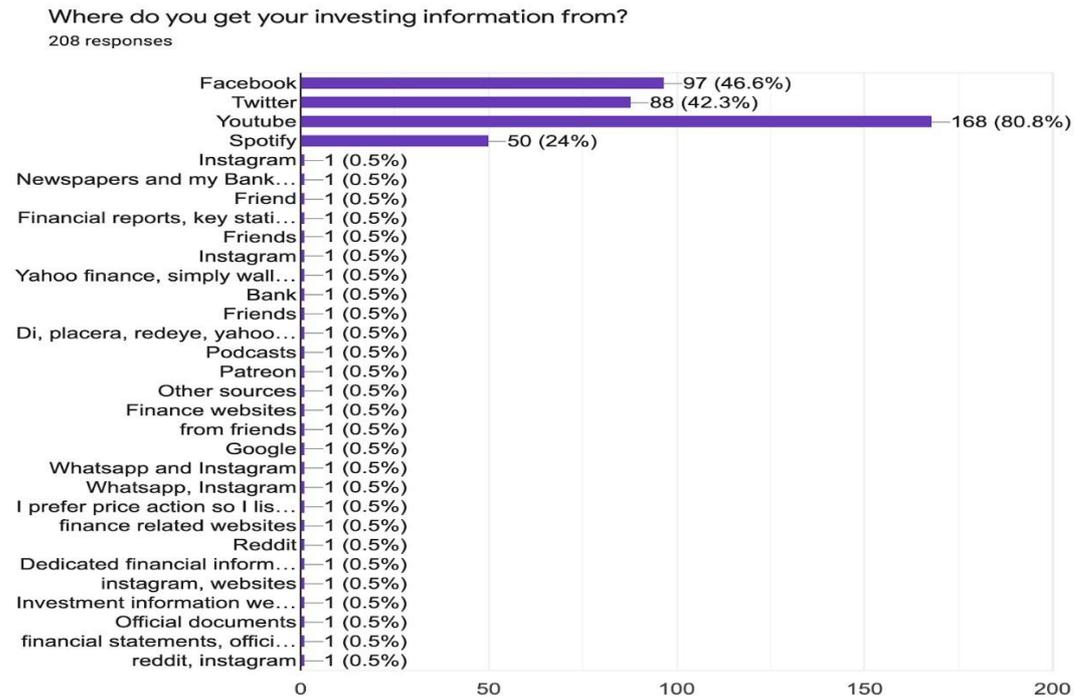


Figure 5. Information taken from social media platforms.

However, In the sample of our study, both male and female investors seem to trust the information they get from social media equally.

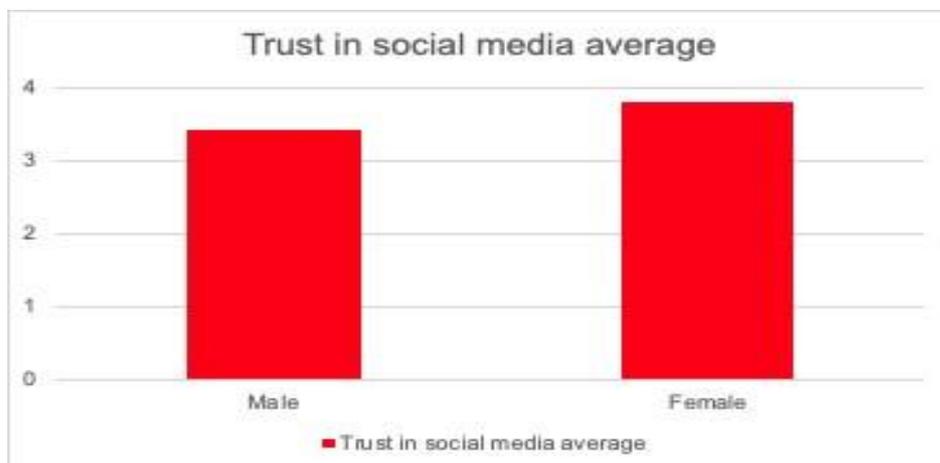


Figure 6. Trust in information from social media between genders

The questions 13 and 15 from the questionnaires helped us fetch data related to information from social media. Moreover, to answer our question, we used the OLS regression test to see if the information that is taken from social media has any impact on investors' decisions. The investment decision is a dependent variable and the information that is taken from social media as an explanatory variable. From Table 4 we found that the R square which represents the dependent variable proportion of the variance that is explained by the independent variable in the regression model to be 48% which is widely accepted in practice. We can also see that the coefficient of the information from social media to be (0,72) which means that a one unit increase in information taken from social media will lead to an increase with 0,72 in the possibility of investing. Moreover, we find that the p-value of our t test to be 2,7E-31 which is extremely smaller than our significant level of 5% (See table 3). Meaning that we reject the null hypothesis, and we accept the alternative hypothesis H_{a1} .

In other words, the information that is taken from social media has an impact on the investment decision. To put it differently, the reported findings suggested that the investor consider social media, to some extent, to be a source of information in terms of their investment planning.

Table 3.: The result from linear regression 1

Variables	Coefficients	t Stat	P-value
Constant	0,77	3,89	1,2E-04
Information from social media	0,72	13,85	2,7E-31

Table 4.: The regression statistics of IFS and ID

Regression Statistics	
Multiple R	0,69
R Square	0,48
Adjusted R Square	0,48

5.3 Online community behaviour (OCB) and investment decision (ID)

In our descriptive statistics analysis, we found that the experience of the investors has a significant impact on their behaviour when it comes to investment. Online community pressure/ behaviour seems to not have any effect on the investors who have more than 10 years' experience in investment. On the other hand, investors who have less investment experience tend to give in to the online community behaviour where they are more likely to invest (buy or sell) any kind of investment as the community on different social media platforms do. So, tends to act against the online community behaviour where they do buy when the online community sells and sell with the online community buy.

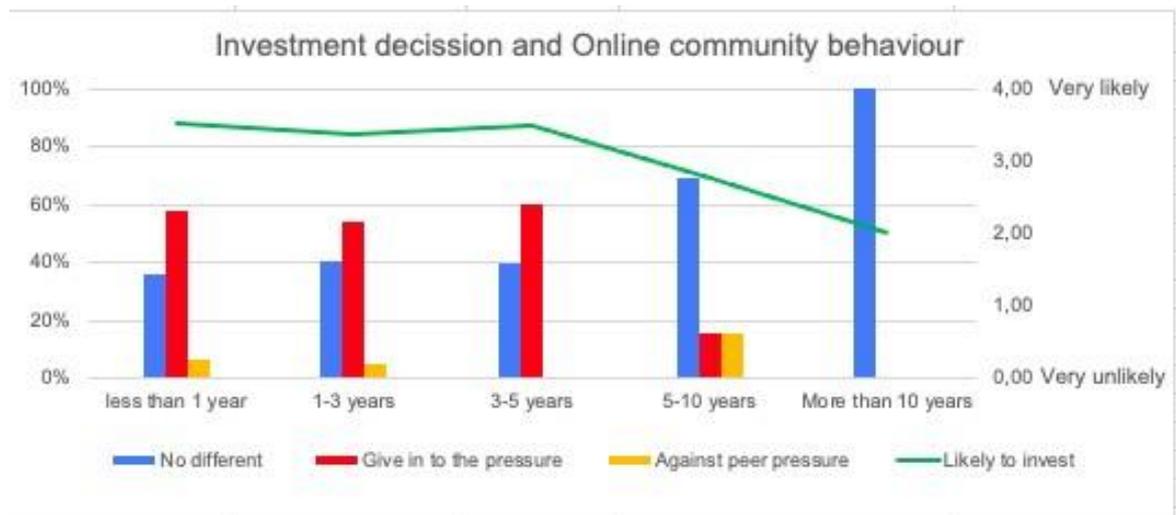


Figure 7. Likeliness of investing with online community pressure vs investment experience

However, in the analytic statistical test, we found that the proportion variance for the online community behaviour (dependent variable) is explained by investment decision in the linear regression test with 57% (see table 6). The coefficient indicates that one increase in the online community behaviour will lead to a 0,82 increase in the possibility of investing. We also must reject the null hypothesis H_0 and accept the alternative hypothesis H_2 as we found that the p-value of the online community behaviour to be (6,0 E-40) smaller than our significant level 5% (see table 5). In other words, the reported findings suggested that the online community behaviour tends to have an impact on the investor's decision on a 5% significance level. The impact of online community behaviour seems to have less impact on investors with years of experience than on those with fewer years of experience, as shown in figure 7.

Table 5: The result from linear regression 2

Variables	Coefficients	t Stat	P-value
Constant	0,53	2,85	4,8 E-03
Online community behaviour	0,82	16,63	6,0 E-40

Table:6 The regression statistics of OCB and ID

Regression Statistics	
Multiple R	0,76
R Square	0,57
Adjusted R Square	0,57

5.4 Firm Image on social media (FI) and investment decision (ID)

Our study found that 33.7% of respondents of our questionnaires think it is very important to invest in a firm that has a good image and is well-known in the industry world like Apple, Amazon, or Alphabet. Furthermore, only 8.2% think that the firm image is not important when they want to invest. Some other investors think differently about the importance of the firm image.

How important is it for you to invest in a well-known company? (e.g. Alphabet, Amazon, Apple, Tesla)

208 responses

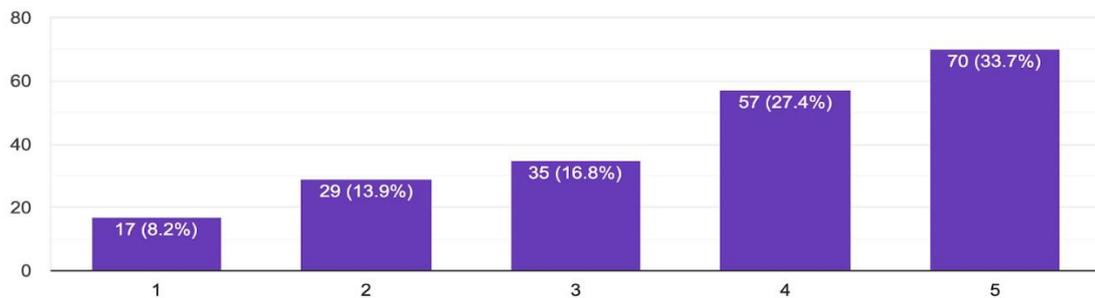


Figure 8. The importance of firm image in investing decision

In the analytic statistical test, we found that the proportion variance for the firm image (dependent variable) is explained by investment decision in the regression model with 31%. The numerical factor of the firm image seems to lead to a 0,55 increase in the probability of investing if it increases with only one unit.

In the t-test that we run we found that the p-value is 1,08E-18, and it is smaller than the p-value of the significant level (p-value 5%) of the null hypothesis H_0 . By that we can say that we reject the null hypothesis of this study and accept the alternative hypothesis H_{a3} . In other words, our findings are reporting that there is an impact of the firm image on the decision of the investors on a 5% significance level (see table 7 and 8).

Table 7: The result from linear regression 3

Variables	Coefficients	t Stat	P-value
Intercept	1,35	6,16	3,8 E-09
Firm's image	0,55	9,74	1,1 E-18

Table 8: The regression statistics showing the FI and ID

Regression Statistics	
Multiple R	0,56
R Square	0,31
Adjusted R Square	0,31

5.5 The study model

The ordinary least squares (OLS) Linear regression was run to analyse the collected data in this study and show that we fail to accept the null hypothesis on a 5% significance level. Which means that all our alternative hypotheses H1 (Information from the social media), H2 (online community behaviour), and H3 (Firm image) do are significant at 5%. In other words, we can say that our independent variables that represent the social media effect have had an impact on the investment decision on a 5% significance level.

However, when we run the multiple linear regression, we found that there is still an impact of our independent variables and the dependent variable but with different coefficient values. The p-value of each of the independent variables in the model seem to have p-values lower than 5% (see table 5.5.1). This means that we reject the null hypothesis. In another word, we can say that we have evidence that social media has an impact on investment decisions on 5% significance level.

From Table 9, the coefficient for information from social media, online community behaviour and firm image on social media seem to be positive values and they are 0.45, 0.22, 0.14, respectively. And that indicates that for every additional amount of information from social media, online community behaviour and firm image on social media we can expect that the impact on investment decisions will increase by an average of 0.45, 0.22, 0.14 respectively. The coefficient determination (R-squared) or the “goodness of a fit” of this model is 53% (see Table10). That means that 53% of the data fit the regression model.

Our model is $(ID)_i = 0,49 + 0,45(IFS)_i + 0,22(OCB)_i + 0,14(FI)_i$ Where:

ID = Investment Decision

IFS = Information from social media

OCB = Online Community behaviour

FI = Firm image on social media

Table 9: The result of the multi-regression

Variables	Coefficients	t Stat	P-value
Intercept	0,49	2,37	0,02
Information	0,45	5,58	0,00
Online community behaviour	0,22	2,90	0,00
Firm image	0,14	2,14	0,03

Table 10: The regression statistics showing the R-square of the model.

Regression Statistics	
Multiple R	0,72
R Square	0,53
Adjusted R Square	0,52

6. Analysis and Discussion

This chapter aims to analyse and discuss the results from the empirical findings chapter on social media and investor decision. In addition to this, it will compare previous literature and establish whether information from the theoretical framework can be used to explain these findings.

6.1 General Discussion

The main aim of this study is to establish whether there is a relationship between social media and investor's decisions and understand it. In addition to that, social media is divided into those three dimensions for investigation to achieve a deeper understanding of the subject.

From the results, it is proven that the information from social media, the online community behaviour, and firm image do have an impact on investor's decisions, and there is a positive correlation. The online community behaviour variable appears to have the strongest impact on investor's decisions, according to the results of the survey, while the firm image variable displayed the weakest impact out of the three. Furthermore, both the information online and online community behaviour variables indicated a moderate correlation, while the firm image had a low correlation.

We remember from the discussion concerning EMH that, according to the efficient market hypothesis, it is not possible for investors to purchase an undervalued stock or sell one with an overvalued price, since the prices of shares reflect the information of the stock market, and the stocks are always traded at a fair value. This, therefore, concludes that investors cannot take advantage of present and historical data to predict the future price and exploit the arbitrage opportunity since the new information is already integrated into the stock prices.

When looking at the results relating to the information from social media, they support an observation that was made by Forbes (2013, p. 110) on how there was a shift from more traditional social media forms to quicker ones due to peoples' preference to obtain information as quickly as possible. The popularity of these platforms in this study's results support that belief, which can be seen from how often YouTube and Twitter were selected as choices. The growth in popularity of these platforms could owe to some of the reasons shared by Cade (2018, p.65) in that since shared information is also publicly available through the platform's search function, investors can easily gain access to all the posts concerning a specific publicly traded company or topic of their interest.

It is important to remember that some of the criticisms of the efficient market hypothesis consider that stocks take time to respond to new information, and those who receive or act on it first gain a potential advantage. The investors also view the market differently, meaning they have different stock evaluations, and stock prices are influenced by human error and emotional decision making.

Additionally, a previous area of attention brought by Tetlock (2015, p. 702) was how well-informed people can still disagree about firm values, and those differences in opinion owe to confidential information or differential abilities to process information. It is expected that despite possessing vast amounts of information, these differences can lead to dissatisfaction in their investment decisions and the return rate of their investments not fully meeting their expectations. From the results of this study, not only do most of the participants appear to be well informed but the majority are also delighted with their investment decisions and answered that the return rate of their investments considerably met their expectations. This satisfaction in outcome can be better explained by the results of the demographic questions, since most of the participants have achieved some level of education, while 75% have attended a finance-related course, meaning they have an improved understanding of the financial market and are better at processing related information they acquire.

In relation to the online community behaviour results, Forbes (2013, p. 107) carried out research on the influence of social media on consumer buying behaviour. That study, which had an additional aim of understanding the extent of the role that social media plays in that recommendation process, concluded that consumers were buying either very inexpensive or awfully expensive items, and their decisions owed to recommendations from people they consider as leaders or influential. Those results suggested that firms were capable of influencing future purchases, especially if they could figure out ways to get their users to post on various forms of social media. (Forbes, 2013, p. 110) The online community behaviour variable in this study, which displayed the strongest impact out of the three variables on investor's decisions, combined with the findings from Forbes, highlights the importance of its role in social media.

Moreover, a point was made which touched on how investors, despite being able to acquire all the necessary information about the price of securities and the asset price in the market, tended to make irrational decisions, which was due to the influence they got from both potential and emotional outcomes. This included them being at risk of being influenced by the perceptions of their family members, friends or even rivals. However, one must be cautious as the outcome of this study cannot fully support that line of thinking. While the results show most of the respondents are influenced by online community behaviour, it must once again be noted that 75% of these respondents have attended a finance-related course, which means several of them are possibly aware of the risk posed by these influential factors, which also explains why their investment decision satisfaction is high, as well as the return rate on their recent investment pleasingly meeting their expectations. Despite this, the influence of social media on their buying behaviour is still evident, especially in those that have not been investing for a long period of time, and a key finding from this is that investors with less experience are more vulnerable to the role that social media plays in this recommendation process, giving in to the pressure.

Seeing that most respondents have achieved some level of financial knowledge, they are likely to understand the different theories and frameworks that have been widely researched in connection to investing. The efficient market hypothesis was mentioned in how it believes no one can beat the market and taking more risk is the only way to gain higher returns; however, the modern portfolio theory advocates that the risk of a specific stock should not be looked at alone without considering how the price of it changes in relation to the change in market portfolio prices. It continues by stating that a portfolio can be constructed for an investor at a preferred level of risk and maximize their expected return.

Previous research concerning firm reputation highlights how several family firms worldwide explicitly communicate their family status to stakeholders, capitalizing on this asset which is difficult to replicate as it is their unique family firm identity, which in turn allows them to achieve long-term stakeholder relationships since they can build and preserve a positive corporate reputation (Zanon et al., 2019, p. 28) These firms have recognized from a marketing perspective the importance of having an online presence and are capitalizing on their exclusive family status by using new media to increasingly promote it (Zanon et al., 2019, p. 29). Because consumers have increasingly developed the desire to be knowledgeable, the internet has emerged as an important provider of this information. It is suggested that these consumers want to engage with trustworthy and authentic firms and to determine this, they end up diving through massive pools of information obtained from various sources (Zanon et al., 2019, p. 29).

From the results of this social media and investor decision study, looking at the third variable, which concerns firm image on social media, the results support this line of thinking in previous research that underlines the value of firm image and reputation as most of the respondents ranked the importance of investing in reputable companies on social media highly.

The results of this study were analysed through both the ordinary linear square (OLS) and the multiple regression analysis using a significance level of 0.05. The coefficients between the dependent and independent variables were considered to understand the relations between the different variables.

7. Quality Criteria

This chapter aims to present and discuss an evaluation of the steps implemented in this study to safeguard the credibility of this research, doing so with the help of various criteria measurements.

7.1 Introduction

Three of the most critical aspects of research are reliability, replicability, and validity (Bryman & Bell, 2013, p. 62). Reliability discusses whether the results from one study would have no difference if the study would be repeated and if the results are affected by chance or other events. Replicability is the potential of repeating a research study, which depends on how well the research study is described by the researcher (Bryman & Bell, 2013, p. 63). Validity considers whether the researcher quantifies the same as is intended and sees if the right things are measured. The internal validity considers the causality between dependent and independent variables. However, external validity, or generalizability, review if the results from a study can be generalized to a broader context and to a total population rather than just the studied population (Bryman & Bell, 2013, p. 64).

7.1.1 Reliability

One characteristic of reliability is stability, which is about the stability over time for a measure of some kind in a research population (Bryman & Bell, 2013, p. 169). Reliability plays a vital role while conducting quantitative research as the researcher is concerned about the stability of the measurements while using the quantitative method. The measures used in this study are demographic variables as well as the variables that were used to measure their effect on the investment decision. The demographic measures were simple questions and should be stable over time. The questions that were used in the survey are straightforward and written in easy language.

In support of the reliability issue for this thesis, it can be said that the data sources were kind of reliable. The questionnaires were sent directly to some of the authors that they know that they have both investment and they use at least one of the social media platforms. However, the questionnaire link was also posted on Facebook pages like: Unga Aktiesparare Umeå and Aktiespararna Umeå, all calculations and decisions taken throughout the entire process have been explained in the previous chapters, Microsoft Excel was used for all statistical tests, and the data processing have been done in an objective manner. All these factors clearly prove the reliability of this paper. Nevertheless, the authors cannot guarantee a zero error, but the efforts to reduce the error can be guaranteed.

7.1.2 Replicability

There are circumstances in which researchers decide on replicating the findings of others. For this to be possible, that study needs to be replicable. This, however, is not possible if a researcher is vague with the details of their procedures (Bryman & Bell, 2011, p. 41). Following that logic, our ability to assess the reliability of a measure of a concept depends

on those procedures that signify that measure being replicable by someone else (Bryman & Bell, 2011, p. 42).

The methods used in this study have been thoroughly described in the thesis, which is necessary to be able to replicate a study. The exact same sample can of course not be replicated, but the questionnaire and the same analysis methods could be used to replicate the study.

7.1.3 Validity

Collis & Hussey (2013) argue that validity is one of the most important truth criteria in research. Validity concerns the extent to which the research conclusions derived from the results is in line with the concepts it initially aimed to measure. Validity testing includes assessing the logical alignment of the research concept with the research results, and that also might include asking the expert opinion regarding the subject. In addition to that, the model construction and the other possible variables with impacting ability are also being evaluated (Bryman & Bell, 2011, p. 160).

Internal validity (or measurement validity), in relation to this study's choice of data collection in questionnaires, refers to the ability of the questionnaire to measure what it is intended to measure (Saunders et al., 2019, p. 517). This study is a development from previous applicable theories and the choice of data collection, as well as the variables being tested, is inspired by existing research, which seek to acquire information in related subject fields.

External validity refers to the degree to which the results drawn from the sample can accurately be generalized beyond the respondents to the population at large (Vogt et al., 2012, p. 122). This study involves stratified random sampling, thereby eliminating bias and allowing for an estimation of sampling error, maximizing external validity.

7.1.4 Generalizability

According to Bryman & Bell (2013), it is desirable to study a sample that is as representative as possible of the total population to be able to generalize the results for the total population (Bryman & Bell, 2013, p. 177). Voluntary response sample was used in this study. The researchers put out a questionnaire for members of the population to take part in the sample, and individuals decide whether to be part or not. As this was a non-random sample, the result from this study cannot be generalized (Kumar, 2011, p. 207; David & Sutton, 2016, p. 197). Furthermore, the sample size (n=223) was relatively small.

8. Conclusions

This chapter introduces the conclusions of the whole study. The chapter repeats some of the key findings of the impact of social media on the decision of the investors, and answers to the research questions. The conclusions are backed with the data and analysis achieved from the previous chapters. Furthermore, the chapter introduces some of the research credibility, such as the validity, reliability, and generalizability of the findings. The chapter ends with further research suggestions related to the topic of this study.

8.1 General conclusion

The main purposes of this study were to examine social media and see if it influences investment decision. It aims first to establish whether there is a relationship between online social media and investor decision making, as well as to add knowledge to the behavioural finance field.

This study finished by answering the main research question and its sub-questions that were raised in the first chapter. The data was gathered by questionnaires that are made by google form. The questionnaires were sent to the authors' contacts and posted on different pages on Facebook. The collected data was analysed both in descriptive and analytic statistics using Excel. Finally, the result was withdrawn from analysis after testing the research hypotheses.

The result of this study shows that social media influences the decision of investors. The authors used the investment decision as a dependent variable(Y) and used three explanatory variables to see if there is an impact of social media on the investment decision. The three explanatory variables are: information from social media(X1), Online community behaviour(X2), and Firm image on social media (X3).

This study found that the information about different investments online has an impact on the investment decision. The study focused on information that is obtained from different social media platforms like YouTube, Facebook, Twitter etc. The information can be given by financial expertise, banks, firms or even by other investors. This study found that there is a relationship between the information that is fetched from social media and the investment decision, where the investment probability in a particular investment increases when there is an increase in the amount of information about it on social media. From the result of the analysed data, the authors conclude that there is an empirical evidence of 5%, which means that we reject the null hypothesis and accept the alternative hypothesis. In other words, it can be said that there is a relationship between the information in social media and investment decisions. The study provides more support to other studies that argue that online information plays a significant role in investment decisions, especially on individual investors. As information from social media is easy to obtain, continuously updated and comes in real-time. As a result, investors tend to take this opportunity and try to make a better investment decision (Ismail et al., 2018).

Online community behaviour also seems to have an impact on the investment decision. The null hypothesis was rejected as the p-value from the multi-regression test analysis has a smaller value than 5%. In other words, it has been seen that there is an impact on investment decisions from the online community behaviour at a 5% significance level. This study supports another research done by Forbes (2013) that concludes that social media influences consumer buying behaviour. However, it has been noticed that the years of experience of the investors play a key role in the extent of the influence. Where investors with ten or more years of experience seem not to have much influence by online community behaviour.

The firm image is the reputation and the status of a company. The null hypothesis was rejected on a 5% significant level, meaning that there is an impact of firm image on the investment decision. This study's finding supports other studies that found that positive posts on social media encourage investors to buy stocks in that firm.

8.2 Theoretical and practical contribution

Our study is expected to contribute to the literature for future research on relevant topics. Regarding the data that is implied in the study, the authors placed their attention on the Swedish stock market. A similar study has been done in Malaysia (Ismail et al., 2018) using the same quantitative methods, namely OLS regression, but our study was done in a different context (the Swedish market).

As the financial market is becoming more digital and social media is commonly used, studying how social media influences investment decisions is highly relevant. The empirical evidence for this study has important implications that could help the investor and traders revise the investor's decision and financial planning, particularly considering social media as a reliable source of information. Moreover, this study can provide insight to regulators and policymakers to develop standards and rules for putting information on social media as it can be deceiving for investors, especially the new ones. However, the behaviour finance it shows generally still requires further study and examination to fill the gap in this regard.

8.3 Limitation and further research suggestions

This study tried to see if there is an influence on investment decisions from social media. Due to the time limitation of this thesis, the authors choose to do a quantitative study with closed questions survey. Since quantitative methods require less time to collect data and to analyse the collected data than qualitative study. The authors of this thesis suggest that further study consider qualitative methods and interview investors to get deeper knowledge and more accurate information to understand how social media impacts investment decision.

8.4 Societal and Ethical Consideration

The scientific research is only driven by the inborn desire to help others; therefore, there is no reason for a researcher to act in an unethical manner (Neuman, 2014, p.145). Ethics in business research has been defined as “a code of conduct or expected societal norms of behaviour while conducting research” (Sekaran & Bougie, 2016, p. 13). The research ethics are a set of values and standards that help and steer researchers to hold studies in an ethical way (Johanson & Christensen, 2014). Ethical considerations typically refer to making sure the safety and the agreement of the research phenomenon. There are many different ethical issues that researchers must consider when conducting research. The authors of this research have kept in mind the principles that are discussed by Bell & Bryman that refer to privacy and transparency. The questionnaires of the study were fully anonymous, and the questions were written in simple language to prevent confusion and misunderstanding. The participants were informed that the data collected from the questionnaires would be only used for studying purposes. Secondary data were also used in this thesis, and proper referencing to the original authors was also considered.

Since the researchers are bachelor students at Umeå business school, the researchers would act in accordance with the rules and ethical values of Umeå Business School and the Swedish academic values. The researchers’ purpose is to examine the effect of social media on investment decisions in the Swedish market by building on the accumulated knowledge in the finance literature. The findings give additional evidence and more insight into the existing knowledge base in this field. Furthermore, the researchers hope that this thesis would contribute with sustainable knowledge that other researchers in the related topic can benefit from it.

From a professional perspective, the researchers have worked to the best of their knowledge to keep the highest values of credibility and integrity in carrying out this research. The researchers have given significant care to choose from credible sources of data. In conducting this research, the researchers have only used reliable and recognized statistical tests to provide the most accurate results. The authenticity of the data collected and the validity of empirical testing was highly considered.

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Appendix 1: Questionnaire

18/05/2021

Does social media affect the decisions of investors?

Does social media affect the decisions of investors?

We are two students in the International Business Programme at Umeå University writing our Bachelor's thesis in Finance. This questionnaire aims to understand the social media impact that information, online community behavior, and firm image have on the investment decision of investors.

The purpose of this is purely educational and all answers remain anonymous.

* Required

1. Gender *

Mark only one oval.

- Female
- Male
- Prefer not to say
- Other: _____

2. Age *

Mark only one oval.

- 18-25
- 26-35
- 36-45
- 46- 55
- over 55

3. Education level *

Mark only one oval.

- High School and below
- Bachelor's Degree
- Master's Degree
- Phd or higher
- Other

4. Marital Status *

Mark only one oval.

- Single
- Married/Sambo

5. Do you have children? *

Mark only one oval.

- Yes
- No

6. What is your current employment status? *

Mark only one oval.

- Unemployed
- Employed Part time
- Employed Full time

7. Please estimate your average monthly income before tax (SEK) *

Mark only one oval.

- Less than 15,000
 15,000 -25,000
 25,000-50,000
 50,000-100,000

8. How long have you been investing? *

Mark only one oval.

- less than 1 year
 1-3 years
 3-5 years
 5-10 years
 More than 10 years

9. What do you invest in? *

Check all that apply.

- Stocks
 Bonds
 Mutual Funds
 Index Funds
 Exchange-Traded Funds
 Insurance

Other: _____

10. Have you attended any finance-related course? *

Mark only one oval.

- Yes
 No

11. How much do you invest per month (SEK)? *

Mark only one oval.

- Less than 1000
 1000 - 2500
 more than 2500

12. The total amount that you have invested so far? (SEK) *

Mark only one oval.

- less than 5000
 5000 - 10 000
 10 000 - 20 000
 more than 20 000

13. How often do you read about stocks, investment in general, from social media per week? *

Mark only one oval.

- Never
 Rarely
 Occasionally
 Often
 Very Often

14. How likely are you to make a decision on investing in a particular stock based on a recommendation from social media? *

Mark only one oval.

	1	2	3	4	5	
Very unlikely	<input type="radio"/>	Very likely				

15. Have you ever recommended others to buy or sell a stock on social media? *

Mark only one oval.

Yes

No

16. How much do you trust the opinions of financial experts that talk about investing on social media? *

Mark only one oval.

	1	2	3	4	5	
Not at all	<input type="radio"/>	Very Much				

17. To what extent does group/peer pressure on social media affect your decision in investing? *

Mark only one oval.

	1	2	3	4	5	
Not at all	<input type="radio"/>	Very much				

18. How does group/peer pressure affect your decision? *

Mark only one oval.

Makes you buy/sell, giving in to the peer movement/pressure

Makes you behave against the pressure

No difference at all

19. Where do you get your investing information from? *

Check all that apply.

Facebook

Twitter

Youtube

Spotify

Other: _____

20. How important is it for you to invest in a well-known company? (e.g. Alphabet, Amazon, Apple, Tesla) *

Mark only one oval.

	1	2	3	4	5	
Not important at all	<input type="radio"/>	Extremely Important				

21. How important is it for you that the company has good reviews on social media? *

Mark only one oval.

	1	2	3	4	5	
Not Important at all	<input type="radio"/>	Extremely Important				

22. Does the return rate of your recent investment meets your expectation? *

Mark only one oval.

	1	2	3	4	5	
Extremely Disagree	<input type="radio"/>	Extremely Agree				

23. Do you feel satisfied with your investment decisions in the last year? *

Mark only one oval.

	1	2	3	4	5	
Extremely Disagree	<input type="radio"/>	Extremely Agree				

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Google Forms

Appendix 2: Internet sites where the questionnaire was posted.

Facebook Pages

Aktiespararna Västerbotten Umeå
Unga aktiesparare Umeå



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