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Determinants of Socially Responsible Investing: An Empirical Approach

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Abstract

English

This study tests how the theory of planned behavior (Ajzen 1985) combined with environmental values and trust in governance, can explain people's intention to invest socially responsible. The theory of planned behavior was extended by including environmental values and trust in governance. A questionnaire study was conducted among respondents who invest or intend to invest socially responsible. A positive attitude and social pressure positively influence the persuasion of responsible investing. High environmental values are strengthening the positive effect of a person's beliefs about other individual's opinion toward engaging in socially responsible investing on the intention to do so. However, there were no other moderating effects observed. Furthermore, high trust in investment's governance and high environmental values were related to stronger intention to invest socially responsible. Practical implications of the study are discussed.

Deutsch

In dieser Studie wurde untersucht, wie die theory of planned behavior (Ajzen 1985) in Kombination mit Umweltwerten und Vertrauen in Governance die Intention von Personen erklären kann, sozial verantwortlich zu investieren. Die theory of planned behavior wurde durch die Einbeziehung der Faktoren Umweltwerte, welche der Einstellung zur Auswirkung von Umweltproblemen entspricht und Vertrauen in Governance erweitert. Es wurde eine Umfrage unter Befragten durchgeführt, die sozial verantwortlich investieren oder dies beabsichtigen. Hohe Umweltwerte verstärken den positiven Effekt der Überzeugungen einer Person über die Meinung anderer Personen in Bezug auf sozial verantwortliche Investitionen. Es wurden jedoch keine anderen moderierenden Effekte beobachtet. Darüber hinaus waren positive Einstellungen, ein hohes Vertrauen in Governance von sozial verantwortlichen Investitionen und positive Umweltwerte mit einer stärkeren Intention zu sozial verantwortlichen Investitionen verbunden. Praktische Auswirkungen der Studie werden diskutiert.

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III. Abbreviations

ATT – Attitude towards behavior

ATTred – Attitude reduced from four to three measurement items

AVE – Average variance extracted

C.R. – Critical ratio

CFI – Comparative fit index

CR – Composite reliability

CSR – Corporate social responsibility

IntATTxENV – Interaction term attitude multiplied with environmental values

IntATTxGOV – Interaction term attitude multiplied with trust in governance

ENV – Environmental values

ESG – Environmental, social and governance

GFI – Goodness of fit index

GOV – Trust in governance

IFI – Incremental fit index

PBC – Perceived behavioral control

PBCxENV – Interaction term perceived behavioral control multiplied with environmental values

PBCxGOV – Interaction term perceived behavioral control multiplied with trust in governance

RMSEA – Root mean square error approximation

SD – Standard Deviation

SN – Subjective norm

SNxENV – Interaction term subjective norm multiplied with environmental values

SNxGOV – Interaction term subjective norm multiplied with trust in governance

SRI – Socially responsible investing

TLI – Tucker–Lewis index

TPB – Theory of planned behavior

VIF – Variance inflation factor

1. Introduction

1.1. Research topic

The industrial and scientific progress of the twentieth century went hand in hand with unprecedented environmental degradation. As we entered the twenty-first century, humanity began developing greater ecological awareness and acknowledging our environmental responsibilities. This shift in consciousness has prompted numerous international frameworks and initiatives designed to create a more sustainable world (Beisenbina et al. 2023, 649).

Current global efforts include the Paris Agreement (United Nations 2015), Sustainable Development Goals (UN General Assembly 2015), Task Force on Climate-related Financial Disclosures (TCFD 2017), Action Plan on Sustainable Finance (European Commission 2018), European Green Deal (European Commission 2019), and Next Generation EU (European Commission 2020). These frameworks increasingly influence financial systems, directing investment activities toward environmental sustainability and promoting responsible capital allocation. In that context, this work aims to examine such sustainable investment activities. More specifically, how socially responsible investment behavior is shaped and influenced.

Investment behavior can be analyzed by looking into the theory of planned behavior (Ajzen 1985). The theory lays focus on cognitive self-regulation and suggests that intentions to act, the direct predecessors of behavior, are derived from behavioral and normative beliefs (Ajzen 1985, 14). Later, control beliefs add a third important factor to the theory in order to understand behavior. Additionally, this approach was chosen because the theory of planned behavior is a “theory designed to predict and explain human behavior in specific contexts” (Ajzen 1991, 181). In this work, the behavior in question is the engagement in socially responsible investing. The specific context is the investigation of the determinants of behavior according to the theory, taking environmental values and trust in governance of investors into account. As dealing with environmental issues plays a significant role when discussing social responsibility and sustainability, individual’s values on environmental consequences on others are taken into account as well. Moreover, the trust in companies’ governance to follow socially responsible guidelines or the trust in providers of sustainable investment opportunities is included in this analysis.

In summary, the influence of the factors based on the theory of planned behavior on socially responsible investing behavior is investigated. Moreover, the constructs of environmental values and trust in governance are used to investigate if they affect the relationship between the different theory based factors and engagement in socially responsible investing.

1.2. State of the Art

Recent literature suggests that the majority of researchers in the field of socially responsible investing have moved their focus away from theoretical articles centered on personal values like “sacrifice”, “morality”, and “religion” in the 1980s and 90s to empirical articles focused on “performance”, “activism”, “sustainability”, “stakeholders”, and “financial performance” in the 2000s (Amini & Ramani 2023, 1286; Talan & Sharma 2019, 2). This reflects a transition towards empirical and performance-driven research (Lapanan 2018, 214). Lately, attention has focused on the provision of the shift of socially responsible investment strategies from traditional screening to modern approaches like best-in-class, ESG (Environmental, Social, and Governance) integration, and impact investing (Beisenbina et al. 2023, 658). While these terms will be explained more thoroughly throughout this research, a great deal of previous research into socially responsible investing has focused on the relationship between financial performance and sustainability and whether sustainable investments performed as well as conventional ones, often concluding that there is no significant performance difference.

Recently, research laid emphasis on green finance and the motivations behind socially responsible investments, showing that investors with pro-environmental motives are willing to trade financial returns for social impact. Especially tools like green bonds and green mutual funds have recently gained popularity as a key financial instrument for climate-friendly projects, with studies showing that green bonds are becoming financially more attractive than traditional bonds (Beisenbina et al. 2023, 661).

While it is important to gain an overview on that topic, this work focuses on investor’s behavior in the context of social responsibility using the concept of the theory of planned behavior. This theory aims to predict behavior by investigating individual’s belief systems. According to the theory, the immediate antecedent of behavior is the intention to perform that specific behavior (Ajzen & Madden 1986, 454). This intention

in turn is shaped by three components: attitude, subjective norm and perceived behavioral control.
An increasing amount of literature focuses on applying the theory of planned behavior on socially responsible investing, but no one included investor's environmental values and trust in governance as moderators into their analysis. By implementing moderation analysis new theoretical insights can be tested (Andersson et al. 2014, 1063).

1.3. Research Question

The aim of this study is to investigate how the behavior of investing socially responsible is shaped. The question raises: How do attitude, subjective norm and perceived behavioral control affect individual's behavioral intention to pursue socially responsible investing? Another target of this work is to investigate if the inclusion of investor's environmental values and trust in governance influence responsible investment intention by investigating the moderation effects using moderation analysis. The main objective of moderation analysis is to "measure and test the differential effect of the independent variable on the dependent variable as a function of the moderator" (Baron & Kenny 1986, 1174). Applied to this work, the goal is to identify if environmental values and trust in governance in socially responsible investments influence the effects of attitude, subjective norm and perceived behavioral control on the intention to invest socially responsible. Another question raises: how do environmental values and trust in governance moderate the relationships between the components that shape the intention to invest socially responsible and the intention itself?

1.4. Assumption

The assumption of this work is as follows: Attitude, subjective norm and perceived behavioral control have a positive relationship with socially responsible investment intention. Moreover, environmental values and trust in governance strengthen the positive relationship between attitude-, subjective norm- and perceived behavioral control on the intention to engage in socially responsible investing. For example, high environmental values strengthen the positive effect of subjective norm on the intention to (further) pursue socially responsible investing.

1.5. Objective

In other words, the objective of this work is to find out why individuals engage in socially responsible investing and what shapes the intention to invest socially responsible. One way to investigate these questions is by using the theory of planned behavior and testing the influence of their variables on socially responsible investing behavior. There has been a lot of published literature using the theory of planned behavior to investigate that behavior. However, this work is supposed to shed a new light onto this concept. Since socially responsible investing is deeply connected to environmental values and (trust in) governance, these factors are included in the analysis as moderator variables. Not only the simple direct relationship of these two factors on socially responsible investing shall be investigated. Furthermore, a moderating effect of these two crucial factors on the known components of the theory of planned behavior is one objective of this work, in order to find out if investor's environmental views and trust in governance affect the belief system of (potential) investors. This will be investigated by using structural equation modeling to test direct and moderation effects.

2. Theory

2.1. Socially responsible investing

2.1.1. Definition

When talking about socially responsible investing, it can be described "as an investment process that integrates social, environmental, and ethical considerations into investment decision making" (Renneboog et al. 2008, 1723). The first time a comparable concept to socially responsible investing was introduced, was in the fourteenth century when personal investing was influenced by religious beliefs called ethical investing. Social responsibility in an investment process was first mentioned by Moskowitz (1972). In his analysis, he identified fourteen corporations demonstrating exceptional social responsibility practices and proposed these companies as potentially sound investment options. A follow-up assessment revealed that these selected stocks had outperformed major market indicators. Specifically, the Dow-Jones and S&P Industrials indices, in total capital returns over a six-month evaluation period. This initial evidence suggested a positive correlation between companies'

social responsibility initiatives and their stock market performance (Brooks & Oikonomou 2018, 16).

Today, socially responsible investing is about having financial returns based on economic, environmental- and social challenges. However, there is no holistic framework for this concept. Socially responsible investing has been described using various terminology throughout academic literature. These alternative designations include ethical investment, sustainable investment, responsible investment, environmental, social and governance (ESG) investment and green investment, among others, reflecting the evolving nature of this investment approach (Escrig-Olmedo et al. 2017, 1334). Descriptions range from “strategy and practice to incorporate ESG factors in investment decisions” (Principles of Responsible Investments 2020) to “investment approach which considers ESG factors in portfolio selection and management” (GSIA 2020). As (socially) responsible investing is the term used most frequently (Beisenbina et al. 2023, 652), the term will be used in this work.

2.1.2. Investing in socially responsible assets

One way to implement socially responsible investing is through impact investing. It is about shareholders using field building, portfolio screening and shareholder engagement to create an impact (Marti et al. 2023, 5). One of the most used forms of socially responsible investing is screening, that is, in the context of socially responsible investing, “an impact strategy in which shareholders reallocate capital from non-sustainable companies to companies they deem sustainable” (Marti et al. 2023, 2). However, for investment strategies like screening and impact investing, there is no standardized definition as some scholars observe a shift from screening to ESG integration, which seeks to build lasting value by leveraging ESG considerations to reduce risks and discover growth potential (Boffo & Patalano, 2020). Different scholars see a shift from screening towards impact investing (Beisenbina et al. 2023, 658), whereas others see screening as part of impact investing (Marti et al. 2023, 5).

From a private investor’s perspective, screening in socially responsible investing is further enabled by tools like mutual funds, exchange traded funds, stocks, bonds and derivates. A socially responsible mutual or exchange traded fund would include

corporations with “lower pollution, more board diversity, higher employee satisfaction, and better workplace safety” (Heath et al. 2023, 3) in their portfolio.

From an institutional perspective, companies who prioritize stakeholder welfare and ESG factors tend to have lower risk and better long-term strategies (Guenster et al. 2011, 682). Cheng et al. (2014) found that better corporate social responsibility (CSR) performance improves access to funding by reducing agency costs and information asymmetry.

Since businesses play a crucial role in addressing social needs that governments alone cannot meet and public expectations have grown beyond what governments can provide, forward-thinking companies are increasingly distinguishing themselves through corporate social responsibility initiatives (Jamali & Mirshak 2007, 243). In that context, CSR can be described as “the commitment of business to contribute to sustainable economic development, working with employees, their families and the local communities’’ (WBCSD, 2001).

Moreover, CSR has a direct and positive impact on corporate financial performance. This relationship strengthens as companies’ ESG scores improve. CSR is increasingly seen as an investment opportunity rather than a cost. Managers and shareholders are advised to integrate CSR into corporate strategy to gain long-term financial benefits and contribute to sustainable development (Coelho et al. 2023, 1536f.).

Revisiting funds as an investment tool, it has been argued that socially responsible investors tend to adjust their portfolios with slightly higher frequency than traditional investors, maintaining more potentially diverse holdings, and often combining both conventional and socially responsible investments. Interestingly, while socially responsible investors respond similarly to past performance when purchasing either type of fund, they demonstrate greater reluctance to sell socially responsible funds compared to conventional ones when facing declining returns (Lapanan 2018, 214; Renneboog et al. 2011, 563).

On the one hand, socially responsible funds predominantly held by committed socially responsible investors, exhibit reduced sensitivity to previous positive returns. At the individual level, dedicated socially responsible investors display heightened responsiveness to past positive performance and lower sensitivity to negative performance in socially responsible funds versus conventional ones (Riedl & Smeets 2017, 2521f.).

On the other hand, despite these patterns suggesting value-based motivations among committed socially responsible investors, their capital movements into socially responsible funds show less consistency than their investments in conventional funds, indicating a lower propensity to reinvest in socially responsible investment options (Lapanan 2018, 214).

On the institutional level, portfolio allocations to socially sensitive stocks are reduced in investment vehicles targeting socially conscious organizations and individual investors, with these allocation patterns correlating with regional political viewpoints and religious demographics. While Borger et al. (2015) show a positive and significant financial advantage associated with higher exposure to traditional "sin" industries like oil and natural gas or tobacco, this performance differential disappears when employing more comprehensive classifications of socially questionable investments. Although one can observe a positive relationship between fund performance and controversial stock holdings, when examining the yearly risk-adjusted performance difference between portfolios with the highest versus lowest concentration of these controversial holdings, no statistically meaningful distinction emerges. These findings indicate that portfolio managers maintain limited positions in high-sin stocks, primarily due to ethical considerations and practical investment limitations (Hong & Kacperczyk 2009, 17; Borger et al. 2015, 2f.).

In conclusion, socially responsible investing plays a crucial role in investment strategies and is a particularly important contribution in private and institutional investment portfolios.

2.2. The theory of reasoned action

2.2.1. Concept

The theory of reasoned action (Fishbein & Ajzen 1975, Ajzen & Fishbein 1980) focuses on cognitive self-regulation and suggests that intentions to act, the direct predecessors of behavior, are derived from behavioral and normative beliefs (Madden et al. 1992, 2). These intentions may change over time. The more time passes between behavioral intention and the actual behavior, the higher the likelihood that unforeseen interferences force changes in intentions.

This theory aims to understand, not only to predict, behavior. Therefore, determinants that shape intentions must be identified. According to Ajzen (1985), intention is a function of two determinants. One is characterized in personal nature, the second one

is reflecting social influence. The former is shaped by the positive or negative perspective on performing behavior. It is called attitude towards the behavior. The latter is shaped by the perception of social pressure of performing or not performing certain behavior. As it deals with perceived social actions, it is termed subjective norm. Put differently, if a person has a positive view towards certain behavior, combined with perceived confirmative opinions of others on performing that behavior, they intend do so (Ajzen 1985, 12).

2.2.2. Attitude:

Now that the determinants of intention are known, the question arises on why individuals hold certain attitudes and subjective norms. The author describes how attitude is determined: “The attitude towards the behavior is determined by the person’s evaluation of the outcomes associated with the behavior (…) the evaluation of each salient outcome contributes to the attitude in proportion to the person’s subjective probability that the behavior will produce the outcome in question” (Ajzen 1985, 13).
In other words, if a person believes that a particular behavior leads to a positive outcome, a positive attitude towards executing that behavior will appear. Beliefs about a negative outcome of a certain behavior will lead to a negative attitude. These beliefs shaping the attitude are termed behavioral beliefs.

2.2.3. Subjective norm:

Normative beliefs are beliefs of a different kind. These shape subjective norm and influence a person’s beliefs that certain groups or individuals want specific behavior to be carried out. If most people a person is motivated to comply with, want certain behavior to be conducted, social pressure is performed on this person. On the contrary, if individuals or groups the same person is willing to comply with, think certain behavior should not be performed, pressure is created to not carry out that behavior (Ajzen 1985, 14).

2.2.4. Intention:

The next section deals with intention. Intentions represent the fundamental psychological mechanism that captures an individual’s motivational commitment toward a specific behavior. They function as a precise indicator of an individual's

preparedness and determination, reflecting the personal effort one is willing to commit to perform a particular behavior.

As a principle, the strength of one's intention directly correlates with the probability of behavioral execution. The more decisively and confidently an individual intends an action, the more probable it becomes that they will ultimately execute that action (Ajzen 1991, 181). A big influence on intentions are the effects of time. Since intention and behavior is shaped by information, change of time has a considerable influence on behavioral intention as new information emerges (Ajzen 1985, 19).

Like Brown (1948), Lewin (1946, 1951) and Miller (1944) have emphasized in their research, a goal's attractions and repulsions generally decrease as psychological distance from the goal increases, with the avoidance response typically being stronger than the approach response. Put more simply, the closer the moment of a certain behavior arrives, the higher the possibility of increasing negative features outperforming positive features and the behavior not being executed.

As mentioned above, new information as an external factor can completely change one person's intention and cannot be anticipated from measures of intention obtained from an earlier point in time. These disruptive effects of unforeseen events take severe influence on the volitional control and the high accuracy from intentions to from behaviors in question (Ajzen 1985, 18f.)

The impact of time can be observed especially well in the intention-behavior relationship. Since intentions are from provisional nature, all individuals can tell is their intention towards a particular behavior "as of now". Hence, assuming the individual has the behavior under volitional control, failure to carry out the intended behavior, would be an indication of the individual's change of mind. The failure to perform a behavior might be caused by either changing the intention or because performing the behavior failed. Thus, every behavioral intention is goal to the desire of executing it. However, it is influenced by some degree of uncertainty (Ajzen 1985, 24).

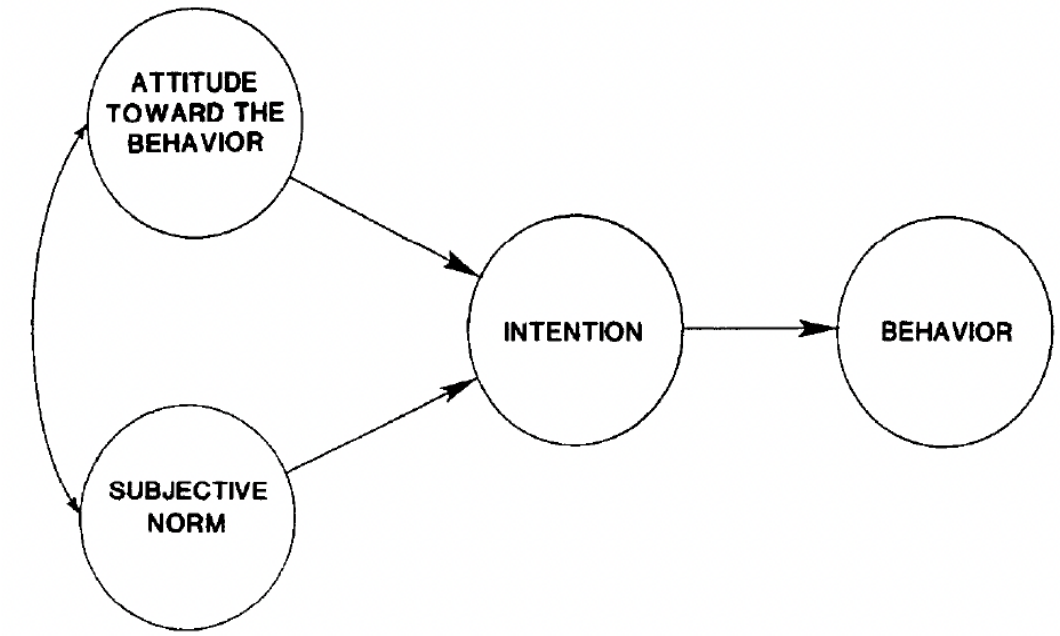
The actual behavior performed by a person is explained by the beliefs this person obtained by the information he gathered. Therefore, what ultimately shapes a person's behavior, is determined by the information received (Ajzen 1985, 14).

A considerable amount of literature has been published on the effectiveness of intention predicting behavior. However, research also shows that behavioral intention can only be expected to predict individual's attempts to perform certain behavior. Put differently, intentions are better predictors of attempts rather than of actual changes.

This can be explained by possible interferences over time (Ajzen 1985, 30f.) Assume a person has the intention to visit a football game in one month. Next month, tickets to this game are already sold out. A clear intention to visit the game was only denied by an interference, that could not have been foreseen by the individual at the time of asking about the intention.

To gain an overview, the variables of the theory of reasoned action can be put onto three levels. At the first level, behavior is determined by the variable intention. At the second level, intention itself is determined by the variables attitude towards behavior and subjective norm. At the third level, behavioral beliefs about the outcome of the behavior and normative beliefs about relevant individuals or groups explain attitude and subjective norm respectively. Figure 1 shows the relationship of the determinants of the theory of reasoned action.

Figure 1. Theory of reasoned action



Source: Ajzen & Madden (1986)

2.3. The Theory of Planned Behavior

2.3.1. Perceived behavioral control

By now the theory of reasoned action explained how behavioral beliefs, which shape attitudes towards performing behavior and normative beliefs, which shape subjective

norm by believing important referents will approve one's behavior, influence behavioral intentions.

However, this only takes the intention of successfully executing one's behavior into account. To tackle that limitation, the theory of reasoned action undergoes an incremental expansion by considering non-volitional factors, forming a third determinant of behavior.

These factors represent the degree of a person's control. Examples are time, opportunity, skills and abilities including possession of a workable plan, requisite information, presence of mind as well as willpower and resources (Ajzen 1985, 25ff.).

Performance of some behavior is highly dependent on the level of control. For example, repairing a car requires technical skills where a high level of control is necessary, whereas going on a run is more dependent on willpower.

If the possibility of failure is salient, the theory of reasoned action must be expanded by the control beliefs a person possesses. These beliefs about being able to perform certain behavior are termed "perceived behavioral control" forming the third determinant shaping behavioral intention and expanding the theory of reasoned action, thereby transforming it into the theory of planned behavior. Consequently, by including control beliefs, which shape perceived behavioral control, the likelihood of actual performance of the behavior can be further examined (Ajzen 1985 30ff.).

Perceived behavioral control can be described as "the person's belief as to how easy or difficult performance of the behavior is likely to be" (Ajzen & Madden 1986, 457). An individual's sense of control over potential behavior increases proportionally with their perceived resource availabilities and opportunities. Simultaneously, this perceived control rises as potential obstacles diminish. Therefore, the more capabilities, tools and supportive circumstances an individual believes they possess and the fewer barriers they expect to encounter, the stronger their belief about successfully executing the desired behavior becomes (Ajzen & Madden 1986, 457).

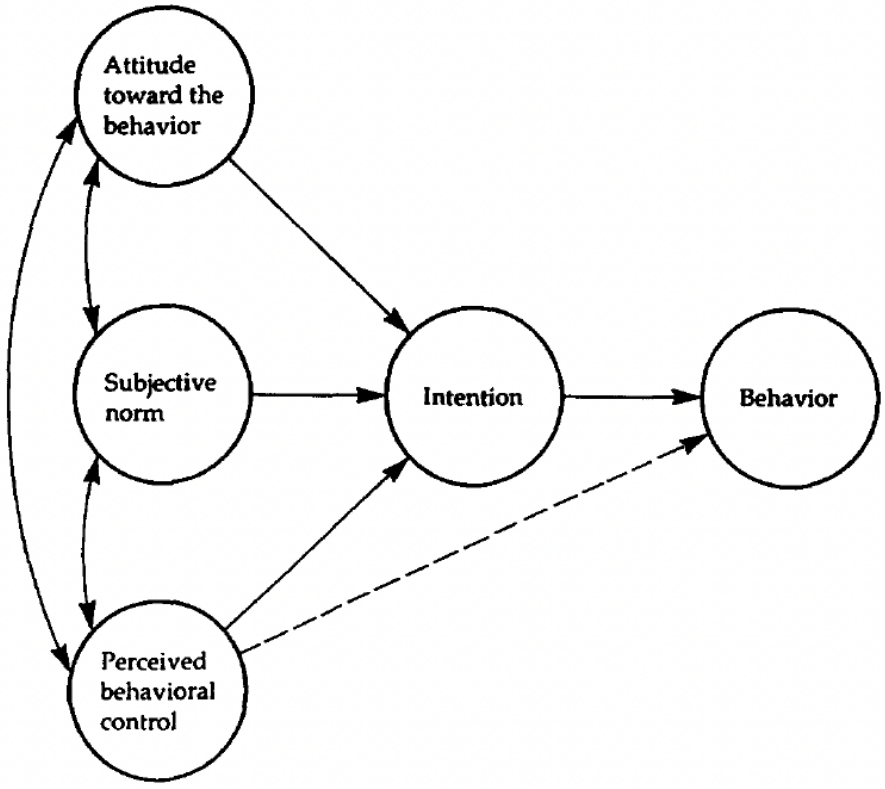
Similar to behavioral and normative beliefs, these control beliefs can be analyzed independently as distinct factors influencing behavior. Perceived behavioral control operates through two distinct pathways in the decision-making process. First, it operates as a motivational factor. Here, one's belief about their ability to successfully execute a behavior shapes their intention to act. This creates an indirect influence on behavior, as perceived behavioral control first alters intentions, which then affect behavior. For instance, when individuals believe they lack necessary resources to

perform an action, their intention to attempt it diminishes. Second, it directly influences behavior without first affecting intentions. This occurs when it accurately reflects actual capabilities and constraints. In such cases, it bypasses the intention-formation process (Ajzen 1991, 182; Madden et al. 1992, 4f.).

The concept of perceived behavioral control is based on Bandura's (1982) construct of perceived self-efficacy which "is concerned with judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura 1982, 122). The author's research shows that a person's behavior is strongly influenced by the confidence in the ability to perform it (Bandura 1991, 2f.). The theory of planned behavior puts this construct of perceived behavioral control into a broader framework among the relations of attitudes, subjective norm, intentions and behavior.

Figure 2 shows a model of the theory of planned behavior. The third determinant of intention, perceived behavioral control was added, having a direct influence on behavior (dashed line) and an indirect influence on behavior, first affecting intention.

Figure 2. Theory of planned behavior



Source: Ajzen & Madden (1986)

2.3.2. A theory for predicting behavior

Prior to the development of the theory of planned behavior, several gaps in literature existed which the theory was aiming to fill.

Research has examined broad attitudinal orientations toward various entities including institutional structures (religious organizations, community housing, campus governance, employment settings), diverse social groups (minorities, religious bodies) and specific individuals from different backgrounds (persons of various racial backgrounds, academic peers).

However, these generalized attitude measurements have consistently demonstrated poor predictive validity when attempting to forecast specific behavioral responses directed towards the attitude object in question. This persistent gap between measured attitudes and observed behaviors has prompted some researchers to question the fundamental utility of attitude as a theoretical construct in behavioral science.

The disconnect between general attitudinal assessments and specific behavioral outcomes suggested abandoning broad attitudinal constructs alone (Wicker 1969, 75). Similarly, researchers have observed minimal correlations between broad personality characteristics and specific situational behaviors, leading some theorists to challenge the trait concept, which can be described as validity of traits as generalized behavioral tendencies (Mischel, 1968). Furthermore, research examining connections between generalized locus of control and context-specific behaviors (Rotter 1954, 1966) have yielded consistently underwhelming results.

A proposed solution to address the weak predictive capacity of both attitudinal and trait measures involves behavioral aggregation across multiple contexts, situations, and action types (Epstein 1983; Fishbein & Ajzen 1974). This aggregation principle operates on the premise that any individual behavioral instance reflects both the underlying mentality and numerous situation-specific variables. By combining diverse behavioral observations from various contexts and situations, these situational influences tend to neutralize each other, resulting in an aggregate measure that more accurately captures the underlying behavioral nature than any single behavioral observation.

Research results have substantiated this aggregation approach by demonstrating that general attitudes and personality traits demonstrate significantly improved predictive

validity when applied to behavioral aggregates rather than specific individual behaviors (Ajzen 1991, 180).

However, this aggregation approach does not explain various behaviors. Moreover, it cannot predict specific behavior in specific situations. Ajzen and Fishbein (1980) argue that general attitudes and personality traits do indeed influence human behavior, but their effects become apparent only when examining comprehensive, aggregated behavioral patterns rather than isolated incidents. The impact of these broad dispositions on specific, situational behaviors is significantly diminished by contextual and immediate factors present in any single behavioral instance.

In fact, one could propose that broad attitudinal and personality traits affect specific behaviors primarily through indirect pathways, by shaping factors that have direct connections to the particular behavior under consideration. This perspective suggests a mediated relationship where general characteristics operate at a distance from specific behavioral outcomes, with their influence flowing through mediating variables that more directly shape the behavior in question (Ajzen 1991, 181f., Ajzen & Madden 1986, 454).

In this context, the theory of planned behavior wanted to gain a more meaningful and deeper understanding by assuming that “perceived behavioral control, together with behavioral intention, can be used directly to predict behavioral achievement (Ajzen & Madden 1986, 184).

2.3.3. Recent developments

When talking about recent developments, this work refers to the development of the theory within the last 15 years. After more than two decades since the initial publication of the theory of planned behavior, research and application, Ajzen (2011) addresses common criticisms regarding affect and emotions. He clarifies that emotions can influence the accessibility of beliefs and intentions indirectly and he critiques how studies sometimes improperly measure anticipated affect by focusing on inaction rather than action (Ajzen 2011, 1117f.)

He also explores the sufficiency assumption of the theory. Meaning whether attitudes, subjective norm and perceived control are enough to predict intentions. He emphasizes that additional proposed predictors like past behavior, habit, prototype similarity and autonomy support, must meet strict criteria to preserve the model’s parsimony (Ajzen 2011, 1119f.).

According to the author, the theory of planned behavior remains a flexible and powerful model, able to integrate findings from contemporary research, including spontaneous processes, habits, and emotional influences, while maintaining its foundation in the theory of reasoned action (Ajzen 2011, 1123). One moderator in this work, environmental values, can be seen as such an emotional influence.

The theory of planned behavior was applied to different academic fields since it was first published. However, criticism was rising in the last decade due to the time that has passed since it was first developed. Sniehotta et al. (2014) reason that the theory should be retired due to their insufficient findings. Ajzen (2014) himself discredited this argument by pointing out their misunderstanding of the theory and insufficient studying of the development from the theory of reasoned action to the theory of planned behavior.

In more recent articles, Ajzen (2019) and Hagger et al. (2022), interpret the influence of perceived behavioral control differently than in the original theory (Ajzen 1985; Ajzen & Madden 1986). They argue, that perceived behavioral control acts as a moderator on attitude and subjective norm. However, in the majority of following empirical work connected to socially responsible- and sustainable investing, perceived behavioral control is still treated as a determinant of intention (e.g. Akhtar & Das 2019; Joo et al. 2020; Aziz 2021; Thanki et al. 2022; Yee et al. 2022; Malzara et al. 2023; Mishra et al. 2023; Sobaih & Elshaer 2023 etc.), instead of assigning it the role of a moderating variable affecting the degree to which attitude and subjective norm influence intention.

2.4. Hypotheses

To date, several studies investigating the relationship between the determinants of the theory of planned behavior and socially responsible investing (or equivalent) have come to the conclusion that at least one or more determinants have a positive relationship with the intention to engage in socially responsible investing (e.g. Raut et al. 2021, Rathee & Aggarwal 2022, Malzara 2023 etc.). However, testing the theory in the context of responsible investing including moderation analysis, can be named as a minority.

It is important to mention, that this work's model treats perceived behavioral control as a direct determinant of intention, applied equally to that of attitude and subjective norm. Assessments of perceived behavioral control can utilize two methodological approaches: direct questioning about behavioral capability, or indirect measurement

based on individual's beliefs regarding their ability to manage specific facilitating or constraining factors. Since the majority of research has implemented the direct measurement approach (Ajzen 2022, 668), this work will do so as well.

The approach of asking direct questions rather refers to the first model presented by Ajzen and Madden (1986), where the assumption exists that perceived behavioral control is a motivational implication for intentions. More specifically, the theory of planned behavior implies that perceived behavioral control is mediated by intention. The theory posits that an individual's sense of capability does not directly trigger behavior, it impacts behavior indirectly by first shaping intentions, which then serves as a proximal determinant of behavior.

However, assessments founded on belief-based measures offer valuable insights into the cognitive underlyings that shape how individuals perceive their control over behaviors (Ajzen 2022, 668). The measurement applicable for investigating the relationship of beliefs, which shape the determinants of intention, intention and further behavior itself, one's questionnaire would contain measures of behavioral beliefs, normative beliefs, direct measures of attitude and subjective norm as well as intention. Last, actual behavior would be recorded by observation or self-reports (Ajzen 1985, 15).

In context of most empirical studies treating the application of this theory without measuring actual behavior, a more limited set of interactions and relationships can answer most questions the theory raises by measuring attitudes and subjective norm (and perceived behavioral control). Furthermore, it is unnecessary to apply a measure of actual behavior as eight out of nine intention-behavior correlations confirmed people carrying out the behavior in accordance with their intentions (Ajzen 1985, 15f.).

In this work, the behavior that is influenced by intention and its determinants is the behavior of engaging in socially responsible investing. The theory will be expanded by adding two moderator variables named environmental values and trust in governance. The first moderator measures an individual's perception on environmental concerns on oneself, others and the biosphere. The second moderator measures trust in governance of the socially responsible investment.

Since this work investigates the influence of environmental values and trust in governance of socially responsible investments within the framework of the theory of planned behavior, first, the direct effects of the three determinants and the direct effects

of the two additional variables on behavioral intention are tested. The following hypotheses are proposed:

Hypothesis 1: Attitude has a positive impact on the intention to invest socially responsible.

H2: Subjective norm has a positive impact on the intention to invest socially responsible.

H3: Perceived behavioral control has a positive impact on the intention to invest socially responsible.

H4: Environmental values have a positive impact on the intention to invest socially responsible.

H5: Trust in governance of the socially responsible investment has a positive impact on the intention to invest socially responsible.

2.4.1. Environmental values

The standard determinants of the theory of planned behavior are expanded with two more variables. The first variable is termed “environmental values”. The measures of this moderator are derived from De Groot and Steg’s (2007) research about the role of environmental concerns within the framework of the theory of planned behavior. As climate change and the increasing demand of natural resources push the discourse about conquering environmental concerns, this moderator was included.
The authors expand the theory by including egoistic, altruistic and biospheric concerns into the theory framework in context of people’s willingness to use a park-and-ride facility (De Groot & Steg 2007, 1817).
The mediation effect of attitudes on the relationship between environmental concerns on intention to use the facility was measured. De Groot and Steg found a positive mediation effect of environmental concerns on attitudes towards the behavior. In their research, the authors strictly distinguish between egoistic, altruistic and biospheric concerns following the three clusters of environmental concerns as argued by Schulz

(2000, 2001). The first one refers to consequences for one personal (e.g. one's future). The second refers to consequences for other people (e.g. future generations). The third refers to effects of environmental behavior for the ecosystem and biosphere. In general, environmental concerns refer to specific environmental issues may be rooted in awareness of harmful consequences of environmental problems to values or valued objects. In their research, these concerns were put together as the variable environmental concerns (De Groot & Steg 2007, 1820ff.).
This work follows this procedure by using some of the used measures including all three clusters of environmental concerns (egoistic, altruistic, biospheric) to create the variable environmental values. The moderating effect of environmental values on attitude, subjective norm and perceived behavioral control on socially responsible investment intention is tested. Therefore, the following hypothesis is proposed:

H6: Higher environmental values strengthen the positive effects of attitude, subjective norm and perceived behavioral control on the intention to invest socially responsible.

2.4.2. Trust in Governance

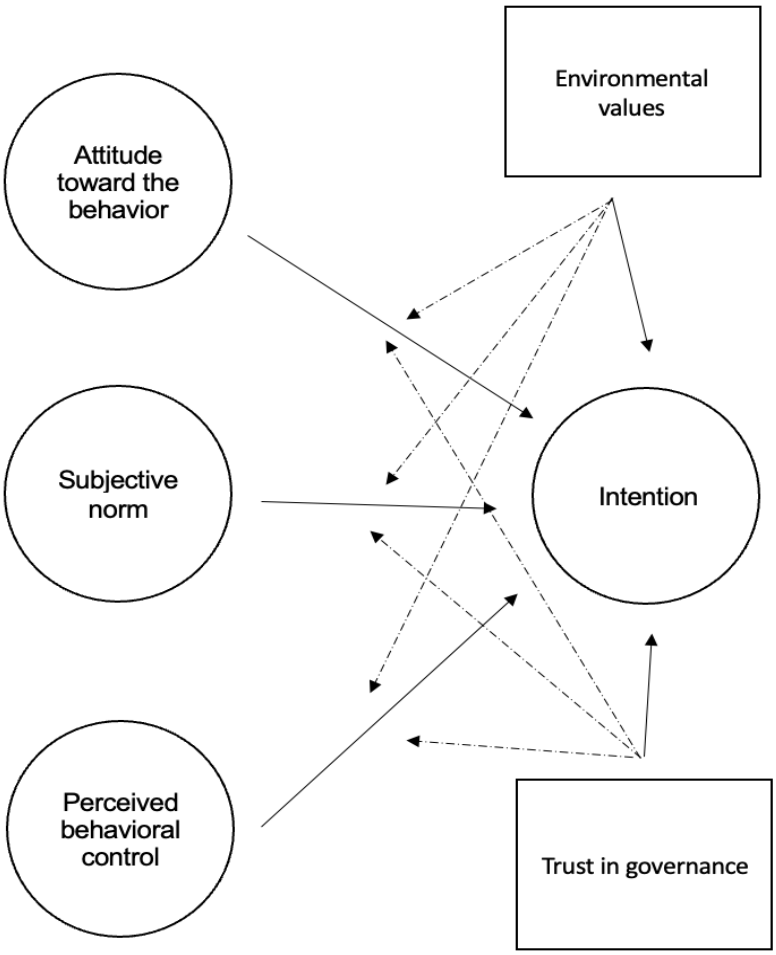
It is argued that publicly traded companies often fail to disclose financially material sustainability data. Paetzold and Busch (2014) state that sustainable investment mutual funds overwhelm investors with excessive sustainability information and financial advisors in retail banking settings frequently withhold crucial sustainable investment information from individual investors (Paetzold & Busch 2014, 9). Moreover, Heath et al. (2021) propose that socially responsible investment funds are impact washing, meaning their portfolio includes companies with high environmental as well as social conduct, however they fail to deliver on their commitment to create impact (Heath et al. 2023, 3).
Therefore, the question raises on how much (potential) investors trust their (potential) socially responsible investment and how it affects their beliefs: This is measured by the second moderator variable, trust in governance. This construct is derived from Nillson (2009), who discusses trust in socially responsible investing in the context of investor trust in fund providers. He highlights that trust is a crucial factor influencing socially responsible investment decisions. Investors who prioritize social responsibility may have different levels of trust in socially responsible funds compared to those who

focus on financial returns. The study suggests that trust plays a role in how investors perceive the performance and credibility of socially responsible funds, impacting their willingness to invest. Additionally, trust in socially responsible investment providers and the ethical claims they make can affect investor confidence and decision-making.
Adapted to this research objective, the questions were reformulated to trust in governance of socially responsible investments. As one can see in the empirical part of this work, the measures do not clearly define what tool of investment is used when asking about trust in socially responsible investing. It was treated this way in order to keep the questions as short as possible and easy to understand (see page 22). To clarify, it can be assumed that respondents think about the governance of the provider of their investment products. For example, the guidelines for the classification for investments to be defined socially responsible and therefore be included in respective mutual funds, exchange traded funds, etc. It might also relate to the governance of companies themselves. For instance, if respondents hold individual stocks or corporate bonds.
The moderating effect of trust on attitude, subjective norm and perceived behavioral control on socially responsible investment intention is tested. Therefore, the following hypothesis is proposed:

H7: Higher trust in governance of the socially responsible investments strengthens the positive effects of attitude, subjective norm and perceived behavioral control on the intention to invest socially responsible.

The two moderating variables show whether and to what extent environmental values and trust in governance strengthen or weaken the effect of attitude, subjective norm and perceived behavioral on intention to engage in socially responsible investing.
Figure 3 presents this approach with an expanded model. The arrow lines represent the direct effects of the five independent variables on the dependent variable intention, while the dashed lines represent the moderating effects of the two moderators on the three determinants of intention.

Figure 3. Expanded model



3. Methodology

3.1. Research objective

The question which the obtained data is supposed to answer is: how do attitude, subjective norm and perceived behavioral affect individual's behavior to pursue socially responsible investing? Expanded by moderators: how do environmental values and trust in governance influence the decision-making factors of engagement in socially responsible investing? More specifically, as a function of environmental values and trust, the differential effect of the three determinants of the theory of planned behavior on the intention to engage in socially responsible investing is investigated.

3.2. Data Collection Techniques

The data in this work was conducted using a survey via online questionnaire. It was distributed through social media, word of mouth and online services such as surveycircle and surveyswap. The target group were people who invest or intend to invest socially responsible. The survey items were adapted from previous studies and tailored to align with the objectives of the current research. The first section of the questionnaire captured demographic details such as age, gender and education level. The second section included items designed to measure the determinants of/and behavioral intentions of (potential) investors as well as investor's environmental values and their trust in governance of their responsible investment. The majority of respondents were located in Austria and Germany and provided their answers on a 5-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5).

3.3. Population and Sample

Green's (1991) suggested formula: 50 + 8 * M (M=Number of independent variables) was applied and the minimum number of respondents needed to fulfill the requirement would thus be 50 + 8*5 = 90 respondents (Green 1991, 499). Anderson and Gerbig (1984) claim that with three or more indicators per factor, a sample size of 100 will be sufficient for convergence and a sample size of 150 will be sufficient for a convergent and proper solution (Anderson & Gerbig 1984, 170f.) While Iacobucci (2009) states that measurements containing three or four indicators per factor, samples of sizes 50 or 100 can be plenty (Iacobucci 2009, 95).

A non-probability sampling technique was applied, which led to 149 valid responses. The target group were people who invest or intend to invest socially responsible. However, convenience sampling was applied as a high number of respondents is crucial for structural equation modelling, which is used in this work. Convenience sampling involves collecting data from research subjects who are easily accessible to the researcher. While probability and non-probability sampling differ significantly, convenience sampling specifically refers to situations where researchers gather participants from readily available public settings. This approach can be utilized across various research contexts, but the term specifically applies when researcher access is the primary selection factor, rather than when multiple populations or research sites

are available for selection. As mentioned above, such access to as many respondents as possible was the main objective when choosing the sampling method.
For instance, distributing the questionnaire to and via peers is more accessible than distributing it at institutions where there is no relevant relationship given as access limitations would be faced. This sampling method provides cost-effective data collection but sees criticism for potential selection bias due to discrepancies between the sample and the broader target population (Golzar & Tajik 2022, 74).
However, since this study is not focused on a specific demographic or geographic group, this sampling method was chosen as the most appropriate one as it is the easiest data collection approach when trying to obtain data from as many respondents as possible.

3.4. Measurement

The construct “intention” as well as the construct “attitude” was adopted from Rathee & Agarrwal (2022) as well as Chen (2007). Their research’s objective was to measure the determinants on impact investing and consumer attitudes as well as purchase intentions respectively. For the measurement of the construct “subjective norm” measurements were partially adopted from Thoradeniya (2015) and partially derived from Taylor and Todd (1995). The research objective was the application of the theory of planned behavior on sustainability reporting and environmental behavior. Scales from Reyhanloo et al. (2018), East (1993) and their studies on investment intentions were used and reformulated for the third construct of “perceived behavioral control”.
The first moderator variable “environmental values” was measured using the template of De Groot & Steg (2007). The scholars were investigating egoistic, altruistic and biospheric concerns related to the environment. The moderation variable “trust in governance” was derived from Nillson’s (2009) measures, conducting research on trust in the providers of socially responsible profiled mutual funds.

Table 1 shows the measures of the constructs, each representing one component of the expanded model.

Table 1. Measurement of constructs

Construct		Item	Source
Intention (INT)	INT1	I consider social and environmental factors while making investment decisions.	Rathee & Agarrwal (2022)
	INT2	I intend to invest in socially responsible companies.	Rathee & Agarrwal (2022)
	INT3	I intend to do only socially responsible investing.	Rathee & Agarrwal (2022)
Attitude (ATT)	ATT1	Socially responsible investing is a good idea.	Chen (2007)
	ATT2	I think socially responsible investing is a long-term solution for social and environmental problems.	Rathee & Agarrwal (2022)
	ATT3	I think socially responsible investing helps to attain sustainable development goals.	Rathee & Agarrwal (2022)
Subjective norm (SN)	SN1	Those who have important influence on me think that I should engage in socially responsible investing.	Taylor & Todd (1995)
	SN2	People whose opinion I value would prefer that I engage in socially responsible investing.	Taylor & Todd (1995)
	SN3	Many individuals similar to me engage in socially responsible investing.	Thoradeniya (2015)
Perceived behavioral control (PBC)	PBC1	I have knowledge about the field of investments which makes me able to engage in socially responsible investing.	Reyhanloo et al. (2018)
	PBC2	If I want to engage in socially responsible investing I can easily do so.	East (1993)
	PBC3	I have financial resources to invest in the field of socially responsible investing.	Reyhanloo et al. (2018)
Environmental values (ENV)	ENV1	I care about the consequences of environmental problems on my future.	De Groot & Steg (2007)
	ENV2	I care about the consequences of environmental problems on future generations.	De Groot & Steg (2007)
	ENV3	I care about the consequences of environmental problems on animals.	De Groot & Steg (2007)
Trust in governance (GOV)	GOV1	I am confident that my (potential) socially responsible investment (will be) is used to improve social and environmental issues such as pollution.	Nillson (2009)
	GOV2	I am confident that my (potential) socially responsible investment (will be) is used to get companies to act in a way that reduces social problems such as pollution and third world poverty.	Nillson (2009)
	GOV3	I am confident that my (potential) socially responsible investment follows the socially responsible guidelines used in their marketing.	Nillson (2009)

3.5. Implementation

The collected data was analyzed utilizing Structural Equation Modeling (SEM) using SPSS AMOS. SEM combines various statistical techniques to examine patterns of interdependence among latent variables, which are measured through one or more observed variables. As Hair et al. (2010) point out, SEM merges factor analysis and path analysis, enabling the development of measurement models and structural models to study complex behavioral relationships.

The study employs SEM for three key reasons: it enables simultaneous assessment of multiple regression equations; it incorporates latent variables while accounting for measurement errors and it establishes both measurement and structural models to analyze complex behavioral relationships with strong reliability and validity testing (Nusair & Hua 2010, 314).

Moreover, moderation analysis was used to “measure and test the differential effect of the independent variable on the dependent variable as a function of the moderator” (Baron & Kenny 1986, 1174). When theory suggests a moderator influences specific structural relationships, simple moderation analysis becomes appropriate. Additionally, moderating variables are also examined to create new theoretical insights (Andersson et al. 2014, 1063). This approach works with both continuous and categorical moderating variables. However, this work uses continuous variables since the two moderators are latent constructs.

The analysis creates a moderated regression model to determine if and how a moderator changes the relationship's strength or direction between independent and dependent variables (Andersson et al. 2014, 1064).

It is important to note that continuous moderators should be maintained in their original form rather than converting them to categorical data during interaction assessment. Such conversion diminishes statistical power, making significant effects harder to detect. Additionally, categorizing continuous data raises questions about the validity of using means or medians for analysis, a methodological concern in moderation testing (Stone-Romero & Anderson 1994, 355).

3.6. Obtained Data

3.6.1. Demographic profile

Table 2 provides an overview of demographic statistics. It can be observed, that out of 149 valid respondents, 91 are female. That is 61% of respondents, whereas 57 respondents or 39% of participants are male. Please note that gender and income variables do not add up to 149 as not every respondent chose to answer the respective questions. Survey results showed high education levels among participants, with 23% of investors holding postgraduate degrees and 79% having completed undergraduate education, suggesting credible and informed responses.

Table 2. Demographic profile

Variable	Category	Frequency	Percentage
Age	<20	5	3
	20-30	107	72
	31-40	25	17
	41-50	7	5
	>50	5	3
Gender	Male	57	39
	Female	91	61
Education	<High school diploma	6	4
	High school diploma	25	17
	Bachelor's degree	83	56
	Postgraduate degree (Master, Magister, Doctorate, PhD)	35	23
Income	<9.999€	40	27
	10.000-24.999€	43	29
	25.000-49.999€	30	20
	50.000-74.999€	20	14
	75.000-99.999€	7	5
	100.000-149.999€	4	3
	>150.000€	3	2

Note: n=149; Gender and income variables do not add up to 149 as not every respondent chose to answer those questions.

3.6.2. Measurement model

To validate the measurement model proposed in the study, confirmatory factor analysis (CFA) was performed. Additionally, the constructs were measured for internal validation using cronbach's alpha (α), reliability using composite reliability (CR) and validity using average variance extracted (AVE). Moreover, multicollinearity was checked using variance inflation factor (VIF).

3.6.2.1. Confirmatory factor analysis

CFA represents a specialized application of structural equation modeling that focuses on measurement models, specifically examining relationships between observable indicators and underlying latent constructs. The fundamental purpose of these measurement models is to identify and characterize the factors responsible for variation and covariation patterns among multiple indicators.
A factor constitutes an unobservable variable that exerts influence across multiple observed measures, explaining their correlational patterns. These observed measures demonstrate intercorrelation precisely because they share common causal influences, meaning they reflect the same underlying construct. Theoretically, removing the latent construct's influence would eliminate all intercorrelations among these observed measures. While CFA provides insightful explanations for indicator covariation by identifying a smaller number of factors than measured variables, it also offers a more economical understanding of complex measurement relationships (Brown & Moore 2012, 362f.).

Table 3 shows that nearly all loadings were a proper measurement for the variables as standardized factor loadings with a value of 0.708 or higher are appropriate (Hair et al. 2020, 104). It is important to add that the variable "attitude" originally had four predictor factors, however, one item with a loading of 0.55 was removed. The third item of intention "INT3" has a low loading. It was not removed, since at least three factor loadings should be included to run SEM analysis, as bias nearly vanishes at that number (Gerbing & Anderson 1985, 268).

3.6.2.1.1. Model fit

Among structural equation modeling fit indices, the chi-square (χ^2) stands alone as the only inferential statistic, while all others are descriptive in nature. This distinction means that only the χ^2 allows for formal hypothesis testing with statements about statistical significance.

This special status might suggest that χ^2 should be the primary or only reported statistic. However, χ^2 has significant limitations that necessitate using it alongside other indices. Most critically, χ^2 is highly sensitive to sample size (Gerbing & Anderson, 1985). While large samples are beneficial for precise parameter estimation, they cause χ^2 values to inflate dramatically. Consequently, with even moderately sized samples, χ^2 tests frequently indicate significant deviation from the model (suggesting poor fit) even when the model is reasonably accurate (Iacobucci 2010, 91).

To address this limitation, methodologists have developed a pragmatic approach. There is general consensus in literature that dividing χ^2 by its degrees of freedom (df) provides a more useful metric, with values not exceeding 3.0 indicating reasonable model fit (Kline, 2004). Others, like Hair et al. (2010), hypothesize a range between 1 and 5 as an appropriate norm. This adjusted measure ($\chi^2/df \leq 3$) helps balance the formal statistical properties of χ^2 with practical assessment needs.

Although all SEM programs provide an overall χ^2 statistic related to model fit, as mentioned above, it is now widely recognized that, due to its extreme sensitivity to sample size, this statistic represents an impractical and unreliable indicator of good fit (Kline, 2011). However, Hayduk et al. (2007) argue that the χ^2 test stands as the only valid global fit statistic. They firmly reject all alternative global fit measures, particularly approximate fit indexes such as the root mean square error of approximation (RMSEA) and others. Nonetheless, different approaches exist. Unlike significance tests, approximate fit indices function as continuous measures of model-data correspondence.

The majority of scholars believe that some approximate fit indices are so commonly expected that reviewers would question their absence from reports. Consequently, it is advised to report values for a core set of approximate fit indices, while emphasizing that decisions about model retention should not be based exclusively on any global fit statistics, including the χ^2 test (Kline 2018, 191f.) As a result, researchers typically use more practical non-statistical indices of fit, that is, goodness of fit (GFI), incremental fit

index (IFI), Tucker-Lewis index (TFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA) (Rathee & Aggarwal 2022, 9).
In this work, standardized root mean square residual (SRMR) is also added. The SRMR measures the average difference between observed and model-predicted correlations. As a badness-of-fit index, SRMR values range from 0 to 1, with smaller values indicating better fit. A value of zero represents perfect fit, where model predictions exactly match the observed data. SRMR performs better when the measurement model has high factor loadings. This index is particularly valuable because it remains relatively robust against violations of distributional assumptions, making it a reliable indicator of how well a model captures the underlying data structure (Anderson & Gerbing 1984, 171).
Unlike SRMR and χ^2, which compare a model directly to data, CFI evaluates relative goodness-of-fit by comparing a hypothesized model against a baseline model (typically one where no relationships between variables are estimated). CFI values range from 0 to 1, with larger values indicating better fit. A distinguishing feature of CFI is its incorporation of model parsimony. It adjusts for model complexity by directly including degrees of freedom in its calculation. This means the CFI penalizes overly complex models (Iacobucci 2010, 97). The TLI compensates for the effect of model complexity, while an IFI, evaluates how much better a model performs by measuring the relative enhancement in fit when comparing a proposed model against a more constrained reference model with fewer parameters. The standard reference point for such comparisons typically employs a baseline configuration where no relationships exist between the measured variables, commonly referred to as the independence model. (Hu & Bentler 1999, 2).

Table 4 provides model fit indices. Normed chi-square shows a good model fit when analyzing primary fit index ($\chi 2/df=1.800$, norm: ≤3 (Kline 2004)). While GFI (0.862, norm: >0.90 (Hu & Bentler 1999)) and TLI (0.905, norm: >0.94 (Bagozzi & Yi 1988)) are slightly out of the norm. Other mentioned indices such as CFI (0.924, norm: >0.92 (Hair et al. 2010)), IFI (0.926, norm: >0.90 (Bagozzi & Yi 1988)), RMSEA (0.074, norm: <0.08 (MacCallum et al. 1996)) and SRMR (0.071, norm: <0.08 (Hu & Bentler 1999) show a good model fit.

Table 3. Reliability and validity of constructs

Construct/Items	Standardized Factor Loadings	Composite Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's Alpha (α)
Intention (INT)		0.807	0.591	0.787
INT1	0.849			
INT2	0.863			
INT3	0.554			
Attitude (ATT)		0.768	0.525	0.790
ATT1	0.735			
ATT2	0.669			
ATT3	0.756			
Subjective norm (SN)		0.842	0.643	0.840
SN1	0.896			
SN2	0.831			
SN3	0.661			
Perceived behavioral control (PBC)		0.840	0.637	0.839
PBC1	0.785			
PBC2	0.867			
PBC3	0.737			
Environmental values (ENV)		0.872	0.694	0.906
ENV1	0.865			
ENV2	0.831			
ENV3	0.806			
Trust in governance (GOV)		0.807	0.583	0.803
GOV1	0.803			
GOV2	0.789			
GOV3	0.696			

Table 4. Fit of measurement model

Fit indices	Measurement model (CFA)	Norms
Chi-square (χ^2)	246,58	
Normed chi-square (χ2/df)	1.800	≤3
GFI	0.862	>0.90
TLI	0.905	>0.94
CFI	0.924	>0.92
IFI	0.926	>0.90
RMSEA	0.074	<0.08
SRMR	0.071	<0.08

3.6.2.2. Cronbach's alpha

The reliability of the constructs was assessed using cronbach's alpha. The results indicated that all constructs demonstrated satisfactory internal consistency, with α values ranging from 0.787 to 0.906. These values exceed the commonly recommended threshold of 0.70, confirming adequate scale (Hair et al. 2020, 104).

3.6.2.3. Composite reliability

Furthermore, composite reliability was assessed to determine the internal consistency of the latent constructs INT, ATT, SN, PBC, ENV, GOV. A CR value of 0.70 or higher is considered acceptable, while a value above 0.80 indicates strong reliability. A value above 0.95 measures the same concept (Hair et al. 2020 104).
In this study, all CR values ranged from 0.768 to 0.872, exceeding the recommended threshold and confirming adequate construct reliability. These results indicate that the latent variables demonstrate high internal consistency, making them suitable for further analysis.

3.6.2.4. Average variance extracted

The average variance extracted was used to assess convergent validity of the constructs. An AVE value of 0.50 or higher indicates that the construct explains at least 50% of the variance in its indicators (Hair et al. 2020 104). In this study, all AVE values ranged from 0.525 to 0.694, confirming that the constructs effectively capture the intended variance.

3.6.2.5. Variance inflation factor

Minor multicollinearity does not necessarily present a significant issue in regression analysis. However, severe multicollinearity becomes problematic because it inflates regression coefficient variances, leading to unstable estimates. This increased variance complicates coefficient interpretation and can even result in contradictory outcomes, such as positive coefficients when the relationship should be negative.

The variance inflation factor serves as a useful diagnostic tool for measuring multicollinearity by quantifying how much regression coefficient variance increases due to predictor correlations. In ideal conditions with completely uncorrelated predictors, all VIFs equal 1. As correlations increase, so do VIF values. VIFs exceeding 1 indicate some correlation among predictors, while values between 5 and 10 signal potentially problematic high correlation. When VIF values surpass 10, regression coefficients are likely poorly estimated due to severe multicollinearity, requiring appropriate remedial action. Generally, multicollinearity requires attention when a predictor's VIF approaches or exceeds 5 (Hair et al. 2011, 145; Akinwande 2015, 755f.).
Table 5 shows VIF values in this work range between 1.57 and 2.46.

Table 5. Variance inflation factor

	ATT	SN	PBC	ENV	GOV
VIF	1.57	1.60	1.54	2.46	2.14

3.6.2.6. Correlation

To assess discriminant validity, the inter-construct correlation matrix in relation to the square root of Average Variance Extracted values is examined in table 6. This analysis evaluates how well each construct maintains its distinctiveness from others. Following the criteria established by Hair et al. (2010), the results demonstrated that most construct's AVE square root (bold numbers), except INT, ATT exceeded its correlations with other constructs, thereby confirming adequate convergent validity for the latent variables. Consequently, it is concluded that the constructs demonstrated sufficient reliability and validity to warrant proceeding with structural equation modeling for hypothesis testing.

Table 6. Inter-construct correlation

	INT	ATT	SN	PBC	ENV	GOV
INT	**0.769**					
ATT	0.783	**0.725**				
SN	0.617	0.492	**0.802**			
PBC	0.285	0.208	0.374	**0.798**		
ENV	0.668	0.804	0.323	0.113	**0.833**	
GOV	0.600	0.696	0.530	0.334	0.410	**0.764**

Notes: The off-diagonal elements present the correlations among constructs, with bold diagonal values representing the square root of AVE of the respective construct. For discriminant validity to be given, diagonal values should exceed off-diagonal elements, meaning they should be larger than off-diagonal elements.

3.6.3. Structural Model

The structural model measures the direct effects of the variables of the theory of planned behavior: attitude, subjective norm, perceived behavioral control as well as the two additional variables: environmental values, trust in governance on intention as well as the moderating effect of the moderating variables on the three determinant variables of the theory on intention.

3.6.3.1. Model fit

A somewhat poor model fit is particularly surprising as in structural equation modeling research, instances of inadequate model fit typically stem from issues in the measurement components rather than from problems within the structural relationships themselves (Brown & Moore 2012, 367f.). In the measurement model, poor standardized factor loadings were excluded and α, CR and AVE provided acceptable to good results. Moreover, the multicollinearity check, VIF, was sufficient.
Furthermore, each interaction term (moderating effect meaning moderator variable multiplied with a theory variable, e.g. ENVxSN) was covaried with every other interaction term and with the rest of the independent variables to measure moderating effects. Attitude, subjective norm and perceived behavioral control were covaried with environmental values and trust in governance as well. This inclusion of covariance terms improved model fit and ensures valid estimation of the moderation effect.
Additionally, to minimize collinearity in the moderation analysis, an orthogonalization approach was applied to construct the interaction terms. This transformation ensures that the interaction term remains uncorrelated with the main effects, thereby reducing bias in variance estimation (Henseler & Chin 2010, 87).
It is conducted by expanding the standard creation of interaction terms which are used to find moderation effects. That is: multiplying the independent variable (e.g. ATT) and the moderator (e.g. ENV) resulting in the interaction term IntATTxEnv. However, this approach can introduce multicollinearity (Fassot et. Al 2016, 1887).
In the orthogonalized approach, the independent variable and the moderator are first mean-centered, which is done by subtracting the mean values from the variables. The adjusted interaction term is then created, ensuring it is uncorrelated with the main effects. This reduces collinearity without losing interaction effects (Fassot et al. 2016, 1891).
Looking at the high value of RMSEA, Baumgartner and Homburg (1996) show that in their research, for RMSEA, 58% of all models had values above 0.05 and 23% had values exceeding 0.08. Thus, a sizable proportion of published models falls short of what norms call a reasonable fit (Baumgartner & Homburg 1996, 153).

The primary assessment tool for evaluating predictive capability in structural models is the squared correlation coefficient R^2. It quantifies how effectively the model explains variance within endogenous variables, but only for the specific dataset employed in the analysis. Importantly, this measurement reflects predictive accuracy solely within the analyzed sample and should not be assumed to be a representative of broader

population patterns or characteristics. When evaluating models, certain fields of study use adjusted R^2, which applies a downward correction to the traditional R^2 value by accounting for both the dataset size and quantity of predictor variables included. This adjusted measure proves particularly valuable when researchers incorporate lots of nonsignificant predictor constructs into their structural frameworks (Hair et al. 2020, 106f.).

As adjusted R^2 is dependent on the research field and the respective research question, comparable results in the field of investigating socially responsible investing using the theory of planned behavior range from 0.461 in moderation analysis (Akhtar & Das 2019) to 0.82 in multiple regression analysis (Rathee & Aggarwal 2022). While most of the indices slightly fall short of the norms, SRMR meets the criteria. Moreover, the adjusted R^2 value of 0.542 (54%) indicates substantial explanatory power of the model. This emphasizes that the theory of planned behavior, supplemented with additional variables, can effectively measure individual investor's intentions toward socially responsible investing including observing a moderating effect.

Table 7. Fit of structural model

Fit indices	Structural model	Norms
Chi-square	146.30	
Normed chi-square	5,225	≤3
GFI	0.861	>0.90
TLI	0.576	>0.94
CFI	0.82	>0.92
IFI	0.83	>0.90
RMSEA	0.169	<0.08
SRMR	0.017	<0.08
R^2 adjusted	0.542	

3.7. Results

In the next step, path coefficients are created by examining standardized regression coefficients (β values) and p-values for all paths in the structural model. Moreover, interaction terms were used to measure the moderation effects.

The coefficient (β) in table 8 is the same as the standardized regression weight estimate, while C.R. (t) stands for critical ratio. While the p-value (p) presents the statistical significance which measures the probability of the null hypothesis being true compared to the acceptable level of uncertainty regarding the true answer.

As the findings in Table 8 reveal, the variables of the theory of planned behavior: attitude (β=0.237, t=2.817), p<0.01) and subjective norm (β=0.386, t=6.078, p<0.01), have positive and significant impacts on intention toward socially responsible investment. Therefore, this study supports the hypotheses stating significant positive relationships between attitude- (H1) and between subjective norms and intention for socially responsible investing (H2).

Environmental values (β=0.292, t=.386, p<0.01) showed significant results, supporting H4. From this data, one can also see that trust in governance of socially responsible investments (β=0.169, t=2.256, p<0.05) demonstrated positive and significant impacts on socially responsible investor intention, supporting H5.

In contrast, surprisingly, the effect of the third determinant of intention in the theory of planned behavior, perceived behavioral control (β=-0.074, t=-1.131) was found to be insignificant in predicting investor intention, resulting in the rejection of H3.

More importantly, the moderating interaction term environmental values multiplied with subjective norm (β=0.151, t=2.264,p=<0.05) shows a strengthening effect of environmental values on the positive relationship of subjective norm and the intention to engage in socially responsible investing. That result partly confirms H6.

As one can observe in table 8, statistical significance is given within in the relationships of H1, H2, H4, H5 and the moderating effect of environmental values on subjective norm of H6, since CR on these variables is >1.96, which means that the estimate is at least 1.96 standard errors away from zero. That corresponds to a p-value below 0.05 (p<0.05). Put differently, the estimate is statistically significant at the 5% (0.05) level, meaning there is strong evidence against the null hypothesis (Hair et al. 2011, 145), with H3 and other moderating effects of H6 and H7 being rejected.

Table 8. Hypotheses results

	Path			Coefficient (β)	C.R. (t)	p-value
H1	Intention	<-	ATT	0.237	2.817	,005
H2	Intention	<-	SN	0.386	6.078	***
H3	Intention	<-	PBC	-0.074	-1.131	,258
H4	Intention	<-	ENV	0.292	3.596	***
H5	Intention	<-	GOV	0.169	2.256	,024
H6	Intention	<-	IntATTxEnv	-0.078	-.949	,343
	Intention	<-	IntSNxEnv	0.151	2.264	,024
	Intention	<-	IntPBCxEnv	0.007	.098	,922
H7	Intention	<-	IntATTxGov	0.023	.233	,815
	Intention	<-	IntSNxGov	0.071	.850	,395
	Intention	<-	IntPBCxGov	-0.045	-.664	,507

4. Discussion

This study aimed to investigate the impact of attitude, subjective norm and perceived behavioral control as well as the factors environmental values and trust in governance on the beliefs that shape engagement in socially responsible investing. The use of factors from a different field with a constructive theoretical explanation provides a strong basis for incorporating mentioned factors into the study as moderating variables. Such investigation and subsequent findings mark a substantial contribution to the existing body of knowledge.

As society develops greater ecological awareness and acknowledging our environmental responsibilities, socially responsible investments are further expanded and demanded. For investors seeking to combine environmental benefits with financial gains, socially responsible investing presents a compelling opportunity. This research examines the psychological factors influencing that investment approach by expanding the theory of planned behavior framework to incorporate environmental perspectives and trust in governance of investors when assessing investment intention. Through this combination of empirical data collection and theoretical analysis, the research has produced several insightful findings.

The results from the survey conducted reveal a strong correlation between the variables of the theory of planned behavior: attitude and subjective norm on behavioral intention to invest socially responsible. Respondents who laid emphasis on their peers' opinion and possess high attitudinal factors towards socially responsible investment, had a high intention to do so. It can be assumed that the behavior of carrying out that kind of investment is fulfilled unless a considerable amount of time passes, forcing new information on investors (Ajzen 1985, 19). Including individuals who lay emphasis on several aspects of environmental effects on the future, shows that a confirmative viewpoint towards caring about egoistic, altruistic and biospheric concerns significantly strengthens the positive relationship between subjective norm and intention. Consequently, a person who keeps the viewpoint of people that have important influence on them, people whose opinion they value and individuals similar to them about investing socially responsible in mind, has an intention to do so. If consequences of environmental problems on oneself, future generations, the ecosystem and biosphere are of high importance to that person as well, the intention towards investing socially responsible increases significantly.
Looking at the direct effect of environmental values as an independent variable on intention, a positive effect can be observed. When analyzing the influence of trust in governance, a significant positive relationship between this variable and intention is found as well. This highlights, that alongside environmental influences, investors who show trust in their (potential) investment actually being socially responsible, intend to engage in socially responsible investing.

As one can see, the expanded model demonstrates the effective application of the core theoretical model of the theory of planned behavior in analyzing investment intentions in this relevant field. This study contributes to the growing body of literature on (socially responsible) investment behavior. It provides empirical evidence that the components of the theory of planned behavior can still predict behavioral intentions. Furthermore, the inclusion of environmental values and trust in governance, provided new insights on how socially responsible investing behavior is shaped.

4.1. Visualized effects

The discussed results can be further explained by interpreting them using graphs.

Figure 4 shows the interaction effect ENVxSN. It provides a more nuanced explanation of causal relationships by revealing not only how an independent variable (SN) affects a dependent variable (INT), but also when or under what conditions this relationship changes based on a moderating variable (ENV). Interactions enhance our understanding of complex relationships by demonstrating how the effect of one variable depends on the level of another variable. This conditional relationship offers greater precision in explaining phenomena that might otherwise appear inconsistent or contradictory across different contexts (Ogbeibu et al. 2018, 341f.)

As one can observe, the lower blue line symbolizes the positive relationship of subjective norm with intention. The upper orange line, which symbolizes the positive relationship of subjective norm with intention including the influence of high environmental values, is steeper, meaning environmental values strengthen the positive effect of subjective norm on the intention to invest socially responsible.

Figure 4. Strengthening effect of environmental values on subjective norm

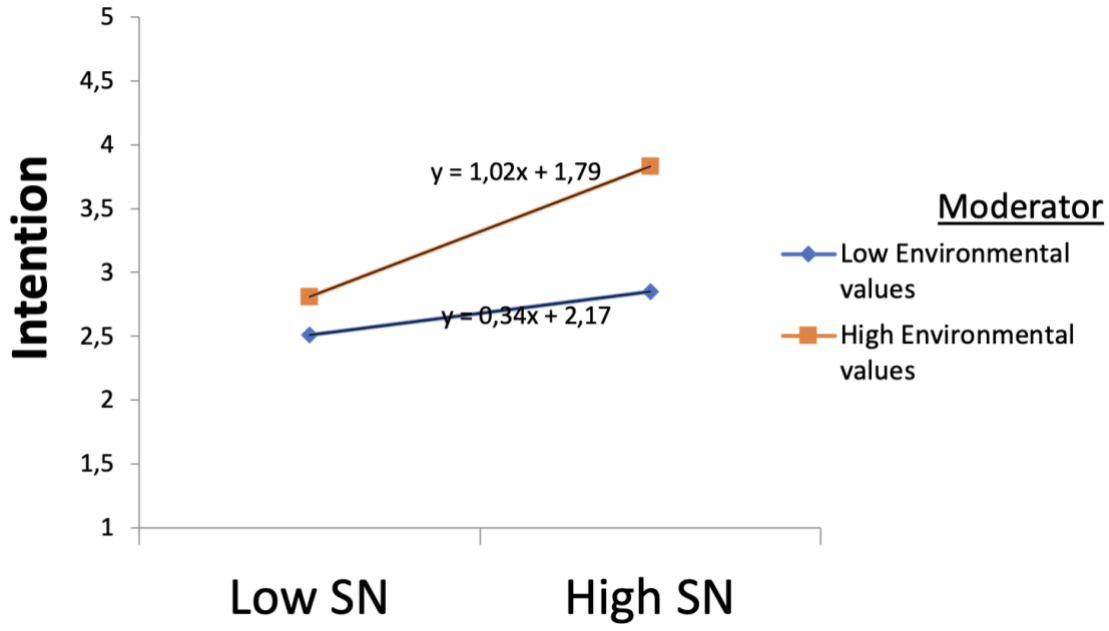
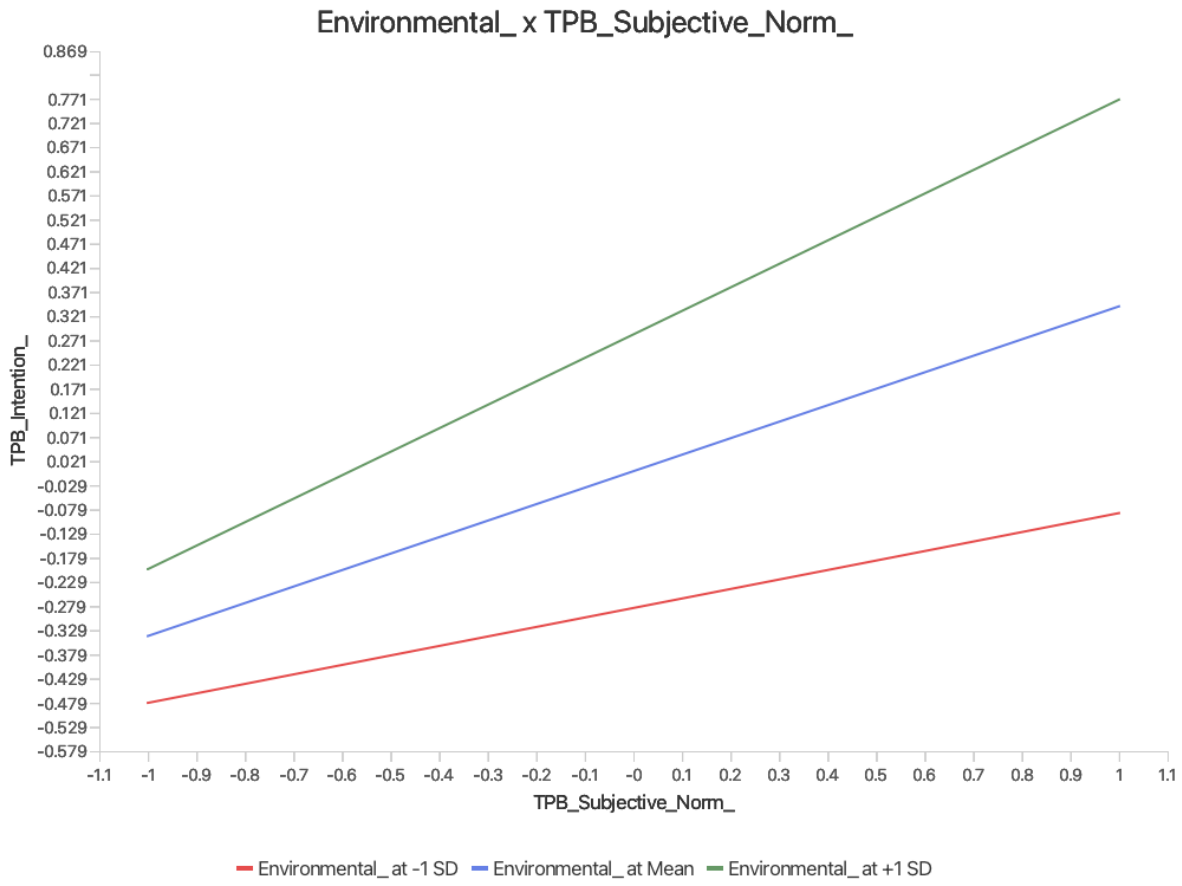


Figure 5 shows another graph explaining the strengthening effect of environmental values on the positive effect of subjective norm on intention That is because the blue line located in the middle, which is the mean of the interaction term ENVxSN, is sloping upward. This positive effect is amplified by high environmental values as one can see

by observing the upper green line, which symbolizes higher environmental values (SD +1) and is getting steeper compared to the lower red line (SD –1), with lower environmental values (Ramayah et al. 2018, 24).

Figure 5. Moderating effect of environmental values on subjective norm



Source: Slope anaylsis via SmartPLS

4.2. Practical implications

The significant role of attitude in predicting socially responsible investing intentions suggests that investment firms and financial advisors should emphasize these psychological components in their communication strategies. Marketing efforts can be enhanced by reinforcing positive attitudes toward investing socially responsible. For example, highlighting ethical, environmental and long-term financial benefits to increase attitude. Since subjective norm has significant impact on investment intention, creating marketing strategies including testimonials or endorsements from respected

figures, can influence investor's behavioral intention when these are associated as people who are important to them or whom they value.

The positive effect of environmental values on responsible investing intention as well as the strengthening moderating effect of environmental values on the relationship between subjective norm and socially responsible investment intention points to the importance of value alignment in investing. Investment products should be managed and communicated in ways that clearly reflect key environmental sustainability attributes. For example, funds that emphasize decarbonization or environmental impact can appeal more effectively to investors with corresponding values. Companies offering socially responsible investment products should ensure that the environmental focus of their products is transparent and verifiable to resonate with value-driven investors.

The role of trust in governance highlights the importance of transparency and regulatory clarity when looking at investor confidence. Concerns about the trustworthiness of socially responsible investments, often triggered by ambiguous claims or non-transparent communication, underscore the need for clearer responsibility definitions, consistent reporting standards, and mechanisms to combat the often-used term greenwashing. Regulators can support this by enforcing robust sustainability disclosure requirements and standardizing sustainability labeling practices.

Finally, these findings suggest that, in the field of socially responsible investment, value-driven strategies which also focus on positive attitudinal factors and the inclusion of relatable respected figures who show positive opinions towards socially responsible investing should be incorporated.

4.3. Limitations and outlook

The insignificant influence of perceived behavioral control suggests that, while investors intend to engage in socially responsible investing, their perceived control about conducting the behavior, e.g. having the knowledge to invest, does not play a significant role in this process. Moreover, there were no significant moderating effects of environmental values or trust in governance on the rest of the components of the theory. This is a rather disappointing outcome as the moderator variables themselves show significant impact on intention when observing their direct effects. The

moderating effect on attitude and subjective norm however, is absent as trust in governance as the second moderator has no strengthening or weakening influence on any of the variables of the theory of planned behavior.

The fast-evolving environment in socially responsible investing, driven by technological shifts and changing investment landscape, necessitates ongoing research. Future studies could explore the role of different attributes influencing engagement in socially responsible investing by expanding the theory of planned behavior and investigate how different beliefs shape specific investment behavior. Another promising area for research is moderation analysis within the field of the theory of planned behavior and socially responsible investing as a lack in literature in that field exists.

5. Conclusion

This study explains the determinants that shape socially responsible investing behavior. By including additional variables like environmental values and trust in governance, the belief system of investors was investigated and enhances understanding of the psychological mechanisms driving (potential) socially responsible investors toward market participation, examining how these decisions are shaped by their environmental values and trust in governance. The objective of this research was to observe the belief system of (potential) socially responsible investors and how it is influenced by the moderators. With the usage of structural equation modeling, the findings reveal that attitude and subjective norm most strongly predict an investor's intention toward socially responsible investment. Additionally, environmental values and trust in governance of the investment shape investor intention to engage in socially responsible investing. Furthermore, the former has a strengthening effect on the positive relationship between subjective norm and socially responsible investment intention. Hence, the intention to invest socially responsible increases when positive viewpoints of peers close to an individual, confirm with that behavior and social pressure arises. It intensifies significantly when the individual additionally holds high environmental values.

The results highlight the central role of subjective norm and environmental values, both directly and by a moderating effect, in shaping intention. To answer the research question, behavioral beliefs in the form of attitude and normative beliefs in the form of subjective norm, shape investor’s intention to invest socially responsible. Moreover, environmental values, more specific concerns about the consequences of

environmental issues on oneself, future generations and the biosphere positively impact responsible investment intention. Those values also strengthen the positive relationship between an individual's social pressure to invest socially responsible, namely subjective norm, and the intention to do so. Another finding reveals that trust in governance, such as the trust in marketing strategies or following the guidelines of socially responsible investment products, positively impacts socially responsible investment intention.

However, the hypotheses on potential moderating effects, for the most part, could not be confirmed, although attitude, subjective norm, environmental values and trust in governance themselves have a significant positive impact on (potential) socially responsible investment intention.

In conclusion, the behavioral drivers and moderators identified in this research provide actionable insights for investment professionals, advisors, managers and policymakers and fill the literature gap of including investor's environmental perspective and trust in governance in the analysis of socially responsible investment behavior, using the theory of planned behavior. Aligning marketing strategies or policies with investor's psychological motivations can enhance both participation in and trust towards socially responsible investing.

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Figures:

Fig. 1, Fig. 2. Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. Journal of experimental social psychology, 22(5), 453-474.
Fig. 5 - Fig. 10: Ringle, C. M., Wende, S., and Becker, J.-M. 2024. "SmartPLS 4." Bönningstedt: SmartPLS, https://www.smartpls.com.

Fig. 11, Fig. 12: Arbuckle, J. L. (2006). Amos (Version 26) [Computer Program]. Chicago: SPSS.

7. Appendix

Note: Although the interaction between the moderators and variables of the theory in the graphs below was not statistically significant, the graphical moderating effects are included for completeness and exploratory insight.

Figure 6. Moderating effect of environmental values on perceived behavioral control

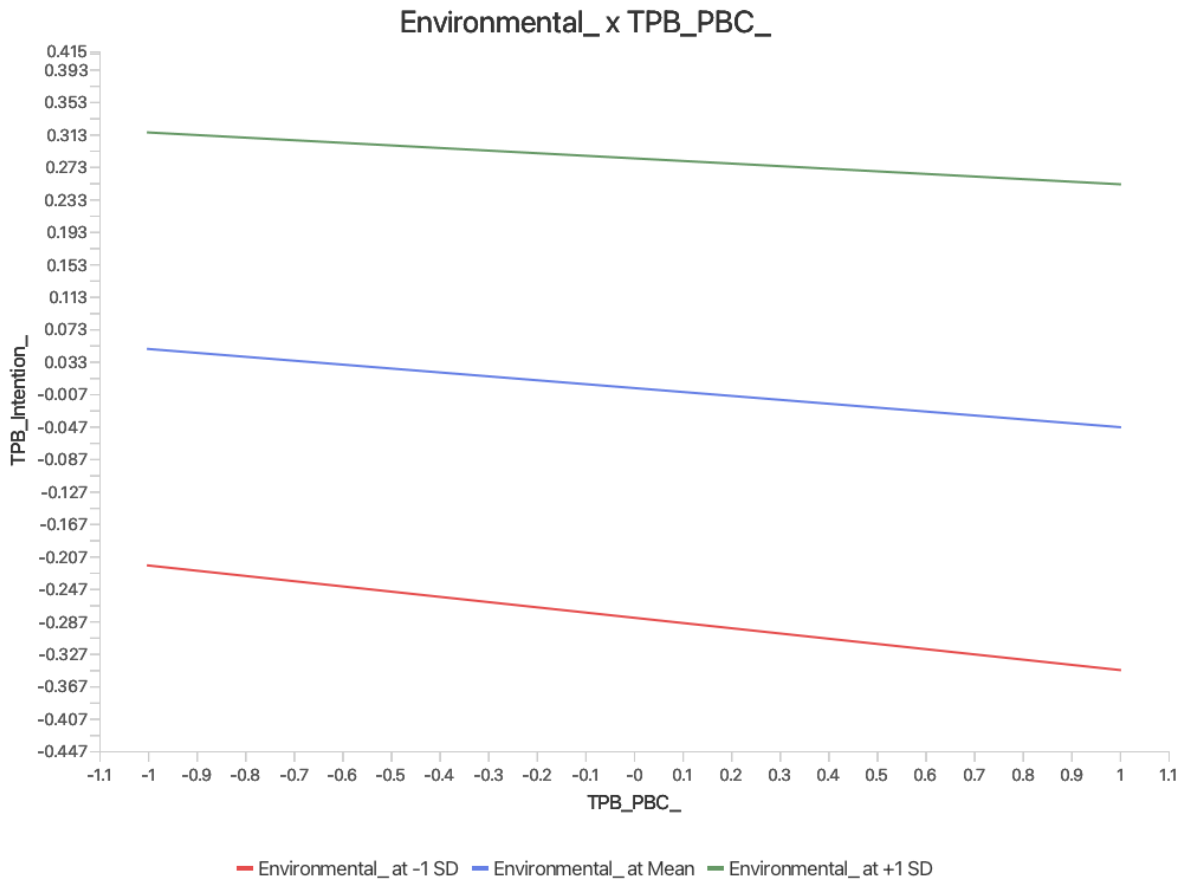


Figure 7. Moderating effect of trust in governance on attitude

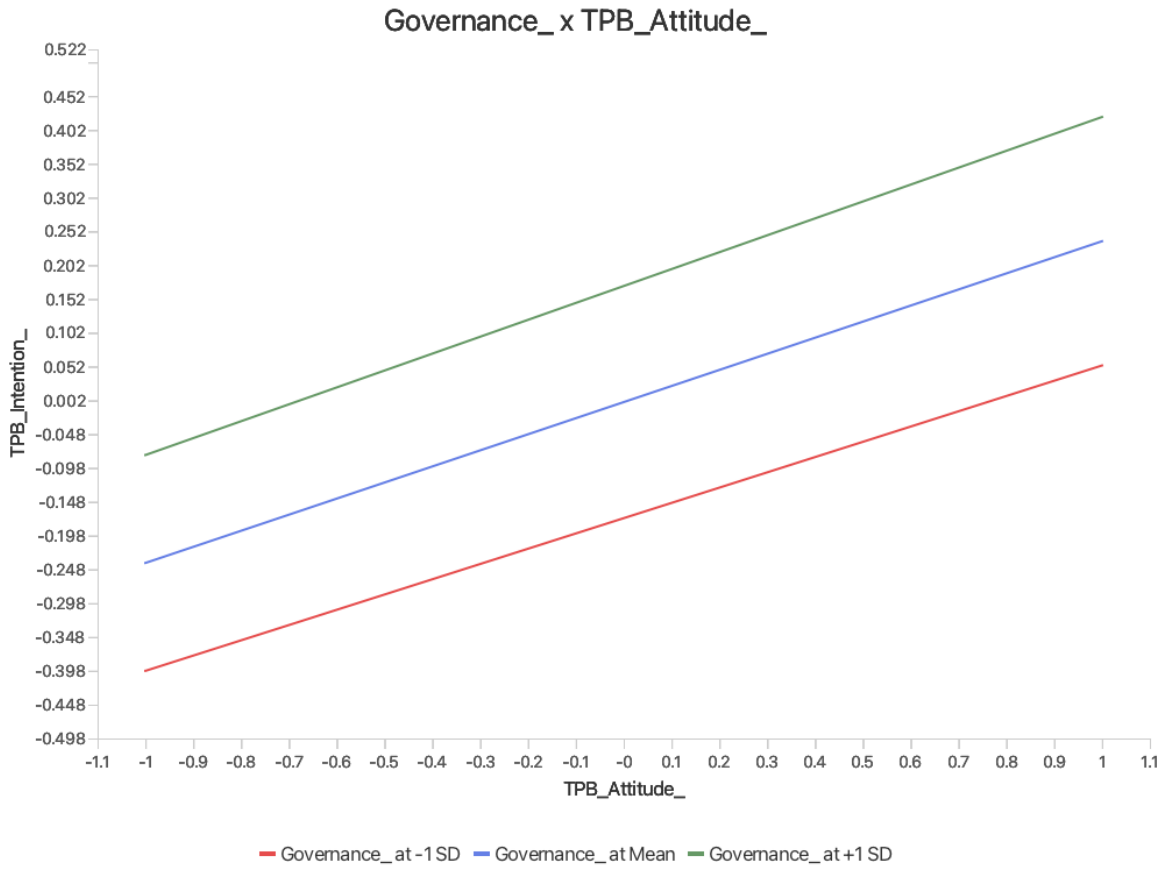


Figure 8. Moderating effect of trust in governance on perceived behavioral control

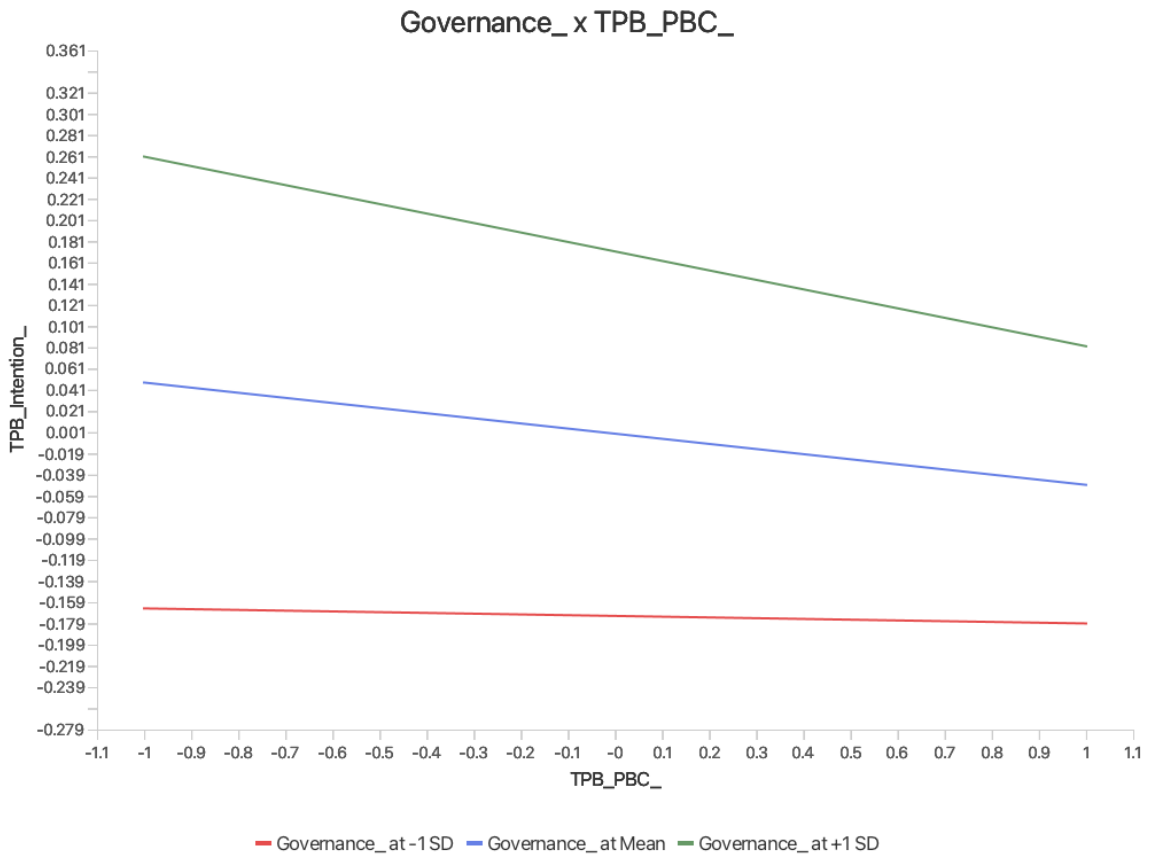


Figure 9. Moderating effect of trust in governance on subjective norm

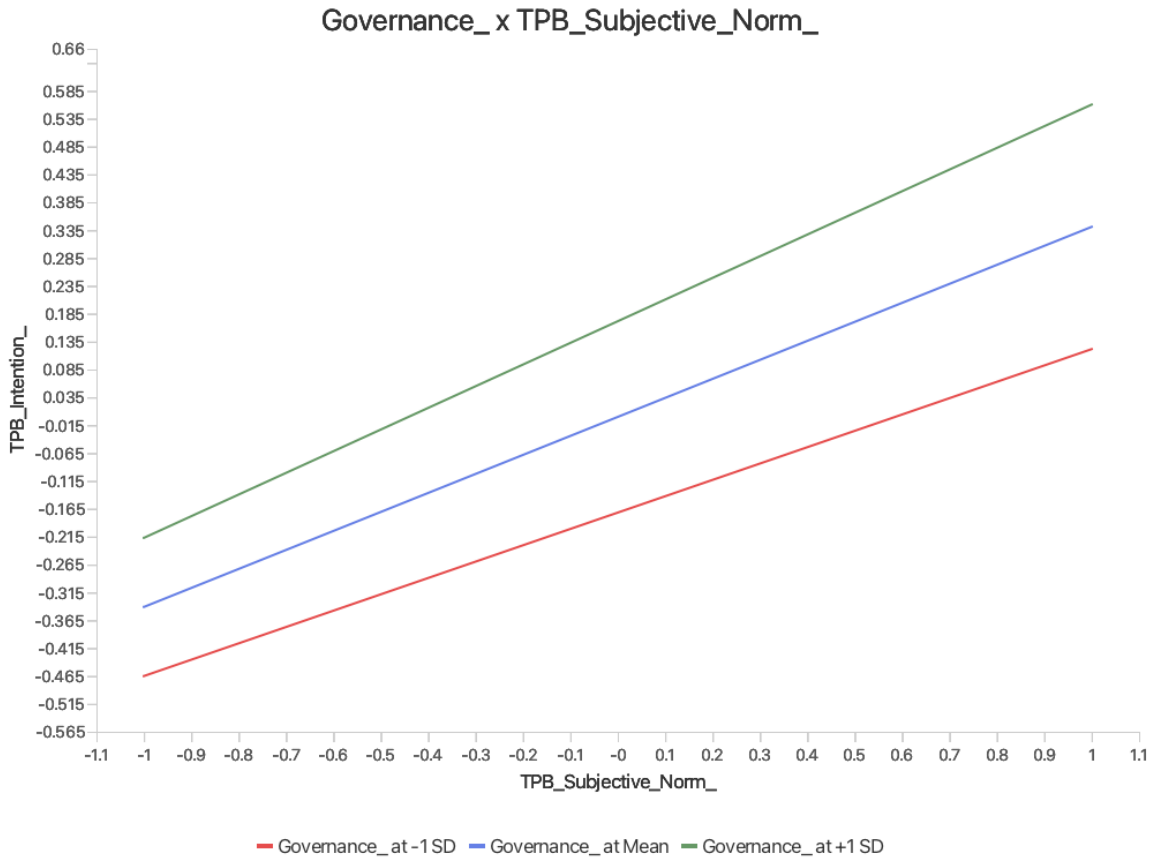


Figure 10. Moderating effect of environmental values on attitude

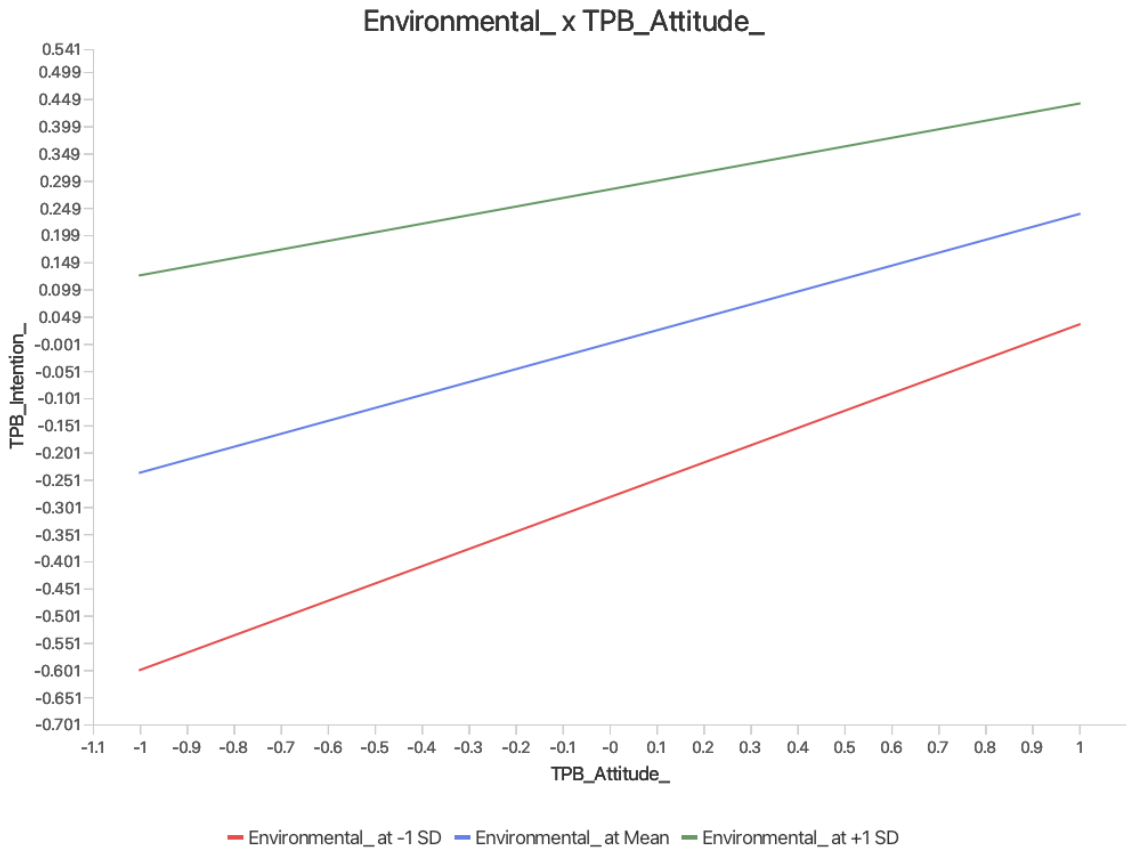
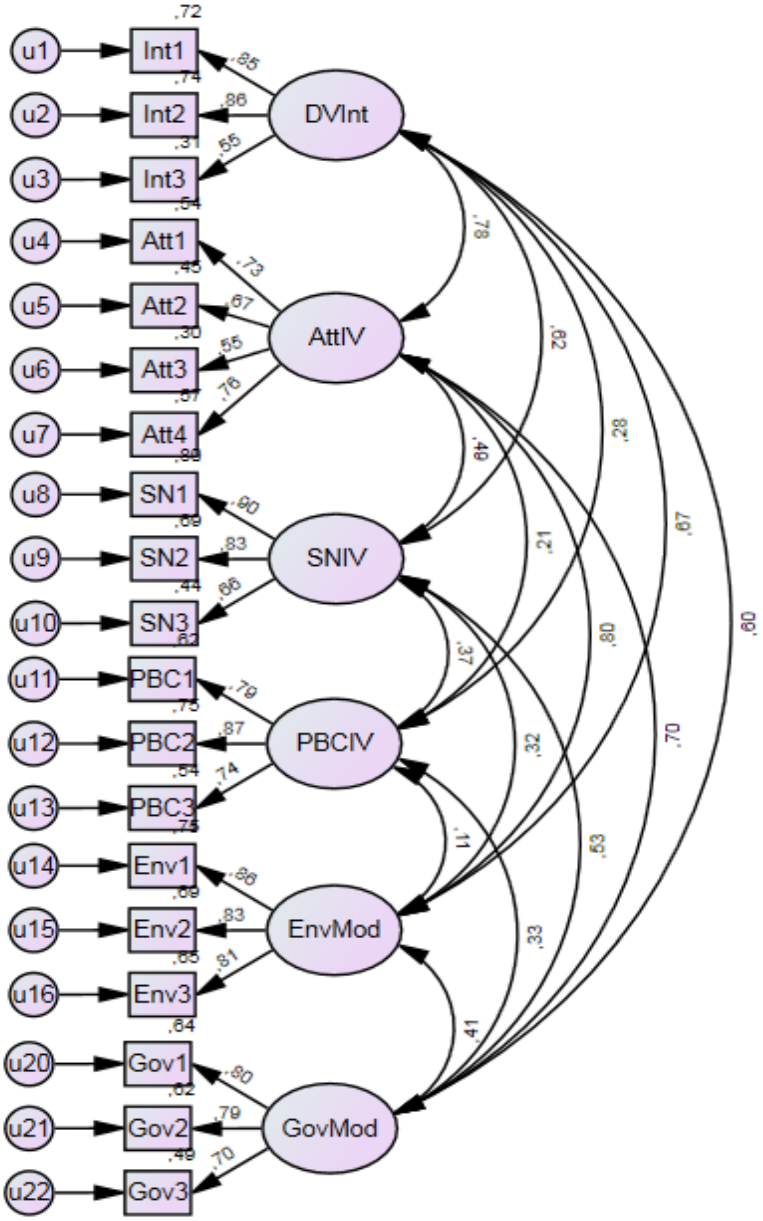
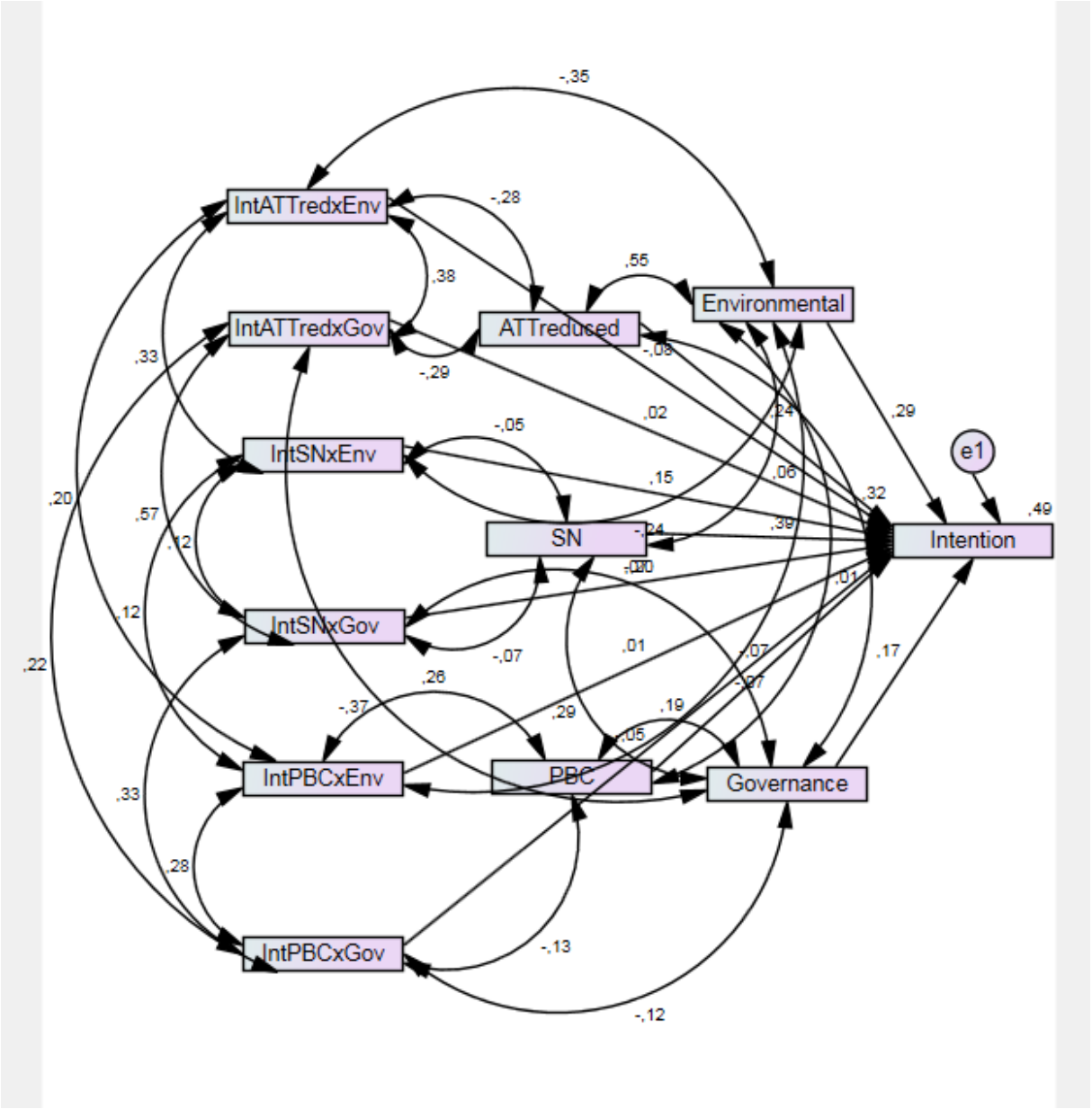


Figure 11. Confirmatory factor analysis



Source: The author via SPSS AMOS

Figure 12. Structural model



Source: The author via SPSS AMOS