



# **How should information on CSR performance be presented? Evidence from experimental research**

MSc. thesis Accounting, Auditing and Control

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## Abstract

This thesis investigates whether investors react to different presentation styles of Corporate Social Responsibility (CSR) disclosures. Moreover, I test whether numerical skills have an influence on the intensity of the investors' reactions. I assume that firms adopt either a community based or a global based strategy (strategy frame) in communicating their CSR strategy and that information on CSR is presented by means of pictures, words, or numbers (presentation style). The Construal Level Theory suggests that there exists a fit in focus when a community based strategy is used and information is depicted by means of pictures, and when a global based strategy is used and firms use words to present CSR information. Based on prior research, I predict that investors with lower numerical skills will be more willing to invest in a firm's stocks when a fit in focus exists between the strategy frame and the presentation style. Furthermore, I predict that more numerate investors will be more willing to invest when information on CSR performance is presented by means of numbers. This thesis does not find evidence that presentation style has an effect on investors' willingness to invest. Moreover, the results of this thesis provide new insights in the numeracy of investors.

# 1. Introduction

This thesis examines the effects of various presentation styles of Corporate Social Responsibility (CSR) reports. More specifically, I investigate the effect of various presentations of CSR information on investors' willingness to invest in a firm's stocks. The research question this study tries to answer is therefore as follows:

***Do investors react to different presentation styles of Corporate Social Responsibility disclosures?***

CSR has gained growing emphasis in recent years, and in today's socially conscious market environment stakeholders as investors, governments and society are increasingly concerned with social practices companies engage in. Legislation on CSR is rising, and since 2010 the provision of non-financial information is mandatory for publicly traded Dutch companies (Selberg, 2013). As from 2017, the European Union requires companies with over 500 employees to provide information about their environmental and social policies, which results in increasing CSR reporting in the Netherlands and other European member states (MVO Nederland, 2014). Besides, the Dutch government supports companies to engage in CSR activities by granting social responsible companies financial support and reward companies for engaging in good corporate practices (Government of the Netherlands, n.d.). Furthermore, the Dutch government has established a national knowledge center and network organization for CSR, called 'MVO Nederland', which supports companies making its operations more sustainable (Government of the Netherlands, n.d.).

Engaging in CSR activities potentially benefits a company in several ways. Outcomes from marketplace polls and academic research show that stakeholders are increasingly rewarding firms which act socially responsible and punish firms that act as poor corporate citizens (Du, Bhattacharya, & Sen, 2010). Engaging in CSR activities may lead firms to obtain favorable stakeholder attitudes towards the firm, build a strong corporate image, strengthen the relationship with stakeholders and improve stakeholders' advocacy behavior (Du et al., 2010).

Prior research on CSR has mainly focused on the financial benefits companies can obtain from acting socially responsible, but the evidence on this topic is mixed. Dhaliwal, Li, Tsang, & Yang (2011) suggest that CSR activities can improve the

financial performance of a firm, and state that providing information on CSR performance is associated with lower analyst forecast errors. In addition, firms with good ratings on material CSR issues outperform firms with poor ratings on these material issues (Khan, Serafeim, & Yoon, 2016). Cheung (2011) suggests that inclusion in the Dow Jones Sustainability World Index leads to a temporary increase in stock returns, whereas Oberndorfer, Schmidt, Wagner, & Ziegler (2013) find that inclusion in the Dow Jones Sustainability World Index is associated with a strong negative effect on the cumulative abnormal returns.

With respect to research on presentation styles, previous research has covered a broad area. Recent studies focused on topics as disaggregation, location of information, readability, and medium by which information is presented (Libby & Emett, 2014). However, the specific literature on the presentation styles of CSR disclosures is limited. When making investment decisions, investors nowadays consider information on CSR performance together with financial information (International Institute for Sustainable Development, 2013). Hence, a better understanding of investors' reactions to CSR disclosures can potentially benefit companies.

This thesis extends existing research from Elliott, Grant, & Rennekamp (2017), which suggests that investors are influenced by different presentations of CSR information. Elliott et al. (2017) state that there exists a fit in focus between the strategy frame firms use to communicate their CSR strategy with, and the presentation style they use to present this information. The strategy frame refers to the overall strategy a firm adopts in its CSR report, this can be either a community based strategy or a global based strategy. With respect to presentation style, I suggest that CSR information is mainly presented by means of pictures, words or numbers. Based on literature from Elliott et al. (2017), the combination of the strategy frame and presentation style may result in a fit in focus. A fit in focus is present when a firm uses a community based strategy and presents CSR information by means of pictures, or when a firm uses a global based strategy and presents information by means of words. By considering different numeracy skills of individuals, I predict that when a fit in focus is present, investors with lower numerical skills will be more willing to invest in a firm's stocks in comparison to investors with higher numerical skills. Elliott et al. (2017) find evidence for this prediction. They also find that the higher willingness to invest of investors with lower numerical skills is due to subjective feelings of processing fluency (Elliott et al.,

2017). These subjective feelings of processing fluency, in turn, cause positive evaluations and increased feelings of reliance on the information provided (Elliott et al., 2017). Elliott et al. (2017) conduct an experiment in which they use business students as proxy for investors, whereas I use real investors as participants of my study. Elliott et al. (2017) state that more numerate investors are not sensitive to a fit in focus between the strategy frame and the presentation style of a CSR report. However, they do not test whether more numerate investors might react more positively towards CSR information that is presented by means of numbers. I expect that more numerate investors are more willing to invest when CSR information is presented by means of numbers and that these investors are not sensitive to a fit in focus between the strategy frame and the presentation style.

The results of this thesis are of relevance to preparers of CSR reports, which can use the outcomes of this study to present information more effectively, by creating disclosures that are clearer and easier to understand for users. Furthermore, the results may be of interest to standard setters as the Global Reporting Initiative (GRI), which set sustainable reporting standards in order to support businesses, governments and other organizations to understand and communicate the impact on sustainability issues to outside stakeholders (Global Reporting Initiative, 2016).

This thesis contributes to the CSR literature by gaining a better understanding of investors' reactions to various presentations of CSR information. I extend research from Elliott et al. (2017) by taking into account an additional presentation style, namely numbers. Furthermore, I disentangle the different presentation styles, which means that in the experiment I present information by means of only one presentation style instead of showing all different presentation styles and highlight the manipulated one. In this way, new insights can be obtained with respect to investors' reactions to different presentation styles on CSR information. Besides, this study uses a different target group of participants. The study from Elliott et al. (2017) is conducted among U.S. business students, which are used as proxy for investors. However, only 25% of the participants of this study indicates that it has ever invested (Elliott et al., 2017). This thesis uses real investors as participants of the experiment. By using real investors as participants, the results represent the behavior of real investors, which makes the findings from this study more generalizable among the investment population. By disentangling the different presentation styles and provide additional evidence on how

stylistic choices affect investors' judgments, this thesis answers the calls by Elliott et al. (2017) and Rennekamp (2012).

The results of this thesis do not support the predicted hypotheses, which suggests that investors do not react to different presentation styles of CSR information. This thesis provides new insights regarding the numeracy of investors. Furthermore, the findings of this thesis may lead to a shift in focus of firms that provide CSR reports, as well as standard setters and regulators.

The rest of this thesis is structured as follows. Section 2 focuses on the theoretical framework and summarizes findings of the related prior literature. The third section describes the hypotheses development followed by the research design and data collection described in Section 4. Section 5 deals with the empirical analysis and the results of this thesis. Lastly, the conclusion, limitations and suggestions for future research are provided in Section 6.



## 2. Literature review

This thesis is motivated by research from Elliott et al. (2017), which is the first study to test the relation between different presentation styles of CSR information and the resulting judgments of investors, by taking into account numerical skills of investors. This study relates to two streams of literature, namely the literature regarding presentation effects of disclosures in the accounting field and the literature on CSR reporting. Literature on CSR is growing, but existing research mainly focuses on the content and impact of CSR activities, causing the literature on presentation effects to be limited.

### *2.1 Literature on CSR reporting*

In recent years, the attention for CSR activities of businesses has increased. Corporate Social Responsibility (CSR) is defined as companies taking responsibility for their impact on society (MVO Nederland, 2015). CSR particularly contributes to activities covering three areas of interest, namely economic development, environmental protection, and social cohesion (Jenkins & Jakovleva, 2006). Disclosures on environmental protection generally cover information related to the natural environment, environmental protection and the resource use of a firm (Jenkins & Jakovleva, 2006). Disclosures on social cohesion, on the other hand, contain information on the interactions of a firm with the community, employees and the society at large (Jenkins & Jakovleva, 2006).

By engaging in CSR activities, firms can obtain several benefits. Stakeholders increasingly reward firms which act socially responsible and punish firms that act socially irresponsible (Du et al., 2010). Firms that actively engage in CSR activities obtain favorable stakeholder attitudes towards the firm, build a strong corporate image, strengthen their relationship with stakeholders and improve stakeholders' advocacy behavior (Du et al., 2010). The evidence on the association between CSR performance and firm performance is mixed. Prior research suggests that CSR activities can improve the financial performance of a firm by enhancing the firm's reputation with customers and regulators, which in turn results in increased sales, favorable treatments from regulators and attracting and motivating employees (Dhaliwal et al., 2011). Research from Dhaliwal et al. (2011) also suggests that providing information on CSR performance is associated with lower analyst forecast errors. Khan et al.

(2016) find that firms that have high ratings on material issues on CSR tend to outperform firms which have poor ratings on these material issues. In addition, Cheung (2011) finds that the inclusion of a firm in the Dow Jones Sustainability World Index is associated with a temporary increase in stock returns. In contrast, Obendorfer et al. (2013) state that the inclusion of firms in the Dow Jones Sustainability World Index negatively influences cumulative abnormal returns.

Moser and Martin (2012) explain this difference in evidence by adopting two different perspectives. One perspective argues that firms only will engage in CSR activities, when this maximizes the firm's shareholder value (Moser & Martin, 2012). The alternative perspective argues that some firms also make investments that benefit society, even when doing so decreases shareholder value (Moser & Martin, 2012). This alternative perspective implies that engaging in CSR activities does not always aim to improve overall firm performance, as it serves a broader stakeholder purpose.

Although firms can obtain several advantages by engaging in CSR activities, there are some important concerns about CSR reporting too. Prior research finds that stakeholders have often feelings of skepticism about disclosed CSR information (Du et al., 2010). Other concerns about CSR disclosures comprise that the information provided may be unreliable, firms may be selective about the information they disclose, and the disclosures are not comparable as there are no uniform guidelines to adapt to (Hopkinson & Whitaker, 1999). Furthermore, CSR disclosures differ between countries due to dissimilarities in accounting and governmental regulations (Meek, Roberts, & Gray, 1995). For this reason, information on CSR between firms and countries is difficult to compare. The key challenge for companies engaging in CSR activities is therefore to design an effective way of communication of CSR information, in order to reduce stakeholder skepticism. Standardization of reporting formats and performance measures in CSR reporting may be a solution to increase the effectiveness of CSR reporting (Hopkinson & Whitaker, 1999).

## *2.2 Literature on presentation effects in accounting*

Literature on presentation effects in accounting covers an extensive range of topics. Recent research has focused on presentation topics as disaggregation, location, readability, and medium by which information is presented (Libby & Emett, 2014). Hirst, Koonce, and Venkataraman (2007) find that investors judge financial forecasts that are

presented in more detail through disaggregation, to be more credible than aggregated financial forecasts. In addition, investors seem to react stronger to earnings metrics that are presented more prominently in the earnings release (Elliott, 2006). Research from Courtis (2004) finds that the use of colour in annual reports influences the speed of information recognition, may assist in the understanding of information, and helps to recall information. Besides, colour is able to direct attention to important information, as well as it is capable to divert attention from less important and trivial items (Courtis, 2004).

### *2.3 Processing fluency*

Findings from research in psychology document that the level of processing fluency has an influence on individuals' affective responses and judgments (Reber, Winkielman, & Schwarz, 1998). Processing fluency is defined by Rennekamp (2012) as how easy it feels to process information, and is considered to be subjective. According to the Hedonic Fluency Model, a higher level of processing fluency is associated with a more positive affective response towards the stimulus, compared to a stimulus that is more difficult to process (Winkielman, Schwarz, Fazendeiro, & Reber, 2003). The associated positive affect, in turn, results in a more favorable evaluation of the stimulus (Winkielman et al., 2003). Fluency is considered hedonic because it represents a positive or negative situation, this can be with regard to situations in the world or within the cognitive system (Winkielman et al., 2003). A high level of fluency generally indicates a positive situation, whereas a lower fluency level indicates a negative situation (Winkielman et al., 2003).

Several studies have manipulated processing fluency in various ways, but the findings are largely uniform across the different settings (Alter & Oppenheimer, 2009; Rennekamp, 2012). An example is a study from Oppenheimer (2006), which uses easy- and hard-to-pronounce words to find that messages that are perceived as more fluent can result in more favorable evaluations about the intelligence of the messenger. Another study manipulates fluency by altering font type, and suggests that easy-to-read fonts are evaluated more positively compared to difficult to read-fonts (Novemsky, Dhar, Schwarz, & Simonson, 2007). Besides that a high level of fluency results in more positive evaluations, a high level of processing fluency also leads to higher ratings of credibility, greater preference for the information presented and greater willingness to rely on the information provided (Alter & Oppenheimer, 2009). In general, when a task

is perceived as fluent this leads people to feel more confident about their performance in comparison to when a task is disfluent (Kelley & Lindsay, 1993). In addition, Shah and Oppenheimer (2007) find that people assign more weight to information that is easy to process than they assign to information that is disfluent when making decisions.

#### *2.4 The Construal Level Theory*

According to the Construal Level Theory (CLT) there exists a relation between the perceived psychological distance and the mental construal of information (Trope & Liberman, 2010; Trope, Liberman, & Wakslak, 2007). Perceived psychological distance is defined as a subjective feeling that something is close or far away, this can be either temporally, spatially, socially and hypothetically (Amit, Algom, & Trope, 2009; Trope & Liberman, 2010; Trope et al., 2007). The psychological distance dimension used in this study is spatial distance. Spatial distance means that an event is more spatially distant as it occurs in a more remote location. The term construal level is defined as the level of abstraction by which people process events, information or other phenomena (Elliott, Rennekamp, & White, 2015). Previous research has shown that the different dimensions of psychological distance affect the mental construal of information, and that these construals in turn influence evaluations and behaviors (Trope et al., 2007).

The CLT suggests that individuals use low-level construals in order to represent events that are psychologically close (Trope et al., 2007). Low-level construals can be described as relatively unstructured, contextualized representations that include subordinate and incidental features (Trope et al., 2007). In case events are psychologically distant, individuals use more schematic and decontextualized representations, defined as high-level construals, in order to derive meaning from the presented information (Trope et al., 2007). The CLT theory thus suggests that when an event is psychologically close to an individual, the processing of this event will occur at a more concrete, and detailed level (low-level) (Trope et al., 2007). In contrast, the processing of more distant events occurs at a more abstract and coherent level (high-level), where secondary and incidental features are omitted and only features that are central and peripheral to the event are represented (Trope & Liberman, 2010; Trope et al., 2007). A high-level construal approach focuses on 'why' specific things happen, and low-level construal approaches focus on 'how' these things are done instead

(Liberman, Trope, & Stephan, 2007). In summary, the CLT suggests that the more spatially distant from an event, the more abstract the event will be represented. Evidence from other studies confirms the relation between spatial distance and the level of processing information (Fujita, Henderson, Eng, Trope, & Liberman, 2006; Henderson, Fujita, & Trope, 2006).

The suggested relation between psychological distance and the level of abstraction can be explained by the association between direct experience and the availability of information (Trope et al., 2007). In general, if an event is more remote, there is less available and reliable information about the event, which leads to the formation of a more abstract and schematic representation of the event (Trope et al., 2007). On the other hand, when an event is near, in general the availability of information is high, and therefore we form a concrete, low-level representation of the event by making use of the detailed and contextualized information that is available (Trope et al., 2007).

### *2.5 Strategy frame*

After reviewing disclosures of the Fortune 100, Elliott et al. (2017) find that companies either focus on a community based strategy or a global based strategy in their CSR report. I will refer to this as strategy frame. Firms that focus on a community based strategy emphasize local efforts, whereas firms that focus on a global based strategy emphasize their efforts to reach their CSR goals on a global level (Elliott et al., 2017). When a firm applies a community based strategy, it implies that it focuses its CSR efforts geographically close to the firm's origin (Elliott et al., 2017). Linking this to the Construal Level Theory described above, Elliott et al. (2017) predict that investors will construe presented information at a low-level when firms adopt a community based strategy when reporting their CSR strategy. In contrast, when firms adopt a global based CSR strategy, this implies that the firm focuses its CSR efforts on a global level, which is more spatially distant from the firm's location of origin (Elliott et al., 2017). According to the CLT, Elliott et al. (2017) predict that when the CSR efforts of the firm seem more distant, investors will adopt a high-level in processing the information provided.

## *2.6 Presentation style*

With respect to presentation style, Elliott et al. (2017) state that companies highlight either pictures or words. Pictures are concrete representations of reality that demonstrate the specific characteristics of the referent object in full detail (Trope et al., 2007). Words, on the other hand, are abstract representations that demonstrate the essence of the referent object, abstracting it to its basic characteristics (Amit, Wakslak, & Trope, 2013; Trope et al., 2007). Linking this with the CLT, literature proposes that pictures are examples of a low-level construal, whereas words are examples of a high-level construal (Amit et al., 2009). According to the CLT, people increasingly prefer the use of pictures when communicating with temporally, geographically or socially proximal others (Amit et al., 2013). The preference for using words is higher when communicating with others that are more distant (Amit et al., 2013). An experiment on spatial distance shows that participants respond faster to pictures of objects when an event is geographically near, whereas participants respond faster to words denoting objects when an event is more spatially distant (Trope et al., 2007).

## *2.7 Fit in focus between strategy frame and presentation style*

Research from Amit (2006) suggests that the processing of information is most efficient when there is a fit between the psychological distance and the medium by which information is presented. The combination of presentation style of CSR performance and the strategy frame may result in a fit, or not, in the focus that investors adopt when reviewing a firm and its CSR performance (Elliott et al., 2017). Elliott et al. (2017) suggest that firms adopting a community based strategy should use pictures to communicate their CSR performance. When a firm uses a global based strategy, the perceived distance is greater and for this reason words are more suitable to communicate CSR performance in order to create a fit in focus (Elliott et al., 2017).

When the use of strategy frame and presentation style result in a fit in focus, investors experience feelings that the presented information is easier to process (Alter & Oppenheimer, 2009; Lee, Keller, & Sternthal, 2009). These subjective feelings of processing fluency will cause an affective reaction that information is reliable, which leads to more positive judgments compared to when there is no fit (Rennekamp, 2012; Shah & Oppenheimer, 2007). A fit in focus is present when a global based strategy frame is adopted and CSR efforts are communicated by means of words, or when a

community based strategy frame is adopted and CSR performance is communicated by using pictures.

### *2.8 Numeracy of investors*

Numerical and non-numerical information is often required to be considered together, when making decisions or forming judgments (Peters, 2012). Individuals with high numerical skills are more likely to rely on and use numerical information, which leads highly numerate individuals to be less sensitive to framing effects in comparison to investors which are less numerate (Peters, 2012). Numerical skills are defined as the way in which individuals process numerical information (Peters et al., 2006). Individuals with lower numerical skills are more influenced by competing non-numerical information or rely less on sources that contain numerical information (Peters et al., 2006). In addition, individuals with lower numerical skills trust numerical data less compared to highly numerate individuals (Peters et al., 2006). Peters et al. (2006) document that highly numerate individuals seem to derive different affective meaning from numbers than less numerate individuals do. This can be explained by the ease of processing by which individuals can process information. Research from Alter and Oppenheimer (2009) suggests that when an individual has low numerical skills, the ease of processing numerical information becomes more difficult, which will result in a negative affective response towards this information.

Elliott et al. (2017) expect and find that investor numeracy has an influence on the relation between the fit in focus and the willingness to invest in a firms' stock. As described above, numeracy seems an important moderator in this relation, since numeracy can influence how information is processed in decisions (Peters, 2012; Peters et al., 2007). The results from the study of Elliott et al. (2017) show that investors which are classified as less numerate are affected by a fit between the strategy frame and presentation style of the firm's CSR report. Investors with lower numerical skills seem to be more willing to invest when there is a fit between the strategy frame and presentation style, compared to the event where there is no fit (Elliott et al., 2017). This increased willingness to invest when a fit in focus exists, is driven by increased subjective feelings of processing fluency which lead to a more positive affective evaluation and reliance on the information provided, which in turn lead to increased willingness to invest in the firm's stocks (Elliott et al., 2017). The results with respect

to the investors with higher numerical skills, show that highly numerate investors are not influenced by a fit in focus.



### 3. Hypothesis development

According to the Hedonic Fluency Model, information which is easier to process results in more positive affective responses than information that is more difficult to process (Alter & Oppenheimer 2009). After Elliott et al. (2017) evaluated CSR reports from the Fortune 100 firms, Elliott et al. (2017) conclude that companies use either a community based strategy or a global based strategy in their CSR report. The Construal Level Theory, which predicts that when perceived distance becomes greater people process information at a high level, suggests that CSR information presented in a global strategy frame is construed with a high-level focus (Fujita et al., 2006; Trope & Liberman 2010). When the perceived distance becomes smaller, on the other hand, people have more detailed information available and process this information with a low-level focus. (Fujita et al., 2006; Trope & Liberman, 2010). Based on the Construal Level Theory, I expect that individuals process CSR information presented in a community based strategy with a low-level focus, whereas individuals process information presented within a global based strategy with a high-level focus.

Regarding the different presentation styles Elliott et al. (2017) consider words and pictures. Trope and Liberman (2010) document that the use of pictures promotes a low-level focus and the use of words promotes a high-level focus. The combination of the strategy frame and the presentation style that firms use, may result in a fit in focus. A fit in focus is present when firms which adopt a community based strategy in their CSR report, communicate information on CSR performance by means of pictures, and when firms which use a global based strategy in their CSR report communicate the CSR information by means of words. When a fit in focus is present, people experience feelings that the information is easier to process (Alter & Oppenheimer, 2009; Lee et al., 2009), which results in an affective reaction that the information is reliable and causes more positive judgments compared to when there is no fit (Rennekamp, 2012; Shah & Oppenheimer, 2007). I therefore predict that when a fit in focus is present, investors<sup>1</sup> are more willing to invest in the firm's stocks.

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<sup>1</sup> The definition of investors I use in this study is derived from the definition of Abt SRBI (2008): Investors are people that invest/have invested in stocks, bonds, and/or mutual funds.

However, numeracy seems to moderate the effect from a fit in focus, as Elliott et al. (2017) predict and find that investors with lower numerical skills are more willing to invest when a fit is present between the strategy frame and presentation style, in comparison to the counter group of highly numerate investors. Their results also suggest that more numerate investors seem not sensitive for a fit in focus. For this reason, I expect that only investors with lower numerical skills react positively to a fit in focus, by being more willing to invest in a firm's stocks. According to the Hedonic Fluency Model and Elliott et al. (2017), I predict that the increased willingness to invest of the less numerate investors will be driven by subjective feelings of processing fluency, which lead to positive affective evaluations and feelings that the information can be relied on, which in turn leads these investors to be more willing to invest.

To isolate the effects of the various presentation styles this thesis only shows the manipulated presentation style, instead of using all different presentation styles and highlight the manipulated one. I acknowledge that in real CSR reports the presentation styles are used interchangeably, but in order to capture the direct reactions to the various presentation styles, this thesis disentangles the different styles. For this reason, the results from this thesis may differ from the results from Elliott et. al (2017).

Although this study will disentangle the different presentation styles, I predict the same effect from a fit in focus on investor's willingness to invest for investors with lower numerical skills, as Elliott et al. (2017). Therefore, Hypotheses 1 and 2 are as follows:

*H1: Investors with lower numerical skills will be more willing to invest when there is a fit between the strategy frame used in the CSR report and the presentation style by which CSR information is presented, in comparison to investors with higher numerical skills.*

*H2: Investors with lower numerical skills are more willing to invest when a fit in focus is present between the strategy frame and the presentation style, due to subjective feelings of processing fluency, which lead to positive affective reactions and increased feelings of reliance on the information provided.*

After evaluating several CSR reports from publicly listed Dutch companies, I find that there are also firms where information on CSR performance is presented by

means of numbers (see Appendix A for examples). Elliott et al. (2017) conclude that highly numerate investors are not influenced by a fit in focus (Elliott et al., 2017). Since there is no evidence on whether more numerate investors are more willing to invest when information is presented by means of numbers, this is a gap in the literature, which will be answered by this thesis. The fact that investors are not sensitive to a fit in focus can be explained by research from Peters (2012), which finds that individuals with higher numerical ability rely more on numerical information to base their decisions and judgments on. Furthermore, Elliott et al. (2017) provide evidence that investors with lower numerical skills experience feelings of processing fluency which cause positive affective evaluations and improve the feeling that the information is reliable. I suggest that when firms use numbers to communicate their CSR information, highly numerate individuals will experience a higher level of processing fluency. I expect that this higher perceived processing fluency will lead to more positive affective responses from these investors towards the presented CSR information. This, in turn, leads these investors to be more willing to invest in the firms' stocks. Therefore, I expect that the willingness to invest of highly numerate investors will be higher when the information on CSR performance is presented by means of numbers instead of by words or pictures, leading to the third hypothesis:

*H3: More numerate investors will be more willing to invest when information on CSR performance is presented by means of numbers compared to when information is presented by words or pictures.*

The research design used to test the predicted hypotheses will be discussed in the following section.

## 4. Research design and data collection

### 4.1 Sample

Participants of this study are Dutch investors<sup>1</sup>. In order to recruit participants for the survey, I used social media networks as Facebook and LinkedIn where I distributed an anonymous link, via which participants were able to fill in the survey. Furthermore, I recruited participants by searching on LinkedIn for people with an investment background. Through the search function of LinkedIn I searched for terms as investors, shareholder and financial analyst. Answers of respondents which did not complete the survey are automatically removed and are not recorded as valid answers. Participants that have not invested in stocks, bonds and/or mutual funds are also deleted from the sample. A total of 311 participants completed the survey and met the criteria. From this number of observations, five cases are removed, as these participants finished the survey in less than three minutes. I assume that these five people did not fill in the survey seriously which can potentially have an influence on the reliability of the results. For this reason, the final sample consists of 306 observations.

### 4.2 Research Design

To test the predicted hypotheses an experiment with a full-factorial 2x3x2 between subjects design is conducted. The strategy frame (community based or global based) and the presentation style (pictures, words or numbers) are the manipulated variables and numeracy is the moderating variable.

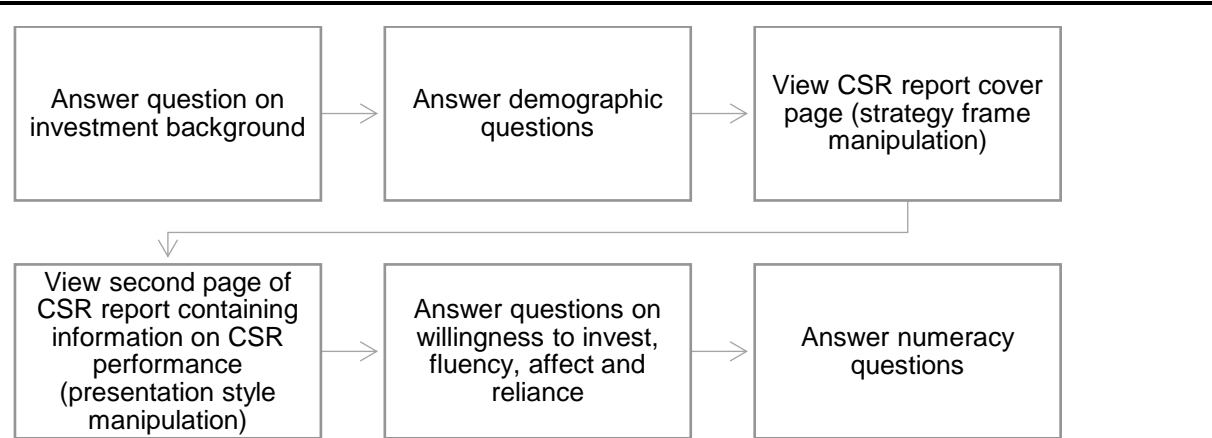
I use the online survey tool Qualtrics to conduct the survey. Participants receive a link which enables them to access one of the six experimental conditions. The survey starts with a short introduction, followed by a question to check whether the respondents have ever invested. This question asks whether the participant has ever invested in stock/bonds/mutual funds. If the participant answers this question with no, he/she will be send automatically to the end of the survey and the observation is deleted from the sample. If the question is answered with yes, some demographic questions on gender, age and education are asked to gain more information on the background of the respondents. After answering the demographic questions,

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<sup>1</sup> The definition of investors I use in this study is derived from the definition of Abt SRBI (2008): Investors are people that invest/have invested in stocks, bonds, and/or mutual funds.

participants again receive a short introduction on the remainder of the survey. After reading this short introduction, a summary CSR report from a hypothetical firm, XY N.V. is shown. In comparison with Elliott et al. (2017) I do not provide background information about the firm and the industry in which the firm operates, nor do I provide financial information. I choose to leave this information out, in order to isolate the reactions to different presentation styles. In this case, information other than CSR information does not lead participants to prejudice and take other information into account when making decisions. I acknowledge that in real world situations not solely CSR information is presented, but in order to measure the direct effects of different presentation style other information is left out. See Figure 1 for an overview of steps in the experiment (Elliott et al., 2017).

**FIGURE 1:** Overview of tasks in experiment



Note. Adapted from Elliott et al. (2017).

**4.3 Strategy frame manipulation**

The summary CSR report consists of two pages, the first page represents the cover page of the CSR report containing the strategy manipulation (community based strategy versus global based strategy). The cover pages for both manipulations contain the title: Corporate Social Responsibility Report 2016. As in Elliott et al (2017), when a community based strategy is adapted, the subtitle of the CSR report is: “Community Responsibility: Improving our Neighborhoods”. In case of the global based strategy, the CSR report’s subtitle is: “Global Responsibility: Improving our World” (Elliott et al., 2017). In order to strengthen the manipulations of the different strategy frames, an

additional text is added that summarizes XY N.V.'s CSR goals consistent with the manipulated strategy of the cover page (community based strategy versus global based strategy). Furthermore, the areas of commitment on XY N.V.'s CSR efforts are presented.

#### *4.4 Presentation style manipulation*

The second page of the summary CSR report presents information on XY N.V.'s CSR performance on the following areas of commitment: waste management, water conservation, carbon footprint management, and volunteerism (Elliott et al., 2017). This information on CSR performance is presented by means of either words, pictures or numbers (the presentation style manipulation).

The strategy manipulations and presentation style manipulations lead to six different experimental designs, where the cover page contains either a community based strategy or a global based strategy and the second page that presents information on the CSR performance of XY N.V. presents this information by either words, pictures or numbers.

#### *4.5 Dependent variable*

The dependent variable in the hypotheses of this thesis is investors' willingness to invest in XY N.V.'s stocks. I ask participants three questions in order to determine their willingness to invest in XY N.V.'s stocks, these three questions form the willingness to invest measure. The first question asks how attractive XY N.V. is as a potential investment (Elliott et al., 2017). Participants answer this question by an 11-point Likert-scale, where 0 represents 'not at all attractive', and 10 represents 'very attractive'. The second question is: "What is the likelihood that you would consider XY N.V. as a potential investment?" (Elliott et al., 2017). This question is also answered by using an 11-point Likert-scale, where 0 represents 'not at all likely', and 10 represents that it is very likely that this respondent will consider XY N.V. as a potential investment. The third and last question that measures investors' willingness to invest asks: "Assume you have €10.000,- to invest in this industry. How much of this €10.000,- will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). Respondents can answer this question by sliding a sliding scale which reaches from €0,- to €10.000,-.

#### *4.5.1 Reliance on the disclosures*

To measure to what extent participants feel like they can rely on the information presented in the summary CSR report, I ask respondents to indicate the extent to which they agree with the statement that they feel they can rely on the information presented in the CSR report (Elliott et al., 2017). Again, an 11-point Likert-scale is used, where 0 represents 'strongly disagree', and 10 represents 'strongly agree' (Elliott et al., 2017).

#### *4.5.2 Affective reaction to disclosures*

For the measurement of affective reactions associated with the CSR report, I present four statements. Participants are asked to indicate their level of agreement for each of these statements, and answer these four questions by an 11-point Likert-scale. The first statement asks to indicate the extent to which the participant is happy with XY N.V.'s CSR performance, where 0 represents 'not at all happy', and 10 represents 'very happy' (Elliott et al., 2017). The second statement asks participants to indicate the extent to which the respondent is upset with XY N.V.'s CSR performance (Elliott et al., 2017). This Likert-scale is reverse scored, which means that 0 represents 'very upset', and 10 represents 'not at all upset'. The third question asks respondents to indicate the extent to which the participant is disappointed with XY N.V.'s CSR performance (Elliott et al., 2017). This question is also answered by using a reverse-scored Likert-scale, where 0 represents 'very disappointed', and 10 represents 'not at all disappointed'. The fourth, and last question to measure affective reactions to the CSR report asks the participant to indicate the extent to which he/she is pleased with XY N.V.'s CSR performance, where 0 represents 'not at all pleased', and 10 represents 'very pleased' (Elliott et al., 2017). As the Cronbach's Alpha of these questions amounts to 0.75, I use the average of these questions to combine the four measures into one single measure.

#### *4.5.3 Processing fluency*

In order to capture participants' feelings of processing fluency, I present three statements and ask participants to indicate their level of agreement with those statements. The first statement asks participants to indicate the extent to which he/she agrees that the information presented in the CSR report is easy to process (Elliott et al., 2017). The second statement measures the extent to which the participant agrees that the information presented is difficult to understand (Elliott et al., 2017) Lastly I ask participants to indicate to which extent they agree that the information in the CSR report

is easy to read (Elliott et al., 2017). Respondents indicate to what extent they agree, on an 11-point Likert-scale, where 0 represents 'strongly disagree', and 10 represents 'strongly agree'. For the second question on processing fluency, the scale is reverse scored, so that 0 represents 'strongly agree', and 10 represents 'strongly disagree'. The Cronbach's Alpha of these questions is 0.86, which suggests that the questions capture the same underlying construct. For this reason, I combine these questions into one single measure by using the average score of the three questions on processing fluency.

#### *4.5.4 Investor numeracy*

I measure the numerical skills of participants by asking seven multiple-choice questions used by Elliott et al. (2017) and prior accounting research from Krische (2015) (See Appendix E for the questions on numeracy). The numeracy of participants is determined by the number of correct answers out of the seven questions in this numeracy scale (Elliott et al., 2017). Elliott et al. (2017) report a median score of 4 out of 7 questions answered correctly using business students as participants.

#### *4.6 Manipulation check*

Furthermore, a manipulation check is conducted to assess whether the manipulations presented in the survey present what they are supposed to present. Ten people are asked to fill in this manipulation check survey. The survey starts with a short introduction and explanation. First the CSR report cover page containing the community based strategy manipulation is shown, and the respondent is asked to indicate whether this CSR report uses a global based strategy or a community based strategy. Second, the cover page of the CSR report with the global based strategy manipulation is shown, and again the respondent is asked whether this firm uses a global based strategy or community based strategy. After a short explanation, the three different presentation styles are shown (pictures, words, and numbers), and after the presentation of each style, the respondent is asked to indicate which of the three presentation styles is used to present the CSR information (pictures, words, or numbers).



## 5. Empirical results and analysis

### *5.1 Manipulation check*

I conduct a manipulation check in order to assess whether the manipulations of the strategy frames and presentation styles are considered to present what they are supposed to present. All ten respondents answer the questions for both manipulations in order with the intended manipulation, which shows that my manipulations are effective.

### *5.2 Descriptive statistics*

The descriptive statistics from the demographic questions reveal that the average age of this sample of investors is 37.60<sup>2</sup>. The youngest participant is 17 years old, whereas the oldest participant is 70 years old. The sample consists of 298 (97.4%) men and only 8 (2.6%) women. Looking at educational background, I see that most participants, namely 157 (51.3/%) finished a Master and/or PhD. Moreover, 277 (90.5%) of all participants finished at least college education (HBO), which seems to indicate that the participants in this sample are relatively highly educated. The different fields of education from participants is quite broad, but I see that the greatest part of the sample has an educational background in business (Finance, (International) Business administration, Accounting or Economics).

With respect to numerical ability, the average score of correct answers is 4.62. A recent study from Krische (2015) used Amazon Mturk participants as a proxy for investors, which reported a median score of 3. Elliott et al. (2017) reported of a median score of 4. The median numeracy score of this sample is 5. This median score is considerably higher than the median scores of Krische (2015) and Elliott et al. (2017), which use business students as a proxy for investors. The higher median score for the sample of investors may indicate that investors, in general, are more numerate than business students. I split the sample into two subgroups based on the numeracy score of the participants. One group is classified as less numerate investors, whereas the other group is classified as more numerate investors. I split the sample in two

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<sup>2</sup> Six participants did not fill in their age, for this reason these observations are not taken into account by computing the sample mean.

subgroups based on a median split<sup>3</sup>. The median numeracy score of 5 leads the less numerate subsample to consist of 136 participants, and 170 participants otherwise.

The number of participants assigned to each experimental condition is randomly assigned, see Table 1 for the distribution of observations per experimental setting.

**TABLE 1 – Observations per experimental setting**

Experimental setting	Number of observations
Community – Pictures	51
Community – Words	50
Community – Numbers	51
Global – Pictures	51
Global – Words	51
Global – Numbers	52
<b>Total</b>	<b>306</b>

*5.3 Hypothesis 1*

The first hypothesis predicts that investors with lower numerical skills will be more likely to invest when there is a fit in focus between the strategy frame and the presentation style used in a CSR report, compared to investors which are more numerate. The willingness to invest measure is based on three questions. The descriptive statistics on the willingness to invest measure for the full sample are presented separately for each of the three questions in Table 2 below. For a visual presentation of the descriptive statistics for the full sample, see Appendix F.

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<sup>3</sup> I also splitted the file based on the mean number of answers that can be answered correctly. Participants scores reach from 0 to 7, so all scores below 4 (0, 1, 2, 3) are considered to be less numerate investors, and all scores of 4 and above (4, 5, 6, 7) are considered to be highly numerate investors. The results do not significantly differ from the results based on the median split.

**TABLE 2** – Descriptive statistics on willingness to invest questions – full sample**Panel A: Descriptive statistics on willingness to invest – Question 1**

Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	5.43 [2.06] n = 51	5.46 [1.79] n = 50	5.22 [2.09] n = 51	5.37 [1.98] n = 152
Global	5.20 [2.20] n = 51	5.20 [1.89] n = 51	5.50 [1.54] n = 52	5.30 [1.89] n = 154
Column Mean	5.31 [2.13] n = 102	5.33 [1.83] n = 101	5.36 [1.83] n = 103	5.33 [1.93] n = 306

Note. This table presents descriptive statistics of the first question that measures investors' willingness to invest: "How attractive is XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question, an 11-point scale is used, where 0 represents 'not at all attractive' and 10 represents 'very attractive'.

**Panel B: Descriptive statistics on willingness to invest – Question 2**

Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	4.69 [2.29] n = 51	4.90 [2.11] n = 50	4.73 [2.31] n = 51	4.77 [2.22] n = 152
Global	4.76 [2.28] n = 51	4.59 [2.24] n = 51	4.65 [2.21] n = 52	4.67 [2.23] n = 154
Column Mean	4.73 [2.27] n = 102	4.74 [2.17] n = 101	4.69 [2.25] n = 103	4.72 [2.22] n = 306

Note. This table presents descriptive statistics of the second question that measures investors' willingness to invest: "What is the likelihood that you would consider XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question, an 11-point scale is used, where 0 represents 'not at all likely' and 10 represents 'very likely'.

**Panel C: Descriptive statistics on willingness to invest – Question 3**

Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	1661.51 [2080.37] n = 51	2045.76 [2086.43] n = 50	1974.25 [1940.20] n = 51	1892.84 [2029.84] n = 152
Global	1999.94 [1876.91] n = 51	2080.69 [1931.31] n = 51	1529.04 [1860.75] n = 52	1867.68 [1893.21] n = 154
Column Mean	1830.73 [1978.74] n = 102	2063.40 [1999.59] n = 101	1749.49 [1904.34] n = 103	1880.18 [1959.09] n = 306

Note. This table presents descriptive statistics of the third and last question that measures investors' willingness to invest: "Assume you have € 10,000,- to invest in this industry. How much of this € 10,000 will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). To answer this question, a sliding scale is used, on this scale participants can choose an amount between € 0,- and € 10,000,-.

With regard to the first question on willingness to invest ("How attractive is XY N.V. as a potential investment?"), the overall sample mean of this measure amounts to 5.33. For the overall sample, it does not apply that the willingness to invest is higher for experimental settings where a fit in focus exists<sup>4</sup>. The second question that measures willingness to invest is "What is the likelihood that you would consider XY N.V. as a potential investment?". The average score on this willingness to invest measure for the overall sample is 4.72. The descriptive statistics for this question also show that the average willingness to invest scores are not higher for the experimental settings where a fit in focus is present. The average scores on willingness to invest for this question even report the lowest averages for the two situations where there is a fit in focus compared to the other experimental settings where there is no fit. The descriptive statistics for the last question that measures willingness to invest by questioning how much people want to invest of their € 10.000,- in XY N.V. stocks, show an average score of € 1880.18 for the overall sample. As for the two previous questions that measure willingness to invest, the average score for this measure neither is higher for settings where a fit in focus exists. To test whether

<sup>4</sup> A fit in focus exists when a community based strategy frame is used and information on CSR performance is presented by means of pictures and when a global based strategy frame is used and CSR performance is presented by means of the presentation style words.

there is a significant difference between the willingness to invest scores of the various experimental settings, I perform an Analysis of Covariance (ANCOVA) for the overall sample, where the numeracy score is included as a covariate.

**TABLE 3 – ANCOVA model of willingness to invest – full sample**

Source of variation	SS	df	MS	F-stat	p-value
1) Strategy Frame	0.40	1	0.40	0.11	0.75
Presentation Style	0.05	2	0.02	0.01	0.99
Strategy Frame x Presentation Style	4.86	2	2.43	0.65	0.53
Numeracy	2.15	1	2.15	0.57	0.45
Error	1,126.49	299	3.77		
2) Strategy Frame	0.80	1	0.80	0.16	0.69
Presentation Style	0.29	2	0.14	0.03	0.97
Strategy Frame x Presentation Style	2.14	2	1.07	0.21	0.81
Numeracy	5.61	1	5.61	1.12	0.29
Error	1,499.33	299	5.01		
3) Strategy Frame	49,176.51	1	49,176.51	0.01	0.91
Presentation Style	6,345,313.49	2	3,172,656.74	0.84	0.43
Strategy Frame x Presentation Style	8,479,735.37	2	4,239,867.69	1.13	0.33
Numeracy	32,831,711.24	1	32,831,711.24	8.73	0.00
Error	1,124,307,984.00	299	3,769,227.37		

Note. This table presents an ANCOVA analysis on investors' willingness to invest. Willingness to invest is measured by means of three questions, 1) "How attractive is XY N.V. as a potential investment?", 2) "What is the likelihood that you would consider XY N.V. as a potential investment?", and 3) "Assume you have € 10,000,- to invest in this industry. How much of this € 10.000,- will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). The numbers before the results in the table correspond with the numbers of the questions. In my survey I manipulate the strategy frame of the CSR report by showing either a community or global based strategy, and I manipulate the presentation style that is used to present CSR performance information by showing either pictures, words or numbers.

The results of the ANCOVA are presented in Table 3 for each willingness to invest measure and all measures show an insignificant interaction effect between the strategy frame and the presentation style ( $p = 0.53$ ,  $p = 0.81$ ,  $p = 0.33$ ). The results from the ANCOVA indicate that there is no significant difference between the different experimental settings, and therefore do not support Hypothesis 1. To further elaborate the results, the sample is divided in a less numerate and more numerate subsample. This distribution is made based on a median sample split on the numeracy score of participants. The median numeracy score of the overall sample is 5. This leads the subsample of less numerate investors to exist of 136 participants, and the more numerate subsample exists of 170 participants. Table 4 presents the descriptive statistics for the questions on willingness to invest for the subsample of less numerate investors.

**TABLE 4** – Descriptive statistics on willingness to invest questions – less numerate subsample

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**Panel A:** Descriptive statistics on willingness to invest – Question 1

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Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	5.43 [2.21] n = 23	5.78 [1.68] n = 23	5.04 [2.01] n = 25	5.41 [1.98] n = 71
Global	5.32 [2.16] n = 19	5.36 [1.71] n = 22	5.38 [1.77] n = 24	5.35 [1.84] n = 65
Column Mean	5.38 [2.16] n = 42	5.58 [1.69] n = 45	5.20 [1.88] n = 49	5.38 [1.91] n = 136

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Note. This table presents descriptive statistics of the first question that measures investors' willingness to invest: "How attractive is XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question, an 11-point scale is used, where 0 represents 'not at all attractive' and 10 represents 'very attractive'.

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**Panel B: Descriptive statistics on willingness to invest – Question 2**

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Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	5.09 [2.28] n = 23	5.00 [2.17] n = 23	4.84 [2.08] n = 25	4.97 [2.15] n = 71
Global	4.79 [2.23] n = 19	4.23 [2.20] n = 22	4.67 [2.18] n = 24	4.55 [2.18] n = 65
Column Mean	4.95 [2.23] n = 42	4.62 [2.20] n = 45	4.76 [2.11] n = 49	4.77 [2.16] n = 136

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Note. This table presents descriptive statistics of the second question that measures investors' willingness to invest: "What is the likelihood that you would consider XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question, an 11-point scale is used, where 0 represents 'not at all likely' and 10 represents 'very likely'.

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**Panel C: Descriptive statistics on willingness to invest – Question 3**

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Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	2196.57 [2747.59] n = 23	2262.87 [1807.56] n = 23	2179.48 [2194.98] n = 25	2212.03 [2247.81] n = 71
Global	2102.68 [2139.15] n = 19	2408.36 [2281.42] n = 22	1837.08 [2078.90] n = 24	2108.08 [2146.28] n = 65
Column Mean	2154.10 [2462.12] n = 42	2334.00 [2030.57] n = 45	2011.78 [2123.62] n = 49	2162.35 [2192.36] n = 136

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Note. This table presents descriptive statistics of the third and last question that measures investors' willingness to invest: "Assume you have € 10,000,- to invest in this industry. How much of this € 10,000 will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). To answer this question, a sliding scale is used, on this scale participants can choose an amount between € 0,- and € 10,000,-.

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The descriptive statistics for the subsample of less numerate investors for the different willingness to invest questions do not show higher average scores on willingness to invest when a fit in focus exists between the strategy frame and presentation style. The average scores for the full sample amount to 5.38 for question 1, 4.77 for question 2, and question 3 indicates that less numerate investors on



average want to invest € 2,162.35 in XY N.V.'s stocks. These average scores are slightly higher than for the overall sample, but again are not in line with Hypothesis 1. I conduct an Analysis of Variance (ANOVA) for the subsample of less numerate investors, as well as for the subsample of more numerate investors in order to investigate if there are significant differences between experimental settings within these subgroups. The results from the ANOVA on the less numerate subsample are presented in Table 5 below. The results from the ANOVA on the more numerate subsample are presented in Table 7.

**TABLE 5 – ANOVA model of willingness to invest – less numerate subsample**

Source of variation	SS	df	MS	F-stat	p-value
1) Strategy Frame	0.15	1	15.00	0.04	0.84
Presentation Style	3.14	2	1.57	0.42	0.66
Strategy Frame x Presentation Style	3.40	2	1.70	0.46	0.64
Error	483.35	130	3.72		
2) Strategy Frame	5.80	1	5.80	1.21	0.27
Presentation Style	2.29	2	1.14	0.24	0.79
Strategy Frame x Presentation Style	2.30	2	1.15	0.24	0.79
Error	621.54	130	4.78		
3) Strategy Frame	317,030.94	1	317,030.94	0.06	0.80
Presentation Style	2,519,073.25	2	1,259,536.63	0.25	0.78
Strategy Frame x Presentation Style	1,396,913.42	2	698,456.71	0.14	0.87
Error	644,665,901.50	130	4,958,968.47		

Note. This table presents an ANOVA analysis on investors' willingness to invest. Willingness to invest is measured by means of three questions: 1) "How attractive is XY N.V. as a potential investment?", 2) "What is the likelihood that you would consider XY N.V. as a potential investment?", and 3) "Assume you have € 10,000,- to invest in this industry. How much of this € 10.000,- will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). The numbers before the results in the table correspond with the numbers of the questions. In my survey I manipulate the strategy frame of the CSR report by showing either a community or global based strategy, and I manipulate the presentation style that is used to depict CSR performance information by showing either pictures, words or numbers.

For the less numerate subsample, results also show an insignificant effect of the interaction effect between the strategy frame and presentation style for all three questions on willingness to invest ( $p = 0.64$ ,  $p = 0.79$ ,  $p = 0.87$ ). For this reason, Hypothesis 1 is rejected. In Table 6 below, the descriptive statistics for the willingness to invest questions are shown for the subsample of more numerate investors.

**TABLE 6** – Descriptive statistics on willingness to invest questions –more numerate subsample

**Panel A: Descriptive statistics on willingness to invest – Question 1**

Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	5.43 [1.97] n = 28	5.19 [1.86] n = 27	5.38 [2.19] n = 26	5.33 [1.99] n = 81
Global	5.13 [2.25] n = 32	5.07 [2.03] n = 29	5.61 [1.34] n = 28	5.26 [1.93] n = 89
Column Mean	5.27 [2.11] n = 60	5.13 [1.94] n = 56	5.50 [1.79] n = 54	5.29 [1.95] n = 170

Note. This table presents descriptive statistics of the first question that measures investors' willingness to invest: "How attractive is XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question, an 11-point scale is used, where 0 represents 'not at all attractive' and 10 represents 'very attractive'.

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**Panel B: Descriptive statistics on willingness to invest – Question 2**

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Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	4.36 [2.28] n = 28	4.81 [2.10] n = 27	4.62 [2.55] n = 26	4.59 [2.29] n = 81
Global	4.75 [2.34] n = 32	4.86 [2.26] n = 29	4.64 [2.28] n = 28	4.75 [2.27] n = 87
Column Mean	4.57 [2.30] n = 60	4.84 [2.16] n = 56	4.63 [2.39] n = 54	4.68 [2.28] n = 170

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Note. This table presents descriptive statistics of the second question that measures investors' willingness to invest: "What is the likelihood that you would consider XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question an 11-point scale is used, where 0 represents 'not at all likely' and 10 represents 'very likely'.

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**Panel C: Descriptive statistics on willingness to invest – Question 3**

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Strategy Frame	Presentation Style			
	Pictures	Words	Numbers	Total
Community	1222.00 [1191.32] n = 28	1860.81 [2315.66] n = 27	1776.92 [1679.54] n = 26	1613.06 [1785.00] n = 81
Global	1938.94 [1736.26] n = 32	1832.10 [1615.12] n = 29	1265.00 [1643.73] n = 28	1692.10 [1675.59] n = 89
Column Mean	1604.37 [1537.37] n = 60	1845.95 [1965.48] n = 56	1511.48 [1665.44] n = 54	1654.44 [1723.89] n = 170

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Note. This table presents descriptive statistics of the third and last question that measures investors' willingness to invest: "Assume you have € 10,000,- to invest in this industry. How much of this € 10,000 will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). To answer this question, a sliding scale is used, on this scale participants can choose an amount between € 0,- and € 10,000,-.

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The descriptive statistics for willingness to invest for the more numerate subsample do neither show higher averages for experimental settings where there exists a fit in focus on a consistent base. In contrast to Elliott et al. (2017) the average scores on willingness to invest in my sample do not show specifically lower average scores for experimental settings where a fit in focus is present. Therefore, the

prediction that more numerate investors are less sensitive to a fit in focus is not supported by these descriptive statistics. In table 7 the results for the ANOVA for the more numerate subsample are shown.

**TABLE 7 – ANOVA model of willingness to invest – more numerate subsample**

Source of variation	SS	df	MS	F-stat	p-value
1) Strategy Frame	0.18	1	0.18	0.05	0.83
Presentation Style	3.77	2	1.89	0.49	0.62
Strategy Frame x Presentation Style	2.00	2	1.00	0.26	0.77
Error	637.13	164	3.89		
2) Strategy Frame	1.03	1	1.03	0.19	0.66
Presentation Style	2.49	2	1.24	0.23	0.79
Strategy Frame x Presentation Style	1.22	2	0.61	0.12	0.89
Error	870.53	164	5.31		
3) Strategy Frame	146,161.86	1	146,161.86	0.05	0.83
Presentation Style	3,345,241.85	2	1,672,620.93	0.56	0.57
Strategy Frame x Presentation Style	10,947,080.93	2	5,473,540.47	1.84	0.16
Error	487,704,176.50	164	2,973,805.95		

Note. This table presents an ANOVA analysis on investors' willingness to invest. Willingness to invest is measured by means of three questions: 1) "How attractive is XY N.V. as a potential investment?", 2) "What is the likelihood that you would consider XY N.V. as a potential investment?", and 3) "Assume you have € 10,000,- to invest in this industry. How much of this € 10.000,- will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). The numbers before the results in the table correspond with the numbers of the questions. In my survey I manipulate the strategy frame of the CSR report by showing either a community or global based strategy, and I manipulate the presentation style that is used to depict CSR performance information by showing either pictures, words or numbers.

The results of the ANOVA for the more numerate subsample show an insignificant interaction effect between the strategy frame and presentation style for all three willingness to invest measures ( $p = 0.77$ ,  $p = 0.89$ ,  $p = 0.16$ ). These findings are consistent with the findings from Elliott et al. (2017), which also find an insignificant interaction effect between the strategy frame and presentation style for the more numerate subsample. The results from the ANOVA analysis suggest that more numerate investors are not influenced by different combinations of strategy frames and presentation styles.

#### *5.4 Hypothesis 2*

The second hypothesis predicts that when there is a fit in focus between the strategy frame and the presentation style, investors are more willing to invest. Based on research from Elliott et al. (2017), I predict that this increased willingness to invest is due to subjective feelings of processing fluency, which lead to more positive affective evaluations and feelings that the information provided is reliable, which in turn lead to a higher willingness to invest. This prediction can be tested by using a path model as used in Elliott et al. (2017) (see Appendix D). However, as the results from Hypothesis 1 show an insignificant effect between strategy frame and presentation style, Hypothesis 2 cannot be supported. In order to include a mediator in a model, the effect of the first independent variable (strategy frame x presentation effect) should have a significant effect on the dependent variable (willingness to invest). After performing a simple regression, I find that this primary relation is not significant. For this reason, I am unable to use a path model to test the second hypothesis. To elaborate on Hypothesis 2, descriptive statistics for the measures of processing fluency, affect, and reliance on the information provided, are shown in Table 8. Furthermore, in Table 9 I provide Pearson correlations to show the associations between the different variables.

**TABLE 8** – Descriptive statistics on - Fluency, Affect, and Reliance**Panel A: Descriptive statistics on Fluency, Affect, and Reliance – full sample**

Strategy Frame		Presentation Style			
		Pictures	Words	Numbers	Total
Community	Fluency	7.47 [1.74]	6.81 [1.94]	7.17 [1.68]	7.15 [1.79]
	Affect	5.92 [1.26]	6.40 [1.55]	6.27 [1.74]	6.20 [1.53]
	Reliance	5.20 [1.87]	5.58 [2.42]	5.45 [2.15]	5.41 [2.15]
		n = 51	n = 50	n = 51	n = 152
Global	Fluency	7.48 [1.48]	7.00 [2.25]	7.51 [1.59]	7.33 [1.81]
	Affect	6.31 [1.59]	6.39 [1.75]	6.39 [1.77]	6.36 [1.69]
	Reliance	5.25 [2.08]	5.65 [2.12]	5.63 [2.21]	5.51 [2.13]
		n = 51	n = 51	n = 52	n = 154
Total	Fluency	7.47 [1.60]	6.90 [2.09]	7.34 [1.63]	7.24 [1.80]
	Affect	6.12 [1.44]	6.39 [1.64]	6.33 [1.75]	6.28 [1.61]
	Reliance	5.23 [1.97]	5.61 [2.21]	5.54 [2.17]	5.46 [2.14]
		n = 102	n = 101	n = 103	n = 306

Note. This table presents descriptive statistics of variables that measure Fluency, Affect and Reliance. Processing fluency is measured by three questions that measure the extent to which participants experienced the CSR report to be 1) easy to process, 2) difficult to understand (reverse-scored), and 3) easy to read (Elliott et al., 2017). These questions are combined into one single measure of processing fluency, by using the average score of these three questions. Affective evaluations are measured by four questions which measure the extent to which participants are 1) happy, 2) upset (reverse-scored), 3) disappointed (reverse-scored), and 4) pleased with the information provided in the CSR report (Elliott et al., 2017). This measure is also combined into a single measure, by using the average of the four questions. Reliance on information is measured by a question that measures the extent to which participants can rely on the information (Elliott et al., 2017). These questions are all answered by means of an 11-point Likert-scale.



**Panel B:** Descriptive statistics on Fluency, Affect, and Reliance – less numerate subsample

Strategy Frame		Presentation Style			
		Pictures	Words	Numbers	Total
Community	Fluency	7.16 [1.95]	6.65 [1.85]	6.73 [1.86]	6.85 [1.87]
	Affect	5.91 [1.09]	6.15 [1.48]	5.62 [1.92]	5.89 [1.54]
	Reliance	5.43 [1.31] n = 23	5.61 [2.27] n = 23	5.28 [2.01] n = 25	5.44 [1.89] n = 71
Global	Fluency	6.96 [1.36]	7.15 [1.57]	7.01 [1.63]	7.05 [1.51]
	Affect	6.22 [1.44]	6.98 [1.48]	5.93 [1.95]	6.37 [1.70]
	Reliance	5.74 [1.79] n = 19	5.64 [1.73] n = 22	5.42 [2.48] n = 24	5.58 [2.03] n = 65
Total	Fluency	7.07 [1.69]	6.90 [1.72]	6.87 [1.74]	6.94 [1.71]
	Affect	6.05 [1.26]	6.56 [1.52]	5.77 [1.92]	6.12 [1.63]
	Reliance	5.57 [1.53] n = 42	5.62 [2.00] n = 45	5.35 [2.32] n = 49	5.51 [1.95] n = 136

Note. This table presents descriptive statistics of variables that measure Fluency, Affect and Reliance. Processing fluency is measured by three questions that measure the extent to which participants experienced the CSR report to be 1) easy to process, 2) difficult to understand (reverse-scored), and 3) easy to read (Elliott et al., 2017). These questions are combined into one single measure of processing fluency, by using the average score of these three questions. Affective evaluations are measured by four questions which measure the extent to which participants are 1) happy, 2) upset (reverse-scored), 3) disappointed (reverse-scored), and 4) pleased with the information provided in the CSR report. (Elliott et al., 2017). This measure is also combined into a single measure, by using the average of the four questions. Reliance on information is measured by a question that measures the extent to which participants can rely on the information (Elliott et al., 2017). These questions are all answered by means of an 11-point Likert-scale.

**Panel C:** Descriptive statistics on Fluency, Affect, and Reliance – more numerate subsample

Strategy Frame		Presentation Style			
		Pictures	Words	Numbers	Total
Community	Fluency	7.73 [1.53]	6.94 [2.03]	7.59 [1.39]	7.42 [1.69]
	Affect	5.93 [1.41]	6.61 [1.61]	6.90 [1.29]	6.47 [1.49]
	Reliance	5.00 [2.23] n = 28	5.56 [2.58] n = 27	5.62 [2.30] n = 26	5.38 [2.36] n = 81
Global	Fluency	7.78 [1.48]	6.89 [2.67]	7.93 [1.46]	7.54 [1.97]
	Affect	6.37 [1.69]	5.94 [1.82]	6.79 [1.52]	6.35 [1.70]
	Reliance	4.97 [2.21] n = 32	5.66 [2.41] n = 28	5.82 [1.96] n = 29	5.46 [2.21] n = 89
Total	Fluency	7.76 [1.49]	6.91 [2.36]	7.77 [1.42]	7.48 [1.84]
	Affect	6.16 [1.57]	6.26 [1.74]	6.84 [1.40]	6.41 [1.60]
	Reliance	4.98 [2.20] n = 60	5.61 [2.47] n = 56	5.72 [2.11] n = 54	5.42 [2.28] n = 170

Note. This table presents descriptive statistics of variables that measure Fluency, Affect and Reliance. Processing fluency is measured by three questions that measure the extent to which participants experienced the CSR report to be 1) easy to process, 2) difficult to understand (reverse-scored), and 3) easy to read (Elliott et al., 2017). These questions are combined into one single measure of processing fluency, by using the average score of these three questions. Affective evaluations are measured by four questions which measure the extent to which participants are 1) happy, 2) upset (reverse-scored), 3) disappointed (reverse-scored), and 4) pleased with the information provided in the CSR report (Elliott et al., 2017). This measure is also combined into a single measure, by using the average of the four questions. Reliance on information is measured by a question that measures the extent to which participants can rely on the information (Elliott et al., 2017). These questions are all answered by means of an 11-point Likert-scale.

**TABLE 9 – Pearson correlations for Processing fluency, Affect, Reliance, and Willingness to invest questions**

**Panel A: Pearson correlations – Question 1**

	(1)	(2)	(3)	(4)
(1) Processing fluency	1			
(2) Affect	0.35***	1		
(3) Reliance	0.26***	0.47***	1	
(4) Willingness to invest	0.11	0.29***	0.38***	1

Note. This table presents pairwise Pearson correlations. \*\* (\*\*\*) denotes significance levels of 0.05 (0.01). Processing fluency is measured by three questions that measure the extent to which participants experienced the CSR report to be 1) easy to process, 2) difficult to understand (reverse-scored), and 3) easy to read (Elliott et al., 2017). These questions are combined into one single measure of processing fluency, by using the average score of these three questions. Affective evaluations are measured by four questions which measure the extent to which participants are 1) happy, 2) upset (reverse-scored), 3) disappointed (reverse-scored), and 4) pleased with the information provided in the CSR report (Elliott et al., 2017). This measure is also combined into a single measure, by using the average of the four questions. Reliance on information is measured by a question that measures the extent to which participants can rely on the information (Elliott et al., 2017). Willingness to invest in this table is measured by the question: “How attractive is XY N.V. as a potential investment?” (Elliott et al., 2017). All questions are answered on an 11-point Likert-scale.

**Panel B: Pearson correlations – Question 2**

	(1)	(2)	(3)	(4)
(1) Processing fluency	1			
(2) Affect	0.35***	1		
(3) Reliance	0.26***	0.47***	1	
(4) Willingness to invest	0.16***	0.28***	0.35***	1

Note. This table presents pairwise Pearson correlations. \*\* (\*\*\*) denotes significance levels of 0.05 (0.01). Processing fluency is measured by three questions that measure the extent to which participants experienced the CSR report to be 1) easy to process, 2) difficult to understand (reverse-scored), and 3) easy to read (Elliott et al., 2017). These questions are combined into one single measure of processing fluency, by using the average score of these three questions. Affective evaluations are measured by four questions which measure the extent to which participants are 1) happy, 2) upset (reverse-scored), 3) disappointed (reverse-scored), and 4) pleased with the information provided in the CSR report (Elliott et al., 2017). This measure is also combined into a single measure, by using the average of the four questions. Reliance on information is measured by a question that measures the extent to which participants can rely on the information (Elliott et al., 2017). Willingness to invest in this table is measured by the question: “What is the likelihood that you would consider XY N.V. as a potential investment?” (Elliott et al., 2017). All questions are answered on an 11-point Likert-scale.

**Panel B: Pearson correlations – Question 3**

	(1)	(2)	(3)	(4)
(1) Processing fluency	1			
(2) Affect	0.35***	1		
(3) Reliance	0.26***	0.47***	1	
(4) Willingness to invest	0.03	0.13**	0.21***	1

Note. This table presents pairwise Pearson correlations. \*\* (\*\*\*) denotes significance levels of 0.05 (0.01). Processing fluency is measured by three questions that measure the extent to which participants experienced the CSR report to be 1) easy to process, 2) difficult to understand (reverse-scored), and 3) easy to read (Elliott et al., 2017). These questions are combined into one single measure of processing fluency, by using the average score of these three questions. Affective evaluations are measured by four questions which measure the extent to which participants are 1) happy, 2) upset (reverse-scored), 3) disappointed (reverse-scored), and 4) pleased with the information provided in the CSR report (Elliott et al., 2017). This measure is also combined into a single measure, by using the average of the four questions. Reliance on information is measured by a question that measures the extent to which participants can rely on the information (Elliott et al., 2017). Willingness to invest in this table is measured by the question: "Assume you have € 10,000,- to invest in this industry. How much of this € 10,000 will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). All questions are answered on an 11-point Likert-scale, except for the willingness to invest measure, which is answered by using an 10.001-point sliding scale.

The descriptive statistics on the variables Fluency, Affect and Reliance, show average scores of respectively 7.24, 6.28, and 5.46 for the overall sample. With regard to the descriptive statistics on these variables for the less numerate subsample, the average scores of these variables are not higher for settings where there is a fit in focus between the strategy frame and presentation style as predicted in Hypothesis 2. These descriptive statistics therefore do not support the prediction of Hypothesis 2, which suggests that values for processing fluency, affect and reliance are higher for settings where a fit in focus exists, compared to when no fit in focus exists. For the descriptive statistics of the more numerate sample, I am also unable to find a consistent pattern. The Pearson correlations at large, show that the variables are weakly but significantly associated with each other, except for the correlations between processing fluency and willingness to invest for Panel A and Panel C.

### 5.5 Hypothesis 3

Hypothesis 3 predicts that more numerate investors are more willing to invest when information on CSR performance is presented by means of numbers. To test this assumption, I perform an ANOVA analysis on the more numerate subsample, where presentation style is included as manipulated variable. The results of the ANOVA are presented in Table 10 below.

**TABLE 10** – ANOVA model of willingness to invest – more numerate subsample

Source of variation	SS	df	MS	F-stat	p-value
1) Presentation Style	3.94	2	1.97	0.51	0.60
Error	639.36	167	3.83		
2) Presentation Style	2.33	2	1.16	0.22	0.80
Error	872.36	167	5.23		
3) Presentation Style	3,307,829.66	2	1,653,914.83	0.55	0.58
Error	498,924,454.30	167	2,987,571.58		

Note. This table presents an ANOVA analysis on investors' willingness to invest. Willingness to invest is measured by means of three questions: 1) How attractive is XY N.V. as a potential investment?, 2) What is the likelihood that you would consider XY N.V. as a potential investment?, and 3) Assume you have € 10,000,- to invest in this industry. How much of this € 10.000,- will you invest in XY N.V.'s stocks?. The numbers before the results in the table correspond with the numbers of the questions. In this ANOVA only the manipulation of presentation style is included to measure if there is any difference between the means of different presentation styles for the more numerate subsample.

The results from the ANOVA for the more numerate subsample reveal no significant effect of presentation style for any of the willingness to invest measures. This indicates that there is no significant difference between the different presentation styles and investors' willingness to invest. These results therefore suggest that more numerate investors are not sensitive for different presentation styles of CSR information. For this reason, Hypothesis 3, which predicts that more numerate investors are more willing to invest when information on CSR is provided by means of numbers, is rejected.

In summary, the results of this thesis do not provide any evidence that investors react to different presentation styles of CSR disclosures, and are therefore not in line with prior research from Elliott et al. (2017). A possible explanation for the differences in results may be that investors, on average, seem more numerate than business students, which are used as participants of prior studies. As Elliott et al. (2017) find that more numerate investors are not sensitive to differences in presentation styles, and on average the numeracy skills of my sample are higher, this may be a reason that investors do not seem to react to different presentation styles of CSR information. Furthermore, since prior research presented information by using different presentation styles and highlighted the manipulated one, this may result in different reactions towards the presented information. Another major difference between prior research and my study, is that I do not present any background information on the firm's industry, neither do I present financial information. This approach allows me to measure the direct reactions to a specific strategy frame or presentation style, without participants being influenced by different presentation styles, or information different from the firm's CSR strategy. As this approach is different from prior research, and deviates slightly from real world investment decisions, this may lead to different results. Besides, these results may reveal that Dutch investors do not value information on CSR on the same level than investors from other countries, or that the severity of CSR problems in the Netherlands may be considered less severe compared to other countries.

## 6. Conclusion

The purpose of this thesis is to investigate whether different presentation styles of CSR information have an influence on investors' willingness to invest in a firm's stocks. As legislation on CSR is rising, and stakeholders are increasingly using non-financial information together with financial information when making investment decisions, the attention for CSR activities increased. By engaging in CSR activities, firms can obtain several benefits. However, prior research finds that stakeholders have often feelings of skepticism about presented CSR information and perceive the information as unreliable (Du et al., 2010; Hopkinson & Whitaker, 1999). A key challenge for firms is therefore to effectively present information on CSR activities in order to reduce stakeholder skepticism and increase the perceived reliability of the information provided. For this reason, it is important to investigate how information on CSR performance can be presented effectively. The results of this thesis are relevant to preparers of CSR reports and standard setters, by offering them deeper insights on the effects of different presentation styles of CSR information. The literature on presentation styles of CSR disclosures is relatively scarce, therefore this thesis adds value to the existing literature by providing new insights.

In order to find an answer to my research question, I investigate whether the use of different presentation styles in communicating CSR information has an influence on investor's willingness to invest in a firm's stocks. As numerical skills seem to influence the intensity of investors' reactions, I include numerical skills as a variable.

With respect to a firm's CSR strategy, I assume that firms either adopt a community based or a global based strategy and that information on CSR is presented by means of pictures, words or numbers. According to the Construal Level Theory there exists a fit in focus when a community strategy is used and information is presented by means of pictures, and when a global strategy is used and firms use words to depict CSR information. Based on prior research from Elliott et al. (2017), I predict that investors with lower numerical skills will be more willing to invest in a firm's stocks when a fit in focus exists between the strategy frame and the presentation style firms use to communicate information on CSR. I expect that this increased willingness to invest when a fit in focus exists, is derived from feelings of processing fluency, which lead to

positive affective evaluations and the feelings that the information provided is reliable, which in turn lead to a higher willingness to invest. Furthermore, I predict that more numerate investors will be more willing to invest when information on CSR is presented by means of numbers.

To test my hypotheses, I conducted a survey under investors, where I manipulated the strategy frame (community based strategy versus global based strategy) and the presentation style (pictures, words, or numbers). Investors were shown one of the experimental settings, whereafter they responded to questions which measured their willingness to invest, feelings of processing fluency, affective reactions, reliance on the information provided, and lastly tested their numerical skills. The sample consists of 306 participants, which are relatively highly educated, and score decently higher on the numeracy scale compared to studies that used business students as participants.

The results of Hypothesis 1, which predicts that investors with lower numerical skills are more willing to invest when a fit in focus is present between the strategy frame and presentation style, compared to more numerate investors, do not support this Hypothesis. The interaction effect between the strategy frame and presentation style turns out to be insignificant for all three measures of willingness to invest, for the overall sample, as well as for the less numerate- and more numerate subsample. The prediction that higher willingness to invest is derived from feelings of subjective processing fluency, more positive affective reactions and reliance on the information presented is rejected. The Pearson correlations for these variables show that there is a weak but significant association between these variables. The results of Hypothesis 3, which predicts that more numerate investors are more willing to invest when information is presented by means of numbers, provide no evidence in line with this hypothesis. The results of the ANOVA analysis show that the effect of presentation style for the more numerate subsample is insignificant. Therefore Hypothesis 3 is also rejected. In contrast to prior research and my predicted hypotheses, the results of my thesis do not reveal any significant evidence that investors react to different presentation styles of CSR information.

An explanation for the differences in results compared to prior research, may be that investors, on average, seem more numerate than business students. As Elliott et al. (2017) find that more numerate investors are less sensitive to framing effects, this may be reflected in the results of my thesis.



A limitation of my study is that I do not use different presentation styles alternately, but I only present information by one specific presentation style. In real world CSR reports, these presentation styles are used interchangeably, which causes my manipulations to differ from real world situations. Another limitation of this thesis is, that I do not present any background information, neither do I present any financial information. In real investment decisions, information on CSR is considered together with other (financial) information. Although these manipulations do not completely represent reality, this approach allows me to measure the direct reactions caused by the manipulations without participants being influenced by other presentation styles, or information other than on the CSR strategy. Besides, these results may reveal that Dutch investors do not value information on CSR on the same level than investors from other countries do, or that the severity of CSR problems in the Netherlands may be considered less severe compared to other countries.

This thesis adds to literature, as it is one of the few studies that uses investors as participants of an experiment. The results of this thesis provide new insights regarding the numeracy of investors. In addition, contrary to previous research, the results suggest that investors do not react to different presentation styles of CSR information. These findings are of value for firms that provide CSR reports, as these firms may shift their focus from presentation styles when creating a CSR report to more content related issues. For regulators and standard setters, these results imply that they may look for different manners to present information on CSR performance more clearly and effectively.

As the results of this study are not in line with the predictions, several questions remain unanswered. An opportunity for future research is therefore to investigate why the results of this study are different from the results of prior research.

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## Appendix A: Examples presentation style

### Panel A: Example CSR performance presentation by means of numbers<sup>5</sup>:

Breakdown of energy consumption						
In kilotonne CO <sub>2</sub> e	2014		2013		2012	
Coverage (% of employees)	92		81		n/a <sup>(1)</sup>	
	MWH (x 1.000)	Kilotonne	MWH (x 1.000)	Kilotonne	MWH (x 1.000)	Kilotonne
Electricity	67	36	78	43	101	60
Renewable energy	227	0	228	0	235	0
Natural gas	93	21	102	24	103	21
Fuel oil	5	1	7	2	9	2
District heating	17	4	23	5	23	2
<b>Total energy</b>	<b>409</b>	<b>62</b>	<b>438</b>	<b>74</b>	<b>471</b>	<b>85</b>
<b>Total energy per FTE<sup>(2)</sup></b>	<b>7.9</b>	<b>1.2</b>	<b>8.5</b>	<b>1.4</b>	<b>n/a<sup>(1)</sup></b>	<b>n/a<sup>(1)</sup></b>

(1) For 2012 no standalone relative ING Bank data is available.

(2) Total energy per FTE in MWH and in tonne.

### Panel B: Example CSR performance presentation by means of words<sup>6</sup>:

#### OUR PERFORMANCE

The direct GHG emissions from facilities that we operate were 70 million tonnes on a CO<sub>2</sub>-equivalent basis in 2016, down from 72 million tonnes of CO<sub>2</sub> equivalent in 2015.

Our 2015 base year GHG emissions were recalculated from 72 million to 76 million tonnes CO<sub>2</sub> equivalent to reflect the impact of the former BG facilities and other structural changes. Therefore, on a like-to-like basis, the direct GHG emissions have decreased from 76 million tonnes in 2015 to 70 million in 2016.

Our overall GHG emissions decreased for the following reasons:

- overall reduction in flaring;
- Quest carbon capture and storage project in Canada's oil sands safely injecting more than 1 million tonnes of CO<sub>2</sub> per year;
- divestments, for example in Nigeria and the UK; and
- operational improvements across many facilities;

These decreases were partially offset by the inclusion of emissions from former BG facilities in our inventory as of February 1, 2016.

In 2016, around 45% of our GHG emissions came from the refineries and chemical plants in our Downstream business. The production of oil, gas and gas-to-liquids products accounted for slightly more than 50% of our GHG emissions, and our shipping activities for less than 2%. We continue to work on improving operational performance and energy efficiency to manage GHG emissions.

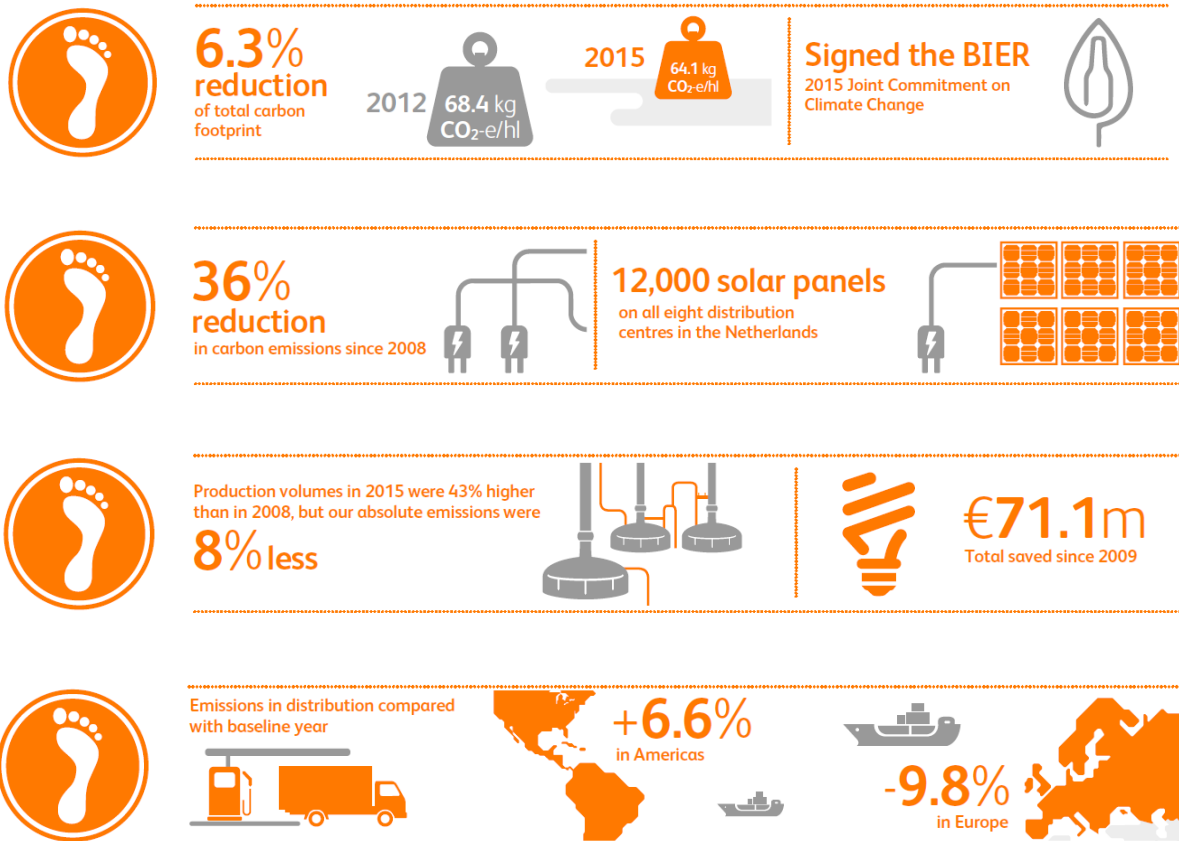
The indirect GHG emissions from the energy that we purchased (electricity, heat and steam) increased to 11 million tonnes on a CO<sub>2</sub>-equivalent basis in 2016, from 9 million tonnes in 2015, mainly due to the inclusion of former BG facilities in our portfolio. These emissions were calculated using a market-based approach, as defined by the World Resources Institute GHG Protocol.

We estimate that the CO<sub>2</sub> emissions from the use of our refinery and natural gas products by others were around 600 million tonnes in 2016, which represents less than 2% of the world's emissions.

<sup>5</sup> Reprinted from "ING Group Sustainability Annex 2014", by ING Group, 2014. Retrieved from: <https://www.ing.com/ING-in-Society/Sustainability/Data-center/Sustainability-reports-archive.htm>

<sup>6</sup> Reprinted from "Royal Dutch Shell plc Sustainability Report 2016", by Royal Dutch Shell plc, 2016. Retrieved from: <http://www.shell.com/sustainability/sustainability-reporting-and-performance-data/sustainability>

**Panel C:** Example CSR performance presentation by means of pictures<sup>7</sup>:



<sup>7</sup> Reprinted from “Sustainability Report 2015 Brewing a better world”, by Heineken N.V., 2015. Retrieved from <http://www.theheinekencompany.com/media/media-releases/press-releases/2016/04/2001027>

## Appendix B: Strategy frame manipulations

Panel A: Community based strategy frame<sup>8</sup>

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# Corporate Social Responsibility Report 2016

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**Community Responsibility**  
Improving our Community

XY N.V.



**What we stand for**

At XY N.V., we recognize that our impact is greater than the products we provide. Our goals are to be a great place to come to work each day, a thoughtful steward of the environment and a caring citizen in our neighborhoods. The 2016 XY N.V. CSR report about our Community Responsibility provides an overview of our performance toward these environmental and social goals.

•••••  
**Areas of Commitment to Community  
Responsibility**

- Waste Management
  - Water Conservation
  - Carbon Footprint Management
  - Volunteerism
- 

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<sup>8</sup> Adapted from “How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments”, by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.



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# Corporate Social Responsibility Report 2016

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**Global Responsibility**  
Improving our World

**XY N.V.**



### What we stand for

At XY N.V., we recognize that our impact is greater than the products we provide. Our goals are to be a great place to be employed, a thoughtful steward of the environment and a caring citizen in our world. The 2016 XY N.V. CSR Report about our Global Responsibility provides an overview of our performance toward these environmental and social goals.

### Areas of Commitment to Global Responsibility

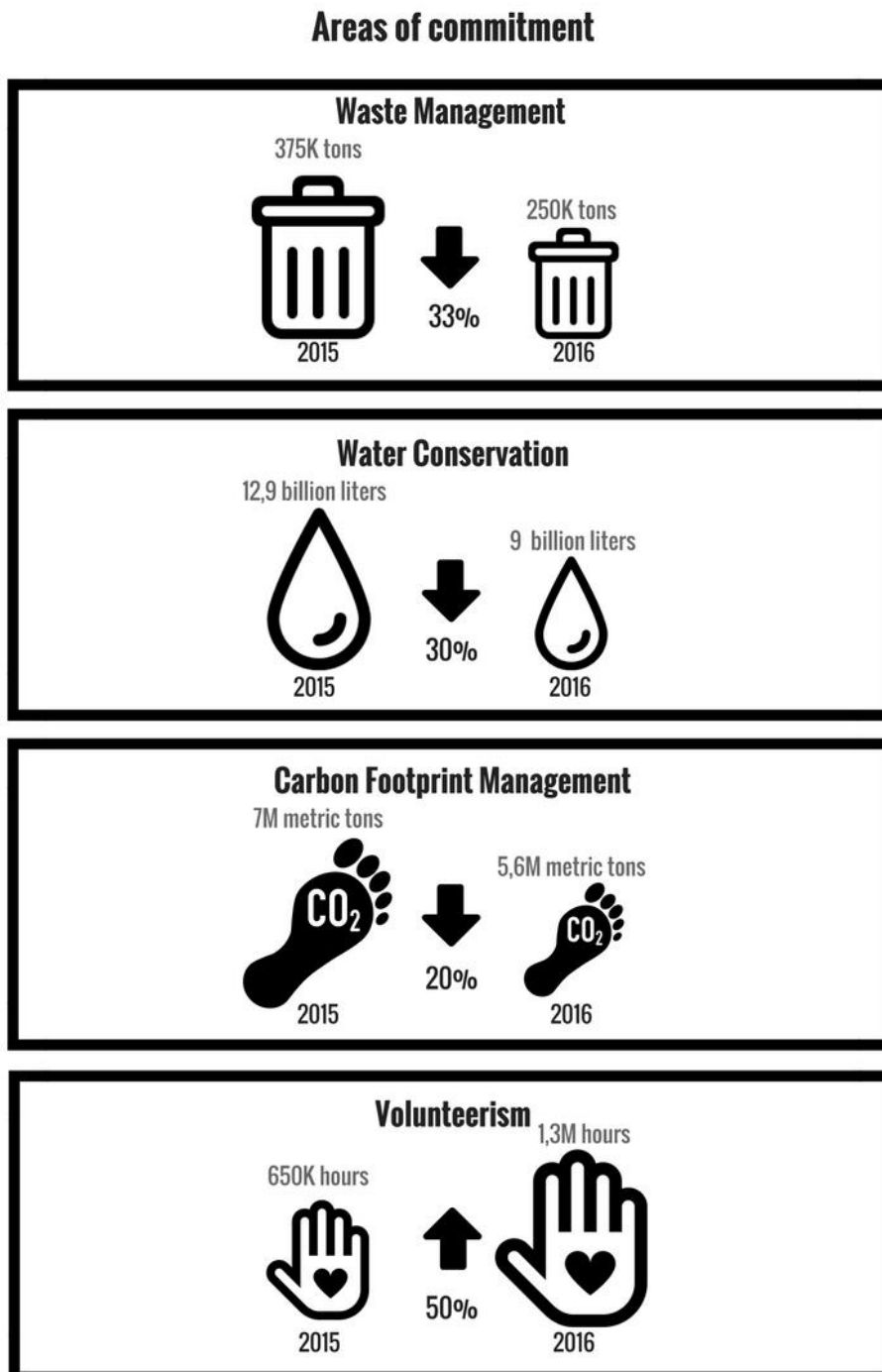
- Waste Management
- Water Conservation
- Carbon Footprint Management
- Volunteerism

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<sup>8</sup> Adapted from “How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments”, by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.

## Appendix C: Presentation style manipulations

**Panel A:** Presentation style pictures<sup>8</sup>



<sup>8</sup> Adapted from “How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments”, by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.

### **Areas of commitment**

#### **Waste Management**

In 2015 XY N.V. produced a total amount of 375.000 tons of waste. The efforts to reduce waste production led to a waste production decrease of one third of the total waste production in 2015, which means a reduction of 125.000 tons of waste. By 2016 XY N.V. reduced its total waste production to 250.000 tons of waste.

#### **Water Conservation**

In 2015 XY N.V.'s water usage amounted to 12,9 billion liters of water. The efforts to reduce the water usage of the company led to a 30% decrease of water used in 2016 relatively to 2015. By 2016 XY N.V. reduced its water usage to 9 billion liters of water, which means a decrease of 3,9 billion of liters relatively to the water used in 2015.

#### **Carbon Footprint Management**

In 2015 XY N.V. produced a carbon emission of 7 million metric tons. The efforts to reduce the carbon emission led to a 20% decrease of carbon, which means a reduction of 1,4 millions metric tons of carbon emission. By 2016 the carbon emission of XY N.V. amounted to 5,6 millions metric tons.

#### **Volunteerism**

In 2015 XY N.V. spent 650.000 hours on volunteering. The efforts to spend more time on volunteering led to a doubled amount of volunteering hours in 2016, which means an increase of 650.000 hours compared to 2015. By 2016 XY N.V. increased its total time spent on volunteering to 1,3 million hours.

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<sup>8</sup> Adapted from "How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments", by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.

### Areas of commitment

#### Waste Management

	Waste production in tons
2015	375.000
2016	250.000
2016-2015	-125.000
Difference in %	-33%

#### Water Conservation

	Water usage in liters
2015	12.900.000.000
2016	9.000.000.000
2016-2015	-3.900.000.000
Difference in %	-30%

#### Carbon Footprint Management

	CO <sub>2</sub> emission in metric tons
2015	7.000.000
2016	5.600.000
2016-2015	-1.400.000
Difference in %	-20%

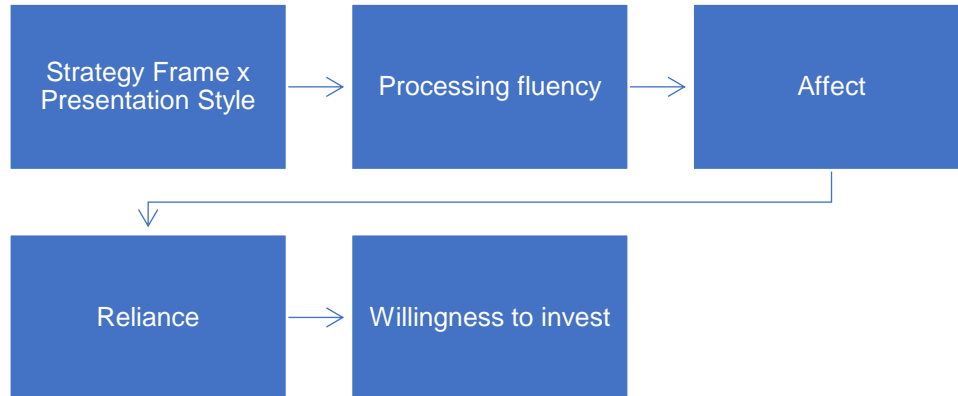
#### Volunteerism

	Volunteering in hours
2015	650.000
2016	1.300.000
2016-2015	+650.000
Difference in %	+50%

<sup>8</sup> Adapted from "How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments", by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.

## Appendix D: Path model - Hypothesis 2

**FIGURE 2:** Path model – Predicted effects



Note. Reprinted from “How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments”, by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.

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## Appendix E: Numeracy questions<sup>9</sup>

1. If we roll a six-sided fair dice 1.000 times, how many times will the dice come up even (2,4 or 6)?

- 50 times out of 1.000 (A)
- 100 times out of 1.000 (B)
- 500 times out of 1.000 (C)
- 505 times out of 1.000 (D)
- None of the above (E)
- Don't know (F)

2. In a lottery, the chances of winning € 10,- are 1%. How many people would win € 10,- if 1.000 people each buy one lottery ticket?

- 1 person out of 1.000 (A)
- 10 people out of 1.000 (B)
- 100 people out of 1.000 (C)
- 990 people out of 1.000 (D)
- None of the above (E)
- Don't know (F)

3. The chance of winning a vacation in a lottery is 1 in 1.000. What percent of tickets wins a vacation?

- 0,001% (A)
- 0,1% (B)
- 1% (C)
- 10% (D)
- None of the above (E)
- Don't know (F)

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<sup>9</sup> Reprinted from "How disclosure features of corporate social responsibility reports interact with investor numeracy to influence investor judgments", by Elliott, W.B., Grant, S. M., & Rennekamp, K. M., 2017, *Contemporary Accounting Research*, Advance online publication.

4. If we roll a five-sided dice 50 times, on average, how many times would this dice show an odd number (1, 3, or 5)?

- 5 out of 50 throws (A)
- 20 out of 50 throws (B)
- 25 out of 50 throws (C)
- 30 out of 50 throws (D)
- None of the above (E)
- Don't know (F)

5. Out of 1.000 individuals in a village, 500 are members of a club. Out of these 500 members in the club, 100 are men. Out of the 500 individuals that are not in the club, 300 are men. What is the probability that a randomly drawn man is a member of the club (please indicate the probability in %)?

- 10% (A)
- 20% (B)
- 25% (C)
- 40% (D)
- None of the above (E)
- Don't know (F)

6. If we roll a six-sided loaded dice, the probability that the dice shows a 6 is twice as high as the probability of each of the other numbers. On average, out of 70 throws, how many times would the dice show the number 6?

- 20 out of 70 throws (A)
- 23 out of 70 throws (B)
- 35 out of 70 throws (C)
- 40 out of 70 throws (D)
- None of the above (E)
- Don't know (F)

7. In a forest, 20% of the flowers are red, 50% brown and 30% white. A red flower is poisonous with a probability of 20%. A flower that is not red is poisonous with a probability of 5%. What is the probability that a poisonous flower in the forest is red?

- 4% (A)
- 15% (B)
- 25% (C)
- 50% (D)
- None of the above (E)
- Don't know (F)

Answers:

1.C 4.D 7.D

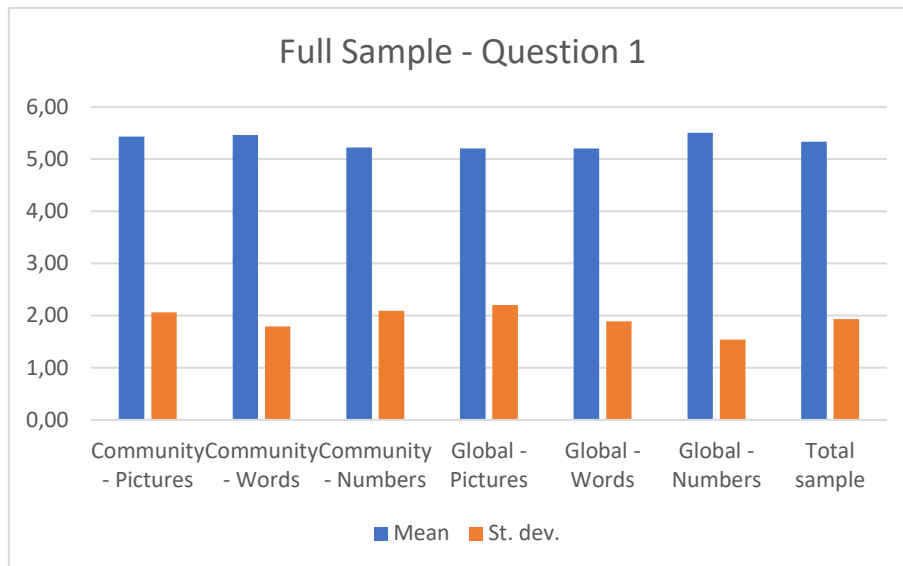
2.B 5.C

3.B 6.A



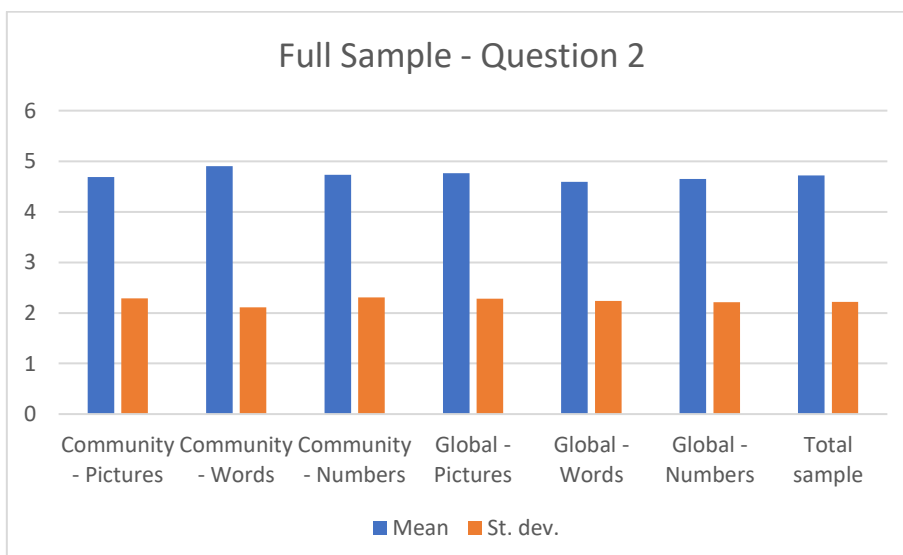
## Appendix F: Figures descriptive statistics willingness to invest – full sample

### Panel A: Descriptive statistics willingness to invest – Question 1



Note. This table presents descriptive statistics of the first question that measures investors' willingness to invest: "How attractive is XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question an 11-point scale is used, where 0 represents 'not at all attractive' and 10 represents 'very attractive'.

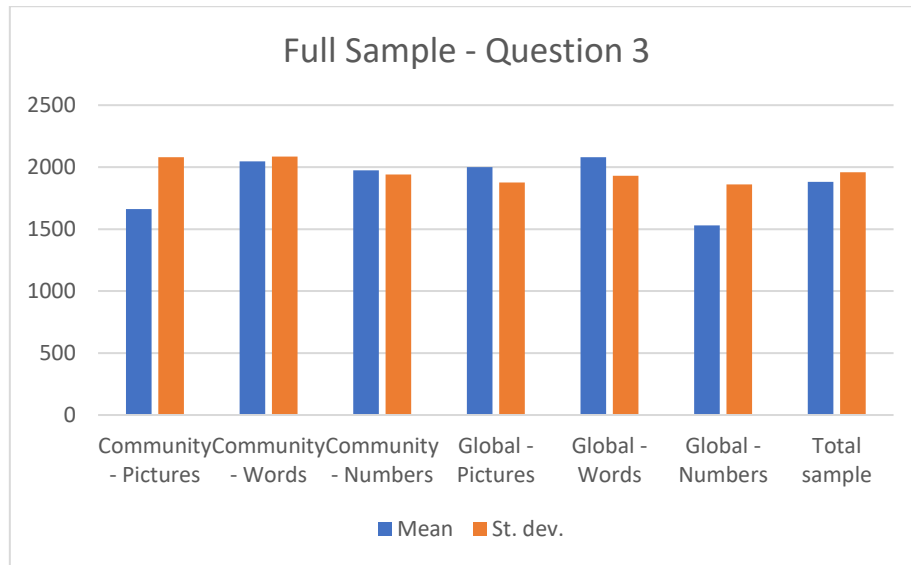
### Panel B: Descriptive statistics willingness to invest – Question 2



Note. This table presents descriptive statistics of the second question that measures investors' willingness to invest: "What is the likelihood that you would consider XY N.V. as a potential investment?" (Elliott et al., 2017). To answer this question an 11-point scale is used, where 0 represents 'not at all likely' and 10 represents 'very likely'.

**Panel C: Descriptive statistics willingness to invest – Question 3**

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Note. This table presents descriptive statistics of the third and last question that measures investors' willingness to invest: "Assume you have € 10,000,- to invest in this industry. How much of this € 10,000 will you invest in XY N.V.'s stocks?" (Elliott et al., 2017). To answer this question a sliding scale is used, on this scale participants can choose an amount between € 0,- and € 10,000,-.

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