Fall 2020

The Invisible Hurdle: Biases Investors Have Against Sustainable Investing

Kerry E. Ullman
Gettysburg College

The Invisible Hurdle: Biases Investors Have Against Sustainable Investing

Abstract

A current trend of many corporations is making it a priority to focus on becoming more socially responsible and ethical in all aspects of their businesses. Investors, on the other hand, have not been as focused on incorporating these issues into their selection criteria, especially when it comes to the issue of sustainable investing (ESG). This research tries to understand what the hidden barriers are that stop individual investors from investing sustainably. This research examines the effect of proper information on sustainable investing and the most effective communication strategies to relay this information to investors. There was a control group and two treatment groups; participants of the three online surveys were asked to answer a set of questions, and either watch a video, read a document, or neither, then answer the final set of questions. There was a significant difference in likelihood of engagement in ESG after participants received the information on ESG. And there was a marginally significant difference in the effectiveness of a written document compared to a video. These findings are important for investors in order for them to understand the importance of being properly informed and to follow the trend of being more socially responsible.

Keywords

Sustainable Investing, ESG, Cognitive Biases, Irrational Behavior, Investment Decision-making, Socially Responsible Investing

Disciplines

Business Law, Public Responsibility, and Ethics | Corporate Finance | Environmental Studies

Comments

Written for OMS 405: Irrational Behavior

The Invisible Hurdle: Biases Investors Have Against Sustainable Investing

Kerry Ullman

Gettysburg College

Abstract

A current trend of many corporations is making it a priority to focus on becoming more socially responsible and ethical in all aspects of their businesses. Investors, on the other hand, have not been as focused on incorporating these issues into their selection criteria, especially when it comes to the issue of sustainable investing (ESG). This research tries to understand what the hidden barriers are that stop individual investors from investing sustainably. This research examines the effect of proper information on sustainable investing and the most effective communication strategies to relay this information to investors. There was a control group and two treatment groups; participants of the three online surveys were asked to answer a set of questions, and either watch a video, read a document, or neither, then answer the final set of questions. There was a significant difference in likelihood of engagement in ESG after participants received the information on ESG. And there was a marginally significant difference in the effectiveness of a written document compared to a video. These findings are important for investors in order for them to understand the importance of being properly informed and to follow the trend of being more socially responsible.

Keywords: Sustainable Investing, ESG, cognitive biases, irrational behavior, investment decision-making, socially responsible investing

The Invisible Hurdle: Biases Against Sustainable Investing

Sustainable investing, also known as ESG (environmental, social, and governance), has been around since the 1960s, but has not taken off as a mainstream strategy when it comes to investing. Sustainable investing is an investment strategy that is very different from traditional or conventional investment strategies. The traditional approach is investing your money into assets that are well-known with the expectation that there will be interest earnings, dividends, and capital appreciation (Erragragui & Lagoarde-Segot, 2016). Sustainable investing is all about aligning your personal views with your investment decisions. There are two approaches to sustainable investing, a negative approach and a positive approach (Boerner, 2011). The negative approach means excluding certain investments that do not align with investors' values. An example of this would be to avoid organizations that leave a large carbon footprint, do not care about climate change, or test their products on animals. The positive approach means selecting investments that have certain ESG ratings. Every organization is given an ESG rating which is scored both internally and externally on the organization's ESG risks and how well the organization is able to manage those risks (New York Life Investments, 2019). There is an overall ESG rating and a rating for each ESG factor, environmental, social, and governance. The environmental factor means that the organization is actively trying to fight climate change, reduce carbon emissions, and even trying to incorporate renewable energy sources (Boerner, 2011). The social factor means that that organization treats its customer and employees well, there are good working conditions, and pays fair wages. The governance factor means that the company is truthful and transparent with regards to how likely they are to do anything unlawful, such as, "cooking their books" or overcompensating their CEO's at the expense of its

shareholders. With the big shift to become more ethical and transparent in all aspects of the business world, it is important that there is more research done on sustainable investing.

Evidence shows that investors want to become more socially responsible with their investments (New York Life Investments, 2019). Sustainable investing follows this trend of becoming more ethical and socially responsible, but investors are not using sustainable investing strategies when it comes time to actually making their investment decisions. This led to the overall question, "Why are investors not engaging in sustainable investing?". It is as if there is an invisible barrier that it is preventing investors from following through with sustainable investment strategies. A potential invisible barrier is lack of information and sufficient education on sustainable investing. It is very important that individual investors and investment managers are properly educated on sustainable investing. Proper education allows investors to match their investment decisions with their own personal values and beliefs and also follows the social responsibility trend. My research will explore the effects of proper education on sustainable investing and which strategy of communication on sustainable investing is most effective for education. I will look to answer the following questions: "After being fully informed on what ESG is, are investors more likely to engage in ESG?" and "Are videos or written documents more effective for persuasion on investors?"

Lack of Information and Education

Whether it is an individual investor or an investor working with an investment manager, the final decision always comes down to the investor themself. With that being said, it is important that individual investors are educated and fully informed on all aspects possible when making investment decisions. The same goes with investment managers; it is their job to be educated so they can therefore educate and advise their clients when making investment

decisions. Significant research has shown that there is a lack of proper education in sustainable investing.

In a metasynthesis of the investor impediments of ESG, Friede (2019) discusses what he found as an important hinderance for sustainable investing is that individual investors and investment managers have insufficient knowledge and/or have been wrongly educated on what ESG is. Friede points out that, "only 10% of global professionals receive formal training regarding how to consider ESG criteria in investment analysis" (2019). This is an extremely important fact. It shows that a majority of investment managers are not fully educated on what sustainable investing is, which makes sense as to why investors are not choosing to invest sustainably.

Paetzold and Busch (2014) also discuss the idea that investors have a lack of information on sustainable investing and are being wrongly educated. Paetzold and Busch conducted their own empirical study where they interviewed investors and asked them questions on what aspects they think about when setting up an investment portfolio. The study concluded that one of the barriers that prevents investors from investing sustainably is that financial advisors are withholding required information about sustainable investing from their clients. This again supports the idea that investors have a lack of information on sustainable investing. It is crucial that investors have a full understanding of sustainable investing in order for them to engage in it.

It is important to note that investors are not only incorrectly educated on what sustainable investing is and how it works, but they believe that is does not perform as well as traditional or conventional investment strategies. Friede, Busch, and Bassen (2015) analyzed more than 2,000 studies to try and find out more on the relationship between conventional and sustainable investment strategies and their performances. They found that organizations with strong ESG

ratings outperformed their non-ESG counterparts. Friede, Busch, and Bassen clearly state that sustainable investment strategies perform better than conventional strategies. They also state that it is a common myth that sustainable investing does not perform as well as conventional strategies. This study further proves that investors are wrongly educated on sustainable investing in more way than one. While Friede (2019), Paetzold and Busch (2014), and Friede, Busch, and Bassen's (2015) research proves that there is lack of proper education, none of them tested if proper education increases engagement in sustainable investing.

Although the following two studies are not specifically related to sustainable investing nor do they explicitly have to do with lack of information on sustainable investing, their overall findings support the idea of how important it is to be fully educated and informed when making investment decisions. Baker and Nofsinger (2002) provide a five step plan to try and prevent and overcome cognitive biases that influence investors decisions. The steps are: 1) Understand and avoid psychological biases 2) Identify investment objectives and constraints 3) Develop quantitative investment criteria 4) Diversify investments 5) Review and reallocate assets. Zahera and Bansal (2018) discuss another idea on how to prevent cognitive biases impacting investors decisions. Zahera and Bansal explain how with more knowledge, investors are able to make a more holistic evaluation on the investment decisions. When investors make a more informative decision, there is less of a chance for the decision to be irrational. Both of these studies show the overarching theme that investors need to be fully informed when making investment decisions.

The first and second hypotheses that will be tested in this experiment were inspired from past research by Friede (2019), Paetzold and Busch (2014), Friede, Busch, and Bassen (2015), Baker and Nofsinger (2002), and Zahera and Bansal (2018). Both hypotheses will test if the lack

of information on sustainable investing is a factor in what is preventing investors from engaging in sustainable investing. The first hypothesis will specifically look at the responses of informed vs. non-informed investors. The second hypothesis will specifically look at the responses before and after investors were informed on what sustainable investing it. The independent variable is either no treatment or the video or written document on sustainable investing. The dependent variable is the likelihood to engage in sustainable investing.

H1a: Subjects are more likely to plan to engage in sustainable investing if they received information on what sustainable investing is in a related video compared to subjects that did not receive this information.

H1b: Subjects are more likely to plan to engage in sustainable investing if they received information on what sustainable investing is in a related written document compared to subjects that did not receive this information.

H2a: Watching a video on sustainable investing will increase subjects' willingness to engage in sustainable investing in the future

H2b: Reading a written document on sustainable investing will increase subjects' willingness to engage in sustainable investing in the future.

Effective Communication

As important as it is to be educated, it is also important for investor and investment managers to know the most effective ways they themselves and their clients should receive information. Whether it is by reading a written document or watching a video, it is important for individuals to know the best way to learn about sustainable investing.

Ong and Mannan (2004) created an interactive module on automated machine tools for the manufacturing division at the National University of Singapore. Ong and Mannan researched

the effectiveness of learning by video on engineering students and found that the videos helped with understanding complex concepts. The videos also strengthened the students engagement and concentration. This study shows the positive impact videos can have on individuals. They make material easier to comprehend and keep students engaged.

Mayer and Chandler (2001) looked at the effectiveness of the leaner control-pacing with learning through videos. Leaner control-pacing is the idea that learning is improved when individuals have the power to control the pace at which they receive the information at. Control can be demonstrated through start/stop/or pause buttons that are associated with a video. Mayer and Candler conducted their own experiment where they had two groups of participants, one group had a video that ran continuously through and another video which was broken down into parts and the participants had to click "continue" in order to advance the video. The study showed that the participants who had control over the viewing of the video outperformed the participants who watched the video all the way through. The study also found that the videos reduced the load on the participants' working memory. This study found that videos have a positive impact on learning and not only do they help with memorizing information, but they also require less energy from your brain.

Connor (2009) conducted his own study where he interviewed college students with learning disabilities about their hardships during their first year in college and drew animations to present the data he collected. Although the purpose of his study is not relevant to this topic, Connor made some very insightful observations throughout his experiment on the power videos have on learning. Connor explains how videos are a blend of visual and auditory forms that present information in a manner that is easier to grasp and also increases the likelihood of being remembered. Similar to what Connor said, Hall (2005) discusses how he uses videos to help with

his students. Hall uses video clips from the famous long running cartoon, The Simpsons, to teach his economics students. He explains how the video clips keep the students engaged and interesting in learning economics. Hall either introduces a new topic and then presents a scene, or he presents a scene and then introduces a new topic. He says it helps get the students to "think like an economist." Hall also explains how it helps students to better understand and visualize the difficult economic concepts.

Zhang (2012) also introduced videos to improve learning economics with his study. Zhang starts out discussing the issue in economic courses of trying to increase engagement and the need to solve misconception problems. Zhang sent out two surveys to ask past students of economic courses what were the topics and concepts that they found confusing and/or had a difficult time grasping. Zhang then created videos for them and had economic students, tutors, and professors review them. The videos received incredibly strong feedback saying they improved learning efficiency, helped with understanding and long term memory of the concepts, and they also increased engagement and attracted more students to take economics. While Mayer and Candler's (2001), Connor (2009), Ong and Mannan(2014), Hall (2005), and Zhang's (2012) research demonstrate the positive impact video has on education, none of them have examined the effectiveness of videos compared to written documents.

Shiu, Chow, and Watson (2019) noted that in past literature there is a great increase in the use of videos in education. They wanted to compare the effectiveness of videos to the effectiveness of traditional learning materials, such as written text. Shiu, Chow, and Watson conducted their own experiment where they had two groups of students, one learning through videos and one learning through written text, and they designed a pre and post-test of each group to see the changes of the learning outcomes comparatively. They found that both strategies were

effective and there was improvement with both groups. The difference in scores were inconsistent across the groups to say which form of communication was the most effective compared to the other, however, this study did find that video is as effective for learning as the traditional written text is.

Similar to the study above, Merkt, Weigand, and Schwan (2011) conducted their own studies to examine further the effectiveness of videos compared to the effectiveness of traditional written text on students learning. Merkt, Weigand, and Schwan had wo different studies, one was a laboratory study and one was a field study. Both of the studies had some students learning through written text and some students learning through videos. They looked at the usage patterns and effectiveness of the videos compared to the textbooks for students learning difficult and complex content. Both studies found that videos are equally effective for learning as the traditional form of communication, written text.

Past researchers argue that videos negatively impacts students learning and their understanding of material, but Barak and Dori (2010) counter this argument in their own research on the impact of videos on students' thinking and motivation to learn science. Barak and Dori had two separate groups of students, one group studied with videos and the other group did not study with videos, and they recorded their overall grade in science by the score on their report card. The study found that the students who studied with the videos were able to fully understand and explain the scientific concepts in their own words compared to the students who did not study with the videos. These students also has a higher motivation to learn science.

Williamson and Abraham (1995) and Marbach-Ad, Rotbain, and Stavy (2007) conducted similar studies to Barak and Dori's study that looked at the impact of videos on students' understanding and engagement in science. The two studies had three groups of students, one that

was taught by the traditional lecture format and the other two groups were taught using some form of video. This study found that the students' who were taught by videos had stronger engagement in their classes and scored higher on their tests than students' who were taught by the traditional lectures. While Shiu, Chow, and Watson (2019) and Merkt, Weigand, and Schwan's (2011) research all shows that video and written text are either equally effective and while Barak and Dori (2010), Williamson and Abraham (1995) and Marbach-Ad, Rotbain, and Stavy's (2007) research all shows that videos are more effective for learning, none of these study the effects of video or written text on learning outcomes when it comes to investing.

The third hypothesis that will be tested in this experiment was inspired by past research by Barak and Dori (2010), Williamson and Abraham (1995), and Marbach-Ad, Rotbain, and Stavy (2007). This hypotheses will test which communication strategy is most effective for learning information on sustainable investing. This hypothesis will specifically test whether video or written communication is better for investors. The independent variable is either the video or the written document on sustainable investing. The dependent variable is the likelihood to engage in sustainable investing

> H3: Watching a video on sustainable investing will be more effective in increasing the willingness to engage in sustainable investing in the future than reading a written document.

Methods

The sample size for this experiment was 186 people: 56 for the control group, 66 for treatment group one, and 64 for the treatment group two. The sampling frame was the general public and the only eligibility requirement was to be over the age of 18. Nonprobability sampling was used, specifically voluntary sampling. Snowball sampling was also used because

participants were asked to forward the survey they participated in on to other individuals. The three separate online surveys were emailed and texted out. It must be noted that the different surveys were sent or emailed to different groups of people, therefore there would be no overlap of participants in each of the surveys. There was no compensation for completing the survey and the survey was available for participants to take at any time before November 17, 2020. The instructions on each survey included that the participants' responses would remain anonymous and also indicated that by taking and submitting the survey, they were giving their informed consent.

The surveys were 13 or 14 questions and each took approximately 5 minutes to complete, depending on which survey the participants received. Paetzold and Busch's (2014) methodology of interviewing investors about what they consider when making investment decisions is what inspired the questions for the surveys in this experiment. The first nine or ten questions test the three hypotheses and the last four questions provide demographic information of gender, age, employment, and individual yearly income level. Depending on which survey the participants were asked to take, they were required to either watch a short video, read a short document, or neither, before completing the survey. Hypothesis 1a and 1b tested if participants who received information on what sustainable investing is would be more likely to engage in sustainable investing in the future compared to those who did not receive the information via independent sample t-test. The participants indicated their likelihood of investing in sustainable investing in the future on a scale from 0-10 with 0 being definitely not and 10 being definitely yes. Hypothesis 1a looked at the answers from question 9 on survey 1 (*Appendix A)* and the answers from question 10 on survey 2 (*Appendix B)*. Hypothesis 1b looked at the answers from question 9 on survey 1 and answers from question 10 on survey 3 (*Appendix C).*

Hypothesis 2a and b tested if participants were more likely to participate in sustainable investing after receiving information on what sustainable investing is via dependent sample t-test. The participants indicated their opinion on relevancy of each sustainable investing factor (environmental, social, and governance), for before and after the treatment (video or document), on a scale from 0-10 with 0 being definitely not and 10 being definitely yes. Hypothesis 2a looked at the answers from questions 3, 4, and 5 and compared them to the answers from questions 7, 8, and 9 from survey 2. The answers from 3, 4, and 5 where also averaged, as well as questions 7, 8, and 9 to create and average ESG score before seeing the video (3, 4, and 5) and an average ESG score after seeing the video (7, 8, and 9) to then compare against each other. Hypothesis 2b followed the same steps for hypothesis 2a except using survey 3. Therefore I looked at the answers from questions 3, 4, 5, and compared them to the answers from questions 7, 8, and 9 from survey 3. The answers from 3, 4, and 5 where also averaged, as well as questions 7, 8, and 9 to create and average ESG score before reading the document (3, 4, and 5) and an average ESG score after reading the document (7, 8, and 9) to then compare against each other.

Hypothesis 3 tested if video or written documents were more effective to communicate information on sustainable investing via independent sample t-test. Hypothesis 3 looked at the answers from questions 3, 4, 5, 7, 8, and 9 from survey 2 and answers from questions 3, 4, 5, 7, 8, and 9 from survey 3. I looked at the difference in scores from each of the ESG factors individually (answers from 7 minus 3, 8 minus 4, and 9 minus 5) for answers from survey 2 and 3. And I also averaged the answers from before seeing the video or reading the document (3, 4, and 5) and from after seeing the video or reading the document (7, 8, and 9) and subtracted the before treatment answers from the after treatment answers for both survey 2 and 3. I then

compared the results. The data was collected from these tests to determine if receiving information on sustainable investing results in a higher likelihood of engaging in sustainable investing in the future and to also see if it is more effective to receive this information about sustainable investing by video or by a written document.

Results

Descriptive Statistics

The age range of respondents was 18 - 70+. The largest age group of respondents was 18-29 (52%) with the age group 50-59 as the second largest (30%), then 60-69 (11%), 40-49 (5%), and lastly, with 30-39 and above 70 tied as the smallest age group (2%). A majority of respondents were male (61%) over female (39%), with only 1% of respondents at nonbinary/gender-fluid and 0% of other. The largest employment group of respondents was students (46%), with employed as the second largest group (44%), then retired (7%), and lastly, unemployed (3%). The largest income group of respondents was $29,999 and below (39%), followed by $90,000 and above (33%), “Prefer not to answer” next (18%), $70,000-89,999 (6%), $50,000-69,999 (3%), and lastly, $30,000-49,999 (1%). Across all the surveys, on average, the participants had a below average experience with sustainable investing prior to this study. The subjects in survey 3 were the most familiar with ESG with an average score of 4.08 out of 10 of expertise, followed by subjects from survey 2 averaging a score of 3.15, and lastly with 2.80 from subjects from survey 1 (see Figure 1).

Survey 1

Specifically for survey 1, the control group, the majority of subjects are not currently investing, but plan to invest in stocks at some point in the future (55%). The second largest group of subjects are currently investing (34%) and following that are subjects that do not currently

invest and do not plan to invest at any point in the future (11%). The largest group of respondents was female (30%) and the second largest age group was male (46%), while there were no respondents who identified as nonbinary/gender-fluid or other. The largest age group of respondents was 18-29 (71%), followed by 50-59 (21%), with very few being 40-49 (4%) and 60-69 (4%), and no respondents being 30-39 and above 70. The largest employment group of respondents was students (66%), followed by employed (25%), unemployed (7%), and lastly, retired (2%). The largest income group of respondents was $29,999 and below (55%), followed by "Prefer not to answer" (20%), $90,000 and above (16%), $70,000-89,999 (5%), $50,000-69,999 (4%), and lastly $30,000-49,999 (4%).

The average score of relevancy for environmental factors in investment decisions in the before set of questions was 5.00 out of 10 (see Figure 2). The average score of relevancy for social factors in investment decisions in the before set of questions was 5.58 out of 10. The average score of relevancy for governance factors in investment decisions in the before set of questions was 5.79 out of 10. And the average score of relevancy for all the ESG factors in investment decisions in the before set of questions was 5.45 out of 10, this means that the subjects found the ESG factors moderately relevant for their investment decisions. The average likelihood to consider environmental factors in future investment decisions was 5.46 out of 10 (see Figure 3). The average likelihood to consider social factors in future investment decisions was 6.20 out of 10. The average likelihood to consider governance factors in future investment decisions was 6.36 out of 10. And the average likelihood to consider all the ESG factors in future investment decisions was 6.01 out of 10, this means that the subjects are more than likely to consider the ESG factors for their investment decisions, more so than in the first set of questions. The average likelihood for subjects to use sustainable investing strategies for their future

investment decisions was 6.50 out of 10, which means, on average, the subjects are more than likely to use sustainable investing strategies in the future (see Figure 4).

Survey 2

Specifically for survey 2, the treatment 1 group, the majority of subjects are currently investing (67%). The second largest group of subjects are not currently investing, but they do plan on investing in stocks at some point in the future (20%) and the last group of subjects do not currently investing and do not plan on investing at all in the future (14%). The largest group of respondents was male (70%) with women to follow (30%) and no respondents identifying at nonbinary/gender-fluid and other. The largest age groups were 18-29 (38%) and 50-59 (38%), followed by 60-69 (18%), 40-49 (6%), and no respondents between 30-39 and above 70. The majority of respondents are employed (58%), with the second largest group being students (32%), followed by retired (9%), and lastly, unemployed (2%). The largest income group of respondents was $90,000 and above (41%), followed by $29,999 and below (32%), “Prefer not to answer” (17%), $70,000-89,999 (6%), $50,000-69,999 (5%), and lastly, with no respondents making $30,000-49,999.

The average score of relevancy for environmental factors in investment decisions prior to seeing the video was 3.88 out of 10 (see Figure 2). The average score of relevancy for social factors in investment decisions prior to seeing the video was 4.91 out of 10. The average score of relevancy for governance factors in investment decisions prior to seeing the video was 5.08 out of 10. And the average score of relevancy for all the ESG factors in investment decisions prior to seeing the video was 4.62 out of 10, this means that the subjects found the ESG factors less than moderately relevant for their investment decisions. The average likelihood to consider environmental factors in future investment decisions was 6.42 out of 10 (see Figure 3). The

average likelihood to consider social factors in future investment decisions was 6.52 out of 10. The average likelihood to consider governance factors in future investment decisions was 6.45 out of 10. And the average likelihood to consider all the ESG factors in future investment decisions was 6.46 out of 10, this means that the subjects are more than likely to consider the ESG factors for their investment decisions, more so than before watching the video on sustainable investing. The average likelihood for subjects to use sustainable investing strategies for their future investment decisions was 6.53 out of 10, which means, on average, the subjects are more than likely to use sustainable investing strategies in the future (see Figure 4).

Survey 3

Specifically for survey 3, the treatment 2 group, the majority of subjects are currently investing (69%). The second largest group of subjects are not currently investing, but plan on investing in stocks at some point in the future (25%). And lastly the smallest group of subjects do not currently invest and do not plan on investing at all (6%). The majority of respondents were male (64%), with the second largest being female (34%), one respondent being nonbinary/gender-fluid (2%), and no respondents identifying as other. The largest age group of respondents was 18-29 (48%), followed by 50-59 (28%), 60-69 (9%), lastly the same number of participants being between 30-39 (5%), 40-49 (5%), and above 70 (5%). The largest employment group of respondents was employed (47%), followed by students (42%), retired (6%), and lastly, unemployed (2%). The largest income group of respondents was $90,000 and above (39%), followed by $29,999 and below (31%), “Prefer not to answer” (19%), $70,000-89,999 (8%), and the same number of respondents making $30,000-49,999 (2%) and $50,000-69,999 (2%).

The average score of relevancy for environmental factors in investment decisions prior to reading the written document was 5.58 out of 10 (see Figure 2). The average score of relevancy

for social factors in investment decisions prior to reading the written document was 6.11 out of 10. The average score of relevancy for governance factors in investment decisions prior to reading the written document 6.41 out of 10. And the average score of relevancy for all the ESG factors in investment decisions prior to reading the written document 6.03 out of 10, this means that the subjects found the ESG factors more than moderately relevant for their investment decisions. The average likelihood to consider environmental factors in future investment decisions was 7.16 out of 10 (see Figure 3). The average likelihood to consider social factors in future investment decisions was 7.28 out of 10. The average likelihood to consider governance factors in future investment decisions was 7.58 out of 10. And the average likelihood to consider all the ESG factors in future investment decisions was 7.34 out of 10, this means that the subjects are very likely to consider the ESG factors for their investment decisions, more so than prior to reading the written document on sustainable investing. The average likelihood for subjects to use sustainable investing strategies for their future investment decisions was 7.21 out of 10, which means, on average, the subjects are very likely to use sustainable investing strategies in the future (see Figure 4).

H1a

For H1a, I hypothesized that subjects would be more likely to engage in sustainable investing if they received information on what sustainable investing is in a related video compared to subjects that did not receive this information. To test this hypothesis I conducted an independent sample t-test. My findings do not support my hypothesis. There is no marginally significant difference in subjects' likelihood to engage in sustainable investing in the future after receiving information by video (M = 6.50, SD = 2.95*)* compared to subjects who did not receive this information (M = 6.53 , SD = 2.61*)*, $t(111) = -0.06$, $p = .48$, 95% CI [-1.04, 0.98].

H1b

For H1b, I hypothesized that subjects would be more likely to engage in sustainable investing if they received information on what sustainable investing is in a related written document compared to subjects that did not receive this information. To test this hypothesis I conducted an independent sample t-test. My findings do not support my hypothesis. There is no marginally significant difference in subjects' likelihood to engage in sustainable investing in the future after receiving information by a written document (M = 6.50 , SD = 2.95*)* compared to subjects who did not receive this information (M = 7.21, SD = 2.37*)*, $t(65) = 6.74$, $p < .001$, 95% CI [0.93, 2.76].

H2a

For H2a, I hypothesized that watching a video on sustainable investing would increase subjects' willingness to engage in sustainable investing in the future. To test this hypothesis I conducted a dependent sample t-test. My findings support my hypothesis. There is a significant difference in subjects' willingness to engage sustainable investing in the future after watching a video (M = 4.62, SD = 2.72) related to sustainable investing compared to their willingness to invest before they watched the video (M = 6.46, SD = 2.54), $t(65) = 6.74$, $p < .001$, 95% CI [0.93, 2.76].

H2b

For H2b, I hypothesized that reading a document on sustainable investing would increase subjects' willingness to engage in sustainable investing in the future. To test this hypothesis I conducted a dependent sample t-test. My findings support my hypothesis. There is a significant difference in subjects' willingness to engage sustainable investing in the future after reading a document (M = 6.03, SD = 2.67) related to sustainable investing compared to their willingness

to invest before they read this document (M = 7.34, SD = 2.01), $t(63) = 5.52$, $p < .001$, 95% CI [0.47, 2.14].

H3

For H3, I hypothesized that watching a video on sustainable investing will be more effective in increasing the willingness to engage in sustainable investing in the future than reading a written document. To test this hypothesis I conducted an independent sample t-test. My findings failed to reject the null hypothesis but did not fully reject it. When I averaged the ESG factors to create an average score before and after the video for survey 2 and the document for survey 3 and compared them, the findings resulted against my hypothesis meaning that watching a video (M = 1.84, SD = 2.22) on sustainable investing will not be more effective in increasing subjects' willingness to engage in sustainable investing in the future than reading a written document (M = 1.31, SD = 1.90), $t(126) = 1.48$, $p = 0.07$, 95% CI [-0.18, 1.25]. However, when I compared each factor individually, the social (Before: (M = 1.61, SD = 2.51) After: (M = 1.17, SD = 2.07), $t(125) = 1.08$, $p = 0.14$, 95% CI [-0.36, 1.23]) and governance factors (Before: (M = 1.38, SD = 2.36) After: (M = 1.71, SD = 2.13), $t(127) = 0.53$, $p = 0.30$, 95% CI [-0.57, 0.99]) rejected my hypothesis, while the environmental factor (Before: (M = 2.55, SD = 2.52) After: (M = 1.58, SD = 2.12), $t(125) = 2.37$, $p = 0.01$, 95% CI [0.16, 1.78]) failed to reject it.

Discussion

To reiterate the results reported above, H1a states that subjects who receive information on what sustainable investing is in a video will be more likely to engage in sustainable investing in the future compared to subjects who did not receive this information. This idea is unsupported. H1b states that states that subjects who receive information on what sustainable investing is in a written document will be more likely to engage in sustainable investing in the future compared to

subjects who did not receive this information. This ideas is also unsupported. The results showed that there was not a significant statistical difference in likelihood to invest in sustainable investing in the future between subjects who received the information on sustainable investing and subjects who did not. This is in contrast to what Paetzold and Busch (2014) found in their research. I can assume that if this experiment was conducted again with a larger same size and with surveys that were more difficult for subjects to figure out what the purpose of them were, there would be evidence in support H1a and H1b. My second hypothesis looked at subjects decisions after being educated on sustainable investing. H2a assumed that after watching a video on sustainable investing, subjects would be more likely to engage in it in the future. H2b assumed that after reading a document on sustainable investing, subjects would be more likely to engage in it in the future. Results showed that there was a significant difference in likelihood to consider investing in sustainable investing after subjects received information on what sustainable investing was, compared to their likelihood before they received the information on sustainable investing. H3 assumed that subjects who watched a video on sustainable investing would be more likely to engage in sustainable investing in the future, compared to subjects who read a document on sustainable investing. Overall, this hypothesis was not supported. The findings were marginally significant because when the tests were run with the individual factors of ESG, the environmental was the only factor to support the hypothesis. Still, the majority were influenced more by the written document compared to the video, in contrast to what was found in prior research done by Barak and Dori (2010), Williamson and Abraham (1995), and Marbach-Adm Rotbain, and Stavy (2007). This suggests that written documents are the more effective strategy for communication.

Implications

The findings from the results are relevant to individual investors and investment managers. These two groups can refer to the results to understand the importance of being properly informed on what sustainable investing is. Understanding the importance of proper education can increase engagement in sustainable investing, which aligns investors personal opinions with their investment decisions and follows the massive trend to become more socially responsible. It is also important for investment managers to be aware of what strategy is the most successful and effective for educating their clients on sustainable investing, and that is by a written document they can read and refer back to later.

With further research, more individual investors and investment managers will become aware of the benefits of being properly educated on sustainable investing and, due to the bandwagon and herding effect, that will encourage even more individuals to engage in sustainable investing or, at least, learn more about sustainable investing.

Limitations and Future Research

Limitations in this study include diversity size of the sample, size of the sample, and the survey itself. A majority of the participants in the survey were male (61%), which could have impacted the survey results due to gender. A majority of the participants were between the ages of 18-29 (52%), which makes sense since the majority of the employment status of the participants were students (46%) and making $29,999 and below a year (39%). The second largest age group was 50-59 (30%), and this also makes sense because the second largest group for employment status and yearly income was employed (44%) and $90,000 and above (33%). The participants from this study were from the two ends of the age spectrum, leaving a gap in the results. This results of this study are not as representative of the general population. Another

limitation is that the individual survey samples were all different from each other. For example, there are way more participants that are currently investing that took survey 2 and 3 than the participants that took survey 1. This can have a big impact on the results. Further researchers should strongly consider having an even larger sample size to make sure each survey is having a wide range of individuals participating that way the results can be more valid and the samples are more representative.

Another limitation of this study is that participants could have guessed the intent of the study and/or responded how they thought me, the researcher wanted them to respond; this is called social desirability bias. This could be the reason why I failed to reject the null for my H1a and H1b. A majority of the participants in survey 1 are not currently investing compared to survey 2 and 3 where a majority of the participants are currently investing, which definitely affected the results. Further researchers should create surveys that are more difficult for participants to guess the true purpose of. I suggest they include other questions to distract the participants from the true intent of the survey. This improvement will prevent the social desirability bias from influencing the participants decision making.

Another major limitation of this study is the hypothetical nature of the survey. It is very easy for participants to say they will engage in sustainable investing, especially if they believe that is what the researcher wants to hear, but the big question is, if their own personal money was being used and they were actually choosing to invest sustainably, would they actually follow through with what they said? This is an example of field data and this is an experimental method I would encourage for future research. Field data research will yield the most accurate and representative results. This will eliminate the hypothetical and will also allow researchers to see,

in real life situations, what other factors may be preventing investors from engaging in sustainable investing.

Conclusion

The results of this study demonstrate that proper education, through written documents, on what sustainable investing is, has the potential to increase engagement in sustainable investing. In order to align their and their clients own personal values, beliefs, and opinions with their investment decisions and to stay in touch with the ever going trend to become more socially responsible, individual investors and investment managers need to properly educate themselves on sustainable investing.

References

Baker, H. & Nofsinger, J. (2002). Psychological biases of investors. *Financial Services Review, 11*(2), 97-116.

Barak, M., Ashkar, T., & Dori, Y. J. (2011). Learning science via animated movies: Its effect on students' thinking and motivation. *Computers and Education, 56*(3), 839-846. doi: 10.1016/j.compedu.2010.10.025

Boerner, H. (2011). SRI: Passing fad or an investment approach on the rise? Sustainable and responsible investment outpaces most traditional indexes and equity returns during downturn. *Corporate Finance Review, 16*(1), 37-40. http://ezpro.cc.gettysburg.edu:2048/login?url=https://www-proquest-com.ezpro.cc.gettysburg.edu/scholarly-journals/sri-passing-fad-investment-approach-on-rise/docview/857924900/se-2?accountid=2694

Connor, D. J. (2009). Creating cartoons as representation: Visual narratives of college students with learning disabilities. *Educational Media International, 46*(3), 185-205. doi: 10.1080/09523980903135319

Erragragui, E., & Lagoarde-Segot, T. (2016). Solving the SRI puzzle? A note on the mainstreaming of ethical investment. *Finance Research Letters, 18*(18), 32-42. doi: 10.1016/j.frl.2016.03.018

Friede, G. (2019). Why don't we see more action? A metasynthesis of the investor impediments to integrate environmental, social, and governance factors. *Business Strategy & the Environment, 28*(6), 1260-1282. doi: 10.1002/bse.2346

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment, 5*(4), 210-233. doi: 10.1080/20430795.2015.1118917

Hall, J. (2005). Homer economicus: Using the Simpsons to teach economics. *The Journal or Private Enterprise, 20*(2), 165 – 176. http://ezpro.cc.gettysburg.edu:2048/login?url=https://www-proquest-com.ezpro.cc.gettysburg.edu/scholarly-journals/homer-economicus-using-simpsons-teach-economics/docview/215104985/se-2?accountid=2694

Marbach-Ad, G., Rotbain, Y., & Stavy, R. (2007). Using computer animation and illustration activities to improve high school students' achievement in molecular genetics. *Journal of Research on Science Teaching, 45*(3), 273-292. doi:10.1002/tea.20222

Mayer, R. E., & Chandler, P. (2001). When learning is just a click away: Does simple user interaction foster deeper understanding of multimedia messages? *Journal of Educational Psychology, 93*(2), 390-397. doi: 10.1037/0022-0663.93.390

Merkt, M., Weigand, S., Heier, A., & Schwan, S. (2011). Learning with videos vs. learning with print: The role of interactive features. *Learning and Instruction, 21*(6), 687-704. doi: 10.1016/j.learninstruc.2011.03.004

New York Life Investments. (2019, November). *Sustainable investing: Debunking 5 common myths.* [Brochure]. https://www.nylinvestments.com/polos/infographic_Sustainable_Investing_Debunking_5_Common_Myths.pdf

Ong, M. & Mannan, M. A. (2003). Virtual reality simulations and animations in web-based interactive manufacturing engineering module. *Computers and Education, 43*(4), 361-382. doi: 10.1016/j.compedu.2003.12.001

Paetzold, F. & Busch, T. (2014). Unleashing the powerful few: Sustainable investing behavior of wealthy private investors. *Organization & Environment, 27*(4), 347-376. doi: 10.1177/1086026614555991

Shiu, A., Chow, J., & Watson, J. (2019). The effectiveness of animated video and written text resources for learning microeconomics: A laboratory experiment. *Education and Information Technologies, 25*(3), 1999-2022. doi: 10.1007/s10639-019-10025-1

Williamson, V. M. & Abraham, M. R. (1995). The effects of computer animation on the particular mental models of college chemistry students. *Journal of Research in Science Teaching, 32*(5), 521-534. doi: 10.1002/tea.3660320508

Zahera, S., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systemic review. *Qualitative Research in Financial Markets, 10*(2), 210-251. doi: 10.1108/QRFM-04-2017-0028

Zhang, Y. A. (2012). Developing animated cartoons for economic teaching. *Journal of University Teaching & Learning, 9*(2), 1-13.

Figures

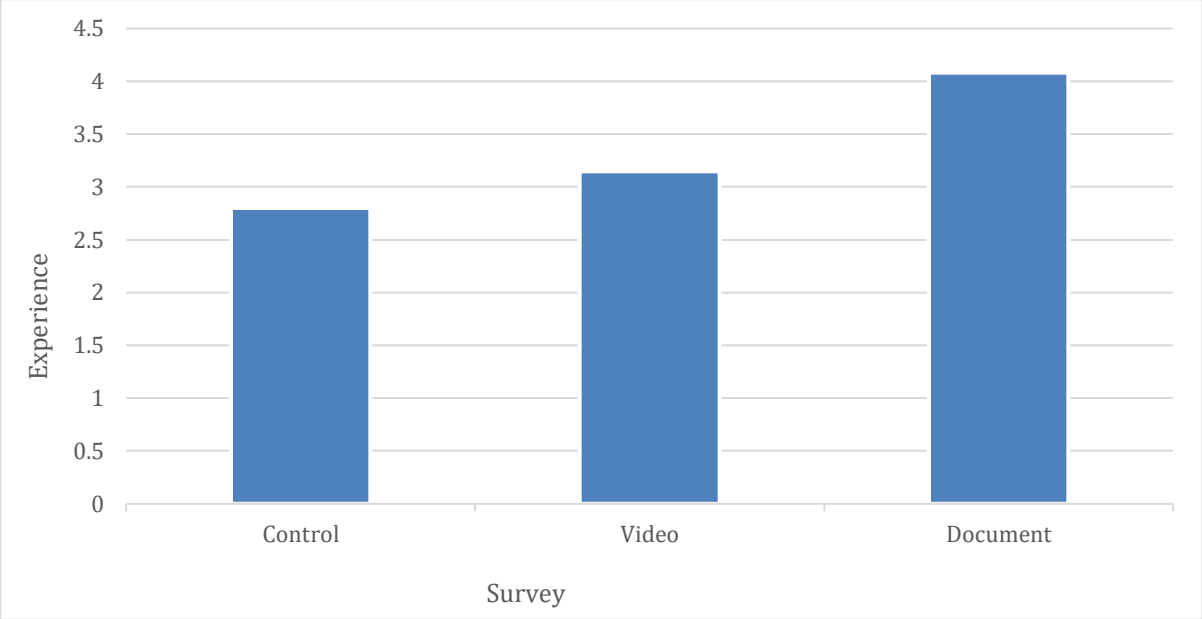

Figure 1. Prior experience with sustainable investing. The experience refers to the self-indicated rating on a scale from 0-10, with 0 meaning no experience with sustainable investing and 10 meaning expert in sustainable investing. The experience for each survey is averaged and presented compared to the other surveys.

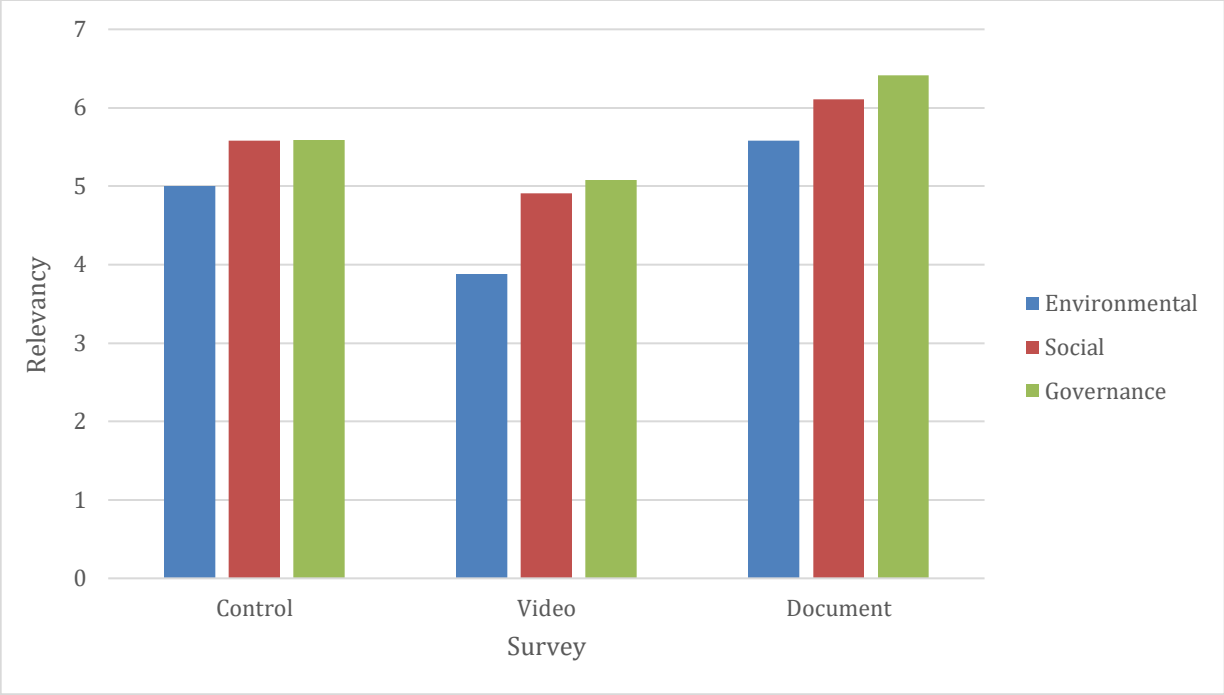

Figure 2. The relevancy of ESG factors in investment decisions prior to seeing the video or written document. The relevancy refers to how relevant subjects felt each of the ESG factors were in their investment decisions on a scale from 0-10, with 0 being not relevant and 10 being very relevant.

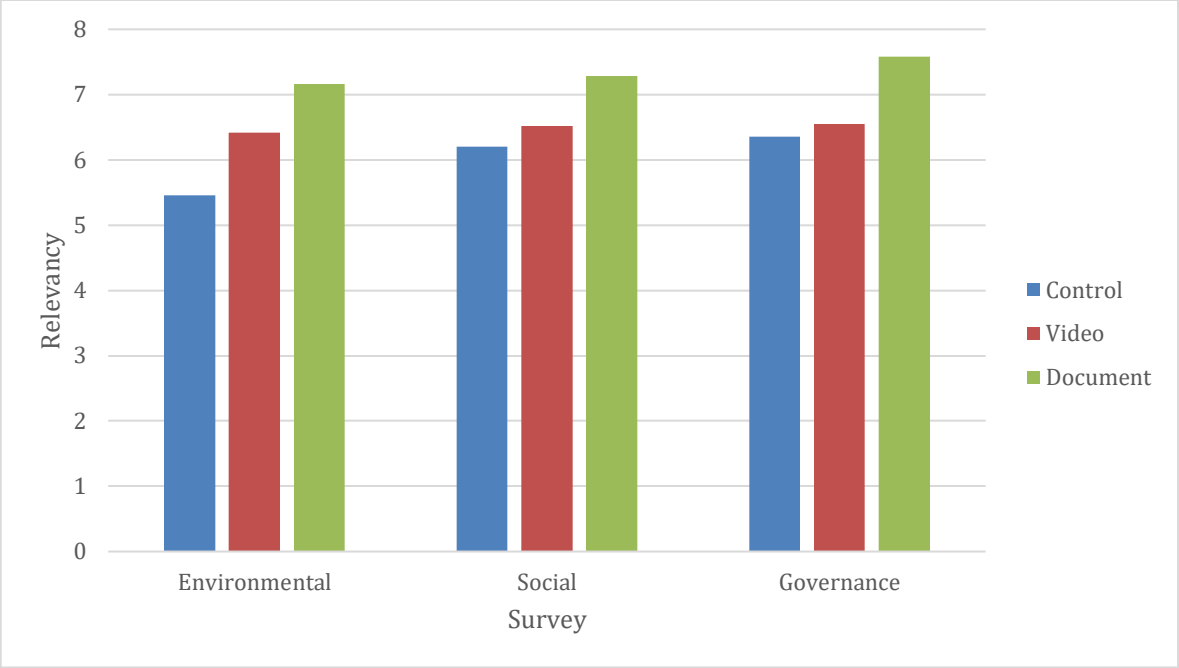

Figure 3. The likelihood to consider ESG factors in future investment decisions. The likelihood refers to how likely subjects are to consider the ESG factors for their investment decisions in the future on a scale from 0-10, with 0 being definitely not, 5 being maybe, and 10 being definitely yes.

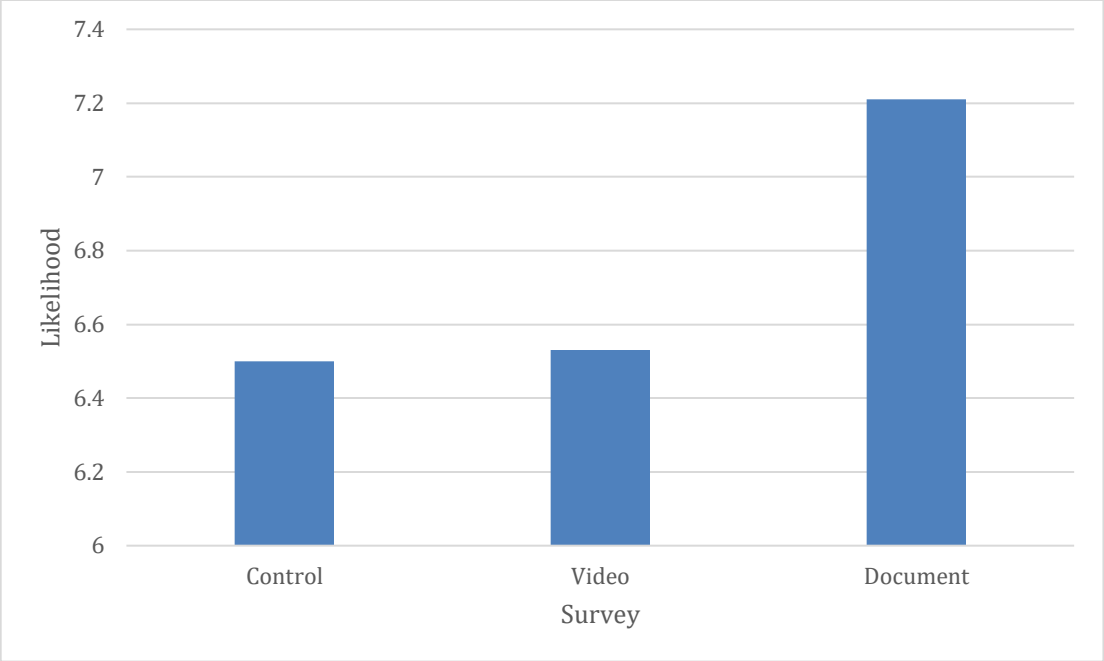

Figure 4. The likelihood to consider using sustainable investment strategies in future investment decisions. The likelihood refers to how likely subjects are to consider using sustainable investment strategies in the future on a scale from 0-10, with 0 being definitely not, 5 being maybe, and 10 being definitely yes.

Appendix

Appendix A

Survey 1

Thank you for taking this survey!

Disclosure: By taking and submitting this survey, you are acknowledging that you are over age 18 and are giving full consent for your responses to be included in a Capstone study. Your answers will remain completely anonymous.

Instructions: Answer the following set of questions

1. Do you currently invest in stocks?

    A. Yes

    B. No, and I do not plan on investing in stocks

    C. No, but I plan on investing in stocks at some point in the future

2. On a scale from 0-10, rate your experience with sustainable investing.

    0 = no experience

    1

    2

    3

    4

    5

    6

    7

    8

    9

10 = expert

3. How relevant are environmental factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

4. How relevant are social factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

5. How relevant are governance factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

6. How likely are you to consider environmental factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

7. How likely are you to consider social factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

8. How likely are you to consider governance factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

9. Would you consider using sustainable investment strategies for your investment decisions going forward?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

10. Please indicate your gender:

A. Male

B. Female

C. Nonbinary/gender-fluid

D. Other

11. Please indicate your age:

A. 18-29

B. 30-39

C. 40-49

D. 50-59

E. 60-69

F. Above 70

12. Indicate your status:

A. Student

B. Unemployed

C. Employed

E. Retired

13. Please indicate your current individual yearly income (before tax):

A. 29,999 and below

B. 30,000-49,999

C. 50,000-69,999

D. 70,000-89,999

E. 90,000 and above

F. Prefer not to answer

Appendix B

Survey 2

Thank you for taking this survey!

Disclosure: By taking and submitting this survey, you are acknowledging that you are over age 18 and are giving full consent for your responses to be included in a Capstone study. Your answers will remain completely anonymous.

Instructions: Answer the first set of questions, watch a short video, and answer the final set of questions

1. Do you currently invest in stocks?

    A. Yes

    B. No, and I do not plan on investing in stocks

    C. No, but I plan on investing in stocks at some point in the future

2. On a scale from 0-10, rate your experience with sustainable investing.

    0 = no experience

    1

    2

    3

    4

    5

    6

    7

    8

    9

10 = expert

3. How relevant are environmental factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

4. How relevant are social factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

5. How relevant are governance factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

6. Please what this video on sustainable investing – please stop the video after 3:36 seconds

https://www.youtube.com/watch?v=3bvm-Afa6Y0

7. How likely are you to consider environmental factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

8. How likely are you to consider social factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

9. How likely are you to consider governance factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

10. Would you consider using sustainable investment strategies for your investment decisions going forward?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

11. Please indicate your gender:

A. Male

B. Female

C. Nonbinary/gender-fluid

D. Other

12. Please indicate your age:

A. 18-29

B. 30-39

C. 40-49

D. 50-59

E. 60-69

F. Above 70

13. Indicate your status:

A. Student

B. Unemployed

C. Employed

E. Retired

14. Please indicate your current individual yearly income (before tax):

A. 29,999 and below

B. 30,000-49,999

C. 50,000-69,999

D. 70,000-89,999

E. 90,000 and above

F. Prefer not to answer

Appendix C

Survey 3

Thank you for taking this survey!

Disclosure: By taking and submitting this survey, you are acknowledging that you are over age 18 and are giving full consent for your responses to be included in a Capstone study. Your answers will remain completely anonymous.

Instructions: Answer the first set of questions, read a short document, and answer the final set of questions

1. Do you currently invest in stocks?

    A. Yes

    B. No, and I do not plan on investing in stocks

    C. No, but I plan on investing in stocks at some point in the future

2. On a scale from 0-10, rate your experience with sustainable investing.

    0 = no experience

    1

    2

    3

    4

    5

    6

    7

    8

    9

10 = expert

3. How relevant are environmental factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

4. How relevant are social factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

5. How relevant are governance factors in your investment decisions?

0 = not relevant

1

2

3

4

5

6

7

8

9

10 = very relevant

6. Please read the following document and then continue answer the final set of questions

Socially Responsible Investing – How to make an impact and make money.
You can invest and put your money to work without compromising your values. There are a lot of socially responsible investing options out there, so that you can make a great return on your money while also taking care of the environment and being ethical.

What is socially responsible investing (SRI)?
Socially responsible investing can mean different things to different people. Investing in companies that do good things in the world or at least companies that are not doing bad things in the world. Back in the day it used to be as simple as excluding companies that manufacture guns or sell alcohol, tobacco, or do gambling. But being socially responsible is so much more than that. Over the years socially responsible investing has become a lot more sophisticated and now investor can use a set of quantifiable metrics called ESG to make investing decisions.

ESG stands for environmental, social, and governance and it's a set of quantifiable metrics assessed by outside data researchers. They assess companies and give them an ESG score and this score has three components.

E = environmental component of their score and this can mean that the company is actively doing things to reduce carbon emissions or fight climate change. Can also mean the company is moving towards renewable energy sources.

S = social factors so this part of the score assess how this company treats its employees, stakeholder, venders, or anyone involved in the company. Generally, a company with a high score in the S category has fair wages, good working conditions, or treats its customers well.

G = governance. This factors tells you how honest the company is in terms of how likely they are to do anything that is corrupt or do fraud, cooking its books, or pay CEO's ridiculous compensations at the expense of its shareholders.

All together the ESG criteria helps investors find companies with values that match their own. Every company gets an ESG score. No company is actually 100% in all categories of the ESG score. So, it is important for you to decide what is important to you. Is it environment? Is it companies that promote equality and diversity? Are you really passionate about human rights or animal welfare? Everyone has something that is important to them.

7. How likely are you to consider environmental factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

8. How likely are you to consider social factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

9. How likely are you to consider governance factors in your investment decisions in the future?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

10. Would you consider using sustainable investment strategies for your investment decisions going forward?

0 = definitely not

1

2

3

4

5 = maybe

6

7

8

9

10 = definitely yes

11. Please indicate your gender:

A. Male

B. Female

C. Nonbinary/gender-fluid

D. Other

12. Please indicate your age:

A. 18-29

B. 30-39

C. 40-49

D. 50-59

E. 60-69

F. Above 70

13. Indicate your status:

A. Student

B. Unemployed

C. Employed

E. Retired

14. Please indicate your current individual yearly income (before tax):

A. 29,999 and below

B. 30,000-49,999

C. 50,000-69,999

D. 70,000-89,999

E. 90,000 and above

F. Prefer not to answer