Perceived Sustainability of Startups: The Role of Relationship Equity and Chief Sustainability Officer

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Abstract

Strategic decisions on how a company should invest resources is naturally a crucial decision, but for startups this decision is even more important as each small decision will have major repercussions on the longevity of a startup. This study seeks to deepen the understanding of the perceived sustainability of a startup by a customer - since this is a growing customer decision criteria - and how the customer' relationship equity and Chief Sustainability Officer (CSO) influence this perceived sustainability. This study employed a vignette experiment, in which 71individuals with existing relationship equity of 4 startups answered a survey on relationship equity and perceived economic/social/environmental sustainability value. Half the respondents received a vignette containing a startup having a founding structure which included a Chief Sustainability Officer and the others without. Statistical analyses based on Multiple Regressions, specifically the PROCESS Procedure in SPSS, found full support for the first study hypotheses: Relationship equity of customers positively influences their perceived (a) Economic, (b) Social, and (c) Environmental sustainability value of a startup. Partial support was found for this study's second hypothesis: CSO moderates the strength of relationship between relationship equity of customers' and their perceived (a) Economic and (c) Environmental sustainability value of a startup, such that the positive relationship is stronger under the presence of CSO. It did not support hypothesis 2 (c) concerning Social sustainability. This study increases the understanding of perceived sustainability and relationship equity and bridges the literature between startups and sustainability. This thesis will contribute to increased numbers of sustainability roles being appointed and as well as guide policy makers on startups.

Keywords: *Perceived Sustainability Value, Relationship Equity, Startups, Chief Sustainability Officer.*

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Samuel Amant and Thor Berg

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1. Introduction

In recent years, out of growing concerns for environmental and climate change, the issue of sustainability has come under the spotlight. Due to increasing pressure from regulations and society, companies are pressured towards the adoption of sustainability in their strategies, structure and management systems (Simon, Kucher & Partners, 2021). Sustainability has also become a strategy for companies to position themselves in the market and emerge as a competitive force given the trends that customers are also becoming conscious in their choices of products and services with sustainability focus (Simon et al. 2021). Hence, the perceived sustainability value of startups which entails how consumers understand the startups to involve social, economic and environmental dimensions of sustainability is important for startups (Kim, Taylor, Kim & Lee, 2015). As such, through understanding of the factors influencing the perceived sustainability value of a startup is considered relevant in the present context where sustainability takes the core of innovation (Freeman & Engel, 2007).

Relationship equity entails how closely a customer feels connected toward a brand and may influence perceived sustainability value of a startup (Kim et al. 2015). When a customer is familiar with the whole value chain of the product, a high relationship equity is normally present (Sun, Kim & Kim, 2014), which is beneficial for the value the customer brings to the company. Although relationship equity has had some focus in the last 10 years (Kim et al. 2015; Lemon, Rust, & Zeithaml, 2001; Rust, Lemon & Zeithaml, 2004; Sun, Kim & Kim 2014), little-to-no research has been conducted on the effect relationship equity has on a consumer's perceived sustainable value of a startup. Knowing the growing focus on sustainable innovation, this is a pressing literature gap. Hence, knowing about how relationship equity influences perceived sustainability value of a startup is relevant because it allows startups to create a competitive advantage and gives insights into the costs/benefits of investing in relationship equity.

Another way that startups increase their perceived sustainability value of startup is by creating a Chief Sustainability Officer (CSO) position. Here, Strand (2013, 2014) defines CSOs as top management teams or executives with Corporate Social Responsibility (CSR) related issues as primarily responsibility, such as implementing sustainable strategies and reporting on them. A CSO can have many positive influences on an organization, for example Stevenson

(Global head of R&D, at Dyson), states a CSO "can take a compliance issue and use it to catalyze real innovation across our company" as a change in sourcing whichDyson made that resulted in components becoming 20% less expensive to produce (McNulty, Davis, Grat & Kent, 2010, pp. 135). This has not gone unnoticed, Birch (2021) discusses how the CSO-position has gained interest, from the first CSO-position at DuPonts in 2004, to a 228% growth in CSO-positions over the last decade (Deloitte, 2022). However, calls have been made for further research on the influence of a CSO in a company (Salvioni, 2019). Next to this, all literature focuses on big organizations without incorporating SME and startups. This leaves founders without proof of the potential benefits of a CSO on the organization and/or the surroundings. Therefore, this research focuses on this context to guide innovators if the creation of such a position is worth the resources. The current situation begs to ask: should small - medium organizations also have CSOs? And if so, what could be the potential benefits for their customers and the bottom line?

1.1 Purpose of the Study

This study intends to investigate if there is a positive relationship between relationship equity, which is the connection customers feel with the startup, and the perceived economic/social/environmental sustainability of a startup using multiple regression analysis. Here, we predict a strong correlation between relationship equity and perceived sustainability (Kim et al. 2015). As a next step, we determine if there is a positive influence of a CSO on this correlation between relationship equity and perceived sustainability, where CSO is used as a moderating variable. Here, we believe that customers will perceive startups with a CSO as more sustainable in all three aspects, based on the upper echelon (Hambrick & Mason, 1984), legitimacy (Deegan, 2002) and stakeholder (Freeman, 1984) theory.

The insights obtained in this study will contribute to the current discussion in literature on the effects of a CSO in organizations, more specifically startups. Furthermore, this study will provide marketing academics and business professionals with insights into the potential value of having a vested interest in sustainability. On a more practical note, we hope to give more answers on the questions why startups should appoint CSO positions. By suggesting that customers will perceive a startup as more sustainabile once a CSO position is introduced, we prove a CSO has more benefits than solely higher sustainable outputs (Kim et al. 2015; Velte & Stawinoga, 2020). Eventually, this thesis can therefore contribute to more CSO's being

appointed and increase the focus on sustainability as well as guide policy makers on startups (Priem, Walters & Li, 2011).

1.2 Empirical Setting for the Study

Freeman and Engel (2007) argue that startups are a robust vehicle for breakthrough innovations. When the sustainable development goals were introduced in 2015, with the aim of more sustainable ambitions, the United Nations also explicitly emphasized the importance of entrepreneurship in the creation of a sustainable society (Polychronopoulos & Dahle, 2021). Yet, no literature describes the role of a Chief Sustainability Officer within a startup organization and its effect on perceived sustainability value. This leaves founders without proof how to increase the perceived sustainability of the startup and the potential benefits of a CSO on the organization and/or the surroundings. Therefore, this research focuses on this context to guide innovators if the creation of such a position is worth the resources.

1.3 Thesis Outline

This thesis is structured as follows. Chapter 2dives into the theoretical framework around the topic and research questions. After this, Chapter 3 describes the research methodology including the research design, data collection and reliability testing, used to answer the thesis of this study. Chapter 4 analyzes and summarizes the data. Thereafter, in Chapter 5, we present tables of descriptive statistics. The findings are then presented in Chapter 6 and discussed in Chapter 7, together with additional learning, further research and limitations. A conclusion of this thesis is formed in Chapter 8.

2. Theoretical Framework

This chapter provides the theoretical base needed in order to understand the importance of the different dimensions of perceived sustainability and relationship equity. In the course of the literature review, the central premises of this research is developed and presented. The literature review begins with presenting the overarching phenomena of perceived sustainable value and the three sub-phenomena which include economic, social and environmental sustainability. Here, the central construct of relationship equity and its relevance to perceived sustainability value is presented. Following this, an explanation of the role of a Chief Sustainability Officer and its potential moderating influence on the relationship between relationship equity and the three perceived sustainable values is discussed. Finally, our two hypotheses (which each have three sub-hypotheses) are explicitly stated and an empirical model is provided to showcase the suggested relationships between the central constructs.

2.1 Perceived Sustainability Value

"Generally, sustainability is considered a movement to ensure better and more sustainable well-being" (Cricelli & Strazzullo, 2021, p. 4). However, in reality, sustainability is much more complex and is a phenomenon that is studied from various perspectives and influences multiple disciplines both within academia but also industry and business (Cricelli & Strazzullo, 2021; Mauri, 2020). Sustainability is a complex phenomenon as it is often intertwined with many other similar concepts and words which include, but are not limited to, organic, environmental, reusable, renewable, compostable, biodegradable, natural, and eco-friendly (Mauri, 2020).

In order to understand perceived sustainability value, it becomes critical to have a basic understanding of perceived value more broadly, which is defined as "an interactive relativistic preference experience" (Holbrook, 1996, page 138), that consists of a customer's overall evaluation of a product or service (Servaes & Tamayo, 2013; Ya-Ching, 2019). Perceived value is influenced by customers' evaluation of costs versus benefits in respect to tangible and intangible products and the quality, service and price they entail (Chiu, Lee, & Chen, 2014). In addition, research shows that perceived value impacts a consumers' ethical behaviors, consumption of green products and services and overall sustainable consumption (Chang & Lu, 2019).

The perceived sustainability phenomena mirrors perceived value as it includes how consumer perception of sustainability refers to how consumers understand and relate to an organization's brand, products and services (Ya-Ching, 2019). Literature also defines perceived sustainability as "the degree to which a consumer believes a company's sustainable actions meet the needs and aspirations of the present and the future" (Lee, 2019, p.1541). Similarly, Kim et al. (2015) define perceived sustainability as the level of belief about a firm's expertise in sustainability. They state that an organization's lack of expertise in environmental evaluations will be evidently reflected as insufficient sustainability management.

Amongst all the various sustainability aspects, this thesis focuses on the perception of sustainability and the value it brings within the organization or 'business-making system' as a whole (Demnjanovicova & Varmus 2021). Central to this is understanding the perception of sustainability from a consumer's perspective as consumers are vital to the long-term success of an organization (Ya-Ching, 2019). To further understand sustainability as a core phenomena it is evaluated in this study through the three overarching types of perceived sustainability; economic sustainability, social sustainability, and environmental sustainability (Gaus, Wehking, Glas, & Eßig, 2022; Kim et al. 2015). These three 'pillars' of sustainability are discussed in the following section.

2.1.1 The Three Pillars of Sustainability

Economic, Social and Environmental sustainability dimensions are often referred to as the 'pillars' of sustainability. These take into account the natural, human and economic capital of the world, in other words, the planet, people and profits (Elkington 1997; Kajikawa 2008; Kim et al. 2015; Schoolman et al. 2012). To truly understand the influencers of perceived sustainable value we dive deeper into these three sub-phenomena below.

2.1.2 Economic Sustainability Value

Economic sustainability is one dimension of perceived sustainability. Mukoro, Sharmina & Gallego-Schmid (2022, p. 5) defines economic sustainability as "the evaluation of costs, revenue and overall profitability of a company". In a similar vein, Kim et al (2015) refer to economic sustainability as the firm's activities that relate to value creation and enhanced financial performance. This is further emphasized by Armindo, Fonseca, Abreu and Toldly (2019) who state that economic sustainability focuses on profit and prosperity in an effort to

build value for an organization and its customers. Interestingly, the dimension of economic sustainability proposes that today's decisions will influence not only the achievement of economic goals now, but also in the future (Gaus et al. 2022). However, economic sustainability is more than just the achievement of economic goals now and in the future; it also refers to the transparency of business management practices, governance and accountability (Kim et al. 2015).

Building upon the above, it is important to understand that economic sustainability refers to the "long-term economic growth while preserving environmental and social resources" (Cricelli & Strazzullo, 2021, p. 4). This includes minimizing environmental degradation and protecting human well-being in business practices while still attaining economic profits - which is easier said than done (Kim et al. 2015). This perspective is where economic sustainability is part and parcel with corporate capital as well as impacting the overall economic health of the networks and communities within which the business operates (Cricelli & Strazzullo, 2021).

2.1.3 Social Sustainability Value

Our second sub-phenomena, social sustainability, is the most recent of the sustainability dimensions and therefore its precise definition and domain is still being debated between scholars (Cope, Kernan, Sanders & Ward, 2022). Some definitions describe social sustainability in terms of enhancing life conditions of communities (McCalman, McEwan, Tsey, & Blackmore, 2010), while others define it as "meeting present needs without compromising future generations" (Cope et al. 2022, p. 2), which interestingly is quite similar to the definitions of economic sustainability as mentioned above. Cope et al. (2022) highlight the complexity of the phenomena by discussing how social sustainability has also been found to include concepts of promoting physical and social wellbeing, and developing social benefits for communities. This sentiment is reflected in other literature also, for example Kim et al. (2015) discuss social sustainability as the evaluation of social contributions to social wellbeing such as an organizations' impact on society through actions such as charities, community relations and educational support. While Armindo et al. (2019) propose that social sustainability focuses on equity and justice of social systems, particularly in terms of stability for communities and cultural diversity.

Social sustainability has also been discussed in terms of the consumer and consumer perception, for example the social aspects of social sustainability have also been related to concepts such as customer segments, customer relationships and channels, through a focus on the 'demand' of business models (Mukoro et al. 2022).

2.1.4 Environmental Sustainability Value

Environmental sustainability is the final dimension of sustainability, which is the most commonly referred to and top of mind when the term 'sustainability' is mentioned (Cope et al. 2022). Environmental sustainability explores the "use of raw materials to meet human needs and the damage this does to the environment" (Cope et al. 2022, p. 2). Various definitions exist, however the common element is clear - the impact on the environment. For example Kim et al. (2015) describe environmental sustainability in terms of assessing corporate environmental management which includes care for natural resources. Building upon this, Armindo et al. (2019) discuss an organization's development and growth in terms of preservation of natural resources and ecosystems. Some research describes such activities as "finding greener alternatives in the business environment" and posits that this requires an active approach and is a responsibility of the organization (Demnjanovicova & Varmus, 2021, p. 1).

Consequently, environmental sustainability focuses on reusing and recycling resources, reducing greenhouse gas emissions, utilizing renewable energy sources, and mitigating environmental harm (Cope et al. 2022; Mukoro et al. 2022). Apart from the obvious impacts and importance that environmental sustainability entails (the impact on the environment), economic sustainability also plays a role in increasing the value of an organization by creating intrigue and increases competitive advancement and preference (Demnjanovicova & Varmus, 2021), and increasing relationship equity (Kim et al. 2015).

To conclude on perceived sustainability, we understand that a stronger perceived sustainable value of an organization has a positive impact on a consumers' purchase intention and therefore we want to investigate factors that may influence a consumer's perceived sustainable value (Wang & Hsu, 2019). Building on Rust et al.'s (2004) research, Kim et al. (2015) found that relationship equity is the only driver which has a positive significant relationship with all three aspects of sustainability; economic, social and environmental. Relationship equity is therefore a core construct in this thesis and its relevance is discussed in the following section.

2.2 Relationship Equity

Kim et al. (2015, p. 185) describe customer equity as "the sum-total value that results from maintaining relationships with customers based on the concept that the net lifetime values of all of a firm's customers can be combined to arrive at a current value". In other words, customer equity is the total lifetime value a customer brings to a business. Businesses, including startups, dedicate incredible amounts of resources into building up and improving customer equity in order to capture the total value that a customer can bring to their business. Customer equity is steered by three main drivers; brand equity, value equity and relationship equity (Kim et al. 2015). Each of these have a significant effect on the total value of a customer however for this thesis we have chosen to focus on relationship equity as it is found to be the main driver of customer equity (Kim et al. 2015), as stated before. This will be discussed in more detail in the following paragraph.

Out of the three various drivers of equity, relationship equity is the glue that keeps a customer to a brand. It is what makes a customer want to come back and remain faithful to a specific brand, product or service (Rust, Lemon & Zeithaml, 2004). Keeping a customer is cheaper than getting a new one and with low relationship equity a company will continue fighting an up-hill battle in search of new customers (Gallo, 2014). With its roots in equity theory it provides researchers with a foundation to focus on customer-centered thinking (Lemon, Rust, & Zeithaml, 2001; Rust, Lemon & Zeithaml, 2004). Relationship equity relates to the qualitative evaluation by the customer regardless of their objective and subjective evaluation of the brand and the tendency to return to the brand (Kim et al. 2015). Furthermore, high relationship equity is found when customers feel familiar with the whole value chain of the product, going from the products, leadership, employees, store and delivery of the service (Sun, Kim & Kim, 2014).

Literature of the last 10 years regularly discussed relationship equity (Kim et al. 2015; Rust, Lemon & Zeithaml, 2004; Sun, Kim & Kim, 2014), however, no research describes the correlation between relationship equity and the customer's perceived sustainable value of a startup. We therefore want to investigate whether a company can increase the strength of the relationship equity by introducing a variable, such as by having a Chief Science Officer on the founding team, and in turn increase the consumers perceived sustainability value of the startup. This will be further developed in the hypothesis section.

2.3 Chief Sustainability Officer

Appointing a Chief Sustainability Officer is one way in which a company can introduce sustainability in their business. Here, Strand (2013, 2014) defines CSOs as top management teams or executives with Corporate Social Responsibility (CSR) related issues as their primarily responsibility. Bowen (1953, p. 69) describes CSR in his book *Social Responsibilities of the Business Man* as "the obligation of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of objectives and values of our society". Next to this, CSOs are in charge of implementing CSR strategies and therefore can be seen as an extension of the CEOs and CFO's roles (Velte & Stawinoga, 2020). Other titles can be used for the CSO position, such as Chief Environmental Officer, Chief CSR Officer or Chief Ethics Officer, however, these all relate to the same responsibilities (Velte & Stawinoga, 2020). Lastly, we align with the vision of Campbell and Fiske (1959), who argues that the CSO should not be implemented as an internal lobby group with no power and just influence, as this will lead to power struggles, empire-building and bureaucracy (McNulty et al. 2010).

As stated in the introduction, a CSO can have many positive influences on an organization, for example Stevenson (Global head of R&D, at Dyson), states a CSO "can take a compliance issue and use it to catalyze real innovation across our company" as a change in sourcing in Dyson made that the components were 20% less expensive to produce (McNulty, Davis, Grat & Kent, 2010, pp. 135). Although this is not the only example of a CSO introducing value increasing changes, literature is still no completely homogeneous about the fact that a CSO position in a company equally results in better performance (Simpson & Theodor, 2002; Vetle & Stawinoga, 2020). As such, the introduction of CSO to a startup early on may be a realistic option for new startups and turn it to a positive investment that may have long term benefits for both the performance of the startup and the perceived sustainable value to the consumer.

A meta-literature review by Vetle and Stawinoga (2020) has shown the inconclusive results found from current literature. Moreover, it also is undecided if CSOs are introduced due to intrinsic motivations, to actually increase CSR performance, or rather as a symbolic act to please stakeholders (Velte & Stawinoga, 2020). This is why Gennari (2019) and Gennari and

Salvioni (2019) amongst others call for further research on the influence of CSO as limited prior research is focussed on the possible determinants of the impact of a CSO.

The connection between the introduction of a CSO to a startup, relationship equity and perceived sustainability value is discussed in detail in the next section.

2.4 Hypothesis Development

In this section, an argumentation for the hypotheses of this study is given, which relationship is expected and why, followed by the hypothesis statements themselves. We have developed two hypotheses, one of which assumes a direct relationship between relationship equity and perceived economic/social/environmental sustainability, and one which assumes that a CSO moderates this direct relationship.

2.4.1 Relationship Equity and Perceived Sustainability Value

In the sections below, we will go into more detail on why we predict a relationship exists between relationship equity and each specific pillar of sustainability.

Firstly, customers can have the perception that their regular purchasing (i.e. loyalty) of a product from a specific brand is significantly beneficial for the brand. From the companies point of view, Iyer, Sharma and Bejou (2006) find that high relationship equity will indeed lead to higher profitability for the firm. As discussed earlier, economic sustainability is the evaluation of costs, revenue and overall profitability of a company. As a consequence, profitability can be linked to the economical sustainability of the firm which indicates that there is a correlation between relationship equity and economical sustainability. Based on this, we predict customers with high relationship equity will also perceive the startup as more economically sustainable.

Secondly, maintaining loyalty (i.e. repurchasing) to a brand service or product is equated to a consumer having a stronger relationship with that brand and higher customer-company identification than with others (Kim et al. 2015). Trusting a brand that it is doing the right thing for society is linked with a consumer's purchase intent as it also establishes a link to consumers who aim to have higher social recognition from their peers (Lee, 2019). These are indications of strong relationship equity linking to higher perceived social sustainability.

Thirdly, customers with high relationship equity have the opportunity to impact an organization's resource allocation and strategy (Fairchild, 2021). Moreover, higher relationship equity is linked to higher customer lifetime value which in turn further builds the perception for the customer that an organization will spend more resources on environmental efforts (Vogel, Evanschitzky & Ramaseshan, 2008). Indeed, adjusting a company's strategy to continuously meet the anticipated needs of those customers allows an organization to be better positioned to adapt to sustainable challenges which may result in an increased perception of environmental sustainability for those customers (Gallo, 2014; Vogel, Evanschitzky & Ramaseshan, 2008). Therefore, we speculate that consumers who feel connected and engaged to a company will perceive the company as being more environmentally responsible (i.e. higher perceived environmental sustainability).

Thus, we formulate the following hypotheses:

H1: Relationship equity of customers positively influences their perceived (a) Economic, (b) Social, and (c) Environmental sustainability value of a startup.

2.4.2 The Role of a CSO on The Perceived Sustainability Value of a Startup

We also argue in this study that the relationship between the customers' relationship equity and perceived sustainability value can be positively moderated by the introduction of CSO in the startup founding/executive team. The relationship developed for hypothesis 1 is presumably influenced by a large array of actuators. We investigate the specific influence the presence of a CSO position in a startup has on the three pillars of perceived sustainability. As stated before, Velte and Stawinoga (2020) have identified inconsistent results in the current literature on CSO. Therefore, this study is also developing the literature regarding CSOs further and making it more homogeneous.

Transparency of business management practices, accountability, and governance are factors that contribute to economic sustainability (Velte and Stawinoga, 2020). The economic, social, and environmental performance of an organization depends on its governance which is managed by the executive team and board (Rodrigue, Magnan & Cho, 2013). The stakeholder theory developed by Freeman (1984) derives from the assumption that the stakeholders

expectations are to be fulfilled by the firm (Freeman, Harrison, Wicks, Parmar & de Colle, 2010). Reporting on CSR initiatives often fall within the scope of a CSO and their teams and therefore by having a CSO onboard a consumer would expect an increase in reporting and accountability on all sustainability initiatives including economic ones. A guarantee of CSR reports provides a functional path to increase both trust and legitimacy with customers and in turn influence relationship equity (Velte & Stawinoga, 2020). According to stakeholder theory we therefore expect that by introducing a CSO to a startup we should see a positive influence on perceived sustainability value.

A CSO will have expertise regarding social and environmental sustainability, which can increase the company's attraction with its stakeholders (Velte and Stawinoga, 2020). The legitimacy theory claims a firm introduces CSO positions to align with the societal expectations as the current societal expectations have shifted to CSR-related issues (Deegan, 2002). Here, the incorporation of a CSO can result in better CSR outputs (e.g. CSR reporting) which in turn results in more legitimacy (Dyllick & Muff, 2016). Therefore, legitimacy theory explains that sustainability-related board expertise (i.e. CSO) may have positive and negative impacts on the CSR outputs (Peters & Romi, 2015). Furthermore, a key goal for a CSO is to review the company's full supply chain and improve both the safety procedure and working conditions that address social and environmental issues (Velte & Stawinoga, 2020).

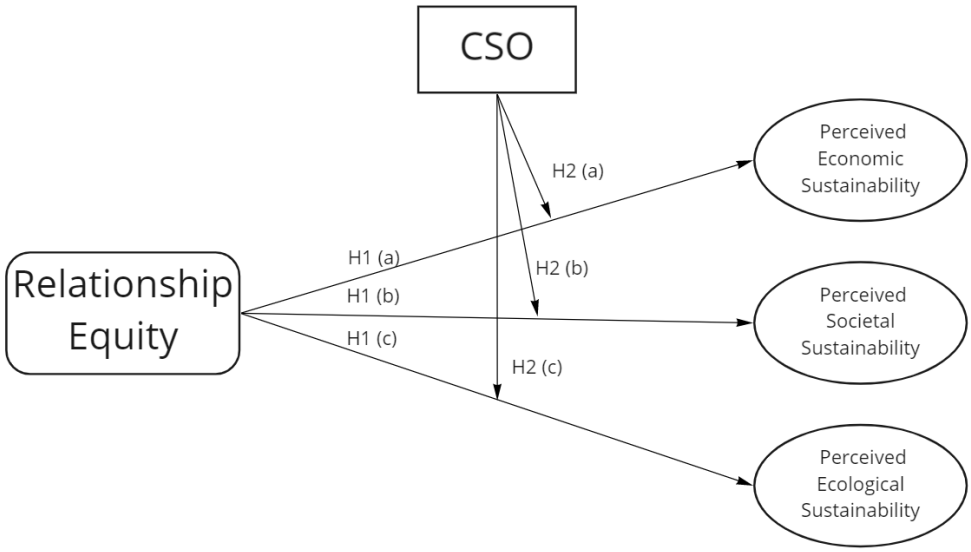
Upper-echelon theory is used to describe how powerful actors can have an essential influence on output of a company, therefore we assume the CSR outputs of a firm will only be influenced if there is a CSR-oriented position within the top management (Hambrick & Mason, 1984). Traditional board positions, such as CEOs and CFOs might not be the most suitable roles to prepare CSR strategies. Implementing an environment-related government, such as by adding a CSO to the executive team, may signal to customers a concern for the environment which will in turn have a positive moderating effect on the perceived economic, social and environmental sustainability value of a startup. Strong relationship equity is equated to higher brand loyalty (Kim et al. 2015). Higher customer brand loyalty is linked to an increased sense of attachment and deviation to that brand and CSR initiatives have an increased influence on customers perception of brand value (Jeon, Lee & Jeong, 2020).

Thus, we formulate the following hypotheses:

H2: CSO positively moderates the strength of relationship between Relationship Equity of customers' and their perceived (a) Economic, (b) Social, and (c) Environmental sustainability value of a startup, such that the positive relationship is stronger under the presence of CSO.

A visualization of our empirical model is provided below:

Empirical model of H1(a,b,c) and H2 (a,b,c)



3. Research Methodology

The previous chapter discussed and constructed a set of hypotheses, which allowed us to create a theoretical model of a consumers relationship equity and their perceived sustainability of a startup including a moderating variable on whether the startup has a CSO or not. This quantitative research applies an Experimental Vignette Methodology (EVM) that utilizes first a detailed one-scenario vignette linked up with a survey . This chapter brings more insight into the research methodology of the study by discussing the design, data collection and the sample used. First, section 3.1 explains the design of the EVM and the reasoning behind design decisions. Section 3.2 dives deeper into the way data is collected, and lastly, in section 3.3 the sample characteristics are given and explained.

3.1 Research Design

This study adopts an online survey to collect the data needed as online surveys are known to gather data at a low cost and short period (Nayak & Narayan, 2019). Knowing the timespan and resources given into consideration, we identified this as the most optimal approach. In addition, we adopted convenience sampling to further increase the cost-effectiveness of this study.

We investigate the relationship between relationship equity and perceived sustainability with a moderating variable. The objective of this research is to prove this relationship in a startup context, and also investigate the influence on a CSO position in the relationship in this context. The reasoning for choosing a startup context is due to the limited resources a startup has when they are first building their business and therefore the allocation of such resources, whether they be monetary, human capital or time, are therefore crucial decisions to be made. By understanding whether introducing a CSO early on in a startups journey has a positive or negative effect on a startups perceived value can help startups navigate this space easier. Furthermore, the effects on relationship equity and perceived value has mainly focused on already established brands and companies (Vetle and Stawinoga, 2020).

For reasons detailed below, we identified EVM as the optimal way to approach survey participants with the question set. Aguinis and Bradley (2014) provide guidelines on best practices for designing and implementing an EVM. The six key decision points concerning the planning and construction of the EVM are discussed in more detail below.

3.1.1 EVM

Steiner, Atzmüller and Su (2016, pp. 52) described vignette experiments as "typically employ(ed) short, systematically varied descriptions of situations or persons (called vignettes) to elicit the beliefs, attitudes, or behaviors of respondents with respect to the presented scenarios."

An EVM is used since it is an efficient tool to exercise control of independent variables and therefore exclude factors that might confound the results (Aguinis & Bradley, 2014; Bryman & Bell, 2011). Next to this, it is used in prior research to generate a better understanding in the startup context (Aguinis & Bradley, 2014). Next to these positive aspects of EVM, Aguinis and Bradley (2014) also identified negative aspects. Here, the EVM can not

always create the “real life” context that the survey needs. Therefore, hypothetical scenarios (e.g. high-stakes decision-making scenarios such as mergers and acquisitions of companies) will not result in exactly the same outcomes as the same situation in a natural setting (Lohrke, Holloway, & Woolley, 2010). This characteristic of an EVM has only limited influence during this research due to the simple nature of the scenario and the potential high relatability the scenario will have. Based on the discussion above, we conclude EVM has characteristics that align with the nature of this study and therefore is the most appropriate methodology to use.

Knowing this, the EVM used in this research is designed based on four key decision points. These decisions are given in sections 3.1.2 to 3.1.5 where more detailed argumentation is provided.

3.1.2 Type of EVM

The paper people approach is adopted for this thesis since they are most effective when explicit processes and outcomes want to be assessed, such as leadership, entrepreneurship and organizational citizenship behavior (Aguinis & Bradley, 2014). Next to this, paper people studies had been used effectively in Entrepreneurship studies in the past (Bucar, Glas & Hisrich, 2003).

3.1.3 Type of Research Design

The between person design aligns the best with the goal of this study (Aguinis & Bradley, 2014). Similar to Raaijmakers, Vermeulen, Meeus, and Zietsma (2014), the participants of this study are provided with adequate baseline information to provide all participants with a similar contextual background. Participants of this study are familiarized with a list of named startups within a new (startup inspired) industry (i.e. electric scooters) alongside two / three other well-known startups. There are two versions of the case with the only difference between the two is the presence of the CSO.

3.1.4 Levels of Immersion

A trade-off was made between the level of immersion (i.e. the level of realism) and the cost of the EVM. The mode of the presentation of the scenario can be improved with technologies such as audio, pictures, video and other ways to better immerse the participant in

the given situations. However, given the timeframe and monetary constraints of this research, we opted for a written vignette (Appendix A) because they require less time and cost and are still the most common approach used (Aguinis & Bradley, 2014).

3.1.5 Levels of the Manipulated Factors

To avoid misspecification, which is the wrongful inclusion or exclusion of factors relevant to the research question, an actual derived case- approach was adopted. This would prevent us from testing "whether a hypothesis is true, but rather whether the experimenter is a sufficiently ingenious stage manager to produce in the laboratory conditions which demonstrate that an obviously true hypothesis is correct'' (McGuire, 1973, p. 449).

On a more practical note, we are interested in testing or exploring the effect on *consumer perceptions* with or without the presence of a CSO. The actual depth of a consumers understanding of what a CSO is or does is not critical in this case as in the real world consumers will have the same understanding (or lack of) of a Chief Sustainability Officer, therefore if we were to explain what a CSO does in the case this would in fact confound what is actually occurring. This study aims to investigate the effect of the 'presence of a CSO' as it would occur in a natural environment. We are not testing what consumers understand a CSO to be but how their perception of the actual title 'CSO' impacts their perceived economic, social and environmental sustainability value of a startup. Therefore it is important to construct a scenario in a way that clearly describes a startup that is well-known enough so that consumers have a level of relationship equity with the idea of the startup that is presented. From this, we excluded factors like an in-depth understanding of the startup, and the CSO position, and included the internal structure of the company and the industry it is working in.

3.2 Data Collection

This section discusses the three aspects of the data collection. Firstly, more insight in the survey is given. Secondly, sample and demographic information is discussed under the section of reponses. Third and lastly, the types of variables used in this study are discussed.

3.2.1 Survey

The data was collected using two online surveys which were distributed via online platforms, and direct messaging through the networks of the authors. Two surveys were developed with the only difference being that the first survey had a CSO represented in the startups founding team and the second one had a CFO. A link was created that randomized the survey to the survey takers and therefore ensured an equal distribution between the two surveys. The survey was coded in Google Forms and the click rate monitored by Bitly. The surveys themselves and its administration were tailored to ensure high quality data. Firstly, the self-administered nature of the survey ensured anonymity of personal contact as no names were collected, which avoided the social desirability bias that could exist, since this bias is commonly found in the sustainability-context (Vesely & Klöckner, 2020). Next to this, the vignette as well as the survey questions were made short and straightforward to avoid non-response bias (Yu & Cooper, 1983). Lastly, the data was gathered over a short period (i.e. two week) which mitigates the influence of time on the data, and no reminders were sent, which removes active and passive non-response biases. One limitation that was identified was the sustainable-minded people will be more likely to answer the survey, which could impact quality of the sample.

The survey was constructed in four parts: introduction, vignette, sections with questions and demographic questions. A criteria question was introduced to ensure that the respondents were familiar and had experience with at least one of the case companies used which allows us to build on their prior startup knowledge and only introduce the composition of the founding team. This was to establish that the respondents would have a level of relationship equity. Following the criteria question, the replicants were made familiar with the background of the research and were given more general information. This section was followed by the vignette in which the real-life case used in this study was presented. The full vignette can be found in Appendix A.

The survey building onto this vignette was adopted from Kim et al.'s (2015) framework which showed strong internal consistency and therefore provided a proven scale to this study. Hence, only minor adjustments were made as can be seen in Appendix B.

Checking the Item-total statistics found in Appendix C, it was found that deleting a specific item from our survey would not contribute to any significantly increased Cronbach

Alpha and therefore all questions remained. Furthermore the item-total correlation for each variable was >.3 which, according to Cristobal, Flavian and Guinaliu (2007), is acceptable.

3.2.2 Responses

A total of 232 clicks were counted which resulted in 118 complete survey responses. Compared to the literature average, we had a high response rate of 50.8% (Holtom, Baruch, Aguinis & Ballinger, 2022). Further screening (i.e. familiarity with startup in vignette), resulted in 71 usable responses. Next to this selection criteria, the survey also gathered demographic information. As a result, we understand the participants better and can judge better to which extent the results can be generalized (Savino, 2009). Hence, the survey includes four questions to get more insight into four variables: *age, gender, income, education and location.*

General trends in our sample can be seen in Table 1 which are a result of the convenience sampling approach. These control variables are not used in further analyses (i.e. covariates or grouping variables), but solely are included in order to correctly generalize the results.

Table 1: Demographic Information

Demographic Criteria	Range	Number	Percentage
Age	18-24	20	28,2%
	25-34	33	46,5%
	35-44	10	14,1%
	45-54	5	7,0%
	55-64	2	2,8%
	65-74	1	1,4%
	75 or older	0	0,00%
Yearly income range			
	0 SEK	9	12,7%
	10-100k SEK	12	16,9%
	100k - 250k SEK	7	9,9%
	250k - 500k SEK	8	11,3%
	500k - 750k SEK	23	32,4%

	750k - 1000k SEK	9	12,7%
	1000k SEK or more	3	4,2%
Gender			
	Male	38	53,5%
	Female	32	45,1%
	Rather not say	1	1,4%
Highest form of education			
	Did not attend school	0	0,00%
	High school graduate	8	11,3%
	Bachelor's degree	27	38,0%
	Master's degree	33	46,5%
	Doctorate degree	3	4,2%
Location			
	Sweden	64	90,1%
	Australia	3	4,2%
	Belgium	1	1,4%
	Indonesia	1	1,4%
	Denmark	2	2.8%

3.2.2 Startups

In the survey, three case studies were used describing different startups. To ensure the nature of these startups does not influence the outcome of the analysis, startups were chosen with four elements in common: the industry, location, firm size and firm age. Why these are chosen is individually discussed below.

Industry and location: Lackmann, Ernstberger and Stick (2011) found that companies with high sustainability performance (i.e. top 20% Dow Jones STOXX 600) are not evenly distributed both on an industry level and geographical level. For this research, the nordics (i.e. Sweden, Denmark, Norway, etc.) was chosen as the geographical focus of this thesis due to the location of the authors. Furthermore, the E-scooter industry was chosen as the sustainability around it is not fully transparent to the wider public (Nocerino, Colorni, Lia & Luè, 2016). Next to this, this industry is emerging in the Nordics, which means the startups still hold large market shares and are known by the general public.

Firm size: Klein (2002) argues that discretionary accruals are negatively associated with the company size. Therefore the size of the ventures used in the case studies must be similar. Literature defines a startup as a new, starting venture limited in size (Cockayne, 2019), therefore a criteria is that the venture must have less than 500 employees.

Firm age: Han and Kim (2021) also identified a moderating role of the firm age in the CSR performance and Corporate Financial Performance of the firm. As stated above, literature defines a startup as a starting venture (Cockayne, 2019), therefore a criteria that the venture should be younger than five years was implemented in this study.

With this literature in mind, the industry, size, age and location of the case were standardized throughout this research. Three startups were identified with similar characteristics as can be seen in Table 2. This allows us to analyze data from these startups together and draw overarching conclusions.

Table 2: Selected Sstartups

Case Startup	**Industry**	**Age**	**Size (employee)**	**Location**
Name	*Electric scooters*	*< 5*	*<500*	*EU*
Voi	Electric scooters	2018	200	West-EU
Dance	Electric scooters	2020	150	EU
Tier	Electric scooters	2018	900	West-EU

3.3 Variables

3.3.1 Independent Variable

Relationship equity. Three items from an established scale were used to measure the relationship equity a consumer has with the brand discussed in the vignette. These items are adopted from Kim et al. (2015) with slightly modified wording (i.e. “corporation” replaced by “startup”). The original Cronback’s alpha was 0.889, the reported one is .812. An example of an item is *“I would continue to use start-up's service because I like being associated with it ”*

A 5-point Likert scale was used to measure this relationship equity. This scale is a method to quantify an opinion of feeling of a sample. Five items were used to capture the

negative, neutral or positive responses to a statement: Strongly disagree (1), Disagree (2), Undecided (3), Agree (4) and Strongly agree (5). Note that this scale assumes the strength of the opinion of the responses is linear (Allen & Seaman, 2007). The same scale will be used for the dependent variables described below.

3.3.2 Dependent Variable

Perceived economic sustainability. Three items were used to quantify the first independent variable that measures the level of economic sustainability perceived by the customers. The variable was measured with a 5-point Likert scale. Again, these items are adopted from Kim et al. (2015) with slightly modified wording (i.e. "company replaced by "startup"). The original Cronback's alpha was 0.643, the reported one is .810. An example of an item is *"The startup's accountability is good".*

Perceived social sustainability. Six items were used to quantify the second independent variable that measures the level of social sustainability perceived by the customers. The variable was measured with a 5-point Likert scale. Again, these items are adopted from Kim et al. (2015) with slightly modified wording (i.e. "company replaced by "startup"). The original Cronback's alpha was 0.904, the reported one is .776. An example of an item is *"The start-up's makes social contributions".*

Perceived economical sustainability. Five items were used to quantify the three independent variables that measure the level of economic sustainability perceived by the customers. The variable was measured with a 5-point Likert scale. Again, these items are adopted from Kim et al. (2015) with slightly modified wording (i.e. "company replaced by "startup"). The original Cronback's alpha was 0.931, the reported one is .871. An example of an item is *"The start-up's recycles / uses recycled materials".*

3.3.3 Moderating Variable

Chief Sustainability Officer. This moderating variable indicates if there is a CSO position present in the startup. The variable is incorporated as a dummy variable (1 = "yes", 0 = "no"). This approach has been proven successful in previous literature to analyze the impact on CSR (Fu, Tang & Chen, 2019).

3.3.4 Control Variable

Campisi, Akgün, Tiscali, and Tesoriere (2020) found in a case study on the public opinion of electric scooters that this is influenced by four specific demographic elements: age, gender, employment (i.e. education and income) and residence place. Based on the nature of our study, four samples were considered influential and therefore chosen as control variables: age, gender, education, income and location. These are moreover, the most commonly found control variable in similar research (Bernerth & Aguinis, 2016).

3.4 Reliability Tests

a. Internal consistency

During the regression analyses later in the research, indexes are used which summarize the data on a specific subject. The relationship equity- index incorporates for example measured items in the survey. A reliability analysis was executed to check the internal consistency within the indexes.

Our scales were adopted from Kim et al. (2015) and had already been deemed viable however since we had created a separate scenario it was important for us to still run our own reliability testing. The Cronbach's alphas for each of the variables reached the satisfactory cutoff criteria ($\alpha > .7$) as seen in Table 3 below (Taber, 2017). This declares that the indexes used in the further analyses represent the items correctly.

Table 3 – Chronbach alpha from indexes

Factor	Cronbach's α from Kim et al. 2015	Cronbach's α reported	Number of items
Economic sustainability	0.643	0.810	3
Social sustainability	0.904	0.766	6
Environmental sustainability	0.931	0.871	5
Relationship equity	0.889	0.812	3

b. Construct validity - Convergent and discriminant validity

To ensure we can safely say that the measure we have chosen measures the correct construct we check the convergent validity. Next to this, we verify that each construct is truly distinct from the other constructs by analyzing the discriminant validity.

The average factor loading in our Component Matrix is >.7 indicating high factor loading. The Correlation Matrix shows all values to be above .5 and significant at a .05 level indicating convergent validity between constructs, meaning they are valid. Furthermore, our Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy is .87 (above .6) and the Barlett test of sphericity significance is <,05. All but 2 communalities are >.5, as can be seen in Appendix C.

The total comparison violations are less than one-half of all potential comparisons (28%; 160/578) which therefore indicates our constructs have discriminant validity, meaning these constructs are not related (Campbell & Fiske, 1959). This can be found in the correlation matrix in Appendix C.

These results indicate that both convergent and discriminant validity has been achieved.

c. Common Method Bias

A Harmans single factor test was executed on the data to guarantee the measured variation in our actual observations was not caused by the measure tool used, i.e. the vignette and survey. Here, the design of the vignette and/or survey had the potential to introduce noise and other forms of incorrect/low quality data. A common factor of 43.225 was found suggesting that the data was not influenced by a common method bias and all variations found originated from actual observations. A table with more detailed data can be found in Appendix C.

d. Independent T-test

An independent T-test determines the variation between the sub-samples and whether there is a statistically significant difference between the means in the two unrelated groups. Since we used two questionnaires - with and without our moderating variable (i.e. CSO) - an independent T-test was required to ensure the responses on both questionnaires differentiated.

The results show that the significance was higher in all cases, therefore all null hypotheses of Levene's tests are accepted meaning we can assume equal variances.

Going further, we find the null hypothesis of the t-test accepted in two cases, meaning the mean between both samples is not significantly different: Perceived environmental sustainability ($t(69) = 1.150$, $p = 0.254$) with a mean difference of 0.23889, and relationship equity ($t(69)= 1.849$, $p = 0.069$) with a mean difference of 0.43148 (Appendix C).

In the two other case, our null hypothesis of the t-test is rejected which indicates a significant difference between the sample means: perceived economic sustainable ($t(69) = 2.426$, $P = 0{,}018$) with a mean difference of 0.44947, and perceived social sustainability ($t(69)= 2.912$, $p = 0.005$) with a mean difference of 0.38981.

To conclude, the independent t-test indicated that we only have strong enough evidence to conclude that the means of the two questionnaires are not equal in case of perceived social and economical sustainability.

4. Analysis Strategy and Diagnostics

A multilinear regression analysis is used to test our hypothesis and is discussed in this section. Firstly, the data is analyzed and tested, thereafter the actual evaluation of the regression and its outcomes are given. In this study, multiple regression analysis is used to find the relationship between one independent, a moderating independent variable and the three dependent variables and the influence of a moderator on this relationship. This analysis is chosen as we are introducing a moderating variable. This analysis is used in order to check that our CSO variable is having a moderating effect on the relationship between Relationship Equity and the three perceived sustainability values. The change of magnitude of the relationship between the two variables is best measured using multilinear regression. Furthermore, through further investigation we found that the moderating variable, CSO, should be considered as an Independent Variable for the purpose of this analysis.

The widely used Statistical Product and Service Solutions (SPSS) software is used to analyze the gathered data and the relationships of the variables in this study. Furthermore, we utilize the PROCESS macro developed by Andrew F. Hayes. (2022) which is an observed variable OLS and logistic regression path analysis modeling tool that suits our moderation analysis.

A multiple linear regression required assumptions to be made (Keith, 2006). Whenever an assumption of the model is violated, a variation of the basic model is used (Poole & O'Farrell, 1970), which makes testing these assumptions crucial for a reliable analysis of the data. These sections describe the eight tests that were conducted in order to validate the assumptions and discuss the findings.

a. Dependent variables is measure on a continuous scale

The first assumption for a multiple linear regression is that the data is continuous, meaning it can take any value. In this study, a likert scale was used in the survey to measure the perceived sustainability, which uses five items to capture the perception of the customer. Since likert scales are considered continuous, the survey results are considered to be continuous data as well (Norman, 2010).

b. Independence of observations

A Durbin-Watson (DW) test was used to evaluate the level of autocorrelation, meaning we assessed that each observation of perceived sustainability and relationship equity were independent from each other. Autocorrelation values between 1.5 and 2.5 indicate there is no problem with the assumption of independence of observations (Krämer, 2014). The Durbin-Watson test results that were found all lay within this range (Relationship Equity - Perceived Economic Sustainability: DW = 1.916, Relationship Equity - Perceived Social Sustainability: DW = 1.860, Relationship Equity- Perceived Environmental Sustainability: DW = 2.018) and hence the assumption is valid. Detailed tables can be found in Appendix D.

c. Normal distribution of variables

The normal distribution of data is important since it has numerous mathematical properties that allow us to apply the required calculations. In a multiple regression, Probability Plots (P-P) can be used to check the normality of the variables. Therefore, all variables of the model were visualized using P-P plots, which illustrates their distribution and allows the identification of outliers (Osborne & Waters, 2022). No outliers were identified, hence no removal was required. Overall, it was concluded that all variables are normally distributed as can be seen in Appendix D.

d. **Normal distribution of residuals**

Next to the variables of the model, also the residuals are assumed to be normally distributed. If this is not the case, there may be a problem with our stability, reliability or model fit. Therefore, four tests were used in order to get the optimal insight in the distribution of the residuals. Note that the residuals used were unstandardised, however, the standardized residuals were checked as well and identical results were obtained.

First, the skewness metric of the residuals was calculated to measure the symmetry in the distribution, where the closer the value lays to zero, the more symmetrical the dataset is. Here, only in the case of environmental sustainability a high asymmetric dataset was found (skewness = 0.409). In the case of perceived economic and social sustainability, higher symmetry was identified (respectively skewness = -0.353 and 0.132), though not sufficiently symmetrical. Next to this, the kurtosis metric was calculated in order to measure the size of the tails. Here, values close to 0 indicate a normal distribution of the residuals. Positive values were

found for all two sets of residuals (Perceived Economic Sustainability = 1.267, Perceived Social Sustainability = 0.915), which indicates the dataset has lighter tails compared to the normal distribution. In one case, a negative value was found (Perceived Environmental Sustainability = -0.215), which indicates heavier tails. Overall, all kurtosis values lay close enough to assume a normal distribution of the residuals. Tables with more detailed information on both the skewness and kurtosis are given in Appendix D.

As a second test of the normality of the residuals, the Kolmogorov-Smirnov test (K-S test) and Shapiro-Wilk test was conducted. In these tests, the residuals of the DV are compared to the residuals of the ID and gives insight if they have the same distribution. Although both tests were run and the results given (Appendix D), only the K-S test results were analyzed as they are preferred when using larger samples ($n > 50$). Only in the case of perceived environmental sustainability, the significance was too low to assume a normal distribution ($p = 0.002$). In the case of perceived social and economic sustainability the significance was high enough to assume this (respectively. $p = 0.2$, $p = 0.2$).

The residuals are visualized on a histogram as a third test to analyze their distribution. All histograms, which can be found in Appendix D, illustrate normal distributions, again approaching the assumption that the residuals are normally distributed.

Q-Q plots are used as the final test for this assumption. The scatter plots (Appendix D) all show linear correlation between the theoretical percentiles of the normal distribution and the percentiles of the observed data of this study. This linearity visually proves the normal distributed nature of the residuals and therefore the assumption is valid.

e. Linearity

The linearity of the relationship between the independent variable (i.e. relationship equity), dependent variables (i.e. perceived economical, social and environmental sustainability) and moderator variables (i.e. CSO) of the model amounts to the way changes of the dependent variables and independent variables are associated. This straight line relationship is assumed during multiple linear regression and hence needs to be checked. The linearity was analyzed using Scatterplots. It is assumed that these relationships are linear by nature (Osborne & Waters, 2002). Appendix D illustrates all model variables plotted out. In all cases, linear relations were identified. No curvilinearity or non-linearity was present.

f. Homoscedasticity

Homoscedasticity was tested to check that the variance of errors is equal at all levels of the independent variables. Heteroscedasticity is known to produce small p-values then is actually the case, which should be avoided to do correct analysis (Osborne & Waters, 2002). This was visually examined by plotting the errors in relation to the predicted values of the regression. The plots in Appendix D show errors which are randomly scattered around zero without an obvious pattern, which validates the assumption (Osborne & Waters, 2002).

g. Multicollinearity

Multicollinearity is tested to analyze if certain independent variables and variables correlate highly with one another. This would be problematic since the independent variable should be independent and if therefore the degree of correlation becomes too high, the model is unfit. Therefore, the variance inflation factor (VIF) was calculated, where values higher than 4 indicate that multicollinearity might exist and values higher than 10 indicate that significant multicollinearity exists. No relationships showed multicollinearity (VIF = 1.050 in all cases), as can be seen in Appendix D.

5. Descriptive Statistics

In this section we provide a summary of the means, and a comparison of the means between those who answered the different surveys, the standard deviations, minimum and maximum of all the variables. These can be seen in Table 4 and 5 below. The completed correlation matrix can be found in Appendix E.

Table 4 – Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Economic Sustainability	71	1,00	5,00	3,2864	0,09581	0,80730	0,652
Social Sustainability	71	1,00	5,00	3,1690	0,07041	0,59328	0,352
Environmental Sustainability	71	1,00	5,00	3,4789	0,10412	0,87732	0,770
Relationship Equity	71	1,00	4,67	2,9812	0,11866	0,99982	1,000

Table 5 – Means Comparison

		Economic Sustainability	Social Sustainability	Environmental Sustainability	Relationship Equity
No CSO	Mean	3,0648	2,9769	3,3611	2,7685
	N	36	36	36	36
	Std. Deviation	0,72951	0,55083	0,86694	0,90788
Has CSO	Mean	3,5143	3,3667	3,6000	3,2000
	N	35	35	35	35
	Std. Deviation	0,82977	0,57707	0,88384	1,05471
Total	Mean	3,2864	3,1690	3,4789	2,9812
	N	71	71	71	71
	Std. Deviation	0,80730	0,59328	0,87732	0,99982

6. Results

6.1 Correlations

The regression analysis itself was approached in two different steps. As a first step, the main effects between the independent variable (i.e. relationship equity) and the three dependent variables (i.e. perceived economical, social, environmental sustainability) was calculated. As a second step, the full moderation model was tested.

During the initial linear regression, we investigate if it is possible to predict the three elements of perceived sustainability (i.e. environmental, social, economical) based on the relationship equity customers of a startup have.

6.1.1 Perceived Economic Sustainability

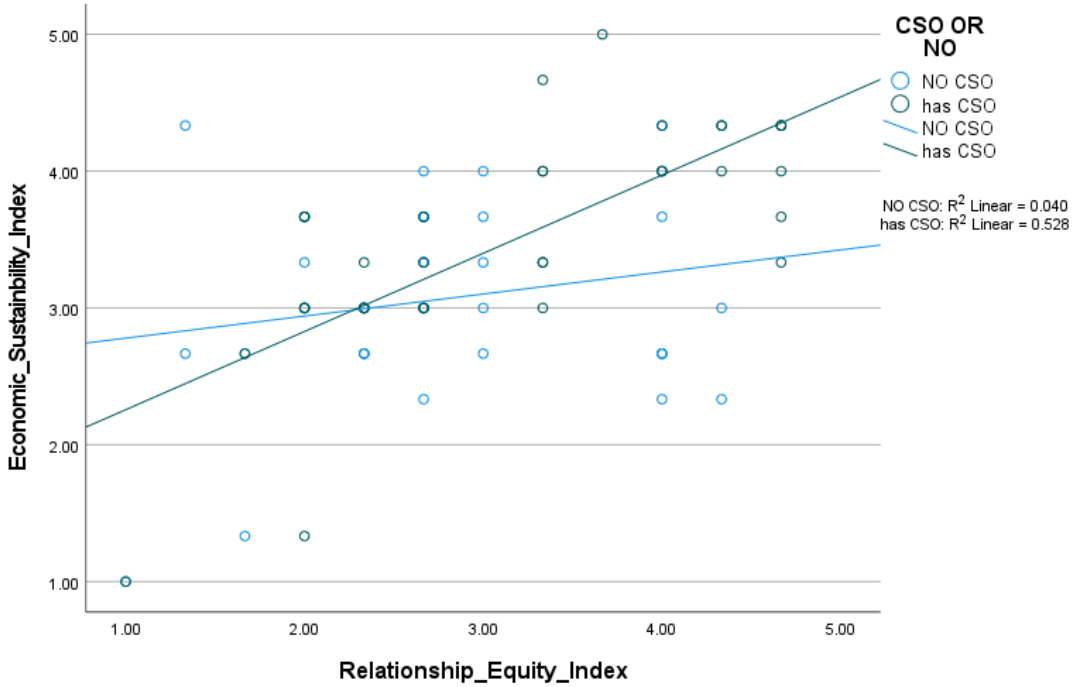
The model result for the dependent variable perceived economic sustainability considering relationship equity is significant ($F(1, 69) = 26{,}382$; $R2 = 0.277$; $p < .001$).

RE (Relationship Equity) without the moderating variable (i.e. CSO) was found to be a significant predictor of perceived economic sustainability ($p < 0{,}001$). Startups have a predicted perceived economical sustainability equal to 2.020 - 0.425 (RE). This means, the startups perceived economic sustainability will increase by 0.425 ($B = 0.425$) for every unit increase of the RE. Therefore, eelationship equity is a significant predictor of perceived economical sustainability.

We also checked for the moderation effect of CSO on the presupposed relationship between relationship equity and perceived economic sustainability. Our results suggest that a moderating factor of 0.4105 was identified in this correlation with a statistical significance ($p = 0.0139$).

Following the above discussion, our results provide support for H1a and H2a. These findings are summarized in Table 6 and Figure 1.

Figure 1 – Scatter plot of Perceived Economic Sustainability in Relation to Relationship Equity



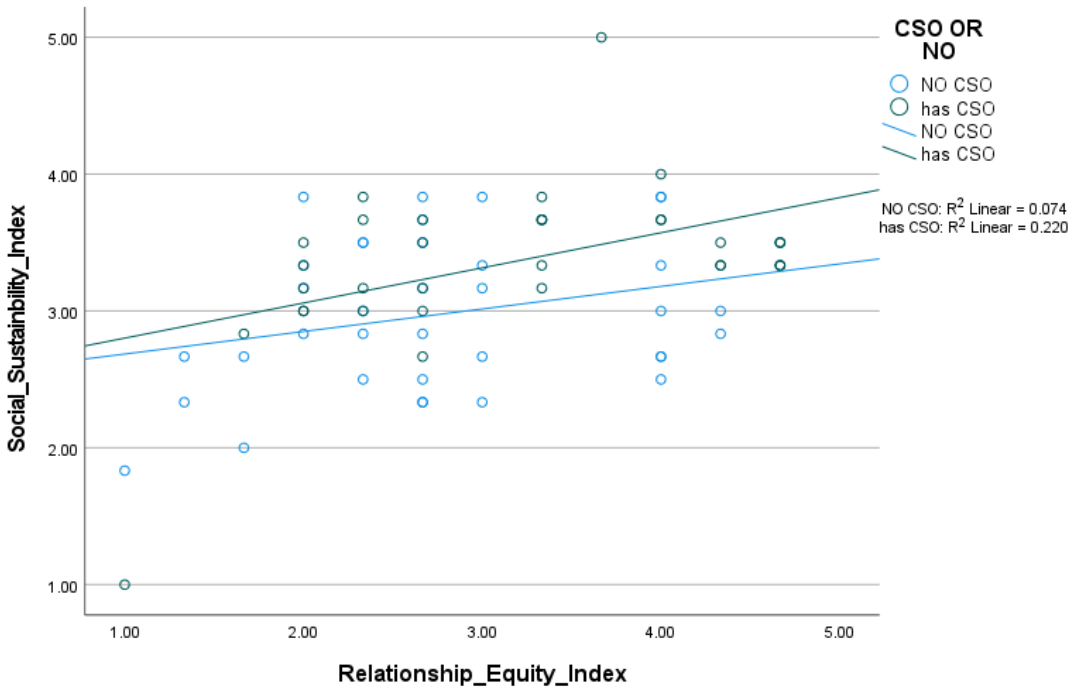
6.1.2 Perceived Social Sustainability

The model result for the dependent variable perceived social sustainability considering relationship equity is significant. (F(1, 69) = 14,796; R2 = 0.177; p < .001)

RE without the moderating variable was found to be a significant predictor of perceived social sustainability (p < 0,001). Startups have a predicted perceived social sustainability equal to 2.426 - 0.249 (RE). This means, the startups perceived social sustainability value will increase by 0.249 (B = 0.249) for every unit increase of the RE. Therefore, relationship equity is a significant predictor of perceived social sustainability.

In the moderating model, where CSO functions as a moderator of the RE as a predictor of perceived social sustainability, A moderating factor of 0.0921 was identified in this correlation, however the significance was not strong enough (p = 0.4829). Following the above discussion, support was found for H1b but not for H2b. These findings are summarized in Table 6 and Figure 2.

Figure 2 – Scatter plot of Perceived Social Sustainability in Relation to Relationship Equity



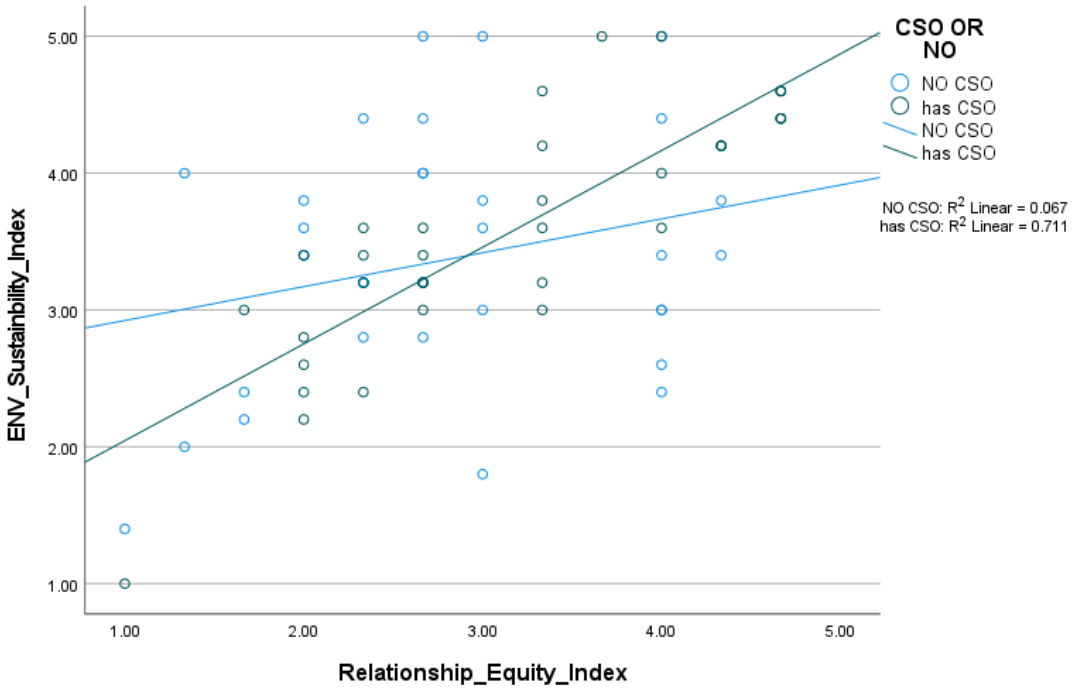
6.1.3 Perceived Environmental Sustainability

Moving the model focusing on perceived environmental sustainability, we find the overall model to be is statistically significant at 95% confidence level as the p-values is less than 0.05 (F(1, 69) = 35.253, R2 = 0.329, p < .001)

RE was found to be a significant predictor of perceived environmental sustainability (p <.001). Startups have a predicted perceived environmental sustainability equal to 1,958 - 0,510 (RE). This means, the startups perceived environmental sustainability will increase by 0.510 (b = 0.510) for every unit increase of the RE. Therefore, relationship equity is a significant predictor of perceived environmental sustainability.

As a second step, the moderation effect of the CSO was analyzed. In the moderating model, where CSO functions as a moderator of the RE as a predictor of perceived environmental sustainability, a moderating factor of 0.4592 was identified in this correlation and with significance(p = 0.0093). Following the above discussion, support was found for H1c and H2c. These findings are summarized in Table 6 and Figure 3.

Figure 3 – Scatter plot of Perceived Environmental Sustainability in Relation to Relationship Equity



6.2 Summary

After the data analysis above, we return back to the hypothesis of this study. Two main hypotheses were formulated, one assuming a positive relationship between the relationship equity, and one assuming positive moderation effect of a CSO in the former. Table 6 gives an overview on the gathered data of the regression analyses, together with the conclusions.

Table 6 – Regression Summary

Hypothesis		IV	Moderator	DV	B	p	R2	confidence interval		Conclusion
								Lower	Upper	
H1 (Main effects)										
	(a)	*RE*	*/*	*PES*	*0,4250*	*<0,001*	*0,2770*			***supported***
	(b)	*RE*	*/*	*PSS*	*0,2490*	*<0,001*	*0,1770*			***supported***
	(c)	*RE*	*/*	*PENS*	*0,5100*	*<0,001*	*0,3380*			***supported***
H2 (Moderator effects)										
	(a)	*RE*	*CSO*	*PES*	*0,4105*	*0,0139*	*0,3660*	*-0,0735*	*-0,0863*	***supported***
	(b)	*RE*	*CSO*	*PSS*	*0,0921*	*0,4829*	*0,2424*	*-0,3525*	*-0,1684*	*not supported*
	(c)	*RE*	*CSO*	*PENS*	*0,4592*	*0,0093*	*0,4023*	*-0,8013*	*-0,1172*	***supported***

For hypothesis 1a, 1b and 1c, support was found, indicating a direct positive effect between relationship equity and perceived economic sustainability (B= 0,4250; $p < 0.001$), perceived social sustainability (B = 0,2490; $p < 0.001$) and perceived environment sustainability (B = 0,5100; $p < 0.001$).

For hypothesis 2a and 2c, support was found, indicating that a CSO has a moderating effect of the correlation between relationship equity and perceived economic sustainability (B = 4105, p = 0.0139) and perceived environmental sustainability (B = 0,4592; p = 0.0093). However, the moderation effect of a CSO on the correlation between relationship equity and perceived social sustainability (B = 0,0921; p = 0,2424) was not supported as it was not significant (p = 0.4829).

7. Discussion

As a first step, the correlation between relationship equity - how connected customers feel with the brand - and perceived sustainability of startups was analyzed. Marketing literature (Kim et al. 2015) has investigated how relationship equity can be increased by perceived sustainability value, however, due to the recent shift to a more sustainable oriented customer behavior (Simon et al. 2021), finding the inverse relationship gains interest as well. It is of high value to know what can or cannot increase the perceived sustainability of customers towards a brand. As a second step, our research investigated how the position of a Chief Sustainability Officer in the startup will influence this relationship. The amount of CSOs in large corporations is rapidly growing (Deloitte, 2022), however, this impact has never been proven in a startup context. Therefore, this research aims to contribute by analyzing if a CSO will improve the perceived sustainability further.

This research contributes to the fields of Entrepreneurship, Sustainability and Marketing research as it covers topics such as startups, early resource allocation, governance as well as consumer behaviors and customer brand loyalty. Furthermore, this thesis adds on to existing work in these fields, including customer centricity, CSR, upper-echelon and stakeholder theory (Dahlsrud, 2008; Freeman, 1984; Hambrick & Mason, 1984; Rust, Lemon & Zeithaml, 2004). Specifically for entrepreneurship, it allows for researchers to further understand the effect of Board / Executive positions of a startup and the potential upsides to it. For Sustainability it further builds on existing CSR literature and helps shift the conversation away from larger organizations to smaller ones. Regarding the field of marketing, our thesis further allows for researchers to see the benefits of customer centricity, the impact of relationship equity and customer loyalty, and how entrepreneurs can utilize channels in ways that larger corporations might have more difficulty pursuing effectively and decisively. We have argued that relationship equity is a good measurement for startups to evaluate their customers' investing behavior and that by introducing a Chief Sustainability Officer, or similar role, can influence the strategic direction of a startup and influence the perceived sustainability value of the customer.

Our study showed higher relationship equity results in higher perceived economic, social and environmental sustainability value, which supports our predictions. This indicates that a high relationship equity is a good predictor that the customer also has a high perceived

sustainability. These findings align with previous research in this field while also adding new perspectives (Kim et al. 2015; Rust, Lemon, Zeithaml, 2004). We note that the correlation between relationship equity and perceived social sustainability was lower than the other two variables which further cements previous findings in the field of Marketing (Kim et al. 2015). These findings could be explained by the fact that social sustainability is often neglected compared to environmental (and economical) (Cuthill, 2010). Having these findings in mind, startups know that investing in relationship equity not only increases their relationship equity with their customers, but also indirectly increases the perceived sustainability of their startup by the customers. Ya-Ching (2019) provides various reasons (e.g. better costs versus benefits evaluation) why this can benefit the success of the startup.

As a second step, we dove deeper in the specific factors that influence the above discussed relationship. We found that a CSO position in the startup increases the perceived economic and environmental sustainability. Although a positive coefficient was also found for perceived social sustainability, it was not found to be significant. This means, customers believe the startup is more sustainable on an economic and environmental level, if they know there is a CSO onboard, compared to when there is not. As the significance in the case of perceived social sustainability is higher than allowed, no conclusions could be made. Here, Catlin, Luchs and Phipps (2017) found that the social dimension of sustainability is indeed perceived differently compared to the other aspects of sustainability, both in theoretical and practical importance. Findings that social sustainability is seen on a smaller and short term scale (Catlin et al. 2017) can explain why no significance was found in this study which uses scaled and global startups as a case study.

Knowing the high value modern customers give towards sustainability, companies can attract more customers by the incorporation of a CSO. Knowing this, our research provides another argument to incorporate a CSO in a startup. Next to a possible better long term strategy and more sustainable outputs (Vetle & Stawinoga, 2020), the company will also be higher valued by customers, which this study proves in a startup context. The result of this higher perceived value could provide opportunities for startups to go out to investors at higher valuations, something which would be interesting for future researchers to explore.

This thesis can provide a basis for future policy makers in the field of sustainability to encourage startups to invest earlier on sustainable roles within their organizations as the value

of these positions can have significant outcomes on their bottom line (Rodrigue, Magnan & Cho, 2013). Examples of policy improvements could be investment into more education for sustainable roles and or to provide funding for startups in order to afford a sustainability officer early on when funds are limited. Furthermore, this would allow policy makers to build support for these initiatives as the overall perception of sustainability value can have greater value to society and environment (Priem, Walters & Li, 2011).

Finally, some limitations of our thesis should be considered. Our first limitation is linked to the limited data set that was obtained through convenient sampling and therefore not perfectly represents the population, which is often the case in quantitative research results and can affect the practical implications and conclusions of our thesis (Jones, Carley & Harrison, 2003). In saying that, we still found our data to be significant on most levels and therefore determined that although our data set was not substantially large, we are able to contribute meaningfull to literature. This can be avoided in the future by having a much larger sample size.

Our second limitation is that we focused exclusively on one industry (i.e. mobile electric transportation), which makes that the conclusions might alter if they are transferred to other industries. Although this is a limitation, we argue that by focusing on a specific industry we were able to provide robust, significant and actionable findings for researchers and managers in this field.

A third limitation can be associated with the theoretical framework we utilized in this thesis. In the model, the perceived sustainability of the customer of a startup is listed as a dependent variable. Here, using sustainability instead of the perceived sustainability, would have analyzed the impact of a CSO on the actual sustainability, which can be considered more interesting than the perceived sustainability. However, this was considered not feasible within the given timeframe and the given resources. Although this thesis is not able to say if the outcome of a startup will become more sustainable, it proves that a CSO will increase the perceived sustainability, which is beneficial for the startup (Ya-Ching, 2019). We argue that although the impact of perceived sustainability may still have the opportunity to create a larger impact on the planet there is still the opportunity that perceived sustainability can in turn influence actual sustainability through the allocation of internal resources and improved

governance (Rodrigue, Magnan & Cho, 2013). All of the above limitations provide future researchers great opportunities to build on the findings of this thesis.

8. Conclusion

To conclude, this study has two mean goals: (1) identify and quantify the relationship between relationship equity and perceived economic, social and environment sustainability in a startup, and (2) how a CSO influences this relationship. These goals were approached with a multiple regression analysis with CSO as moderator. This approach was successful as we were able to find support from five out of six hypotheses. As predicted, relationship equity was positively correlated to all three dependent variables: perceives economical, social and environmental sustainability. Moreover, we found that a CSO has a positive effect on the perceived economic and environmental sustainability of the startup. No support was found for the effect of a CSO on perceived social sustainability. Further research should identify why this relationship was not supported.

Next to this, further research could identify the found correlation in other industries as well, together with the incorporation of more independent variables. This would contribute to the picture we have established of how startups can increase the perceived sustainability of their startups. Next to this, the target sample can be shifted from *customers* to a broader concept like *stakeholders,* which would bring insights on how a startup can be perceived as better by more than just its customers.

The findings for this thesis can be used at advisory boards of startups in the discussion why a CSO posistion will add value to the startup. Next to the direct consequences this position has (i.e. sustainable strategy, sustainable value chain, etc.), we found that it will also make that the startup is perceived as more sustainable on an economic and environmental level, which are in the current market, competitive advantages.

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Appendices

Appendix A: Written Vignette

Imagine that when (STARTUP X) started their company the founding team consisted of the following positions (and still does):

Chief Financial Officer (CFO),

Chief Technical Officer (CTO), and

Chief Executive Officer (CEO)

The start-up has now been around for a few years, employs people around the world and services thousands of people every month with their scooters and bicycles.

Please note: When answering the following survey please consider your experiences and thoughts about (STARTUP X) while keeping the organizational structure of the founding team in mind.

Appendix B

Factors		Measured items
Sustainability	Economic sustainability	*The startups* transparency in business management is good
		The startups governance is appropriate
		The startups accountability is good
	Social sustainability	*The startups* serves social responsibility
		The start-up's cares about human rights
		The start-up's makes social contributions
		The start-up's provides social activities for local communities
		The start-up's hires local people
		The start-up's donates and offers volunteer work
	Environmental sustainability	*The start-up's* utilizes green technology
		The start-up's invests for the environment
		The start-up's produces eco-friendly products
		The start-up's achieves environmental innovativeness
		The start-up's recycles / uses recycled materials
Customer equity drives	Relation equity	I feel emotionally attached to the *start-up*
		I would continue to *use start-up's service* because I like being associated with it

Appendix C: Research methodology

Item - Total Statistics

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ENVS1	13.52	13.282	.695	.524	.846
ENVS2	13.85	12.019	.758	.586	.829
ENVS3	14.04	11.555	.792	.634	.820
ENVS4	14.32	14.679	.531	.330	.880
ENVS5	13.85	12.019	.723	.565	.838

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ES1	6.63	2.978	.651	.424	.749
ES2	6.59	2.674	.671	.450	.730
ES3	6.49	2.911	.659	.435	.740

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SS1	15.75	8.221	.518	.337	.735
SS2	16.14	9.408	.626	.429	.709
SS3	15.72	9.520	.492	.296	.735
SS4	15.92	8.193	.649	.448	.690
SS5	15.46	10.081	.317	.124	.780
SS6	16.08	9.850	.527	.342	.731

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
RE1	6.52	3.882	.697	.526	.707
RE2	5.94	3.454	.774	.602	.618
RE3	5.42	5.790	.579	.357	.839

Component Matrix

Component Matrix[a]

	Component 1
Economic_Sustainbility_Index	.839
Social_Sustainbility_Index	.827
ENV_Sustainbility_Index	.867
Relationship_Equity_Index	.756

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

KMO and Bartlett test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.871
Bartlett's Test of Sphericity	Approx. Chi-Square	646.113
	df	136
	Sig.	<,001

Communalities

Communalities

	Initial	Extraction
ES1	1.000	.643
ES2	1.000	.723
ES3	1.000	.690
SS1	1.000	.619
SS2	1.000	.721
SS3	1.000	.497
SS4	1.000	.635
SS5	1.000	.489
SS6	1.000	.630
ENVS1	1.000	.687
ENVS2	1.000	.818
ENVS3	1.000	.772
ENVS4	1.000	.568
ENVS5	1.000	.749
RE1	1.000	.827
RE2	1.000	.814
RE3	1.000	.647

Extraction Method: Principal Component Analysis.

Common Method bias

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.365	43.325	43.325	7.365	43.325	43.325
2	1.739	10.227	53.552			
3	1.314	7.728	61.280			
4	1.112	6.542	67.822			
5	.875	5.148	72.971			
6	.721	4.241	77.211			
7	.642	3.776	80.988			
8	.554	3.258	84.245			
9	.512	3.011	87.256			
10	.435	2.561	89.817			
11	.372	2.188	92.005			
12	.327	1.923	93.928			
13	.281	1.653	95.581			
14	.229	1.349	96.930			
15	.193	1.137	98.067			
16	.174	1.022	99.089			
17	.155	.911	100.000			

Extraction Method: Principal Component Analysis.

Independent T-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
COMPUTE Economic_Sustainbility_Index=(ES1 + ES2 + ES3) / 3	Equal variances assumed	.418	.520	2.426	69	.009	.018	.44947	.18528	.07985	.81910
	Equal variances not assumed			2.421	67.352	.009	.018	.44947	.18562	.07901	.81993
COMPUTE Social_Sustainbility_Index= (SS1+SS2+SS3+SS4+SS5+SS6)/6	Equal variances assumed	1.457	.232	2.912	69	.002	.005	.38981	.13386	.12277	.65686
	Equal variances not assumed			2.910	68.614	.002	.005	.38981	.13395	.12256	.65707
COMPUTE ENV_Sustainbility_Index= (ENVS1+ENVS2+ENVS3 +ENVS4+ENVS5)/5	Equal variances assumed	.079	.779	1.150	69	.127	.254	.23889	.20778	-.17562	.65340
	Equal variances not assumed			1.149	68.842	.127	.254	.23889	.20784	-.17575	.65353
COMPUTE Relationship_Equity_Index=(RE1+RE2+RE3)/3	Equal variances assumed	2.270	.136	1.849	69	.034	.069	.43148	.23334	-.03402	.89698
	Equal variances not assumed			1.845	66.903	.035	.069	.43148	.23384	-.03527	.89823

Correlation Matrix for Discriminant validity

Correlation Matrix

		ES1	ES2	ES3	SS1	SS2	SS3	SS4	SS5	SS6	ENVS1	ENVS2	ENVS3	ENVS4	ENVS5	RE1	RE2	RE3
Correlation	ES1	1,000	0,590	0,574	0,282	0,175	0,464	0,382	0,337	0,270	0,350	0,349	0,285	0,340	0,391	0,396	0,462	0,476
	ES2	0,590	1,000	0,600	0,495	0,148	0,286	0,405	0,314	0,291	0,354	0,374	0,406	0,354	0,533	0,191	0,325	0,426
	ES3	0,574	0,600	1,000	0,436	0,393	0,476	0,584	0,426	0,302	0,410	0,553	0,549	0,456	0,496	0,302	0,477	0,534
	SS1	0,282	0,495	0,436	1,000	0,481	0,277	0,492	0,169	0,414	0,363	0,502	0,471	0,380	0,520	0,051	0,267	0,270
	SS2	0,175	0,148	0,393	0,481	1,000	0,358	0,518	0,268	0,521	0,261	0,387	0,429	0,450	0,307	-0,003	0,302	0,289
	SS3	0,464	0,286	0,476	0,277	0,358	1,000	0,491	0,244	0,384	0,331	0,455	0,352	0,392	0,426	0,276	0,371	0,420
	SS4	0,382	0,405	0,584	0,492	0,518	0,491	1,000	0,320	0,371	0,331	0,397	0,388	0,383	0,499	0,118	0,282	0,567
	SS5	0,337	0,314	0,426	0,169	0,268	0,244	0,320	1,000	0,177	0,243	0,164	0,195	0,180	0,269	0,246	0,243	0,433
	SS6	0,270	0,291	0,302	0,414	0,521	0,384	0,371	0,177	1,000	0,214	0,408	0,342	0,518	0,343	0,082	0,215	0,269
	ENVS1	0,350	0,354	0,410	0,363	0,261	0,331	0,331	0,243	0,214	1,000	0,628	0,633	0,359	0,645	0,294	0,517	0,525
	ENVS2	0,349	0,374	0,553	0,502	0,387	0,455	0,397	0,164	0,408	0,628	1,000	0,692	0,542	0,601	0,482	0,660	0,514
	ENVS3	0,285	0,406	0,549	0,471	0,429	0,352	0,388	0,195	0,342	0,633	0,692	1,000	0,509	0,702	0,177	0,434	0,389
	ENVS4	0,340	0,354	0,456	0,380	0,450	0,392	0,383	0,180	0,518	0,359	0,542	0,509	1,000	0,404	0,244	0,402	0,363
	ENVS5	0,391	0,533	0,496	0,520	0,307	0,426	0,499	0,269	0,343	0,645	0,601	0,702	0,404	1,000	0,245	0,454	0,498
	RE1	0,396	0,191	0,302	0,051	-0,003	0,276	0,118	0,246	0,082	0,294	0,482	0,177	0,244	0,245	1,000	0,723	0,479
	RE2	0,462	0,325	0,477	0,267	0,302	0,371	0,282	0,243	0,215	0,517	0,660	0,434	0,402	0,454	0,723	1,000	0,593
	RE3	0,476	0,426	0,534	0,270	0,289	0,420	0,567	0,433	0,269	0,525	0,514	0,389	0,363	0,498	0,479	0,593	1,000

Correlation Matrix (significance)

Sig. (1-tailed)	ES1		0,000	0,000	0,009	0,072	0,000	0,001	0,002	0,011	0,001	0,001	0,008	0,002	0,000	0,000	0,000	0,000
	ES2	0,000		0,000	0,000	0,109	0,008	0,000	0,004	0,007	0,001	0,001	0,000	0,001	0,000	0,056	0,003	0,000
	ES3	0,000	0,000		0,000	0,000	0,000	0,000	0,000	0,005	0,000	0,000	0,000	0,000	0,000	0,005	0,000	0,000
	SS1	0,009	0,000	0,000		0,000	0,010	0,000	0,079	0,000	0,001	0,000	0,000	0,001	0,000	0,336	0,012	0,012
	SS2	0,072	0,109	0,000	0,000		0,001	0,000	0,012	0,000	0,014	0,000	0,000	0,000	0,005	0,490	0,005	0,007
	SS3	0,000	0,008	0,000	0,010	0,001		0,000	0,020	0,000	0,002	0,000	0,001	0,000	0,000	0,010	0,001	0,000
	SS4	0,001	0,000	0,000	0,000	0,000	0,000		0,003	0,001	0,002	0,000	0,000	0,000	0,000	0,164	0,009	0,000
	SS5	0,002	0,004	0,000	0,079	0,012	0,020	0,003		0,070	0,020	0,086	0,051	0,067	0,012	0,019	0,021	0,000
	SS6	0,011	0,007	0,005	0,000	0,000	0,000	0,001	0,070		0,037	0,000	0,002	0,000	0,002	0,249	0,036	0,012
	ENVS1	0,001	0,001	0,000	0,001	0,014	0,002	0,002	0,020	0,037		0,000	0,000	0,001	0,000	0,006	0,000	0,000
	ENVS2	0,001	0,001	0,000	0,000	0,000	0,000	0,000	0,086	0,000	0,000		0,000	0,000	0,000	0,000	0,000	0,000
	ENVS3	0,008	0,000	0,000	0,000	0,000	0,001	0,000	0,051	0,002	0,000	0,000		0,000	0,000	0,070	0,000	0,000
	ENVS4	0,002	0,001	0,000	0,001	0,000	0,000	0,000	0,067	0,000	0,001	0,000	0,000		0,000	0,020	0,000	0,001
	ENVS5	0,000	0,000	0,000	0,000	0,005	0,000	0,000	0,012	0,002	0,000	0,000	0,000	0,000		0,020	0,000	0,000
	RE1	0,000	0,056	0,005	0,336	0,490	0,010	0,164	0,019	0,249	0,006	0,000	0,070	0,020	0,020		0,000	0,000
	RE2	0,000	0,003	0,000	0,012	0,005	0,001	0,009	0,021	0,036	0,000	0,000	0,000	0,000	0,000	0,000		0,000
	RE3	0,000	0,000	0,000	0,012	0,007	0,000	0,000	0,000	0,012	0,000	0,000	0,000	0,001	0,000	0,000	0,000	

Appendix D: Analysis and Diagnostics

Durbin-Watson test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.526[a]	.277	.266	.69159	1.916

a. Predictors: (Constant), COMPUTE Relationship_Equity_Index= (RE1+RE2+RE3)/3

b. Dependent Variable: COMPUTE Economic_Sustainbility_Index=(ES1 + ES2 + ES3) / 3

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.420[a]	.177	.165	.54225	1.860

a. Predictors: (Constant), COMPUTE Relationship_Equity_Index= (RE1+RE2+RE3)/3

b. Dependent Variable: COMPUTE Social_Sustainbility_Index= (SS1+SS2+SS3+SS4+SS5+SS6)/6

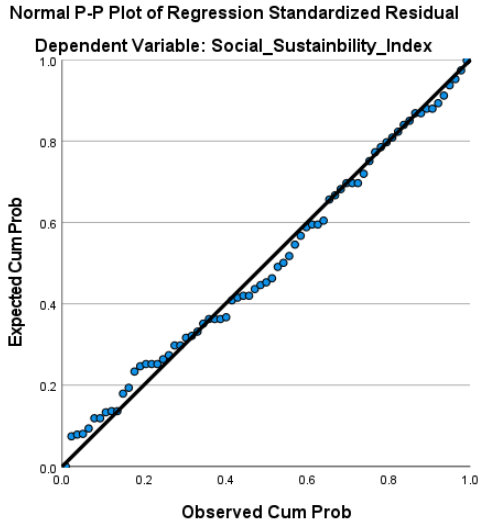
Model Summary[b]

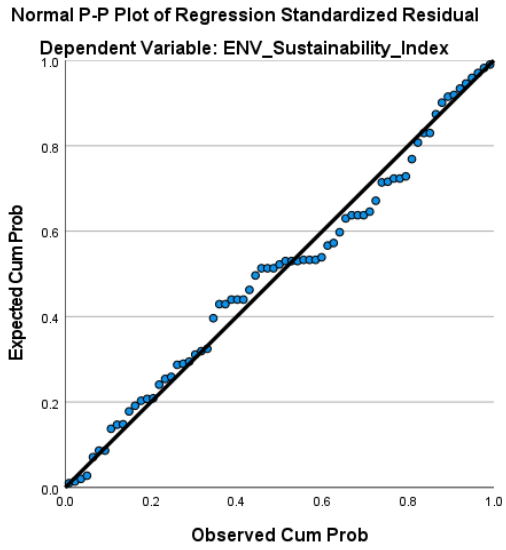
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.582[a]	.338	.329	.71889	2.018

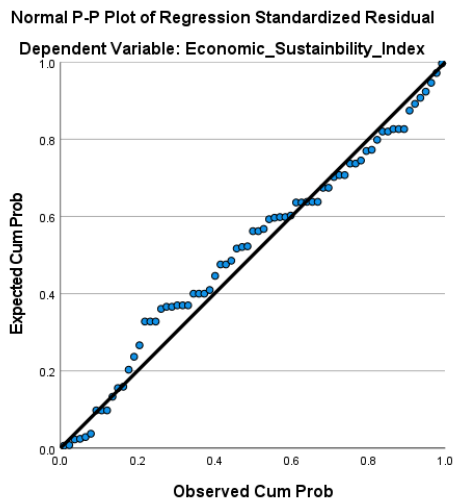
a. Predictors: (Constant), COMPUTE Relationship_Equity_Index= (RE1+RE2+RE3)/3

b. Dependent Variable: COMPUTE ENV_Sustainbility_Index= (ENVS1+ENVS2+ENVS3+ENVS4+ENVS5)/5

Linearity P-P Plots of Regression







Normal distribution of residuals

Descriptives

			Statistic	Std. Error
Residual for Economic_Sustainability_Index	Mean		.0000	.05790
	95% Confidence Interval for Mean	Lower Bound	-.1155	
		Upper Bound	.1155	
	5% Trimmed Mean		.0093	
	Median		.0000	
	Variance		.238	
	Std. Deviation		.48788	
	Minimum		-1.60	
	Maximum		1.14	
	Range		2.74	
	Interquartile Range		.54	
	Skewness		-.353	.285
	Kurtosis		.915	.563

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Economic_Sustainability_Index	.078	71	.200*	.984	71	.516

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Descriptives

			Statistic	Std. Error
Residual for Social_Sustainability_Index	Mean		.0000	.04286
	95% Confidence Interval for Mean	Lower Bound	-.0855	
		Upper Bound	.0855	
	5% Trimmed Mean		-.0037	
	Median		.0000	
	Variance		.130	
	Std. Deviation		.36117	
	Minimum		-.73	
	Maximum		.81	
	Range		1.55	
	Interquartile Range		.42	
	Skewness		.132	.285
	Kurtosis		-.215	.563

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for Social_Sustainability_Index	.069	71	.200*	.984	71	.483

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

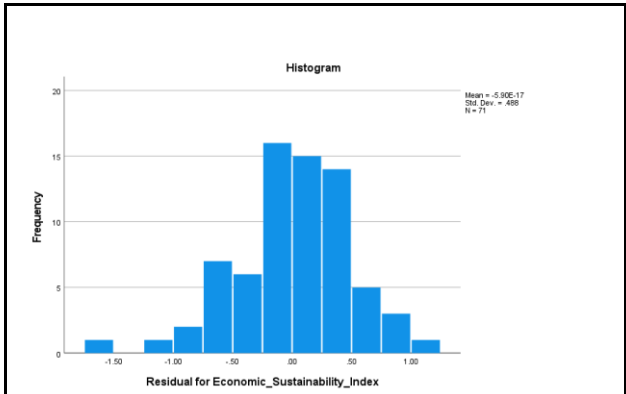
Descriptives

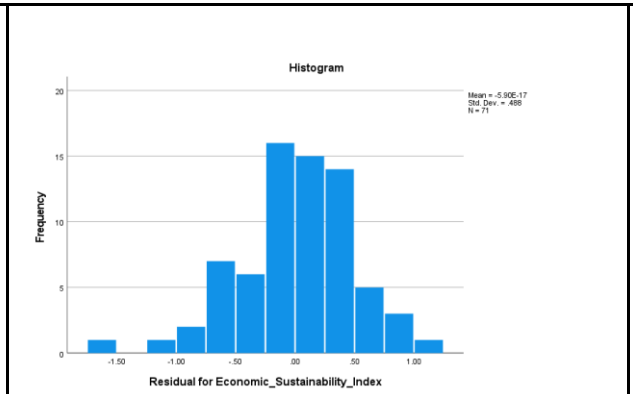
			Statistic	Std. Error
Residual for ENV_Sustainability_Index	Mean		.0000	.06860
	95% Confidence Interval for Mean	Lower Bound	-.1368	
		Upper Bound	.1368	
	5% Trimmed Mean		-.0134	
	Median		.0000	
	Variance		.334	
	Std. Deviation		.57803	
	Minimum		-1.64	
	Maximum		1.60	
	Range		3.24	
	Interquartile Range		.53	
	Skewness		.409	.285
	Kurtosis		1.267	.563

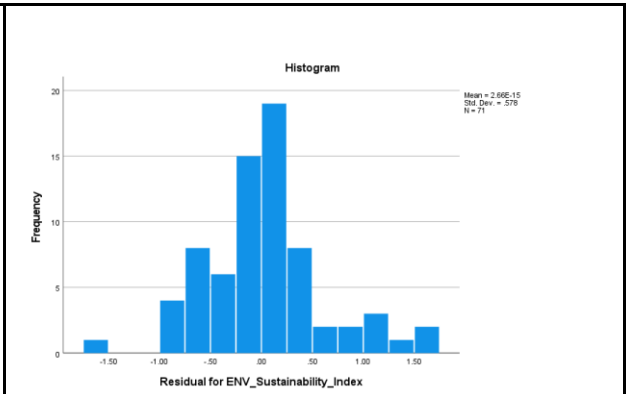
Tests of Normality

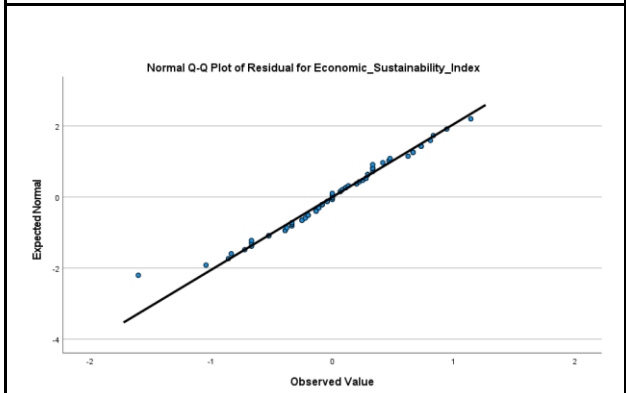
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual for ENV_Sustainability_Index	.136	71	.002	.956	71	.015

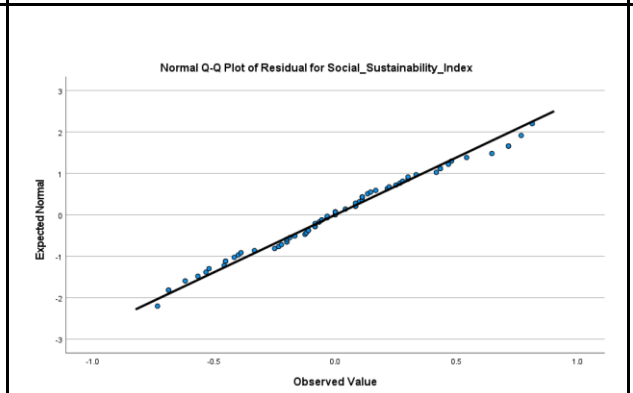
a. Lilliefors Significance Correction

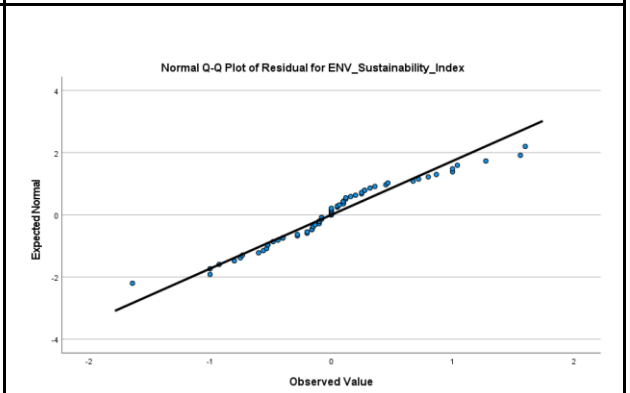

Histogram
Mean = -5.90E-17
Std. Dev. = .488
N = 71
Frequency
Residual for Economic_Sustainability_Index

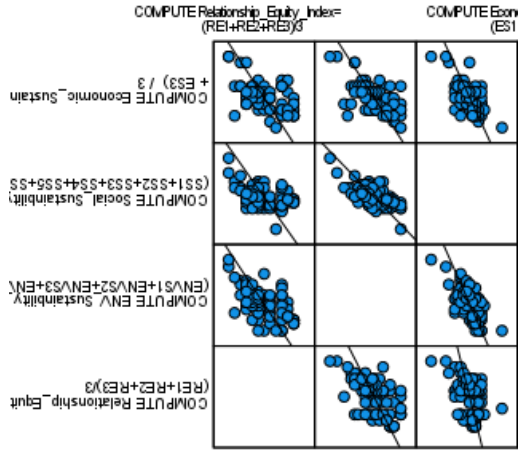

Histogram
Mean = -5.90E-17
Std. Dev. = .488
N = 71
Frequency
Residual for Economic_Sustainability_Index


Histogram
Mean = 2.66E-15
Std. Dev. = .578
N = 71
Frequency
Residual for ENV_Sustainability_Index


Normal Q-Q Plot of Residual for Economic_Sustainability_Index
Expected Normal
Observed Value

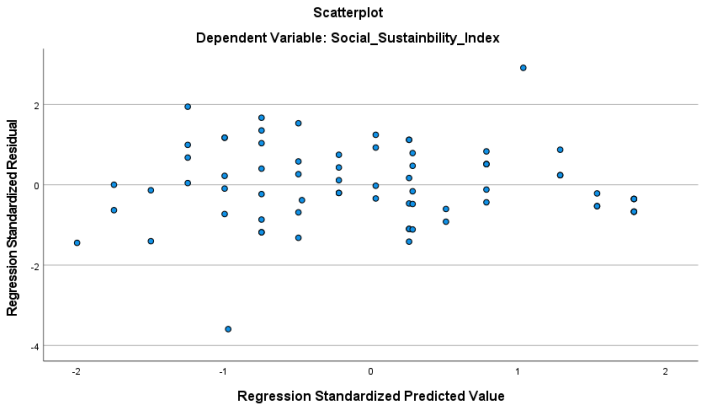

Normal Q-Q Plot of Residual for Social_Sustainability_Index
Expected Normal
Observed Value

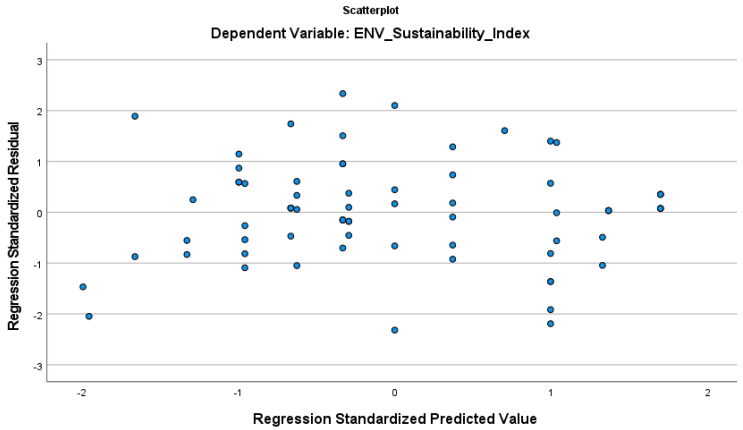

Normal Q-Q Plot of Residual for ENV_Sustainability_Index
Expected Normal
Observed Value

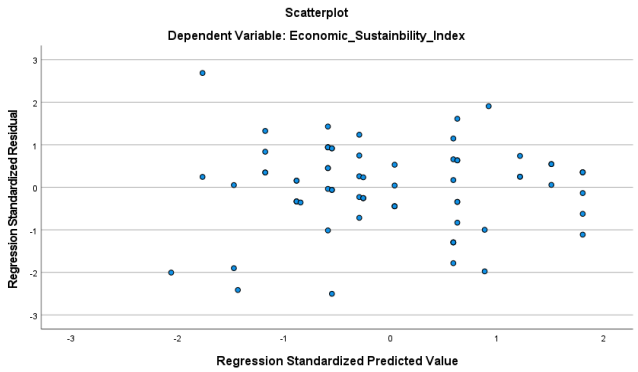


Linearity of relationships

Homoscedasticity







Multicollinearty

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.994	.422		4.723	<,001		
	COMPUTE Relationship_Equity_Index=(RE1+RE2+RE3)/3	.508	.089	.579	5.730	<,001	.953	1.050
	CSO OR NO	-.020	.176	-.011	-.112	.911	.953	1.050

a. Dependent Variable: COMPUTE ENV_Sustainbility_Index=(ENVS1+ENVS2+ENVS3+ENVS4+ENVS5)/5

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.533	.398		6.365	<,001		
	Relationship_Equity_Index	.394	.084	.488	4.714	<,001	.953	1.050
	CSO OR NO	-.279	.166	-.174	-1.683	.097	.953	1.050

a. Dependent Variable: Economic_Sustainbility_Index

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.969	.307		9.684	<,001		
	Relationship_Equity_Index	.217	.064	.366	3.368	.001	.953	1.050
	CSO OR NO	-.296	.128	-.251	-2.316	.024	.953	1.050

a. Dependent Variable: Social_Sustainbility_Index

Appendix E: Descriptive Statistics

Correlation Matrix

Correlation Matrix[a]

		Economic_Sustainbility_Index	Social_Sustainbility_Index	ENV_Sustainbility_Index	Relationship_Equity_Index
Correlation	Economic_Sustainbility_Index	1.000	.628	.598	.526
	Social_Sustainbility_Index	.628	1.000	.657	.420
	ENV_Sustainbility_Index	.598	.657	1.000	.582
	Relationship_Equity_Index	.526	.420	.582	1.000
Sig. (1-tailed)	Economic_Sustainbility_Index		<,001	<,001	<,001
	Social_Sustainbility_Index	.000		.000	.000
	ENV_Sustainbility_Index	.000	.000		.000
	Relationship_Equity_Index	.000	.000	.000	

a. Determinant = .189