The influences of environmental legislation complexity and external support on SMEs' environmental responsiveness

Moderated by financial performance and SME size

Radboud Universiteit

Master Thesis

International Business

Author: Jerom van de Kraats

Student number: s101195

Supervisor: Bas van Heerwaarden

Second examiner: Prof. Dr. Ayse Saka-Helmhout

Date: 26-06-2022

Abstract

Research into factors influencing SMEs' environmental responsiveness has been sparked by a growing awareness. This study seeks to extent the knowledge regarding this subject by investigating the influences of environmental legislation complexity and external support on the environmental practice adoption of SMEs. Moreover, the study adheres to calls that factors influencing SMEs could vary across the category, as SMEs are not a homogenous group. It is therefore, that recent financial performance and SME size are included as potential moderators on the relationship between environmental legislation complexity and SMEs' environmental practice adoption. Additionally, the possible moderating effect of SME recent financial performance on the relationship between external support and environmental responsiveness is included. For the analysis, a dataset consisting over 9000 SMEs originating from the 28 countries of the European Union (as of January 1st 2017) has been used. The results of the ordinal logistic regression show a surprising finding that environmental legislation complexity positively influences SMEs' environmental responsiveness. Furthermore, this positive effect is proven to be significantly weaker for SMEs with higher financial performance and larger size. Ultimately, this study confirms the results of prior research by finding that external support also has a positive impact on the environmental practice adoption of firms.

Key words: Small and medium-sized enterprises, environmental practice adoption, corporate social responsibility, absorptive capacity, resource dependence theory, slack resources theory, environmental legislation complexity, external support

Index

1 Introduction

The first chapter serves as an introduction of the topic, which is the environmental adoption of SMEs. The cause and relevance of the problem will be discussed, as well as the objective and related research questions of the thesis. Lastly, an outline of the thesis will be provided.

1.1 Environmental strategy adoption by SMEs

The adoption of environmental practices has been a complicated topic for small- and medium-sized enterprises (SMEs) over the past years. Environmental pollution, such as landscape devastation, groundwater contamination, carbon emissions, and industrial waste, has become a major source of concern for societies around the world, endangering people's health and disrupting local communities (Peng et al., 2020). As a result, great attention is steered towards these sustainability concerns in today's world, and especially Europe (PWC, 2018). Consequently, European SMEs are expected to play their part in solving these issues, since they shape a great part of Europe's business landscape. In 2018 SMEs represented 99.8% of the total enterprises in the European Union (EU) and accounted for 66.6% of EU employment (PWC, 2018). Consequently, these SMEs contribute between 60% and 70% to the industrial pollution in Europe (OECD, 2019). It is therefore that the EU desires that European SMEs adopt environmentally responsible strategies in order to reduce this high share of pollution. Global institutions like the Organisation for Economic Co-operation and Development (OECD) advocate this message by emphasizing that SMEs are "critical for the green transformation' and have 'the potential to engender substantial environmental improvements" (OECD, 2019, p.5).

However, these words do not directly influence SMEs to adopt environmentally responsible practices. In fact, most European managers of SMEs do not perceive clear benefit in environmentally responsible behaviour and do not see a point in going beyond the environmental legislation in order to obtain competitive advantage (Sáez-Martínez et al., 2016). An example of being environmentally responsible as a firm could be the adoption Corporate Social Responsibility (CSR) practices, but those are often perceived as a burden and threat by SMEs (Stoian & Gilman, 2017). The reason being the fear of losing their competitive edge, as they are unable to meet the social and environmental requirements of buyers and supply chains due to their limited resources and capabilities (Maloni & Brown, 2006). Research shows that SMEs and their managers struggle with estimating the costs and benefits of environmentally

responsible behaviour, which prohibits environmental responsiveness. It is therefore that academics advise policy makers and governments to inform SMEs about environmental legislation, promote environmental practice adoption and recognise firms engaging in these type of practices (Sáez-Martínez et al., 2016).

The latter is an example of the actors in the environment surrounding SMEs trying to influence them to adopt environmental practices. Besides education and legislation as a form of regulation, states can also influence firms by supporting them either financially or non-financially (Hoogendoorn et al., 2015). Firms may also receive external support from private institutions, such as consultancy firms, to overcome skill gaps and lacking knowledge regarding environmental practices (Bradford & Fraser, 2008; Simpson et al., 2004).

1.2 Research objective and question

The paragraph above mentions the examples of legislation and external support to influence SMEs' environmental practice adoption. Environmental legislation refers to rules and laws regarding the environment that are created by regulatory institutions. These institutions, such as governments, impose environmental requirements, examine whether companies are complying, and penalise companies if they are not (Darnall et al., 2010). These regulatory pressures are believed to impact the adoption of environmental practices by SMEs, however there is still discussion about the effectiveness of environmental regulation in terms of SMEs' environmental behaviour (Kassinis, 2012). Additionally, many studies examine the stringency of environmental legislation to assess that legislation has a positive effect on SME environmental practice adoption (e.g. Hoogendoorn et al., 2015). However, this measure fails to incorporate the perception of the firm on legislation. Conversely, other studies put forward that environmental regulation is seen as a burden by SMEs (Williamson et al., 2006). The latter can be observed when environmental legislation is perceived as complex by firms, which has been examined by only two notable studies (Petts et al., 1999; Wilson, et al., 2011). This research aims to further our understanding by incorporating environmental legislation complexity in an extensive quantitative analysis, since the other two studies either did qualitative research or lacked a clear definition of the construct.

Regarding external support, many academics put forward that it has a positive influence on the environmental practice adoptions of SMEs, as it helps them to overcome financial and knowledge barriers (e.g. Hoogendoorn et al., 2015, Bodas-Freitas & Correcher, 2019).

However, there is still no complete consensus regarding this argument, as some research challenges the notion that SMEs' resource constraints hinder them in adopting environmental practices. In line with this argument, Soundarajan et al. (2018) put forward that SMEs are still able to engage in environmental practices, even when they are deprived of financial and human resources. This seems to be contradictory to the notion that SMEs need external support to overcome resource barriers that impede their environmental responsiveness. Using resource dependence theory as guidance, this thesis seeks to investigate how SMEs' reliance on external support interacts with their adoption of environmental practices. Considering these reasons, the study's goal is to gain better understanding what motivates SMEs to embrace environmental practices by examining the effects of environmental legislation complexity and external support. This aim results in the following research question:

(1) What is the influence of environmental legislation complexity and external support on the environmental practice adoption of SMEs?

In other research regarding the environmental responsiveness of SMEs, more factors were proven to be of an influence, such as firm-level factors like financial performance and size. The firm's recent financial performance is indicated to have a positive impact on SMEs' environmental practice adoption, as it is an indicator of abundant financial resources (Xiao et al., 2018). Related studies confirmed that the likelihood of firms engaging in social practices is greater when financial performance is higher (Seifert, 2004; 1997; Surroca, et al., 2010; Julian & Ofori-Dankwa, 2013). However, these are merely studies investigating the direct influence of financial performance on firm's environmental practice adoption. Two notable exceptions exist where financial performance was included as a moderator on a relationship with a firm's environmental responsiveness. One of these studies focusses on the moderating effect of financial performance on the pressures of stakeholders. Chiu & Sharfman (2011) put forward that stakeholders pressure firms to be environmentally responsive and this effect is strengthened by a firm's financial performance. They argue that the demands of stakeholders intensify when they view that firms are profitable, because this is an indication that excess financial resources can be allocated towards environmental practices. Their results remained somewhat inconclusive, but they suggested that future research into possible moderations of financial performance should be conducted in the realm of smaller firms as opposed to their study using

S&P500 firms (Chiu & Sharfman, 2011). Furthermore, Panwar et al. (2017) put forward that the role of financial performance in the context of SMEs social engagement was not understood previous to their research, so our study can reduce this gap that has not been fully filled over the past years. There also exists a gap in understanding of the possible moderation by financial performance between other factors impacting firms' environmental practice adoption. The recent financial performance of firms refers to much more than merely turnover, as it correlates with a firm's slack resources (Xiao et al., 2018), which enables them to invest in political actions (Darnall et al., 2010). The possibility to engage in these actions influences the attitude of a firm towards compliance with environmental legislation (Bowen, 2002), which ultimately could lower environmental practice adoption. Moreover, the presence of slack resources may minimize a firm's resource dependence (Hillman et al., 2009; Roundy & Bayer, 2019), which could potentially lower the positive effect of external support on environmental practice adoption. It is therefore that this study seeks to investigate the interaction effect of financial performance on environmental legislation complexity and external support.

Firm size is another factor that affects the environmental strategy of a firm (e.g. Preuss & Preschke, 2010). Regarding firm size, research generally suggests that larger firms are more environmentally responsive (Perrini et al., 2007; Darnall et al., 2010; Uhlaner et al., 2012). Whereas small firms are said to be reluctant towards environmental practice adoption (Hoogendoorn et al., 2015). Firm size can be viewed as an indicator of more complicated phenomena that eventually determine a firm's environmental practice adoption (Etzion, 2007). The viewpoint of size being positively related to environmental responsiveness is supported by two common arguments in academic research. The first argument refers to larger enterprises possessing more stable resources (manpower and finances), which makes them more inclined to engage in environmental management techniques (Lepoutre and Heene 2006). However, we contend that these explanations are better suited for the arguments regarding SME recent financial performance. This study adopts the line of reasoning from the second core argument, which refers to larger corporations being more visible to the general population. As a result, when irresponsible behaviour is exposed, their reputations and even existence may be threatened, which influences them to be more environmentally responsible (Lynch-Wood et al. 2009). Conversely, smaller firms are less visible to media and public. This anonymity towards stakeholders causes lower pressures and leads to smaller firms being less likely to engage in environmental practices (Etzion, 2007). These findings generally apply to the distinction of

large and small firms. However, it can be contended that these differences also apply to the distinction of small and large within the category of SMEs, since larger SMEs share more characteristics with large firms than with smaller SMEs (Uhlaner et al., 2012). It is therefore that this research expects that SME size correlates with its visibility in society. Visibility is an example of a size-related outcome that influences the firm's attitude towards the engagement in environmental practices (Van Heerwaarden, 2020), as firms with higher visibility are regarded to be more environmentally responsive (Lynch-Wood et al., 2009). Moreover, higher visibility causes firms to experience more negative effects of non-compliance with regulation (Etzion, 2007). In light of environmental legislation, visibility helps to understand the different responses by SMEs of varying size towards complex environmental requirements. Considering the arguments of other academics, this research argues that the influence of firm size on environmental responsiveness is also prevalent within the SME category (e.g. Hoogendoorn et al., 2015) which leads us to include SME size as a moderating variable.

The possible moderation effects can help in understanding whether the factors environmental legislation complexity and external support differ in their influencing power for SMEs of varying financial performance and size. It is therefore that a second research question is constructed:

(2) What is the influence of environmental legislation complexity and external support on SMEs' environmental responsiveness varying recent financial performance and size?

1.3 Theoretical and practical relevance

It is of relevance to study SME environmental practice adoption and its influences, as previous literature was mainly aimed at describing the environmental practice adoption of MNEs (Preuss & Perschke, 2010). Moreover, studying SMEs in general is important, since they do not get nearly as much academic coverage as larger firms and multi-national enterprises (MNEs) do. There are substantial differences between SMEs and large firms, such as the strategies, drivers, importance of managerial values, stakeholders' involvement and the number of resources in possession (Sáez-Martínez et al., 2016). These factors create a different approach for SMEs adopting environmentally friendly practices. However, environmental policies were often based on insights that SMEs are just miniatures of these large corporations (Aragón-Correa, et al., 2008; Perrini et al., 2007).

To avoid the latter, this research does not treat SMEs as a homogenous group, which is suggested for future research by Preuss & Perschke (2010). It is therefore that recent financial performance and SME size are included as moderating variables to examine how factors impacting environmental responsiveness differ within the SME category. These factors help to explain the variation within the SME category. First, recent financial performance correlates with the firm's possession of slack resources (Xiao et al., 2018). The presence of these resources can change a firm's response to external stimuli driving environmental responsiveness (e.g. Darnall et al., 2010; Hillman et al., 2009), such as legislation and external support. Next, the size of SMEs determines its visibility in society, which influences their attitude towards environmental legislation (Lynch-Wood et al., 2009). Including SME size as a moderator variable adheres to the call of Soundararajan et al. (2018) for more research regarding size differences within the SME category and their environmental responsiveness. In general, this study tries to respond to the demand for a more bespoke research agenda regarding SMEs (Spence, 2007). It is also in line with the recommendation of Parker et al. (2009) to develop studies that are more specific to the characteristics of SMEs.

For European policy makers it is important to determine how they could influence SMEs, since these firms are heavy users of raw materials and energy, which leads them to produce between 60% and 70% of Europe's pollution (OECD, 2018). This study may yield insight for governmental policy makers how to steer SMEs towards the adoption of environmental practices, so their pollution could be reduced. For instance, by providing insight in the effectiveness of external support, so policy makers can determine whether support policies like public funding or educational programs should be implemented to influence SMEs' environmental responsiveness. This research also provides knowledge on the effectiveness of environmental legislation by examining whether complexity prohibits SMEs to adopt environmental practices. For policymakers, this is important since it will determine whether they should consider complexity when formulating environmental legislation and regulations.
SME managers are another group of practitioners that could benefit from our study. In general, they perceive environmental regulation as a burden (Williamson et al., 2006). The investigation of environmental legislation complexity may help them in understanding why they find environmental requirements difficult to comprehend. This knowledge may help them in identifying missing capabilities in the organisation, which they can purposefully target to overcome the burden of environmental legislation.

1.4 Outline

The remainder of this thesis is divided into the following sections. The following chapter 2 will serve as theoretical background is provided by explaining the relevant variables relating to the problem and referring to past academic research. Consequently, the hypotheses are formulated and illustrated in a conceptual model. Chapter 3 will revolve around the introduction of our sample (Flash Eurobarometer no. 456), operationalisation of the variables, and the methodology used to conduct the research. Next, chapter 4 presents the results from the analysis of the data. Followingly, chapters 5 will serve to discuss these results and make use of previous research for interpretation. Ultimately, chapter 6 is used to show the conclusions that can be drawn from the research. In addition, we elaborate on the implications and limitations of this study to identify ground for future research.

2 Theoretical framework

This second chapter serves as the theoretical background of this thesis. The first paragraph of this chapter is used to shed light on prior literature regarding CSR and SMEs. Additionally, this part is used to describe SMEs' environmental practice adoption and possible influencing factors in particular. The second paragraph is used to explain the variable environmental legislation complexity by the aid of the absorptive capacity theory and displays the corresponding hypothesis. The third paragraph entails the explanation of external support by using resource dependence theory. Whereas the last two sections provide explanations for the hypotheses regarding the moderator variables SME size and recent financial performance. Ultimately, a conceptual model is displayed in the last section to summarise the theoretical framework.

2.1 Prior literature of SMEs and environmental practice adoption

This research will investigate the environmental practice adoption of SMEs. To put things in perspective, it is needed to display the foundations of SMEs engaging in environmentally responsible practices. Corporate Social Responsibility (CSR) can be classified as the overarching concept for all socially responsible behaviours displayed by firms with respect to their stakeholders. Broadly, CSR can be described as "commitment to improve societal well-being through discretionary business practices and contributions of corporate resources" (Du et al., 2010, p.8). However, CSR is a concept that has been so widely defined, that it is difficult to pinpoint its exact definition. Although, some consensus is found regarding the definition that CSR are instances where a firm goes beyond compliance and engages in actions that appear to advance a social cause (McWilliams and Siegel 2001; Rodriguez et al. 2006). Considering this, environmental practices are examples of responsible behaviours related to CSR activities, so it seems important to understand its roots. To provide clarity on the dependent variable in the research, environmental practice adoption of SMEs is defined as: 'activities undertaken by firms aimed at reducing the impact of their operations and their products and services on the environment' (Gadenne et al., 2009; Uhlaner et al., 2012). Examples of such activities are minimising waste, recycling material, saving water, and producing eco-friendly goods. There are growing pressures for firms to incorporate such practices in their business processes in order to reduce their share of environmental pollution (Bakos et al., 2020). For instance, an actor who exerts such pressure is the European Union by the aid of policies, laws and support. An example

of the latter is the Green Action Plan for SMEs, which was adopted in 2014 with the goal to help small and medium businesses from the EU take advantage of the opportunities offered by the transition to a green economy (PWC, 2018). Simultaneously, these societal developments sparked the interest of management academics and surged scientific research towards the influences on environmental practice adoption (Aguinis & Glavas, 2012).

The first stream of research regarding environmental practice adoption was mainly focused on larger organisations, such as MNEs (Preuss & Perschke, 2010). Although in recent years a change in research focus toward smaller firms' environmental responsiveness can be observed. The adoption of environmental practices by SMEs has gathered great interest by academics, as they acknowledged the need for a tailored small business perspective, which led to a wave of related scientific research (Soundararajan et al., 2018). Small businesses have unique characteristics due to their size that can influence their socially responsible behaviour (Morsing & Perrini, 2009). It is therefore, that Bakos et al. (2020) conducted a meta-analysis regarding the factors driving or inhibiting the environmental sustainability in SMEs' strategies. Many of these drivers relate to factors in the external environment, which are said to constraint firms' behaviour and sets boundaries for their decision-making process (Campbell, 2007). Accordingly, Deephouse et al. (2017) identify the following factors to influence the environmental practice adoption of firms: national regulations, public opinion, social movements, stakeholder expectations and competitor CSR engagement.

Regarding regulations, there are parties that force firms to comply with defined rules, schemes and norms related to CSR practices, such as regulatory bodies, license authorities, standardisation agencies, customers, parent companies and other stakeholders (Dasanayaka et al., 2022). These regulators' pressures are believed to impact the adoption of environmental practices by SMEs, however there is still discussion about the effectiveness of environmental regulation in terms of SMEs' environmental behaviour (Kassinis, 2012). Additionally, many studies examine the stringency of environmental legislation to assess its effect on SME environmental practice adoption (e.g. Hoogendoorn et al., 2015). However, this is a country-specific measure, which fails to incorporate the perspective of the business on environmental legislation. Another subject that needs advancing, is the effect of external support. Actors providing support are believed to positively influence SMEs' environmental responsiveness, as they help to remove financial and knowledge barriers that prohibit the environmental practice adoption of firms (e.g. Hoogendoorn et al., 2015; Bodas-Freitas & Corrocher, 2019, Aristei &

Gallo, 2021). However, some dispute remains whether external support is that critical for SMEs' environmental practice adoption. For example, Soundararajan et al., (2018) put forward that SMEs are able to engage in environmental initiatives without a strong financial foundation and a large human resource-base. As a result, the following section will go into further detail about regulatory pressures by introducing the concept of environmental legislation complexity and its relation to environmental practices. Whereas section 2.3 will display the effect of external support on SMEs' environmental responsiveness.

2.2 Environmental legislation complexity and SMEs' environmental practice adoption

Environmental legislation refers to rules and laws regarding the environment that are created by regulatory institutions. Regulatory institutions, such as governments, create environmental requirements, inspect whether firms comply and penalise firms in the case of non-compliance (Darnall et al., 2010). Furthermore, the decision-making of firms is influenced by these legislative bodies, as they can influence the firm's license to operate (Halme & Laurila, 2009). In line with these findings, research has shown that regulatory pressures in the form of environmental legislation have a significant influence on the environmental initiatives of SMEs (Darnall et al., 2010; Cuerva et al., 2014; Hoogendoorn et al., 2015).

However, regulation has also been proven to be a burden for firms (Williamson et al., 2006), which can be observed when SMEs face complex environmental legislation. Petts, Herd, Gerrard and Horne (1999) were one of the first researchers to connect the complexity of environmental legislation to the SMEs' compliance with environmental rules and laws. They found that full compliance of firms with environmental legislation is not assured when it is reliant on a complex regulatory system. The complexity causes both poor understanding of environmental requirements by the SMEs, as well as scepticism that these requirements would actually benefit the environment (Petts et al., 1999). A qualitative study that evaluated the impact and effectiveness of environmental legislation in the United Kingdom had similar findings, as it found that complexity of environmental legislation led many SMEs to not understand the laws and rules (Wilson et al., 2011). Subsequently, a lot of the SMEs in this case were unaware of compliance issues. Furthermore, SMEs did not consider the efforts required to comply to be comparable with the pollution threat of their activities, which them view environmental regulation as unnecessary (Wilson et al., 2011). Unfortunately, the literature regarding environmental legislation complexity does not explicitly define the concept. A more

general definition of legislation complexity is provided by Di Vita (2017), who described it as "negative coordination externalities among different sources of legislation that render it difficult for consumers and firms to understand which is the correct rule to observe" (Di Vita, 2017, p.1058). Especially the latter part is important for defining the concept of environmental legislation complexity, since it helps to understand the operationalization of Petts et al. (1999). They used environmental legislation complexity in order to measure the individuals' perception of the effectiveness of environmental regulation. Petts et al. (1999) asked whether employees and managers of SMEs thought that environmental legislation is too complex and found that 60% of the respondents agreed upon this statement.

The incompetence of firms to understand environmental legislation can be related to a lower level of absorptive capacity. Absorptive capacity can generally be described as a firm's ability to identify vital knowledge in the external environment and its competence to integrate this knowledge into their organisation for exploitation (Cohen & Levinthal, 1990). The presence of absorptive capacity within a firm has been found to facilitate the development of environmental strategies (Delmas et al., 2011), as it enables firms to integrate external knowledge with their own internal knowledge (Qi et al., 2021). Whereas the absence of absorptive capacity seems to be a significant barrier for a firm's green innovation strategy (Aboelmaged and Hashem, 2019). Zahra and George (2002) have conducted a review regarding absorptive capacity and introduced a new dimension: potential absorptive capacity, which refers to a firm's ability to acquire and assimilate knowledge. Acquisition is the capability of the firm to identify and obtain external knowledge that is vital for their operations (Upstill-Goddard et al., 2016), Next, the dimension of assimilation describes the firm's routines and processes in place to analyse and interpret externally obtained information (Szulanski, 1996). Potential absorptive capacity can be related to the adoption of routines for compliance with environmental legislation (Pacheco et al., 2018). In regard to environmental legislation complexity, it can be observed that firms are unable to identify that the legislation is vital for their operations and not deemed necessary to comply with. It is argued that high levels of absorptive capacity within firms will increase the likelihood of adapting to environmental stimuli (Qi et al., 2021), such as legislation. Conversely, a lack of absorptive capacity may generate greater organisational resistance to such stimuli and inhibits firms to meet the requirements of legitimacy like compliance with legislation (Zhang et al., 2020). In other words, the perception of environmental legislation as complex may reflect a lack of absorptive

capacity. Ultimately, it seems that complex environmental legislation hinders SMEs in complying with environmental requirements, which leads to the hypothesis below.

Hypothesis 1: *The complexity of environmental legislation negatively influences the environmental practice adoption of SMEs.*

2.3 External support and SMEs' environmental practice adoption

External support is another factor to consider when analysing SMEs' environmental practice adoption. Generally, SMEs are more resource-constrained than larger firms, with these barriers being even bigger for smaller SMEs (Preuss & Perschke, 2010). Consequently, SMEs are more dependent on external actors providing resources than larger enterprises. This makes it an important factor to analyse, as stakeholders providing external support exert influence on the strategic and operational decision-making of firms (Frynas & Yamahaki, 2016). Resource dependency theory gives insight in the aforementioned relationship and was introduced by Pfeffer and Salincik (1978), who contend that firm's survival and growth is dependent on actors in their external environment who provide critical resources (Hillman et al., 2009). The dependence relationship causes the firm's decision-making to be influenced by the demands of these external parties (Frynas & Yamahaki, 2016). For instance, when oil and gas companies expand their drilling operations into developing countries, they are dependent on local communities in order to access the desired resources. This dependency enables the local community to demand investments in health and education initiatives from the oil and gas firms. These firms commonly adhere to the requests, so their decision-making is influenced by the external actors (Hess & Warren, 2008). Taking the perspective of resource dependency theory may also yield insight into the relationship between external support and SME environmental practice adoption. Its rationale serves to explain that the adoption of CSR practices is driven by the contingency of firms on key resources of specific external actors (Frynas & Yamahaki, 2016). An example of the adoption of this viewpoint is the study of Kassinis and Vafeas (2006), which shows that American firms dependent on the resources from certain local communities are influenced by these communities to show more environmental responsiveness.

External support in financial and non-financial ways spurs SMEs to engage in environmental practice adoption, because of the influence the actors providing support can have on the firms' decision-making. Regarding resources and SMEs' environmental practice

adoption, SMEs also face knowledge and financial barriers that impede them be environmentally responsible. Some of these impediments are merely economic, such as a lack of capital, a lack of external funding opportunities, and excessive investment expenses (Ghisetti et al., 2016). Other constraints are related to a lack of knowledge about environmental technologies and techniques. It is therefore that SMEs need different types of external support to overcome these barriers (Bodas-Freitas & Corrocher, 2019), which can be provided by either public or private actors (Hoogendoorn et al., 2015). Governments providing direct capital injections or reducing tax rates for certain firms are exemplary of public actors providing external support. Such public financial support can be used as a government policy to steer funds towards firms under the condition of them showing environmental responsiveness (Lee et al., 2017). For instance, the Chinese government that tries to encourage firms' environmental practice adoption via state subsidies. Firms view such subsidies as important external resources for their survival and growth. Whereas the Chinese state's motivation is to achieve its social goals of pollution reduction by enhancing corporate environmental performances. The instrument proves to be effective, since Wang and Zhang (2020) found that Chinese firms receiving state subsidies adopted significantly more environmental practices. Private actors provide external support based on different interests, which are often economically motivated. It has been found that private investors steer firms towards environmentally responsible actions, as these can foster efficiency benefits and profits for the firm. The latter would lead to positive return on investment for the financers. An insightful example is the funding of firms by investors, which push these companies to adopt water-efficiency actions, since these lower costs and increase profits while simultaneously reducing risk of climate change and drought (Clark et al., 2018).

External support also steers the environmental responsiveness of SMEs in another way, because it helps SMEs to overcome resource constraints that prohibit them to adopt environmental practices. It has been articulated numerous times that the financial aspect of engaging in environmental is the biggest barrier for SMEs (Lepoutre and Heene, 2006; Cuerva et al., 2014; Panwar et al., 2017). Pimenova and Van der Vorst (2004) found that external support, and financial support in particular, helps removing these barriers for SMEs to engage in environmental practices. Access to external financial support can provide SMEs the possibility to buy the much-needed resources, but also helps them invest in energy and resource efficient practices (Bodas-Freitas & Corrocher, 2019). It is therefore that actors who offer

financial support are considered to be a major stakeholder for pressuring SMEs into environmentally responsive actions (Hoogendoorn et al, 2015). The latter is supported by a recent study of Aristei and Gallo (2021), who prove a positive relationship between external financial support and the implementation of resource efficiency actions by European manufacturing firms. Besides the financial part, other barriers that prohibit SME environmental practice adoption relate to the lacking knowledge of SMEs regarding environmental legislation (Simpson, 2004), but also the skills or conditions needed to implement environmental practices (Hoogendoorn et al., 2015). Most SMEs appear to be lacking in those aspects, which causes them to have low standards of 'eco-literacy' (Tilley, 2000; Bradford & Fraser, 2008). In that case, advice and assistance are forms of external support to cover such organisational gaps (Hoogendoorn et al., 2015). Consulting firms, suppliers or research institutions are exemplary for providing such external advice, which has been proven to positively influence the greening investments of European manufacturing firms (Aristei & Gallo, 2021).

In essence, the positive influence of external support on the environmental practice adoption of SMEs is supported by two arguments. First, it is expected that actors providing external resources have a positive influence on SMEs' decision-making regarding environmental practices. Second, external support removes the barriers for SMEs to adopt environmental practices. Taking these considerations into account leads to the formulation of the following hypothesis.

Hypothesis 2: *External support positively influences the environmental practice adoption of SMEs.*

2.4 The moderating effects of SME recent financial performance

The recent financial performance also seems to influence the environmental responsiveness of SMEs, as it indicates the availability of slack resources within a firm. Slack resources are the financial, managerial, and technical assets that a company can employ in a discretionary manner (Bourgeois, 1981; Dimick and Murray, 1978). The availability of slack resources within a firm can act as a cushion to counter organizational threats or to exploit opportunities (Bourgeois, 1981; Nohria & Gulati, 1996). Firms can accumulate slack resources in the form of financial resources, advanced technologies and experience in both the managerial and technical staff (Xiao et al., 2018). The slack resources theory is one of the primary theoretical groundings for

research regarding the antecedents of CSR. In that context, slack resources theory steers the attention towards the effect of financial resource availability on CSR expenditures (Julian & Ofori-Dankwa, 2013). Profitability is generally regarded as an important indicator of (financial) slack resources in firms (Xiao et al., 2018). In light of a CSR context, high profits influence the firm to perceive CSR related expenditures as affordable and thus pursue greater social engagement (Seifert et al., 2004). This logic has been widely tested and proven to be true (Amato & Amato, 2007; Brammer & Millington, 2008; Surroca et al., 2010). It has also been studied in the context of small firms, as financial resources play an even more important role in the SME context when it comes to social engagement activities like environmental practices (Panwar et al., 2017). Although, their study follows the example of many other scholars and examines the direct effects a firm's financial performance on the corporate social responsibility of firms (e.g. Seifert et al. 2004; Waddock & Graves 1997).

Less is known about the ways in which financial performance interacts with other factors in influencing firms' environmental practice adoption. However, two notable studies exist where financial performance was included as a moderator on a relationship with firm environmental responsiveness. The first being the research of Arora and Dharwadkar (2011) which investigated the interaction effect of financial performance on corporate governance. The second study focusses on the moderating effect of financial performance on the firm's visibility to stakeholders. The researchers suggested that future research should be conducted in the realm of smaller firms as opposed to their study using S&P500 firms (Chiu & Sharfman, 2011). Consequently, this thesis looks into the moderating role of financial performance on the environmental practice adoption of SMEs.

2.4.1 SME recent financial performance and environmental legislation complexity

Regarding environmental legislation, non-compliance is expected to be higher when environmental legislation is perceived as complex (Petts, 1999; Wilson et al., 2011), which can be argued to reflect lacking absorptive capacity in the firm (Zhang et al., 2020). Consequently, disobedience of the environmental rules will cause penalties for the firms (Henriques and Sadorsky, 1996). However, the perceived threat that comes with such penalties differs between firms possessing varying resources. More resourceful firms are more likely to invest in litigation, which influences them to perceive non-compliance penalties as less of a risk. Firms with limited resources are likely to perceive penalties as a far greater threat, since resource

constraints prohibit them to engage in political activities like litigation (Darnall et al., 2010). Instead, they are expected to invest their limited resources in addressing the immediate environmental concern rather than in political resistance (Bowen, 2002). Darnall, Henriques and Sadorsky (2010) support this argument by stating that resource constrained firms experience stronger influence of regulatory pressures than more resourceful firms do. In the context of financial performance, low performing firms are indicated to possess few resources (Xiao et al., 2018), so it is expected that these firms view non-compliance as a greater threat than firms with a higher financial performance and more corresponding resources. Therefore, I argue that in the face of complex environmental legislation, SMEs with lower financial performance will engage more in environmental practice adoption than those with higher financial performance.

Hypothesis 3: *The recent financial performance of SMEs moderates the relationship between environmental legislation complexity and environmental practice adoption, such that the negative relationship is stronger for SMEs with higher financial performance.*

2.4.2 SME recent financial performance and external support

The arguments for the hypothesised positive relationship between external support and SMEs' environmental responsiveness are stooled on the resource dependence theory, which explains that the adoption of environmental practices is driven by the contingency of firms on key resources of specific external actors (Frynas & Yamahaki, 2016). It is expected that the provision of resources by these external actors can exert a positive influence SMEs' environmental responsiveness. Regarding the recent financial performance of SMEs, it can be argued that firms with higher recent financial performance are less resource dependent compared to lower performing firms. The argument supporting this viewpoint refers to the availability of slack resources due to higher financial performance, which enables financially better performing firms to engage in political actions (Darnall et al., 2010). These actions help firms to reduce the power of external actors over them, which leads to minimizing environmental resource dependency (Hillman et al., 2009). In other words, these firms have more power to bargain against the demands of external actors, which weakens the potential positive influence of these actors on a firm's environmental practice adoption. Furthermore, it has been examined that slack resources can act as a buffer between these firms and their external

environment, which reduces its exposure to external resource providers (Roundy and Bayer, 2019). Consequently, the potential interactions of these firms with actors stimulating environmental responsiveness decline. Conversely, SMEs who are performing poorly on the financial aspect are expected to be much more dependent on external resources, so the positive relationship between external support and environmental practice adoption is hypothesised to be greater for these firms.

Hypothesis 4: *The recent financial performance of SMEs moderates the relationship between external support and environmental practice adoption, such that the positive relationship is weaker for SMEs with higher financial performance.*

2.5 The moderating effect of SME size

SME size is the last factor that is considered in this research to influence environmental responsiveness. Regarding firm size, research generally suggests that larger firms are more environmentally responsive (Perrini et al., 2007; Darnall et al., 2010; Uhlaner et al., 2012), whereas small firms are said to be reluctant towards environmental practice adoption (Hoogendoorn et al., 2015). However, size may not be the determining factor, but rather an indicator of more complicated phenomena that eventually determine a company's environmental responsiveness (Etzion, 2007). For instance, a core argument regarding firm size and environmental practice adoption refers to larger corporations being more visible to the general population. As a result, exposure of irresponsible behaviour can damage the firm's reputation and even threaten their existence (Lynch-Wood et al. 2009). Greater societal visibility for larger firms is also believed to intensify the stakeholder calls for environmental practice adoption (Bowen, 2002). Conversely, smaller firms are less visible to media and public. This anonymity towards these stakeholders causes lower pressures and leads to smaller firms being less likely to engage in environmental practices (Etzion, 2007). These findings generally apply to the distinction between large firms, such as MNEs, and smaller firms like SMEs. However, it can be contended that these differences also apply to the distinction of small and large within the category of SMEs, since larger SMEs share more characteristics with large firms than with smaller SMEs (Uhlaner et al., 2012). SMEs can be distinguished into three different sizes: micro (less than 10 employees), small (between 10 and 49 employees), and medium-sized (between 50 and 249 employees) firms (EU Recommendation, 2003). The upper

end of the range is sharply attenuated, so the size effect is expected to be less pronounced. Although, it is still anticipated that larger SMEs experience greater visibility and greater pressure from stakeholders than smaller SMEs, which leads to them being more environmentally responsive (Uhlaner et al., 2012). Studies regarding the firm size within the SME category have been of growing interest over the past years. Several studies pose different results for the environmental practice adoption of SMEs varying in size (Uhlaner et al., 2012; Hoogendoorn et al., 2015; Van Heerwaarden., 2020). One study discovered that medium-sized businesses are substantially more likely to engage in environmental management techniques than micro and small businesses. However, they discovered that this effect is indirect, necessitating a close examination of the unique characteristics that SMEs have in relation to their size (Uhlaner et al., 2012). A different result was found by Hoogendoorn et al. (2015), who examined the relationship between SME size and their investments in greening processes. They discovered that European SMEs are more likely to engage in these environmental activities than micro and medium-sized businesses, implying an inverted U-shaped relationship. These inconsistent results provide the basis for further research regarding the environmental practice adoption of SMEs of varying size.

2.5.1 SME size and environmental legislation complexity

The influence of environmental legislation complexity is expected to differ for SMEs of varying sizes. It has been researched that the rate of non-compliance with environmental legislation is much higher when it involves the perception of complex regulation, which hinders the adoption of environmental practices of SMEs (Petts et al., 1999; Wilson et al., 2011). The concept of absorptive capacity yields insight in this relationship, as it is linked to routines of compliance with environmental legislation (Pacheco et al., 2018). Non-compliance with regulation may reflect low absorptive capacity and can ultimately damage the firm's reputation (Fuller & Tian, 2006). The damage of their reputation has a greater negative effect on larger firms, as smaller firms are typically less concerned with their reputation (Williamson et al., 2006), because they face lower visibility within their society (Etzion, 2007). It has also been studied that firms with higher visibility suffer from greater exposure when violating environmental regulations (Huang & Kung, 2010), which results in a strong negative reaction from investors (Wu et al., 2020). Regarding the latter this would imply that the negative effects of bad reputation have a greater impact on SMEs with greater societal visibility, which are the larger SMEs in this context

(Etzion, 2007). In addition, higher firm visibility also causes customers to know sooner about the environmental irresponsibility of firms, which also harms the identity of firms towards other firms (Alniacik, et al., 2011). It can therefore be concluded that the negative effects of non-compliance are bigger for larger SMEs, which leads them to sooner adopt environmental practices than smaller SMEs when facing complex environmental legislation.

Hypothesis 5: *The size of SMEs moderates the relationship between the complexity of environmental regulation and environmental practice adoption, such that the negative relationship is weaker for larger SMEs.*

2.6 Conceptual model

The figure below shows a visualisation of the hypotheses described in the previous sections. The influence of the independent variables, environmental legislation complexity and external support, is shown via an arrow pointing towards SME environmental practice adoption (right side). The minus and plus sign indicate whether the relation is positive or negative. SME size and SME recent financial performance are shown in the middle to have a moderating effect on the mentioned relationships.

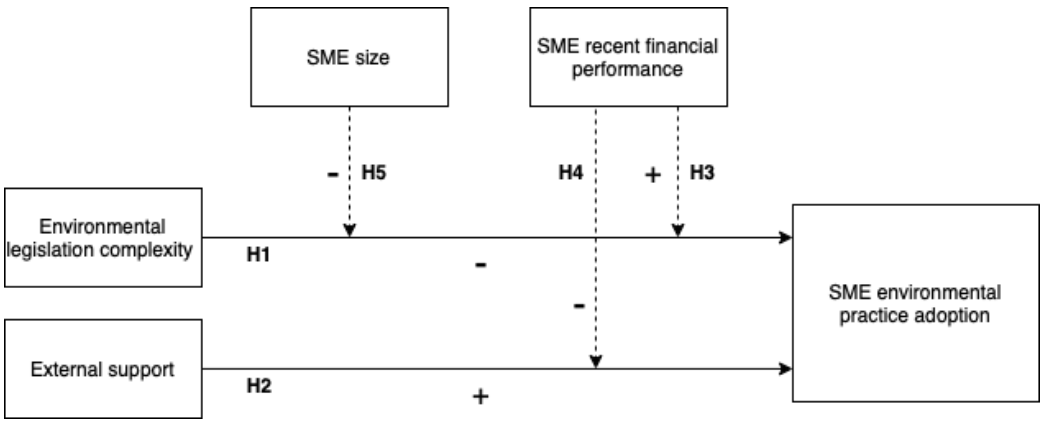


Figure 1. *Conceptual Model*

3 Methodology

The third chapter provides information on the dataset, which is the Flash Eurobarometer (no. 456) that will be used in the research. Moreover, an operationalisation of the dependent variable, independent variables and the moderator variables will be given. These operationalisations are built on previous studies, which will help to measure the according variables. Consequently, the method of analysis will be explained, deriving it from the measurement scales from the previous section and connecting it to the instructions from Hair et al. (2018). The last two paragraphs provide information on the insurance of business ethics and quality of this research.

3.1 Introduction of the dataset

For studying the environmental practice adoption of SMEs, this research relies on the data gathered from Flash Eurobarometer survey "Small and Medium Enterprises, Resource Efficiency and Green Markets" (no. 456). The survey has been carried out in the period between 11th and 26th of 2017 by the TNS Social and Political Network on behalf of the European Commission. They made use of computer-assisted telephone interviews in the language of the respective country in order to obtain the data from 15.019 firms. This survey has been held in the 28 member states of the European Union in 2017, as well as in Albania, Iceland, North Macedonia, Moldova, Montenegro, Norway, Serbia, Turkey and the United States of America. It follows up on three past Eurobarometer surveys, held between 2012 and 2015, in reviewing the current levels of resource efficiency actions of SMEs situated in these countries named before. Furthermore, it is stated that the firms approached for the survey were selected randomly from an international database.

Multiple filters have been applied to the database in order to compute an adequate sample of firms for this research. Only firms in countries that are part of the European Union as of January 1st 2013 are considered in the research sample, since the EU is considered as a political entity. The latter implies that the institutions within this entity are rather similar. It is important to note that firms from the United Kingdom are still incorporated in this study, since the Brexit occurred a few years after (1st of February 2020) the survey was carried out. Next, the dataset is filtered according to the size of the firms, as this study only seeks to investigate SMEs, but the dataset also contains larger enterprises. Therefore, the dataset is cleared of firms

that do not meet the criteria for SMEs set by the European Union in terms of staff and headcount of employees, which results in the exclusion of firms with more than 249 employees (EU Recommendation, 2003). These filters narrow the sample down to 12.081 SMEs. The SMEs can be divided into four sector categories, as is done by Hoogendoorn et al. (2015), which are manufacturing (NACE C), retail (NACE G), services (NACE H/I/J/K/L/M) and industry (NACE B/D/E/F).

3.2 Operationalisation

This section entails the operationalisation of the variables used in the analysis by explaining which items form the constructs in this study. Moreover, a table is created to display and summarise all the variables and related measurements.

3.2.1 Dependent variable: Environmental practice adoption of SMEs

In order to measure the dependent variable of environmental practice adoption of SMEs this study follows up on previous research in which this variable has been studied. Firstly, the focus is on the resource efficiency actions undertaken by the SMEs to measure the environmental practice adoption of SMEs (Aristei & Gallo, 2021). The first item that relates to the dependent variable is the following question in the survey, which reads: 'What actions is your company undertaking to be more resource efficient?'. The following answer possibilities were provided: (a) Saving water, (b) Saving energy, (c) Using predominantly renewable energy (e.g. including own production through solar panels, etc.), (d) Saving materials, (e) Minimising waste, (f) Selling your scrap material to another company, (g) Recycling, by reusing material or waste within the company, (h) Designing: products that are easier to maintain, repair or reuse, (i) Other and (j) None. A follow-up question is presented for respondents to indicate their engagement in these practices: 'Over the past two years, how much have you invested on average per year to be more resource efficient?'. Respondents could answer the following: (a) Nothing, (b) Less than 1% of annual turnover, (c) 1% - 5% of annual turnover, (d) 6% - 10% of annual turnover, (e) 11% - 30% of annual turnover, (f) more than 30% of annual turnover. The responses to this question will be used to categorize the variable of environmental practice adoption: no investments (less than 1% of annual turnover), few investments (between 1% and 5% of annual turnover) and substantial investments (more than 5% of annual turnover), which follows the example of Van Heerwaarden (2020).

Table 1 Variable descriptions, measurement and data resources

Category	**Variable**	**Measurement**
Dependent variable	SME environmental practice adoption	Average yearly investments in greening processes as percentage of turnover (Aristei & Gallo, 2021; Van Heerwaarden, 2020)
Independent variables	Environmental legislation complexity	Measures whether SMEs perceived complexity in legislation to be a burden (Own measurement, as previous quantitative operationalization is lacking).
	External support	Measures whether SMEs received any external support for the firm's environmental practices (Hoogendoorn et al., 2015)
Moderating variables	SME size	Measured by the employee headcount: micro firms (between 1 and 9 employees), small firms (between 10 and 49 employees), and medium-sized (between 50 and 249 employees) (Van Heerwaarden, 2020)
	SME recent financial performance	The growth of the annual turnover over the past two years (Panwar et al., 2017)
Control variables	Sector tangibility	Measured by the following categories: intangible services, tangible services, tangible products (Hoogendoorn et al., 2015)
	Firm age	Years of SME since establishment according to these categories: < 2 years 3 to 5 years 6 to 10 years > 10 years (Hoogendoorn et al., 2015)

3.2.2 Independent variables

Environmental legislation complexity

The measurement of environmental legislation complexity's effect on environmental practice adoption will be executed by considering items that influence the resource efficiency actions employed by firms. The focus will be on the aspect of extensiveness of environmental regulation. In the first place, question 7 related to this aspect is: 'Did your company encounter any of the following difficulties when trying to set up resource efficiency actions?'. The survey provides the following answer possibilities that relate to environmental legislation complexity: (a) Complexity of administrative or legal procedures (b) Difficulty to adapt environmental legislation to your company, and (c) Technical requirements of the legislation not being up to date. As there is no validation for the quantitative measurement of environmental legislation complexity, we need to resort to a factor analysis in order to assess whether the expected items form the aforementioned variable (see Section 4.3).

External support

The measurement of external support is somewhat similar to previous research of Hoogendoorn et al. (2015), which analysed and older dataset by using the Flash Eurobarometer (no. 342). The Flash Eurobarometer (no. 456) is specifically asking for support in question 5: 'Which type of support does your company rely on in its efforts to be more resource efficient?', which provides the possibility for the respondent to answer (a) own financial resources, (b) own technical expertise or (c) external support. Followingly, the aforementioned items are aggregated into two separate answer categories, which will observe if the SME received external support or not. External support can be classified as a dummy variable with these two categories: (1) No external support (formed by the first two answer possibilities) and (2) Yes external support (formed by the third answer possibility). The reference category is the category of SMEs receiving no external support.

3.2.3 Moderator variables

SME size

In order to measure SME size, the distinction of the European Union is followed by viewing the staff headcount of the employees (EU Recommendation, 2003). These three sizes are distinguished according to the headcount of employees: (1) micro firms (1 to 9 employees), (2)

small firms (10 to 49 employees) and (3) medium-sized firms (50 to 249 employees). The Flash Eurobarometer (no. 456) provides the opportunity to measure the headcount of the firms, as there is a question that is asking this directly: 'How many employees does your company have?'. The answer possibilities in for this question are: (a) 1 to 9 employees, (b) 10 to 49 employees (c) 50 to 249 employees, (d) 250 employees or more. These answers enable us to measure which firms fall into the category of SMEs and to leave firms that are perceived too large or do not provide a headcount out of the analysis.

Recent financial performance

The variable of recent financial performance will be measured in a way that is similar to previous studies by measuring the growth of a financial indicator. A subjective measure will be used by analysing the responses to the following question: 'Over the past two years, has your company's annual turnover increased, decreased, or remained unchanged?'. This approach is similar to more studies that are assessing financial performance using subjective measures, which have been found to provide reliable data in small firm context (Panwar et al., 2017; Morgan and Strong, 2003). The fact that objective financial data is hard to obtain, is another reason posed by these studies for choosing this method. The item of turnover growth used in this research corresponds the most with the item of Panwar et al. (2017) that resembles rate of sales growth. However, in this study the growth of turnover over the past two years will be measured using self-report on a three points scale with (1) decreased, (2) remained unchanged and (3) increased. Whereas the other study opts for self-reporting on a seven points scale regarding the growth over three years for return on sales (1–3 representing decrease, middle point of 4 representing no change, and 5–7 representing increase). The construct and measure are proven to be reliable in the study of Panwar et al. (2017), so it is expected to be the same case for this research. The reference category for this variable used in analysis will be the category of decreased turnover for the past two years.

3.3.3 Control variables

Some industry- and firm-level variables are included into the analysis to control for omitted variable bias. The example of several other studies in this field has been followed to support the decision for these variables (Aristei & Gallo, 2021; Hoogendoorn et al., 2015). Controlling for these variables also provides additional insight on the relationships that are analysed.

Sector tangibility is the control variable for the industry-level in order to examine the impact of different industry sectors on the environmental responsiveness of SMEs. Multiple studies found the industry sector to have an impact on the environmental practice adoption of SMEs (Perrini et al., 2007; Stoian and Gilman, 2017). Hoogendoorn, Guerra and Van der Zwan (2015) study this relation in more detail by defining the variation within the industry sector regarding its tangibility. According to them, SMEs that are active in resource-intensive sectors, such as manufacturing, are more likely to engage in environmental practices compared to SMEs belonging to less resource-intensive sectors, such as services. A reason they put forward is that firms in resource-intensive sectors receive great attention by primary and secondary stakeholders due to their higher levels of environmental damage. The second argument refers to business logic, as the adoption of environmental practices provides cost reducing opportunities for firms in resource-intensive sectors (Hoogendoorn et al., 2015). It is therefore that this study adopts their operationalisation of sector tangibility, which is defined as "a sector's use of natural resources as well as its potential to pollute" (Hoogendoorn et al., 2015, p.767). The classification of the concept is based on the NACE codes that categorise the different sectors. The first category entails tangible products, the second consists of tangible services and the last category includes intangible services. The corresponding NACE code per sector can be found in Appendix 1.

Firm age is the control variable for the firm-level, as it has been found to impact the environmental responsiveness of firms. New firms are said to be engaging less in environmental compared to older firms. The reason for this lies in their liability of newness, and relative resource scarcity, which causes persistent concerning about their survival and less about engaging in ethical behaviour (Neubaum, Mitchell and Schminke, 2014). However, a contradicting argument has been made regarding firm size, as Hockerts and Wüstenhagen (2010) argue that new firms are more inclined to adopt environmental practices. Their argument is stooled on research viewing new entrants in industry's going through a sustainable transformation pursued more sustainable opportunities than established incumbents in the same industry. In sum, no clear relationship between firm age and environmental practice has been found. However, these contradicting views are a reason to study the relationship and include this variable into the analysis.

3.4 Method of analysis

The nature of the dependent variable has been assessed in order to select the appropriate method of analysis. The variable SMEs' environmental practice adoption is categorically scaled, as it is measured by using three categories. According to Hair, Black, Babin and Anderson (2018) two methods apply to a categorical dependent variable: discriminant analysis and logistic regression. The latter is selected due to the independent variables being non-metrically scaled. To be precisely, the ordinal logistic regression has been selected, as it fits the categorical ranking of the independent variables (Hair et al., 2018). The analysis is conducted with the aid of the statistical program IBM SPSS Statistics 27.

3.5 Research ethics

Complying with certain guidelines regarding ethics is of great importance when engaging in scientific research. In order to be researching in an ethical way the guidelines provided by the Ethics Assessment Committee of the Radboud University are followed thoroughly throughout the entire study process. Their Code of Conduct for Research Integrity is stooled on five main principles, which are the following: (1) Honesty, (2) Scrupulousness, (3) Transparency, (4) Independence and (5) Responsibility (KNAW; NFU; NWO; TO2-federatie; Vereniging Hogescholen; VSNU, 2018).

Next, the data used in this study originate from a survey conducted by the TNS Political & Social Network on behalf of the EU Commission for this study. The surveys were performed over the phone in the participant's native language. This reduced the likelihood of participants having difficulty comprehending the questions, as well as the risk of data confounding. Participants were notified prior to the survey that it was being done on behalf of the European Commission with the purpose of learning more about the sustainable practices of SMEs in the European Union and other countries. They were also given the option of refusing to answer any questions, indicating that they did not know the answer, and withdrawing from the study at any moment. Complete anonymity was guaranteed to all participants and all the information gathered was treated confidentially (European Commission, 2018). Additionally, the data gathered from the survey are available to all participants via the Flash Eurobarometer website.

Ultimately, the obtained information from the aforementioned research form the Flash Eurobarometer (no. 456), which is the dataset used in this study and will be treated with utmost

caution. The data was used exclusively for the purpose of this study and complete transparency is provided to everyone interested in any aspects of my research.

3.6 Reliability and validity

Throughout the research process, close attention was paid to reliability and validity. The measurements of the majority of our variables are based on earlier research and used a similar operationalization to assure the validity of our data (Aristei & Gallo, 2021; Hoogendoorn et al., 2015; Panwar et al., 2017; Van Heerwaarden, 2020). The exception being the variable *environmental legislation complexity*, which will be measured using our own operationalization. Due to the absence of a validated operationalisation, a factor analysis has been conducted to develop the construct. The reliability of the construct is measured by the aid of Cronbach's alpha, which is a suitable instrument according to Field (2018). A score of 0.60 is minimum level for the Cronbach's alpha to consider the measurement sufficiently reliable. Whereas a Cronbach's alpha of 0.80 indicates high reliability. The measurement of *environmental legislation complexity* is therefore considered to be sufficiently reliable, as the Cronbach's alpha-level (Appendix 3) exceeded the threshold of 0.60, but it warrants a bit of caution when interpreting the results (Field, 2018). Furthermore, failing to meet the assumptions in relation to the statistical analysis could jeopardize the validity of a study. It is therefore that all assumptions are checked prior to the analysis.

4 Analysis

This chapter contains the analysis of the data obtained from the Flash Eurobarometer (no. 456). First, an examination of data's descriptive statistics is given. After analysing and deleting missing data, this chapter discusses the factor analysis regarding the independent variable environmental legislation complexity. Next, the assumptions for conducting an ordinal logistic regression are checked. Ultimately, the results of the ordinal logistic regressions are shown and discussed in order to formulate the conclusions regarding the hypothesis.

4.1 Descriptives of the final sample

The descriptive statistics of the final sample can be found in Table 2. After treating the missing values, 9876 valid cases remain in the dataset that will be analysed. These cases represent SMEs of all the 28 countries within the European Union (as of January 1st 2017) and are divided between a share of 1.3% (Cyprus) and 4.4% (Greece). Appendix 2 shows a more detailed version of the distribution of SMEs across countries. The skewness and kurtosis levels of the variables are viewed in order to assess the normality of its distribution and checked for any unusual patterns. The only variable that shows an odd value is SME age, which exhibits a kurtosis of 3.280 that is slightly higher than the threshold of 3.00. This variable should therefore be treated with a bit more caution, as the high kurtosis level might indicate non-normality. Next, an assessment of the frequency distribution leads to the observation that only 12 cases (0.1%) fall into the category of SMEs aged 2 years and younger. This amount is estimated to be insufficient in forming a separate category for *SME age* and will therefore be merged with the category of firms aged 3 to 5 years. Consequently, leading to a reduction of the kurtosis level of *SME age* (3.067).

Further investigation of the frequency distribution reveals that most of the SMEs in the final sample are micro firms with 4365 cases (44.2%). Small firms are accounted for by 3515 SMEs (35.6%) and medium-sized firms are represented the least with 1996 cases (20.2%). The frequencies of the *SME recent financial performance* show that 3198 SMEs (32.4%) saw no change in their turnover for the past two years. Whereas 4898 cases (49.6%) reported an increase and 1780 SMEs (18%) suffered a decrease in turnover. In the case of *external support* it becomes apparent that the majority of SMEs (79%) does not receive external support at all, which causes the other external support categories to consists of relatively few SMEs.

Ultimately, an assessment of the SME environmental practice investments shows that only 10.3% makes substantial investments as opposed to the majority of 60.4% of SMEs that does not invest in resource efficiency actions at all. Ultimately, a group of 2886 SMEs (29.2%) makes few investments. The complete distribution of the frequencies can be found in Appendix 2.

Table 2 Descriptive statistics of the final sample

Variable	Mean	Median	Mode	SD	Skew.	Kurt.	Min.	Max
Dependent variable								
SME EPA	1.499	1.00	1.00	0.676	1.009	-0.216	1	3
Independent variables								
ELC	0.558	1.00	1.00	0.497	-0.235	-1.945	0	1
External support	1.411	1.00	1.00	0.892	2.085	2.956	1	4
Moderators								
SME size	1.760	2.00	1.00	0.766	0.436	-1.179	1	3
SME RFP	1.83	2.00	1.00	0.889	0.343	-1.648	1	3
Controls								
SME age	1.26	1.00	1.00	0.613	-2.138	3.067	1	4
Sector tangibility	1.768	2.00	2.00	0.728	0.387	-1.048	1	3

N = 9876, *missing* = 0

4.2 Missing value analysis

Initially, the selected sample of 12,082 cases of the Flash Eurobarometer (no. 456) presented a considerable number of missing values. A missing value analysis was conducted including all the relevant variables for this research. The first variable that will be viewed, is the dependent variable *SME environmental practice adoption.* A number of 1341 missing cases were reported for this variable, which are consequently deleted in order to avoid bias or an artificial increase in relationships with the independent variables. This narrowed the sample down to 10,741 cases. The deletion of those cases results in an absence of missing values for the moderator variable *SME size* and control variable *sector tangibility*. Next, the variables *external support*, *SME age* and *SME recent financial performance* exhibit a percentage of missing values below 5%. Listwise deletion is considered to be appropriate for these cases, as it does not substantially reduce the sample size. This procedure narrows the sample down to 9876 valid cases.

Only the variable *environmental legislation complexity* showed an extraordinary amount of 3343 missing cases that is representing 31,1% of the sample. It is therefore deemed necessary

to impute the missing data, as deleting the corresponding cases would result in a dramatic reduction of the sample size. However, the procedure should be treated with caution due to its potential of introducing bias in the model (Hair et al., 2018). Preceding this method, the randomness of the missing data must be examined. The missing values for *environmental legislation complexity* do not exhibit any pattern (Appendix 4), so it is concluded that the data is missing completely at random (MCAR) for this variable (Hair et al., 2018). The chosen method for treating the missing data is multiple imputation, which implies the generation of several datasets with different imputed data for each set. Its aim is to provide both unbiased parameter estimates and correct estimates of the standard errors in the aggregate (Field, 2018). The execution of this method follows three steps. First, the imputed datasets will be constructed. Then the model will be estimated and finally, the results from the imputed datasets will be pooled. The program (SPSS) will use the supplied data to fill in the gaps in the dataset and build a complete dataset. Before replacing the data with the imputed values, it will make a probability calculation to determine what the missing values could have been (Sterne et al., 2009). Unfortunately, the program could not handle the number of cases in the dataset, which led us to do only one repetition of the imputation. This imputation was used to create a pooled dataset with the modes of *environmental legislation complexity* replacing the missing values, since this variable was measured at a nominal scale.

4.3 Factor Analysis

Preceding the ordinal logistic regression, a factor analysis has been conducted to constitute the variable *environmental legislation complexity*. Previous studies did not attempt to measure this variable in a quantitative manner. Therefore, a factor analysis is needed to measure whether certain items form the construct *environmental legislation complexity*. The method is described as an interdependence technique whose primary purpose is to define an underlying structure among variables in the analysis. Factor analysis serves two purposes, first being the reduction of data. We use it for the second purpose of data summarization (Hair et al., 2018). The items that have been identified for summarization are: (a) complexity of administrative or legal procedures, (b) difficulty to adapt environmental legislation to your company and (c) technical requirements of the legislation not being up to date. By considering only three items, we do not follow up on the desired number of variables that should be selected according to Hair et al. (2018). They propose that at least five variables should be included to closely reflect the

hypothesized underlying factors. However, due to theoretical considerations only these three variables were selected and expected to form the construct. Next, Hair et al. (2018) explain that a correlation value can be calculated among all types of variables. Although, metric variables are considered as the preferred option, whereas non-metric values are described to be more problematic. It is therefore that dummy variables are used in representing the categories 'yes' and 'no' regarding *environmental legislation complexity*. To put it differently, the final construct measures whether SMEs suffered from complexity in environmental legislation or not.

Several considerations with respect to factor analysis have been assessed. First, the sample size needs to incorporate an adequate number of cases. Hair et al. (2018) prefer 100 observations to be the minimum for the absolute sample size, which our sample exceeds by a mile with 9876 cases. They also put forward several critical values for the observations per item, with the highest minimum being 20 observations, which is also largely exceeded for the three measured items. Another consideration is the assumption of normally distributed variables, as it can affect the correlations between variables. Consequently, the levels of skewness and kurtosis have been checked and exhibited no extraordinary values. All scores appeared to be between the critical values of -2.00 and 2.00, so the variables need no further adjustments. Lastly, we validate whether factor analysis is a suitable technique to use. In order to do so, we conducted a Bartlett's test of sphericity as well as a Kayser-Meyer-Olkin (KMO) test, which measures the adequacy of the sampling. The Bartlett's test should be significant at $\alpha = 0.05$ and the value of the KMO test should be ≥ 0.5. The results of both tests confirm that the requirements were met, as the Bartlett's test of sphericity exhibited a value of .00 and KMO test provided a score of 0.643. Next, the eigenvalues were assessed in order to check the number of factors. There appeared to be one factor, as only the first component reported an eigenvalue (1.692) above 1.00, which confirms our perception that these items indeed form one construct. Additionally, the factor loadings for all three items exceeded the level of 0.70, which indicates a well-defined structure according to Hair et al. (2018). However, these items accounted for only 56.41% of total variance explained, which leaves 43.59% of the construct *environmental legislation complexity* unexplained by these items (Appendix 5).

4.4 Ordinal logistic regression assumptions

Several assumptions have to be met before conducting an ordinal logistic regression. First, an evaluation of the sample size is required. According to Hosmer and Lemeshow (2000) the overall sample size has to consist of more than 400 cases when performing an ordinal logistic regression, which this study adheres to with a total 9876 valid cases. Hair et al. (2018) provide an additional requirement: the sample size per group of the dependent variable has to be at least 10 for each estimated parameter. The dependent variable *SME environmental practice adoption* consists of three categories. An assessment of the other variables in the model shows 18 parameters, which leads to a minimum observation of 180 cases per category of the dependent variable. A requirement that is met, as the smallest group of the dependent variable (substantial investments) consists of 1021 observations. Next, there exist four assumptions underlying the ordinal logistic regression: (1) the presence of an ordinal-level dependent variable, (2) the presence of at least one independent variable of a continuous, categorical, or ordinal nature, (3) the absence of multicollinearity, and (4) the presence of proportional odds (Brant, 1990; O'Connell, 2006). An evaluation of the variables' measurement levels reveals that the first two assumptions are met. The last two assumptions require more extensive methods before they can be assessed.

The third assumption, absence of multicollinearity, is checked by viewing the correlations of the independent, moderating and control variables. A bivariate correlation matrix is constructed in order display the correlations between the predictor variables. The correlations are measured according to the Spearman's rho, as the variables consist of nominal, ranked and continuous predictors (Field, 2018). Table 3 shows the matrix with no correlations exceeding the critical of 0.80, which indicates no threat of multicollinearity. Additionally, the variance inflation factor (VIF) values and tolerance statistics for the predictor variables have been examined via linear regression (Appendix 5). The aim of this measure is to check for more subtle forms of multicollinearity and to inspect whether other correlations could cause any issues (Field, 2018). All VIF scores display values that are substantially lower than the critical value of 10. An assessment of the tolerance values shows no scores lower than 0.1 for all predictor variables. Both measures are leading to the conclusion that multicollinearity is indeed absent (Meyers, 1990). The fourth assumption regarding the presence of proportional odds will be discussed in paragraph 4.6, as it can only be assessed after the execution of the ordinal logistic regression.

Table 3. Bivariate correlation matrix

Variables	1	2	3	4	5	6	7
1. SME size							
2. SME recent financial performance	0.172						
3. Environmental legislation complexity	-0.167	0.029					
4. External support	0.114	-0.085	-.193				
5. Tangibility: tangible products	0.147	-0.005	0.095	-.038			
6. Tangibility: tangible services	-0.091	0.006	-0.005	0.012	-0.701		
7. Tangibility: intangible services	-0.072	-0.001	-0.116	0.033	-0.383	-0.390	
8. SME age	0.180	-0.110	0.048	-0.056	0.056	-0.034	-0.028

N=9876

4.5 Ordinal logistic regression

Multiple ordinal logistic regressions are run to test the hypotheses of this study. Several models are conducted in order to form a clear representation of the various types of effects in this study. Table 4 is used to display first two models with results from two separate regressions. The first model includes only the control variables *SME age* and *sector tangibility*. This model is used to compare with the second model that is extended by adding the main predictor effects of *external support* and *environmental legislation complexity* and the moderating variables *SME size* and *SME recent financial performance*. We can draw a comparison between both models based on their explanatory power using the statistic Nagelskerke's R^2, which is 0.019 for the first model and 0.137 for the second model. This leads to the conclusion that model 2 has a much higher explanatory power, which means this model explains much more variance in the dependent variable of *environmental practice* adoption. The latter consequently justifies the identification of *external support* and *environmental legislation complexity* as predictors for SME environmental practice adoption. Additionally, the Chi-Square statistic ($p \leq 0.001$) of model 2 is significant, which indicates significant improvement over the baseline intercept-only model. As a result, model 2 offers a significant better prediction of the dependent variable *environmental practice adoption* than if this was predicted on the marginal probabilities of the outcome variables. In other words, model 2 proves to be appropriate for the analysis.

A closer look at model 2 shows a significantly positive relationship between external support and the environmental practice adoption of SMEs ($b = 0.641$, $p \leq 0.001$). This effect is compared to the reference category of no external support, so the conclusion can be drawn that external support has a positive impact on the environmental practice adoption of SMEs, which confirms hypothesis 2. Another direct effect on the dependent variable can be observed, which is surprising, as a positive and significant relationship exists between the presence of environmental legislation complexity and SME environmental practice adoption ($b = 1.033$, $p \leq 0.001$). This leads us to reject hypothesis 1, which predicts a negative relationship between the two aforementioned variables.

Model 2 also provides inside on the direct effects of *SME size* on environmental practice adoption. It can be observed that small firms invest more in environmental practices than micro firms ($b = .105$, $p \leq 0.05$). An assessment of medium-sized firms reveals that this positive effect is even greater in proportion and significance ($b = .234$, $p \leq 0.001$), so these SMEs are even

more likely to invest in environmental practices compared to micro firms. An observation of the coefficients related to *SME recent financial performance* reveals that SMEs that saw an increase in their turnover are more likely to invest in environmental practices than SMEs suffering from a decrease, as a positive and significant effect is reported (b = .515, $p \leq .001$). The same positive effect holds for SMEs reporting no change in their turnover, but this effect is slightly weaker (b = .209, $p \leq .001$). In order to examine the potentially moderating effects of both *SME size* and *SME recent financial performance*, models 3 to 6 are created to analyse the interactions separately (Appendix 6). The separation of the models helps to observe changes in explanatory power due to the addition of the interaction variables. Although these changes are limited, since the explanatory power of these models varies between 0.137 and 0.140 as values of Nagelskerke's R^2.

Table 4. Ordinal logistic regression model 1 and model 2. Dependent variable: Environmental practice adoption.

	Model 1		Model 2	
	Coeff.	SE	Coeff.	SE
Predictor variables				
SME size: micro[a]				
SME size: small			.105*	.049
SME size: medium			.234***	.058
SME recent financial performance: decreased[a]				
SME recent financial performance: remained unchanged			.209***	.065
SME recent financial performance: increased			.515***	.061
Environmental legislation complexity (ELC): No[a]				
Environmental legislation complexity (ELC): Yes			1.033***	.045
External support: No[a]				
External support: Yes			.347***	.072
Controls				
Sector tangibility: intangible services[a]				
Sector tangibility: tangible services	0.277**	.060	.153*	.063
Sector tangibility: tangible products	0.663***	.060	.473***	.063
SME age: 0 to 5 years[a]				
SME age: 5 to 8 years	-.056	.098	-.063	.102
SME age: > 8 years	.083	.072	.008	.076
N		9876		9876
Pseudo (Nagelkerke) R^2		0.019		0.137
Chi-square		159.257***		1201.411***

Parameter estimates and standard errors (between parentheses) are displayed

Ordinal dependent variable *SME environmental practice adoption*: (1) No investments (<1% of annual turnover); (2) Few investments (1% to 5% of annual turnover); (3) Substantial investments (>5% of annual turnover).
Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided)

[a] Reference category.

Table 5 shows displays model 6, which includes all control, predictor and interaction variables with a total explained variance of 0.140 indicated by Nagelskerke's R^2. This full model also offers a good fit, which can be observed through its significant Chi-square statistic ($p \leq .001$), so model 6 will be referred to when analysing the interaction effects related to hypothesis 3 to 5. Hypothesis 3 predicts that the negative effect of environmental legislation complexity is stronger for firms with a higher recent financial performance. However, this hypothesis can be rejected before examining the interaction effects, since the main effect of environmental legislation complexity proves to be positive (b = 1.424, $p \leq .001$). Although, an interesting interaction can be observed when assessing model 6. The observed positive main effect of environmental legislation complexity is significantly weaker for firms with an increase in turnover as opposed to firms reporting a decrease in turnover over the past two years (b = -.281, $p \leq .05$). SMEs with no change in turnover do not experience significantly different effects than firms with a decreasing turnover. Hypothesis 5 predicts that the negative effect of environmental legislation complexity on SME environmental practice adoption is stronger for smaller SMEs, but is also rejected due to the main effect being positive. However, model 6 shows another interesting interaction, as the positive effect of environmental legislation complexity seems to be significantly weaker for medium-sized firms as opposed to micro firms (b = -.474, $p \leq .001$). A slightly less significant result leads to the observation that small firms also experience a weaker positive effect compared to micro firms (b = -.262, $p \leq .01$).

Hypothesis 4 predicts the positive effect of external support on SMEs' environmental practice adoption to be stronger for SMEs with a lower recent financial performance. However, an examination of model 6 leads to the observation that positive influence of external support does not differ for SMEs with varying recent financial performance, as no significant interaction effects exist. Hypothesis 4 is therefore rejected.

Table 5. Ordinal logistic regression model 6. Dependent variable: Environmental practice adoption

	Model 6	
	Coeff.	SE
Predictor variables		
SME size: micro[a]		
SME size: small	0.271***	0.093
SME size: medium	0.553**	0.082
SME recent financial performance: decreased[a]		
SME recent financial performance: remained unchanged	0.277*	0.117
SME recent financial performance: increased	0.665***	0.109
Environmental legislation complexity (ELC): no[a]		
Environmental legislation complexity (ELC): yes	1.424***	0.123
External support: no[a]		
External support: yes	0.536***	0.132
Interaction variables		
SME size * ELC: no[a]		
SME size: micro: * ELC: yes[a]		
SME size: small * ELC: yes	-0.262**	0.101
SME size: medium * ELC: yes	-0.474***	0.119
SME recent financial performance * ELC: no[a]		
SME recent financial performance decreased * ELC: yes[a]		
SME recent financial performance remained unchanged * ELC: yes	-0.138	0.141
SME recent financial performance increased * ELC: yes	-0.281*	0.131
SME recent FP: decreased * External support: yes[a]		
SME recent FP: remained unchanged * External support: yes	0.088	0.160
SME recent FP: increased * External support: yes	0.143	0.147
Controls		
Sector tangibility: intangible services[a]		
Sector tangibility: tangible services	0.156*	0.063
Sector tangibility: tangible products	0.481***	0.063
SME age: 0 to 5 years[a]		
SME age: 5 to 8 years	-0.056	0.102
SME age: > 8 years	0.006	0.077
N		9876
Pseudo (Nagelkerke) R^2		0.140
Chi-square		1229.703***

Parameter estimates and standard errors (between parentheses) are displayed

Ordinal dependent variable *SME environmental practice adoption*: (1) No investments (<1% of annual turnover); (2) Few investments (1% to 5% of annual turnover); (3) Substantial investments (>5% of annual turnover).
Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided)

[a] Reference category.

4.5 Control variables results

The control variables in this research are also examined using ordinal logistic regression. Model 2 shows whether the control variables *SME age* and *sector tangibility* show any significant effect following the inclusion of the other predictor variables. On the firm-level, *SME age* shows no significant effects on the firm's resource efficiency investments, so it can be concluded that SMEs of varying age do not significantly differ in their environmental practice adoption. Regarding industry level, the effect of *sector tangibility* is examined. The type of sector the firm operates in proves to be significant in predicting SMEs' environmental practice adoption. SMEs operating in the tangible product sector invest the most in resource efficiency actions (b = .480, $p \leq 0.001$), followed by SMEs that operate in the tangible service sector (b = .156, $p \leq 0.5$), which are results consistent with previous research (Hoogendoorn et al., 2015).

4.6 Assumption of proportional odds

The presence of proportional odd is the last assumption regarding ordinal logistic regression, which can only be viewed after conducting the analysis. The regression divides the variable into two different thresholds (i.e. few investments or above, substantial investments), as the dependent (outcome) variable is ordinal. The assumption of proportional odds states that the effects of the explanatory factors are consistent across the outcome variable's threshold levels (Brant, 1990). Regardless of the threshold, the explanatory variables should have the same influence on the model's odds. If a set of binary logistic regressions were fitted to the data, the identical odds ratios for an explanatory variable should appear in all of them. SPSS uses the test of parallel lines to examine this assumption, which compares an ordinal model with one set of coefficients for all thresholds against an alternative model with distinct coefficients for all thresholds. The assumption of proportional odd is rejected if the alternative model appears to be a superior fit. In our analysis, the Chi-Square values of the alternative models following the regressions of Model 1 to 6 are all highly significant, which leads to the rejection of this assumption. This is not surprising, given that the test of parallel lines has been characterised as

anti-conservative, unavoidably rejecting the proportionate odds assumption in the presence of large sample sizes or continuous predictor factors (O'Connell, 2006; Brant, 1990). As both of those conditions are present in the data, the more scientifically validated Wald test of Brant is used to evaluate this assumption (1990). Two binary logistic regressions have been conducted to perform Brant's (1990) Wald test (Appendix 7). This method enables us to assess the odds ratios for each explanatory variable across the two data thresholds and check whether these are consistent. Consequently, an examination of this data in Appendix 7 shows that the conclusion that the assumption of proportional odds is met, as there seem to be no inconsistencies between the odds ratios. Ultimately, these observations lead to the conclusion that the results of the logistic regressions in Models 1 through 6 can be trusted.

5 Discussion

The analysis shows multiple results that are contrary to the hypotheses in the theoretical framework section. This chapter aims to discuss these findings and attempts to explain and understand them by the aid of previous research.

5.1 The influence of environmental legislation complexity

An outstanding finding was the result that environmental legislation complexity drives SMEs to invest significantly more in environmental practices. This is a surprising result, as I hypothesised that the relationship would be negative. However, there is a potential explanation for the positive relationship between environmental legislation complexity and SMEs' environmental responsiveness. The argument refers to learning and flexibility. Both factors are part of absorptive capacity, as the latter determines the effectiveness of firms' learning processes (Kim, 1998). Moreover, potential absorptive capacity is characterised by high levels of organisational flexibility (Zahra & George, 2002). Complex legislation may push SMEs to devote more attention towards these environmental requirements, which enables their learning process, consequently leading to a positive impact on environmental practice adoption. This explanation is based on insights of complexity theorists, who view organizations as complex adaptive systems. They theorise that organisations develop either a proper fit or certain autonomy when facing complex stimuli (Boisot & Child, 1999). The concept of adaptability is also described by Jenkins (2009) as a crucial ability of SMEs in relation to their CSR practices. He argues that a higher degree of flexibility allows SMEs to respond swiftly to changes in the environment, resulting in more effective CSR strategies. In line with this reasoning, it can be contended that complex legislation may motivate the SMEs to react and learn, which could ultimately lead to higher levels of environmental practice adoption.

It also appears that the observed positive influence of environmental legislation complexity on environmental responsiveness differs across SMEs of varying recent financial performance and size. Regarding recent financial performance, SMEs with an increase in turnover experience a significant weaker positive effect of environmental legislation complexity on environmental responsiveness than firms who suffered a financial decrease. An explanation may be given by the insight of Bowen (2002) who put forward that firms with less resources are expected to invest their limited resources in addressing the immediate

environmental concern rather than resisting external stimuli, such as environmental legislation. Conversely, firms possessing more resources are expected to be more resistant towards pressures like environmental legislation, since they have the possibility to engage in political actions (Darnall et al., 2010). The financial performance of firms correlates with their resources (Xiao et al., 2018), so it may be that SMEs with higher financial performance may be less motivated by complex environmental requirements to engage in environmental practices.

Regarding SME size, medium-sized firms experience a significant weaker positive effect than micro firms, which can be understood by viewing environmental legislation complexity as an external stimulus that steers firms' learning and flexibility. Traditionally, SMEs are viewed as being more flexible (Preuss & Perschke, 2010), which could be beneficial for adapting to complex external stimuli (Jenkins, 2009). However, SMEs are not a homogenous group, which leads Uhlaner et al. (2012) to state that medium-sized firms share more similarities with larger enterprises. Following this line of reasoning, medium-sized firms could be less flexible than smaller businesses, as they would share the characteristic of rigidness with larger enterprises (Etzion, 2007). It is therefore expected that larger SMEs have a lower ability in learning from environmental legislation complexity, which results in lower positive effect on environmental responsiveness.

5.2 The influence of external support

In accordance with the second hypothesis, SMEs that receive external support invest significantly more in environmental practices than SMEs without any support. Two explanations were given to support the hypothesis. One argument is based on the resource dependence theory viewpoint that external actors drive SMEs towards environmental practice adoption, because they can exert an influence on these firms' decision-making through the provision of support (e.g. Kassinis & Vaffeas, 2006; Wang & Zhang, 2020; Clark et al., 2018). The other argument refers to external resources allowing SMEs to engage in environmental practices, because the support helps them to overcome resource constraints (e.g. Aristei & Gallo, 2021; Bodas-Freitas & Corrocher, 2019; Hoogendoorn et al., 2015). By confirming the latter, this research also opposes to the suggestion of Soundararajan et al. (2018) that the resource deprivation of SMEs does not significantly hinder their environmental responsiveness. This study shows that SMEs can indeed be helped in the shift to sustainable practices by receiving external support. In sum, the results support the findings of previous scholars that

external support can positively influence the decision-making of SMEs towards environmental practice adoption and helps them overcoming resource barriers.

However, the positive relationship between external support and environmental practice adoption does not differ for SMEs with varying recent financial performance. This is contradictory to our expectation that SMEs with higher financial performance would experience a weaker positive effect of external support on their environmental responsiveness. The explanation for this hypothesis was that firms with higher financial performance are less resource dependent on external actors compared to lower performing firms. The resource availability of higher performing firms is assumed to reduce the power of external actors, as it enables a firm's engagement in political actions (Hillman et al., 2009). Additionally, it is argued that resources provide a buffer between firms and the external environment, which reduces the exposure towards these resource providers (Roundy & Bayer, 2019).

These arguments supporting the weakened positive influence of external support on the environmental practice adoption of SMEs with varying financial performance may be mitigated by an effect that strengthens the relationship. External resource providers may view higher profits and resources as an indicator of a firm's ability to invest in environmental practices, which could intensify their demands for these practices. According to Mackey et al. (2007), stakeholders who value CSR may put pressure on certain firms to adopt related practices. Chiu and Sharfman (2011) argue that these demands of external actors are more pronounced when a firm is able to allocate resources from its profits for environmental practices. Following this explanation, it might be that SMEs with higher financial performance encounter intensified demands from external actors, such as resource providers, towards environmental practice adoption. In other words, the weakening effects of less resource dependency due to higher financial performance may be negated by higher pressures towards environmental practice adoption of actors providing external support. Ultimately, these considerations could explain why the moderation of financial performance on the relationship between external support and SME environmental practice adoption is absent.

6 Conclusion

First, this chapter forms a reflection on the research aim by answering the two research questions. Followingly, the theoretical and practical implications of the research are described. Finally, the limitations of the research and potential future research are put forward.

6.1 Conclusion

Environmental pollution, such as landscape devastation, groundwater contamination, carbon emissions, and industrial waste, has become a major source of concern for society around the world, endangering people's health and disrupting local communities (Peng et al., 2020). Consequently, European SMEs are expected to play their part in solving such environmental issues, since they shape a great part of Europe's business landscape and contribute between 60% and 70% to the industrial pollution in Europe (OECD, 2019). As a result, there are growing pressures on these firms to incorporate environmentally responsible practices in their business processes, so they reduce their share of environmental pollution (Bakos, 2020). In line with previous research, the effects of regulation and external support have been identified as significant determinants of SMEs' environmental responsiveness (e.g. Bodas-Freitas & Corrocher, 2019; Hoogendoorn et al., 2015; Soundararajan et al., 2018). However, there remains some dispute on the impact of these factors. For instance, whether legislation is an inhibitor or promotor of SMEs environmental responsiveness (Kassinis, 2012). Moreover, the question is raised whether external support is needed to steer the adoption of environmental practices by firms, since the suggestion that resources are crucial for SMEs was challenged by Soundararajan et al. (2018). For that reason, this study's goal was to gain better understanding of what motivates SMEs to embrace environmental practices by examining the effects of environmental legislation complexity and external support. This research aim resulted in the following research question:

(1) What is the influence of environmental legislation complexity and external support on the environmental practice adoption of SMEs?

Both factors prove to have a significant influence on SMEs' environmental practice adoption. Although, the positive significant effect of environmental legislation complexity is opposite of what has been hypothesised. An explanation for this finding refers to the possible influence of

environmental legislation complexity on SMEs' learning processes and flexibility through its adaptive abilities, which could potentially steer environmental practices. In sum, this significant finding regarding environmental legislation opens new areas for future research. Additionally, this study confirmed the hypothesised positive effect of external support on the environmental practice adoption of SMEs. This supports the notion that providers of external support drive the environmental responsiveness of SMEs, because they can have an impact on their decision-making. Moreover, this finding confirms previous research that external support allows SMEs to engage in environmental practice adoption, as it helps to overcome resource barriers.

Next, this study investigates the forces influencing firms environmental practice adoption by looking into the size-related differences within the category of SMEs. The suggestion that SMEs should not be treated as a homogenous group is based on previous research (e.g. Preuss & Perschke, 2010; Uhlaner et al., 2012; Hoogendoorn et al., 2015; Van Heerwaarden, 2020). It is therefore that the study examines whether the effect environmental legislation complexity on environmental practice adoption varies across the different sizes of SMEs due to varying visibility. Furthermore, this study builds on other research suggesting that the recent financial performance of firms is directly influencing their environmental practice adoption (e.g. Seifert, 2004; Surroca, Tribo & Waddock, 2010; Julian & Ofori-Dankwa, 2013; Panwar et al., 2017). Although, this research seeks to investigate its possible interaction effect on the relationship of environmental legislation complexity and external support with SMEs environmental responsiveness. The reasons for this being the suggestions of other academics of the potential moderating effect of recent financial performance (Chiu & Sharfma, 2011; Arora & Dharawadkar, 2011). These considerations led to the second research question:

(2) What is the influence of environmental legislation complexity and external support on SMEs' environmental responsiveness varying recent financial performance and size?

Regarding the relationship of environmental legislation complexity and environmental responsiveness, both SME size and recent financial performance prove to be of significant influence. However, the observed interaction effects differ from the hypotheses, as the main effect of environmental legislation complexity is proven to be positive instead of negative. This provides interesting insights and possible ground for future research. The perspective that firms with less resources are less resistant towards external stimuli is used to explain the possibility

of SMEs with lower financial performance experiencing a stronger positive effect of environmental legislation complexity on their environmental responsiveness. Whereas the possible differences in flexibility between SMEs of varying size provide an explanation why medium-sized firms experience a weaker positive impact from environmental legislation complexity. Ultimately, the analysis showed that the positive impact of external support on environmental practice adoption does not seem to differ in impact for SMEs of varying size or recent financial performance. An explanation may lie in two simultaneous effects that negate each other. First, it is expected that the positive effect of external support is weaker for SMEs with higher financial performance, as they are less resource dependent. Second, this weakening effect can be nullified by the effect that higher financial performance could bring intensified demands of stakeholders for environmental responsiveness.

6.2 Theoretical and practical implications

The first theoretical implication regards the fact that this research went beyond previous research by examining the effects of different factors on the environmental responsiveness of SMEs of varying financial performance and size. The finding that environmental legislation complexity has a different effect for SMEs of varying financial performance and size adds to the belief that SMEs should be treated as a heterogenous group (Preuss & Perschke, 2010). Furthermore, these findings reaffirm the call of Soundararajan et al. (2018) for more research regarding size differences within the SME category and their environmental responsiveness.

Next, another theoretical implication refers to the effectiveness of environmental regulation as a driver of firm's environmental responsiveness, which is debatable according to Kassinis (2012). The findings of this research confirm the stance that environmental legislation is indeed effective since complex environmental regulation drives SMEs to invest more in environmental practices. Regarding environmental legislation complexity, the significant findings also provide ground for future research, as the perspective of firms perceiving environmental regulation as complex is an underdeveloped part of research.

The findings that environmental legislation complexity and external support have a significant positive influence on SMEs' environmental practice adoption are very relevant for policy makers. Regulation and support are instruments for these actors to influence the environmental responsiveness of firms (Hoogendoorn et al., 2015). It is important that policy makers are aware of the power of both external support and environmental legislation, so they

can use it to steer environmentally responsible behaviour that can reduce the pollution. The insight that complex environmental requirements have a positive impact on SMEs' investment in environmental practices may have an implication for future legislation policies. Policy makers could possibly incorporate some complexity into environmental requirements with the aim to encourage SMEs to engage in environmental practices. In addition, they could consider that doing this would have a larger impact on smaller SMEs and SMEs with lower financial performance. Moreover, the positive influence that external support has on the investments of SMEs in environmental practices provides evidence for policy makers that instruments like subsidies and external advice can be effective. It is therefore advisable for these policy makers to design policies that incorporate external support initiatives if they want SMEs to adopt environmental practices.

The findings regarding environmental legislation complexity are especially relevant for managers of SMEs, as this opposes to their general perception of environmental regulation being a burden (Williamson et al., 2006). Instead, the insight that legislation may spur their environmental responsiveness could help them change their attitude towards the legislation and view it as a challenge to become more environmentally responsible.

6.3 Limitations and future research

There are various limitations to this study, which provide opportunities for further research. The first limitation refers to the measurement of *environmental legislation complexity*, which only captured 56.41% of its total variance. As a result, 43.59% remains unexplained by the items used in this research. Consequently, the findings regarding this variable need to be treated with caution, as other factors outside the analysis are likely to have an impact. It is therefore that future research may be headed towards other measurements of the concept environmental legislation complexity since it does prove to be significantly impacting the environmental practice adoption of firms. Furthermore, the need for more quantitative research regarding this variable is desired, because only notable qualitative measures exist (Petts & Herd, 1999, Wilson et al., 2011). Additionally, environmental legislation is often measured in terms of stringency, which does not take the business perspective regarding legislation into account.

Second, another limitation that is related to the analysis, is the use of dummies for the independent variables environmental legislation complexity and external support. These variables were measured by assessing their presence ('yes' or 'no'). The use of dummies

inherently causes the loss of noteworthy information, as it only measures whether respondents possess a certain characteristic (Hair et al., 2018), but does not incorporate the degree of a certain variable. For example, we do not know what the perceived degree of environmental legislation complexity is or to what extend external support is provided to the firms in terms of resources. It seems plausible that varying degrees of both variables have a different impact on the environmental practice adoption of SMEs. It is therefore advised to use other types of measurements for these variables in future research.

The third limitation of the research considers the problem of subjectivity in the responses collected by the Flash Eurobarometer (no. 456) survey. The firms were asked to answer the questions based on self-perception, which could provide results that are not completely reliable due to a possible lack of objectivity. Although, social desirability bias is countered by ensuring the anonymity, there remains a chance of respondents exaggerating the firm's environmental responsiveness. A self-reported measure on the subject of environmental practice adoption is common practice (e.g. Aristei & Gallo, 2021; Hoogendoorn et al., 2015), but future research could limit potential bias by relying on other measures like independent corporate reports.

Fourth, a theoretical limitation of this study is the separate investigation of both environmental legislation complexity and external support as factors influencing the environmental practice adoption of SMEs. However, there are also indications in research that these factors interact with each other. For instance, external support in terms of consulting may help SMEs to understand the environmental legislation better, which helps them in complying and ultimately adopting CSR practices (e.g. Wilson, 2011; Aristei & Gallo, 2021). Potential future research therefore lies in examining the interrelations between the effects of environmental legislation and external support on SMEs' environmental responsiveness.

References

Aboelmaged, M., & Hashem, G. (2019). Absorptive capacity and green innovation adoption in SMEs: The mediating effects of sustainable organisational capabilities. *Journal of Cleaner Production*, *220*, 853–863. https://doi.org/10.1016/j.jclepro.2019.02.150

Aguinis, H., & Glavas, A. (2012). What we know and don't know about Corporate Social Responsibility: a review and research agenda. *Journal of Management*, *38*(4), 932–969.

Aragón-Correa, J. A., Hurtado-Torres, N., Sharma, S., & García-Morales, V. J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management, 86*(1), 88–103.

Arora, P., & Dharwadkar, R. (2011). Corporate governance and corporate social responsibility (CSR): the moderating roles of attainment discrepancy and organization slack. *Corporate Governance: An International Review*, *19*(2), 136–152.

Alniacik, U., Alniacik, E., & Genc, N. (2011). How corporate social responsibility information influences stakeholders' intentions. *Corporate Social Responsibility and Environmental Management*, *18*(4), 234–245. https://doi-org.ru.idm.oclc.org/10.1002/csr.245

Amato, L. H., & Amato, C. H. (2007). The effects of firm size and industry on corporate giving. *Journal of Business Ethics*, *72*(3), 229–241.

Aristei, D., & Gallo, M. (2021). The Role of External Support on the Implementation of Resource Efficiency Actions: Evidence from European Manufacturing Firms. *Sustainability*, *13*(17), 9531. https://doi.org/10.3390/su13179531

Bakos, J., Siu, M., Orengo, A., & Kasiri, N. (2020). An analysis of environmental sustainability in small & medium-sized enterprises: patterns and trends. *Business Strategy and the Environment*, *29*(3), 1285–1296. https://doi-org.ru.idm.oclc.org/10.1002/bse.2433

Berrone, P., Fosfuri, A., Gelabert, L., & Gomez-Mejia, L. R. (2013). Necessity as the mother of 'green' inventions: institutional pressures and environmental innovations: necessity as the mother of 'green' inventions. Strategic Management Journal, 34(8), 891–909. https://doi.org/10.1002/smj.2041

Bradford, J., & Fraser, E. D. G. (2008). Local authorities, climate change and small and medium enterprises: Identifying effective policy instruments to reduce energy use and carbon emissions. *Corporate Social Responsibility and Environment Management, 15*(3), 156–172.

Brammer, S., & Millington, A. (2008). Does it pay to be different? an analysis of the relationship between corporate social and financial performance. *Strategic Management Journal, 29*(12), 1324–1343. https://doi-org.ru.idm.oclc.org/10.1002/smj.714

Brammer, S., Jackson, G., & Matten, D. (2012). Corporate social responsibility and institutional theory: new perspectives on private governance. *Socio-Economic Review, 10*(1), 3–28. https://doi-org.ru.idm.oclc.org/10.1093/ser/mwr030

Brant, R. (1990). Assessing proportionality in the proportional odds model for ordinal logistic regression. *Biometrics*, *46*(4), 1171–1178.

Bodas-Freitas, I. M., & Corrocher, N. (2019). The use of external support and the benefits of the adoption of resource efficiency practices: An empirical analysis of European SMEs. *Energy Policy*, *132*, 75-82.

Bourgeois, L. (1981). On the Measurement of Organizational Slack. *Academy of Management Review*, *6*(1), 29–39. https://doi.org/10.5465/amr.1981.4287985

Bowen, F.E. (2000). Environmental visibility: a trigger of green organizational response? *Business Strategy and the Environment*, 92–107.

Bowen, Frances E. (2002). Organizational Slack and Corporate Greening: Broadening the Debate. *British Journal of Management*, *13*(4), 305–316. https://doi.org/10.1111/14678551.00248

Boisot, M., & Child, J. (1999). Organizations as Adaptive Systems in Complex Environments: The Case of China. *Organization Science*, *10*(3), 237–252. https://doi.org/10.1287/orsc.10.3.237

Buzzelli, D. T. (1991). Time to structure an environmental policy strategy. *Journal of Business Strategy*, *12*(2), 17–20.

Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *The Academy of Management Review*, *32*(3), 946–967.

Chiu, S.-C., & Sharfman, M. (2011). Legitimacy, visibility, and the antecedents of corporate social performance: an investigation of the instrumental perspective. *Journal of Management*, *37*(6), 1558–1585.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, *35*(1), 128. https://doi.org/10.2307/2393553

Cuerva, M. C., Triguero-Cano, Á., & Córcoles, D. (2014). Drivers of green and non-green innovation: empirical evidence in low-tech SMEs. *Journal of Cleaner Production*, *68*, 104–113. https://doi-org.ru.idm.oclc.org/10.1016/j.jclepro.2013.10.049

Dasanayaka, C. H., Gunarathne, N., Murphy, D. F., & Nagirikandalage, P. (2022). Triggers for and barriers to the adoption of environmental management practices by small and medium-sized enterprises: a critical review. *Corporate Social Responsibility and Environmental Management*, *(20220129)*.

Darnall, N., Henriques, I., & Sadorsky, P. (2010). Adopting Proactive Environmental Strategy The Influence of Stakeholders and Firm Size. *Journal of Management Studies*, *47*(6) 1072–1094. https://doi.org/10.1111/j.1467-6486.2009.00873.x

Deephouse, D.L., Bundy, J., Tost, L.P. and Suchman, M.C. (2017), *Organizational legitimacy: six key questions*, in Greenwood, R., Oliver, C., Lawrence, T.B. and Meyer, R. (Eds), The SAGE Handbook of Organizational Institutionalism, Sage, London, pp. 27-54.

Delmas, M., Hoffmann, V. H., & Kuss, M. (2011). Under the Tip of the Iceberg: Absorptive Capacity, Environmental Strategy, and Competitive Advantage. *Business & Society*, *50*(1), 116–154. https://doi.org/10.1177/0007650310394400

Demirel, P., Iatridis, K., & Kesidou, E. (2018). The impact of regulatory complexity upon self-regulation: evidence from the adoption and certification of environmental management systems. *Journal of Environmental Management*, *207*, 80–91.

Di Vita, G. (2017). Institutional quality and the growth rates of the Italian regions: The costs of regulatory complexity. *Papers in Regional Science*, *97*(4), 1057–1081. https://doi.org/10.1111/pirs.12290

Du, S., Bhattacharya, C., & Sen, S. (2010). Maximizing Business Returns to Corporate Social Responsibility (CSR): The Role of CSR Communication. *International Journal of Management Reviews*, *12*(1), 8–19. https://doi.org/10.1111/j.1468-2370.2009.00276.x

Etzion, D. (2007). Research on organizations and the natural environment, 1992-present: a review. *Journal of Management*, *33*(4), 637–664.

Frynas, J. G., & Yamahaki, C. (2016). Corporate social responsibility: review and roadmap of theoretical perspectives. *Business Ethics: A European Review*, *25*(3), 258–285. https://doi-org.ru.idm.oclc.org/10.1111/beer.12115

Gadenne, D. L., Kennedy, J., & McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics, 84*(1), 45–63.

Ghisetti, C., Mancinelli, S., Mazzanti, M., & Zoli, M. (2016). Financial barriers and environmental innovations: evidence from EU manufacturing firms. *Climate Policy, 17*(sup1), S131–S147. https://doi.org/10.1080/14693062.2016.1242057

Greenwood, R., & Meyer, R. E. (2008). Influencing ideas: a celebration of DiMaggio and Powell. *Journal of Management Inquiry, 17*(4), 258–264.

Gunarathne, A. D. N., Lee, K. H., & Hitigala, K. P. K. (2021). Institutional pressures, environmental management strategy, and organizational performance: The role of environmental management accounting. *Business Strategy and the Environment, 30*(2), 825–839.

Hair, J.F., Black, W. C., Babin, B. J. & Anderson, R. E. (2020). *Multivariate Data Analysis* (8th ed.). Harlow, United Kingdom: Pearson Education Limited.

Halme, M., & Laurila, J. (2009). Philanthropy, integration or innovation? Exploring the financial and societal outcomes of different types of corporate responsibility. *Journal of Business Ethics, 84*(3), 325–339.

Henriques, I., & Sadorsky, P. (1996). The Determinants of an Environmentally Responsive Firm: An Empirical Approach. *Journal of Environmental Economics and Management, 30*(3), 381–395. https://doi.org/10.1006/jeem.1996.0026

Hess, D., & Warren, D. (2008). The meaning and meaningfulness of corporate social initiatives. *Business and Society Review, 113*(2), 163–197.

Hillary, R. (2000). Introduction. In R. Hillary (Ed.), *Small and medium-Sized enterprises and the environment: Business imperatives* (pp. 11–22). Sheffield: Greenleaf.

Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource Dependence Theory: A Review. *Journal of Management, 35*(6), 1404–1427. https://doi.org/10.1177/0149206309343469

Hockerts, K., & Wüstenhagen, R. (2010). Greening Goliaths versus emerging Davids theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *Journal of Business Venturing, 25*(5), 481–492. https://doi.org/10.1016/j.jbusvent.2009.07.005

Høivik, H., & Shankar, D. (2011). How Can SMEs in a Cluster Respond to Global Demands for Corporate Responsibility? *Journal of Business Ethics*, *101*(2), 175–195. https://doi.org/10.1007/s10551-010-0708-6

Hoogendoorn, B., Guerra, D., & van der Zwan, P. (2015). What drives environmental practices of SMEs? *Small Business Economics: An Entrepreneurship Journal*, *44*(4), 759–781. https://doi-org.ru.idm.oclc.org/10.1007/s11187-014-9618-9

Hosmer, D. W., & Lemeshow, S. (2000). *Applied Logistic Regression*. New York, NY: John Wiley & Sons.

Huang, C. L., & Kung, F. H. (2010). Drivers of Environmental Disclosure and Stakeholder Expectation: Evidence from Taiwan. *Journal of Business Ethics*, *96*(3), 435–451. https://doi.org/10.1007/s10551-010-0476-3

Iatridis, K., & Kesidou, E. (2018). What drives substantive versus symbolic implementation of ISO 14001 in a time of economic crisis? insights from Greek manufacturing companies. *Journal of Business Ethics*, *148*(4), 859–877.

Upstill-Goddard, J., Glass, J., Dainty, A., & Nicholson, I. (2016). Implementing sustainability in small and medium-sized construction firms. *Engineering, Construction and Architectural Management, 2*3(4), 407–427. https://doi-org.ru.idm.oclc.org/10.1108/ECAM-01-2015-0015

Jenkins, H. (2006). Small business champions for corporate social responsibility. *Journal of Business Ethics, 67*(3), 241–256.

Jenkins, H. (2009). A 'business opportunity' model of corporate social responsibility for small and medium-sized enterprises. *Business Ethics: a European Review, 18*(1), 21-36.

Jiang, R. J., & Bansal, P. (2003). Seeing the Need for ISO 14001. *Journal of Management Studies*, *40*(4), 1047–1067. https://doi.org/10.1111/1467-6486.00370

Julian, S. D., & Ofori-Dankwa, J. C. (2013). Financial resource availability and corporate social responsibility expenditures in a sub-Saharan economy: The institutional difference hypothesis. *Strategic Management Journal, 34*(11), 1314–1330.

Kassinis, G., & Vafeas, N. (2006). Stakeholder pressures and environmental performance. *The Academy of Management Journal*, *49*(1), 145–159.

Kassinis, G. (2012). The value of managing stakeholders. In P. Bansal & A. J. Hoffman (Eds.), *The Oxford Handbook of Business and the Natural Environment* (pp. 83–100). Oxford: Oxford University Press.

Kim, L. (1998). Crisis Construction and Organizational Learning: Capability Building in Catching-up at Hyundai Motor. *Organization Science*, *9*(4), 506–521. https://doi.org/10.1287/orsc.9.4.506

KNAW; NFU; NWO; TO2-federatie; Vereniging Hogescholen; VSNU (2018): Nederlandse gedragscode wetenschappelijke integriteit. DANS. https://doi.org/10.17026/dans-2cj-nvwu

Lee, E., Walker, M., & Zeng, C. C. (2017). Do Chinese state subsidies affect voluntary corporate social responsibility disclosure? *Journal of Accounting and Public Policy*, *36*(3), 179–200. https://doi.org/10.1016/j.jaccpubpol.2017.03.004

Lepoutre, J., & Heene, A. (2006). Investigating the impact of firm size on small business social responsibility: A critical review. *Journal of Business Ethics*, *67*(3), 257–273.

Lynch-Wood, G., Williamson, D., & Jenkins, W. (2009). The over-reliance on self-regulation in CSR policy. *Business Ethics: A European Review*, *18*(1), 52–65.

Neubaum, D. O., Mitchell, M. S., & Schminke, M. (2004). Firm newness, entrepreneurial orientation, and ethical climate. *Journal of Business Ethics*, *52*(4), 335–347.

Mackey, A., Mackey, T. B., & Barney, J. B. (2007). Corporate social responsibility and firm performance: Investor preferences and corporate strategies. *Academy of Management Review*, *32*(3), 817–835. https://doi.org/10.5465/amr.2007.25275676

Maloni, M. J. & Brown, M. E. (2006). Corporate social responsibility in the supply chain: An application in the food industry. *Journal of Business Ethics*, 68: 35-52.

McWilliams, A., Siegel, D. S., & Wright, P. M. (2006). Corporate Social Responsibility: Strategic Implications*. *Journal of Management Studies*, *43*(1), 1–18. https://doi.org/10.1111/j.1467-6486.2006.00580.x

Morgan, R. E., & Strong, C. A. (2003). Business performance and dimensions of strategic orientation. *Journal of Business Research*, *56*(3), 163–176. https://doi.org/10.1016/s0148-2963(01)00218-1

Morsing, M., & Perrini, F. (2009). CSR in SMEs: do SMEs matter for the CSR agenda? *Business Ethics: A European Review*, *18*(1), 1–6. https://doi.org/10.1111/j.1467-8608.2009.01544.x

Nejati, M., Quazi, A., Amran, A., & Ahmad, N. H. (2017). Social responsibility and performance: does strategic orientation matter for small businesses? *Journal of Small Business Management*, *55*, 43–59.

https://doi-org.ru.idm.oclc.org/10.1111/jsbm.12305

Nohria, N., & Gulati, R. (1996). Is Slack Good or Bad for Innovation? *Academy of Management Journal*, *39*(5), 1245–1264. https://doi.org/10.5465/256998

O'Connell, A. A. (2006). *Logistic Regression Models for Ordinal Response Variables*. Thousand Oaks, CA: SAGE Publications.

OECD. (2019). *SMEs: Key Drivers of Green and Inclusive Growth*. Retrieved February 25, 2022 from https://www.oecd-ilibrary.org/docserver/8a51fc0c-en.pdf?expires=1647877281&id=id&accname=guest&checksum=E8485885E16F2121FD582D32D7E2DBB2

Panwar, R., Nybakk, E., Hansen, E., & Pinkse, J. (2017). Does the business case matter? The effect of a perceived business case on small firms' social engagement. *Journal of Business Ethics*, *144*(3), 597–608.

Parker, C. M., Redmond, J., & Simpson, M. (2009). A Review of Interventions to Encourage SMEs to Make Environmental Improvements. *Environment and Planning C: Government and Policy*, *27*(2), 279–301. https://doi.org/10.1068/c0859b

Peng, X., Tang, P., Yang, S., & Fu, S. (2020). How should mining firms invest in the multidimensions of corporate social responsibility? evidence from china. *Resources Policy*, *65*. https://doi.org/10.1016/j.resourpol.2019.101576

Perrini, F. (2006). SMEs and CSR theory: Evidence and implications from an Italian perspective. *Journal of Business Ethics, 67*(3), 305–316

Perrini, F., Russo, A. & Tencati, A. (2007). CSR strategies of SMEs and large firms: Evidence from Italy. *Journal of Business Ethics*, 74: 285-300.

Petts, J., Herd, A., Gerrard, S., & Horne, C. (1999). The climate and culture of environmental compliance within SMEs. *Business Strategy and the Environment*, *8*(1), 14–30.

https://doi-org.ru.idm.oclc.org/10.1002/(SICI)1099-0836(199901/02)8:1<14::AID-BSE175>3.0.CO;2-4

Pfeffer, J., & Salancik, G. R. (1978). The External Control of Organizations. *Administrative Science Quarterly*, *23*(2), 358. https://doi.org/10.2307/2392573

Porter, M. E., & Kramer, M. (2006). Strategy and society. *Harvard Business Review*, *84*(12), 78–92.

Preuss, L., & Perschke, J. (2010). Slipstreaming the larger boats: social responsibility in medium-sized businesses. *Journal of Business Ethics*, *92*(4), 531–551.

Pacheco, L. M., Alves, M. F. R., & Liboni, L. B. (2018). Green absorptive capacity: A mediation-moderation model of knowledge for innovation. *Business Strategy and the Environment*, *27*(8), 1502–1513. https://doi.org/10.1002/bse.2208

PWC. (2018). *Europe Monitor - Innovation and Digital Transformation: How do European SMEs perform?* Retrieved February 25, 2022 from https://www.pwc.nl/nl/assets/documents/pwc-europe-monitor-innovation-sme.pdf

Qi, G., Jia, Y., & Zou, H. (2021). Is institutional pressure the mother of green innovation? Examining the moderating effect of absorptive capacity. *Journal of Cleaner Production*, *278*, 123957. https://doi.org/10.1016/j.jclepro.2020.123957

Ramanathan, R., Poomkaew, B., & Nath, P. (2014). The impact of organizational pressures on environmental performance of firms. *Business Ethics: A European Review*, *23*(2), 169 182. https://doi.org/10.1111/beer.12042

Rodriguez, P. L., Siegel, D. S., Eden, L., & Hillman, A. (2006). Three Lenses on the Multinational Enterprise: Politics, Corruption and Corporate Social Responsibility. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.900544

Ropega, J. (2011). The reasons and symptoms of failure in SME. *International Advances in Economic Research*, *17*(4), 476–483.

Roundy, P. T., & Bayer, M. A. (2019). To bridge or buffer? a resource dependence theory of nascent entrepreneurial ecosystems. *Journal of Entrepreneurship in Emerging Economies*, *11*(4), 550–575.

Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*, *40*(3), 534–559.

Sáez-Martínez, F., Díaz-García, C., & González-Moreno, N. (2016). Factors Promoting Environmental Responsibility in European SMEs: The Effect on Performance. *Sustainability*, *8*(9), 898. https://doi.org/10.3390/su8090898

Seifert, B., Morris, S. A., & Bartkus, B. R. (2004). Having, giving, and getting: slack resources, corporate philanthropy, and firm financial performance. *Business & Society*, *43*(2), 135–161.

Sen, S. & Cowley, J. (2013). The relevance of stakeholder theory and social capital theory in the context of CSR in SMEs: An Australian perspective. *Journal of Business Ethics*, 118: 413-427.

Simpson, M., Taylor, N., & Barker, K. (2004). Environmental responsibility in SMEs: Does it deliver competitive advantage? *Business Strategy and the Environment*, *13*(3), 156–171.

Soundararajan, V., Jamali, D., & Spence, L. J. (2018). Small Business Social Responsibility: A Critical Multilevel Review, Synthesis and Research Agenda. *International Journal of Management Reviews*, *20*(4), 934–956. https://doi.org/10.1111/ijmr.12171

Spence, L.J. (2007). CSR and small business in a European policy context: the five "C"s of CSR and small business research agenda 2007. *Business and Society Review*, *112*(4), 533–552. https://doi-org.ru.idm.oclc.org/10.1111/j.1467-8594.2007.00308.x

Stoian, C. & Gilman, M. (2017). Corporate social responsibility that 'pays': A strategic approach to CSR by SMEs. *Journal of Small Business Management*, 55: 5-31.

Surroca, J., Tribó, J. A., & Waddock, S. (2010). Corporate responsibility and financial performance: The role of intangible resources. *Strategic Management Journal, 31*(5), 463–490.

Sterne, J. A. C., White, I. R., Carlin, J. B., Spratt, M., Royston, P., Kenward, M. G., Carpenter, J. R. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *BMJ*, *338*. https://doi.org/10.1136/bmj.b2393

Szulanski, G. 1996. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal, 17*, 27–43.

Tilley, F. (2000). Small firm environmental ethics: how deep do they go? *Business Ethics: A European Review*, *9*(1), 31–41. https://doi.org/10.1111/1467-8608.00167

Uhlaner, L. M., Berent-Braun, M. M., Jeurissen, R. J., & de Wit, G. (2012). Beyond size: Predicting engagement in environmental management practices of Dutch SMEs. *Journal of Business Ethics, 109*(4), 411–429.

Van Heerwaarden, B. (2020). Shaping environmental responsiveness: The influence of national institutions on SMEs of varying sizes.

Waddock, S. A., & Graves, S. B. (1997). The Corporate Social Performance-Financial Perfomance Link. *Strategic Management Journal*, *18*(4), 303–319.

Windolph, E. S., Schaltegger, S., & Herzig, C. (2014). Implementing corpo- rate sustainability: What drives the application of sustainability man- agement tools in Germany? *Sustainability Accounting, Management and Policy Journal, 5*(4), 378–404.

Wilson, C. D. H., Williams, I. D., & Kemp, S. (2011). An evaluation of the impact and effectiveness of environmental legislation in small and medium-sized enterprises:

experiences from the uk. *Business Strategy and the Environment, 21*(3), 141–156. https://doi-org.ru.idm.oclc.org/10.1002/bse.720

Williamson, D., Lynch-Wood, G., & Ramsay, J. (2006). Drivers of environmental behaviour in manufacturing SMEs and the implications for CSR. *Journal of Business Ethics, 67*(3), 317–330.

Wu, W., Liang, Z., & Zhang, Q. (2020). Effects of corporate environmental responsibility strength and concern on innovation performance: the moderating role of firm visibility. *Corporate Social Responsibility and Environmental Management, 27*(3), 1487–1497. https://doi-org.ru.idm.oclc.org/10.1002/csr.1902

Xiao, C., Wang, Q., Van Donk, D. P., & Van der Vaart, T. (2018). When are stakeholder pressures effective? An extension of slack resources theory. *International Journal of Production Economics, 199*, 138–149. https://doi.org/10.1016/j.ijpe.2018.03.002

Zahra, S. A., & George, G. (2002). Absorptive capacity: a review, reconceptualization, and extension. *The Academy of Management Review, 27*(2), 185–203.

Zhang, J., Liang, G., Feng, T., Yuan, C., & Jiang, W. (2020). Green innovation to respond to environmental regulation: how external knowledge adoption and green absorptive capacity matter? *Business Strategy and the Environment, 29*(1), 39–53. https://doi org.ru.idm.oclc.org/10.1002/bse.2349

Zhu, Q., Cordeiro, J., & Sarkis, J. (2013). Institutional pressures, dynamic capabilities and environmental management systems: investigating the iso 9000-environmental management system implementation linkage. *Journal of Environmental Management, 114*,232–42.

Appendices

Appendix 1: NACE Codes and related sectors

NACE Code	Sector
B	Mining and quarrying
C	Manufacturing
D	Electricity, gas, steam, and air conditioning
E	Water supply, sewerage, and waste management
F	Construction
G	Wholesale and retail
H	Transportation and storage
I	Accommodation and food service
J	Information and communication services
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific, and technical activities

Appendix 2: Descriptive statistics

A2.1 SMEs analysed per country

Country	Sample size	Percentage	Cumulative percentage
Austria	373	3.8	3.8
Belgium	357	3.6	7.4
Bulgaria	367	3.7	11.1
Cyprus (Republic)	133	1.3	12.5
Czech Republic	341	3.5	15.9
Germany	350	3.5	19.5
Denmark	381	3.9	23.3
Estonia	409	4.1	27.5
Spain	382	3.9	31.3
Finland	403	4.1	35.4
France	373	3.8	39.2
United Kingdom	277	2.8	42.0

Greece	431	4.4	46.3
Croatia	337	3.4	49.8
Hungary	392	4.0	53.7
Ireland	331	3.4	57.1
Italy	356	3.6	60.7
Lithuania	414	4.2	64.9
Luxembourg	147	1.5	66.4
Latvia	427	4.3	70.7
Malta	140	1.4	72.1
The Netherlands	401	4.1	76.2
Poland	397	4.0	80.2
Portugal	405	4.1	84.3
Romania	425	4.3	88.6
Sweden	378	3.8	92.4
Slovenia	401	4.1	96.5
Slovakia	348	3.5	100.0
Total	9876	100.0	

A2.3: Frequencies environmental practice adoption

Efficiency investments	**Frequency**	**Percentage**	**Cumulative %**
No investments	5969	60.4	60.4
Few investments	2886	29.2	89.7
Substantial investments	1021	10.3	100
Total	9876	100	

A2.4: Frequencies environmental legislation complexity

ELC	Frequency	Percentage	Cumulative %
No ELC	4361	44.2	44.2
Yes ELC	5515	55.8	100
Total	9876	100%	

A2.5: Frequencies external support

External support	Frequency	Percentage	Cumulative %
No external support	7799	79.0	79.0
Yes external support	2077	21.0	100
Total	9876	100	

A2.6: Frequencies SME recent financial performance

SME RFP	Frequency	Percentage	Cumulative %
Decreased	1780	18.0	18.0
Remained unchanged	3198	32.4	50.4
Increased	4898	49.6	100
Total	9876	100	

A2.7: Frequencies SME size

SME size	Frequency	Percentage	Cumulative %
Micro firm	4365	44.2	44.2
Small firm	3515	35.6	79.8
Medium-sized firm	1996	20.2	100
Total	9876	100%	

A2.8: Frequencies sector tangibility

Sector Tangibility	Frequency	Percentage	Cumulative %
Tangible products	4027	40.8	40.8
Tangible services	4111	41.6	82.4
Intangible services	1738	17.6	100
Total	9876	100%	

A2.9: Frequencies SME age

SME age	Frequency	Percentage	Cumulative %
0 to 5 years	873	8.8	8.8
5 to 8 years	854	8.7	17.5
> 8 years	8149	82.5	100
Total	9876	100%	

Appendix 3: Factor Analysis

A3.1: Reliability analysis

Reliability analysis	*N* of items	Cronbach's alpha
	3	.611

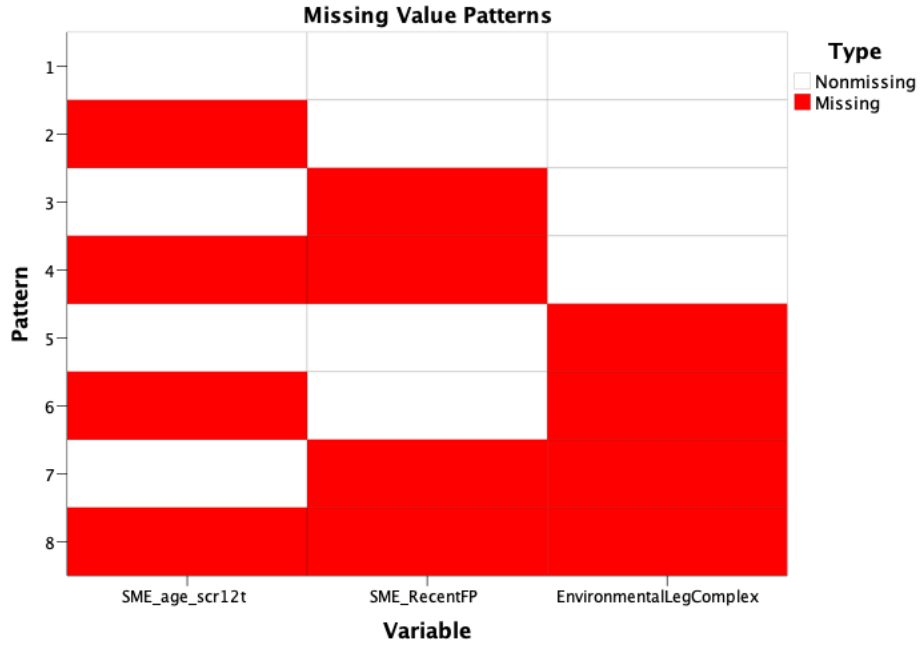
A3.2: KMO and Bartlett's Test

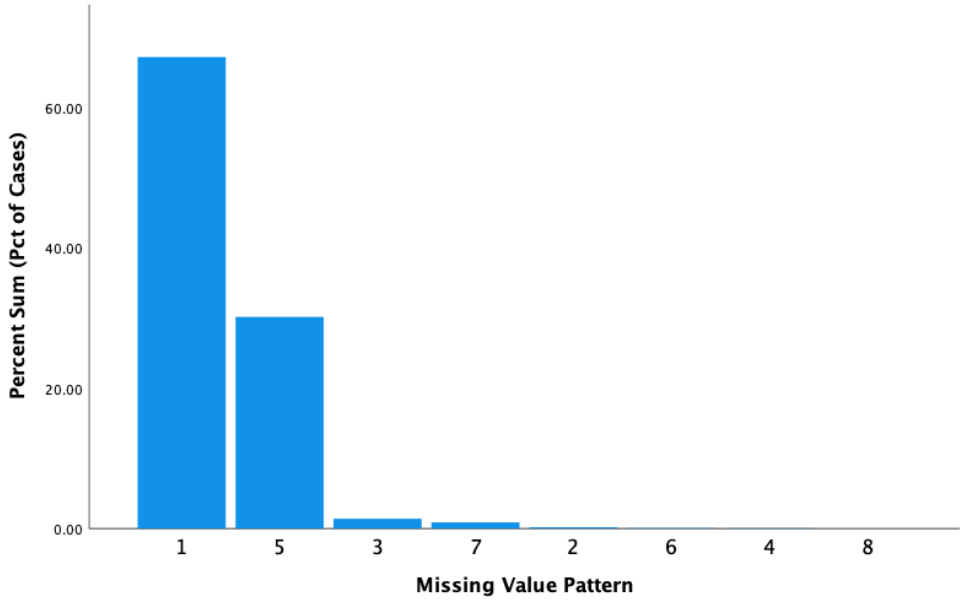
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.643
Bartlett's Test of Sphericity	Approx. Chi-Square	2765.698
	df	3
	Sig.	.000

A3.3: Total Variance Explained and

Total Variance Explained	*N* of items	Sums of Squared Loadings % of Variance
	3	56.409

Appendix 4: Missing value patterns





Appendix 5: Multicollinearity statistics (VIF and tolerance values)

	Collinearity Statistics	
Variable	Tolerance	VIF
Independent variables		
Environmental legislation complexity	.942	1.061
External support	.977	1.024
Moderator variables		
SME size: micro [a]		
SME size: small	.811	1.233
SME size: medium	.773	1.293
SME RFP: decreased [a]		
SME RFP: remained unchanged	.773	1.293
SME RFP: increased	.505	1.980
Control variables		
Sector tangibility: tangible products [a]		
Sector tangibility: tangible services	.830	1.205
Sector tangibility: intangible services	.823	1.215
SME age: 0 to 5 years [a]		
SME age: 5 to 8 years	.552	1.811
SME age: more than 8 years	.531	1.882

Dependent variable: SME environmental practice adoption.

[a] Reference category.

Appendix 6: Ordinal logistic regression results models 3, 4 and 5

	Model 3		Model 4		Model 5	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Predictor variables						
SME size: micro[a]						
SME size: small	.289***	.081	.103*	.049	.105*	.049
SME size: medium	.575***	.097	.236***	.058	.234***	.058
SME recent financial performance: decreased[a]						
SME recent financial performance: remained unchanged	.202**	.065	.294**	.115	.183*	.073

SME recent financial performance: increased	.511***	.061	.726***	.106	.485***	.069
Environmental legislation complexity (ELC): no[a]						
Environmental legislation complexity (ELC): yes	1.249***	.069	1.254***	.114	1.033	.045
External support: no[a]						
External support: yes	.643***	.050	.641***	.050	.563	.130
Interaction variables						
SME size* ELC: no[a]						
SME size: micro: * ELC: yes[a]						
SME size: small * ELC: yes	-.291**	.100				
SME size: medium * ELC: yes	-.511***	.117				
SME recent financial performance * ELC: no[a]						
SME recent financial performance remained unchanged * ELC: no[a]						
SME recent financial performance decreased * ELC: yes[a]						
SME recent financial performance remained unchanged * ELC: yes			-.142	.139		
SME recent financial performance increased * ELC: yes			-.328*	.129		
SME recent FP: decreased * External support: yes[a]						
SME recent FP: remained unchanged * External support: yes					.072	.158
SME recent FP: increased * External support: yes					.101	.144
Controls						
Sector tangibility: intangible services[a]						
Sector tangibility: tangible services	.153*	.063	.159*	.063	.256	
Sector tangibility: tangible products	.480***	.063	.480***	.063	.480	
SME age: 0 to 5 years[a]						
SME age: 5 to 8 years	-.053	.102	-.051	.102	-.050	.102
SME age: > 8 years	.006	.077	.010	.076	.009	.076
N		9876		9876		
Pseudo (Nagelkerke) R^2		.140		.138		
Chi-square		1222.163***		1209.420***		

Parameter estimates and standard errors (between parentheses) are displayed

Ordinal dependent variable *SME environmental practice adoption*: (1) No investments (<1% of annual turnover); (2) Few investments (1% to 5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Significance values: *** p ≤ 0.001; ** p ≤ 0.01; * p ≤ 0.05 (two-sided)

[a] Reference category.

Appendix 7: Assumption of proportional odds Brant tests

Table A7.1: Proportional odds testing model 1

Model 1	Coefficients			Odds ratios		
	Ordinal	Binary		Ordinal	Binary	
		Few +	Substantial		Few +	Substantial
Controls						
Tangibility: intangible services[a]						
Tangibility: tangible services	.277	.280	.243	1.319	1.324	1.275
Tangibility: Tangible products	.663	.677	.580	1.883	1.967	1.786
SME age: 0 to 5 years[a]						
SME age: 5 to 8 years	-.056	-.070	.030	0.946	.933	1.030
SME age: > 8 years	.083	.104	-.035	1.087	1.110	.965

N = 9876

Ordinal logistic regression (Ordinal): ordinal dependent variable SME environmental practice adoption: (1) No investments (<1% of annual turnover); (2) Small investments (1-5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Binary logistic regressions (Binary): coefficients and odds ratios displayed for two thresholds: (1) Small investments and above; (2) Substantial investments.

Significance values: *** p ≤ 0.001; ** p ≤ 0.01; * p ≤ 0.05 (two-sided).

[a]Reference category

Table A7.2: Proportional odds testing model 2

Model 2	Coefficients			Odds ratios		
	Ordinal	Binary		Ordinal	Binary	
		Few +	Substantial		Few +	Substantial
Predictor variables						
SME size: micro[a]						
SME size: small	.105	.106	.070	1.111	1.112	.965
SME size: medium	.234	.304	-.036	1.264	1.356	1.073
SME recent FP: decreased[a]						
SME recent FP: unchanged	.209	.220	.083	1.232	1.246	1.087
SME recent FP: increased	.515	.535	.370	1.674	1.707	1.448
ELC: No[a]						

ELC: Yes	1.033	.1070	.784	2.809	2.915	2.191
External support: No[a]						
External support: Yes	.347	.692	.535	1.414	1.999	1.708
Controls						
Tangibility: intangible services [a]						
Tangibility: tangible services	.153	.157	.134	1.165	1.169	1.144
Tangibility: tangible products	.473	.490	.431	1.605	1.633	1.539
SME age: 0 to 5 years [a]						
SME age: 5 to 8 years	-.063	-.068	-.069	.939	.934	.933
SME age: > 8 years	.008	.025	.039	1.008	1.026	1.040

N = 9876

Ordinal logistic regression (Ordinal): ordinal dependent variable SME environmental practice adoption: (1) No investments (<1% of annual turnover); (2) Small investments (1-5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Binary logistic regressions (Binary): coefficients and odds ratios displayed for two thresholds: (1) Small investments and above; (2) Substantial investments.

Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided).

[a]Reference category

Table A7.3: Proportional odds testing model 3

Model 3	Coefficients			Odds ratios		
	Ordinal	Binary		Ordinal	Binary	
		Small +	Substantial		Small +	Substantial
Predictor variables						
SME size: micro[a]						
SME size: small	.289	.287	.161	1.335	1.333	1.175
SME size: medium	.575	.583	.256	1.777	1.792	1.291
SME recent FP: decreased[a]						
SME recent FP: unchanged	.202	.225	0.085	1.224	1.252	1.089
SME recent FP: increased	.511	.538	.371	1.667	1.713	1.450
ELC: No[a]						
ELC: Yes	1.249	1.268	.913	3.487	3.555	2.493
External support: No[a]						
External support: Yes	.643	.694	.535	1.902	2.001	1.708
Interaction variables						
SME size* ELC: no[a]						
SME size: micro: * ELC: yes[a]						

SME size: small * ELC: yes	-.291	-294	-.132	.748	.745	.876
SME size: medium * ELC: yes	-.511	-.439	-.394	.600	.645	.674
Controls						
Tangibility: intangible services [a]						
Tangibility: tangible services	.153	.154	.133	1.165	1.166	1.143
Tangibility: tangible products	.480	.490	.431	1.616	1.632	1.539
SME age: 0 to 5 years [a]						
SME age: 5 to 8 years	-.053	-.070	-.070	.948	.933	.932
SME age: > 8 years	.006	.023	.038	1.006	1.023	1.039

N = 9876

Ordinal logistic regression (Ordinal): ordinal dependent variable SME environmental practice adoption: (1) No investments (<1% of annual turnover); (2) Small investments (1-5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Binary logistic regressions (Binary): coefficients and odds ratios displayed for two thresholds: (1) Small investments and above; (2) Substantial investments.

Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided).

[a]Reference category

Table A7.4: Proportional odds testing model 4

Model 4	Coefficients			Odds ratios		
	Ordinal	Binary		Ordinal	Binary	
		Small +	Substantial		Small +	Substantial
Predictor variables						
SME size: micro[a]						
SME size: small	.103	.105	-.035	1,108	1.110	.966
SME size: medium	.236	.306	.069	1,266	1.358	1.071
SME recent FP: decreased[a]						
SME recent FP: unchanged	.294	.285	.310	1,342	1.330	1.364
SME recent FP: increased	.726	.711	.690	2,067	2.036	1.993
ELC: No[a]						
ELC: Yes	1.254	1.245	1.121	3,504	3.473	3.068
External support: No[a]						
External support: Yes	.641	.692	.536	1,898	1.999	1.709
Interaction variables						
SME size* ELC: no[a]						
SME size: micro: * ELC: yes[a]						
SME size: small * ELC: yes	-.142	-.097	-.306	0,868	.908	.736

SME size: medium * ELC: yes	-.328	-.273	-.434	0,720	.761	.648
Controls						
Tangibility: intangible services [a]						
Tangibility: tangible services	.159	.159	.137	1,172	1.173	1.147
Tangibility: tangible products	.480	.491	.431	1,616	1.634	1.538
SME age: 0 to 5 years [a]						
SME age: 5 to 8 years	-.051	-.070	-.068	0,950	.932	.934
SME age: > 8 years	.010	.026	.037	1,010	1.026	1.038

N = 9876

Ordinal logistic regression (Ordinal): ordinal dependent variable SME environmental practice adoption: (1) No investments (<1% of annual turnover); (2) Small investments (1-5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Binary logistic regressions (Binary): coefficients and odds ratios displayed for two thresholds: (1) Small investments and above; (2) Substantial investments.

Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided).

[a]Reference category

Table A7.5: Proportional odds testing model 5

Model 5	Coefficients			Odds ratios		
	Ordinal	Binary		Ordinal	Binary	
		Small +	Substantial		Small +	Substantial
Predictor variables						
SME size: micro[a]						
SME size: small	.105	.107	-.034	1.111	1.113	.967
SME size: medium	.234	.305	.075	1.264	1.356	1.078
SME recent FP: decreased[a]						
SME recent FP: unchanged	.183	.196	.062	1.201	1.216	1.064
SME recent FP: increased	.485	.512	.280	1.624	1.669	1.379
ELC: No[a]						
ELC: Yes	1.033	1.070	.786	2.809	2.916	2.194
External support: No[a]						
External support: Yes	.563	.594	.312	1.756	1.812	1.367
Interaction variables						
SME RFP * Ext. support: no[a]						
SME RFP: decreased: * Ext. support: yes[a]						

SME RFP: rem. unchanged * Ext. support: yes	.072	.120	.102	1.075	1.128	1.108
SME RFP: increased * Ext. support: yes	.101	.113	.321	1.106	1.120	1.379
Controls						
Tangibility: intangible services [a]						
Tangibility: tangible services	.256	.157	.134	1.292	1.170	1.143
Tangibility: tangible products	.480	.491	.431	1.616	1.634	1.539
SME age: 0 to 5 years [a]						
SME age: 5 to 8 years	-.050	-.068	-.072	0.951	.934	.930
SME age: > 8 years	.009	.025	.037	1.009	1.026	1.038

N = 9876

Ordinal logistic regression (Ordinal): ordinal dependent variable SME environmental practice adoption: (1) No investments (<1% of annual turnover); (2) Small investments (1-5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Binary logistic regressions (Binary): coefficients and odds ratios displayed for two thresholds: (1) Small investments and above; (2) Substantial investments.

Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided).

[a]Reference category

Table A7.6: Proportional odds testing model 6

Model 6	Coefficients			Odds ratios		
	Ordinal	Binary		Ordinal	Binary	
		Small +	Substantial		Small +	Substantial
Predictor variables						
SME size: micro[a]						
SME size: small	.271	.272	.138	1.311	1.313	1.148
SME size: medium	.553	.565	.220	1.738	1.760	1.247
SME RFP: decreased[a]						
SME RFP: unchanged	.277	.263	.290	1.319	1.301	1.336
SME RFP: increased	.665	.657	.600	1.944	1.929	1.823
ELC: No[a]						
ELC: Yes	1.424	1.403	1.243	4.154	4.069	3.467
External support: No[a]						
External support: Yes	.536	.578	.254	1.709	1.783	1.290
Interaction variables						
SME size* ELC: no[a]						

SME size: micro: * ELC: yes[a]						
SME size: small * ELC: yes	-.262	-.095	-.093	.770	.909	.911
SME size: medium * ELC: yes	-.474	-.229	-.339	.622	.795	.712
SME RFP * ELC: no[a]						
SME RFP decreased * ELC: yes[a]						
SME RFP * ELC remained unchanged: yes	-.138	-.268	-.321	.871	.765	.726
SME RFP increased * ELC: yes	-0.281	-.407	-.459	.755	.666	.632
SME RFP * External support: no[a]						
SME RFP: decreased * External support: yes[a]						
SME recent FP: remained unchanged * External support: yes	.088	.153	.290	1.091	1.166	1.336
SME recent FP: increased * External support: yes	.143	.395	.600	1.154	1.484	1.823
Controls						
Tangibility: intangible services [a]						
Tangibility: tangible services	.156	.156	.136	1.169	1.169	1.146
Tangibility: tangible products	.481	.491	.431	1.618	1.634	1.538
SME age: 0 to 5 years [a]						
SME age: 5 to 8 years	-.056	-.071	-.073	.946	.931	.929
SME age: > 8 years	.006	.023	.033	1.006	1.023	1.034

N = 9876

Ordinal logistic regression (Ordinal): ordinal dependent variable SME environmental practice adoption: (1) No investments (<1% of annual turnover); (2) Small investments (1-5% of annual turnover); (3) Substantial investments (>5% of annual turnover).

Binary logistic regressions (Binary): coefficients and odds ratios displayed for two thresholds: (1) Small investments and above; (2) Substantial investments.

Significance values: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$ (two-sided).

[a]Reference category