



Bridging the gap between sustainable HRM & firm performance

Title Page

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Abstract

Adopting a sustainability approach in human resource management has become an imperative for companies. To facilitate managers in what practices they should incorporate for achieving sustainability, Diaz-Carrion et al. (2018) have identified 98 practices that would foster sustainability in the field of HRM. Out of the 98 sustainable HRM practices identified by Diaz-Carrion et al. (2018), the database with ESG indicators as provided by the Thomson Reuters Eikon database measured 14. Of these 14 variables selected from the database, only some were a close match to the definitions as provided by the theory (Diaz-Carrion et al., 2018) while others were only loosely aligned but were included in the study, as they did fall clearly within the definition of the overarching categories, even if they did not align with an individual sustainable HRM practices. The data revealed issues, mainly with regard to missing data, the level of measurement and some data errors, implicating that the currently available data is not sufficient for measuring the components of sustainable HRM. Nevertheless, the research contributes to the academic field of sustainable HRM by highlighting pitfalls of quantifying sustainable HRM. The research provides practical advice to include businesses and organisations in the debate about sustainable HRM. Consequently, recommendations are made to follow the steps of the Global Reporting Initiative such that revealed issues (e.g. reporting bias, signaling, poor quality of measurement levels) are prevented.

Key words: Sustainable HRM practices; ESG indicators; firm performance; Generalised Linear Modelling

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1. Introduction

Over the past years, companies have been devoting substantial resources to various social initiatives, ranging from community outreach and environmental protection, to socially responsible business practices. The reason for businesses to involve themselves with corporate social responsibility (CSR) activities is not that they have become altruistic, but companies recognize competitive advantages in adopting these activities (Eccles, Ioannou & Serafeim, 2014; Malik, 2015; Orlitzky, Schmidt, & Rynes, 2003). Although the direct financial benefits have not been conclusive in all studies (Blomgren, 2011), companies not actively coping with CSR practices have been criticized by society (Cho, Chung, & Young, 2019). Therefore, companies have started to report on their activities according to CSR standards. To guide this, the International Integrated Reporting Council (IIRC) presented an integrated reporting system with the objective to merge financial reports and (non-financial) reports on environmental, social and corporate governance (ESG) performance (IIRC, 2013). Still, to develop and implement CSR strategies, considerable changes have to be made in an organization to align existing strategies, policies and practices (Russell, Haigh & Griffiths, 2007; Sarvaiya, Eweje & Arrowsmith, 2016).

Some research reports indicate that the human resource management (HRM) department is effective at facilitating the strategic shift of companies to focus on CSR (Voegtlin & Greenwood, 2016; Westerman, Rao, Vanka & Gupta, 2020). There have been substantial developments around the role of the HRM department within organisations. Some researchers are emphasizing the role of HRM and the achievements of organizational outcomes and performances resulting in the so-called strategic human resource management (SHRM) (Richard & Johnson 2001). A more recent approach emphasizes on the role of HRM in not only financial but also in human and social outcomes, and therefore, includes the impact of a firm on groups of people (Poelmans, Chinchilla, & Cardona, 2003). In addition, researchers acknowledge the impact of HRM on environmental and ecological outcomes as well (Avery, 2005; Dunphy, Griffiths and Benn, 2007). The emergence of this new approach has been labelled as sustainable human resource management (sustainable HRM) and has been conceptualized worldwide in a variety of ways (Wilkinson, Hill and Gollan, 2001; Mariappanadar, 2003; 2012; Ehnert, 2006, 2009, 2014, Kramar, 2014).

The term sustainable HRM is relatively new and the field is still expanding. This explains the lack of an established definition for the concept. In her work on sustainable HRM, Ehnert (2009) defines it as *'The pattern of planned or emerging human resource strategies and practices intended to enable organizational goal achievement while simultaneously reproducing the HR base'* (p. 74). Furthermore, Kramar (2014, p.1084) portrays sustainable HRM as *'the pattern of planned or emerging HR strategies and practices intended to enable the achievement of financial, social and ecological goals while simultaneously reproducing the HR base over a long term.'* The researchers have a shared view that sustainable HRM is concerned with acknowledging either explicitly or implicitly human and social outcomes of the organisation (Ehnert, Harry, & Zink, 2014; Kramar, 2014; Mariappanadar, 2003). Besides, researchers recognize that HR practices impact the viability of an organisation in the long run, not only financially, but also improve the quality of life in society in general (Avery, 2005; Benn, Dunphy, & Griffiths, 2006; Ehnert et al., 2014; Mariappanadar, 2003).

The shift of strategic HRM towards sustainable HRM is providing directions on how companies should become more sustainable in terms of managing their employees. To this end, Diaz-Carrion et al. (2018) as well as other researchers have developed a conceptual model of sustainable HRM in alignment with CSR theory (De Prins et al., 2014; Ehnert & Harry, 2012). To create a better understanding of whether

these practices are also effective and efficient many researchers have conducted research at employee level by measuring indicators such as, job satisfaction, employee turnover, employee performance (Davidescu, Apostu, Paul, & Casuneanu, 2020; Guest, 2017; Manzoor, Wei, Bányai, Nurunnabi, & Subhan, 2019). Other studies focus on organisations at country level and compared the adaptation of sustainable HRM practices with organisational outcomes such as employer brand and increased productivity (Almarzooqi, Khan, & Khalid, 2019; App & Büttgen, 2016; Parakandi & Behery, 2016).

Nevertheless, the research on sustainable HRM is still at the pioneering if not emerging phase, leading to contradictory views on how sustainable HRM can be constructively used with regard to HRM practices (De Prins et al., 2014). Diaz-Carrion, López-Fernández, & Romero-Fernandez (2018) contributed to the field of sustainable HRM by operationalizing sustainable HRM into managerial concepts on an international level. However, it remains unclear whether companies are making this transition from traditional HRM to sustainable HRM and whether there are benefits detectable at large scale to be able to answer the question how sustainable HRM is addressing the current challenges of this era and leading towards the resilience of organisations regarding managing their employees.

To understand the incorporation of sustainable HRM practices within firms on an international level preferably a longitudinal study should be executed. Gathering data of a large number of multinational firms is very resourceful and time consuming (Caruana, Roman, Hernández-Sánchez, & Solli, 2015). However, this might not even be necessary. Companies are becoming more transparent and report on activities beyond the ones required by legislation (Torugsa, O'Donohue, & Hecker, 2012). This information is gathered in large databases accessible for researchers and universities such as the Thomson Reuters Eikon database. Investigating these datasets and comparing this with the definitions of sustainable HRM as defined in literature could therefore give an indication to what extent organisations are incorporating sustainable HRM.

The aim of this research is twofold. First it aims to bridge the gap of theoretical focus of the role of sustainable HRM by using the theoretical operationalisation of sustainable HRM and link this to empirical measurements available in the Thomson Reuters Eikon database. This leads to a better understanding on how sustainable HRM can be measured with available ESG indicators. Furthermore, this research is investigating whether a relationship can be established between sustainable HRM practices and firm performance. These issues are addressed in the following research question: *'To what extent can datasets be used to gain insights in how sustainable HRM practices are currently incorporated by companies and can a relationship between sustainable HRM and firm performance be established?'*

To answer this question, a mix methods research has been conducted by first aligning the sustainable HRM practices with the ESG indicators as measured in the Thomson Reuters Eikon database. Secondly, the quality of the data is investigated which is followed by a quantitative analysis to establish the relationship between sustainable HRM practices and firm performance.

1.2 Research outline

The purpose of this research is to align sustainable HRM practices with available data. In this way, the research contributes to the growing literature on sustainable HRM and provides researchers with an overview on where to find the data they would need for investigating sustainable HRM and in what ways it could be used. To structure this research, three sub-questions have been constructed. The first question is focussing on the content of the sustainable HRM practices and linking this to ESG indicators with the following question *‘To what extent can the existing data be aligned with the sustainable HRM practices?’*. The second question builds upon the first question by investigating the quality of the data with the following question: *‘What is the quality of the ESG data provided by companies related to sustainable HRM practices?’*. The last question is focusing on establishing whether a relationship can be observed with the following question: *‘Can a relationship between sustainable HRM practices and firm performance be observed?’*.

The following section provides a review about sustainable HRM, tracing its historical roots, clarifying the conceptual elements, and highlighting the theoretical importance for the field. This review is needed to create an understanding of the concept and to be able to align this with available ESG indicators. Secondly, the research design and used methods and models are discussed. Thirdly, results and implications of the research are outlined followed by a discussion and limitations of the study. These all lead to recommendations for future research.

2. Defining Sustainable HRM Practices

This section is outlining the development of sustainable HRM and describing the characteristics of sustainable HRM. By describing the development of sustainable HRM, a compact background on the multitude of studies is given providing an overview of the extensive research which has already been carried out. From an analysis of these studies, several categories which are frequently mentioned in relation to sustainable HRM are identified. The second half of this section focuses on the categories of sustainable HRM and provides a more detailed description on the content of these categories. This study uses the content analyses of the categories from sustainable HRM to compare this with the ESG indicators of the Thomson Reuter Eikon database.

2.1 The journey of sustainable HRM

Since 1987, the year of the publication of the United Nations's World Commission on Environmental Development report, companies worldwide have been actively incorporating sustainability into their strategies (WCED, 1987). The desire of society that companies should become more sustainable has also influenced the field of human resource management. Companies need HRM to support their results in economics, social and environmental performance. This process started with the perspective called strategic HRM (SHRM) which considers the role of the HR department as the basis for organizational sustainability through the integration of HR practices in order to achieve strategic objectives (Freitas, Jabbour, & Santos, 2011). The early definitions of SHRM frequently involve high-performance human resource practice influencing employee's ability, motivation and opportunity by creating conditions of high involvement and participation ultimately leading to increased firm performance (Mitchell, Obeidat, & Bray, 2013). Kramar (2014) elaborates this view by presenting the impact of HRM on more than just organisational economic performance and is arguing that the moral dimensions of HRM policies should also be considered when talking about sustainable HRM.

To follow up on this, De Prins, Van Beirendonck, De Vos and Segers (2014) presented a model based on three characteristics that can be assigned to Elkington's (1994) three Ps of sustainability (people, planet, profit) and used the ROC model (respect, openness, continuity). These researchers characterised sustainable HRM with the following characteristics: respect- restoring respect and consideration for the internal stakeholders in the organization; openness- environmental awareness and HRM perspective from the outside; and continuity – a long-term approach to economic and social aspects and with regard to employability of the individual. The perspective which incorporates HRM strategies and practices that achieve financial, social and ecological goals with an impact within the organisation for the long-term is now viewed as a logical extension of strategic HRM (Ehnert & Harry, 2012b; Kramar, 2014; Mariappanadar, 2003).

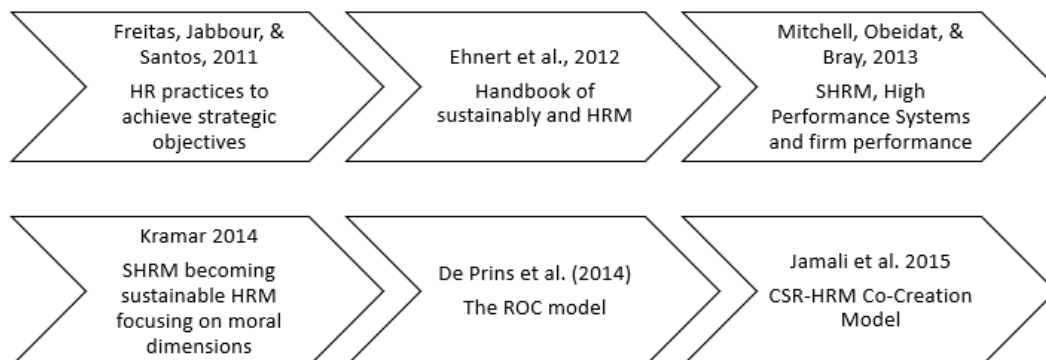


Figure 1: graphical display of the highlights the sustainable HRM journey

The number of publications in the field of sustainable HRM is still growing, and scholars have been dedicating their time in defining the characteristics of sustainable HRM (Stankevičiūtė & Savanevičienė, 2018; Wikhamn, 2019). Zaugg (2001) has already explicitly incorporated characteristics as sustainable HRM practices which are: flexibility, employee participation, value orientation, strategy orientation, competency and knowledge orientation, stakeholder orientation, and building mutually trustful employee-employer relationships. More recently, Järlström (2016) introduced four dimensions as sustainable HRM characteristics, namely justice and equality, transparent human resource practices, profitability and employee well-being. However, translating this wide variety of characteristics of sustainable HRM into managerial practices for the HR department remains challenging (Jamali et al., 2015). In their study, Diaz-Carrion et al. (2018) have developed a system of specific policies and practices of sustainable HRM and determined a measurement scale of it (Diaz-Carrion et al., 2018). Drawing on the research of Diaz-Carrion et al. (2018) linking sustainable HRM and following the essence of corporate sustainability reports, this paper uses their six overarching categories of sustainable HRM, namely: work-family balance and diversity promotion, safety, compensation, training, staffing, and performance evaluation and career management (Diaz-Carrion et al., 2018). As is mentioned before, there is a plurality of competing approaches explaining sustainable HRM practices. Gladwin, Kennelly, & Krause (1995) treat such definitional diversity as a matter-of-course thing. This research is sharing the opinion and is attempting to define clear lines around each characteristic of sustainable HRM in light of the paper by Diaz-Carrion-et al.(2018).

2.2 The characteristics of sustainable HRM

Diaz-Carrion applied a contextual approach to sustainable HRM to establish the criteria for the implementation of a human resource management system that contributes to the corporate social responsibility (CSR) of a company. Subsequently, Diaz-Carrion et al. (2018) analysed sustainability reports of 194 companies quoted on the main stock exchange of Germany, Spain, Sweden and the United Kingdom. Besides, the researchers have conducted a Delphi study among academic experts in the field of sustainable HRM. Researches showed that there are policies in the area of HRM that have strong CSR content, including those related to occupational safety and health, employment, labour relations, training and development, diversity, equal opportunities, remuneration, communication, transparency, work-life balance, wellbeing, staff involvement (Ehnert & Harry, 2012b). In their study, Diaz-Carrion et al. (2018) measured these HRM practices by also considering the external context of the firm since this determines a large extent of the implementation of sustainable HRM practices (Gallego-Álvarez & Quina-Custodio, 2017).

Diaz-Carrion et al. (2018) asked the panel of experts to rank all these practices on a scale of 1-10. In total 98 practices were evaluated on the adequacy for an organization to achieve their sustainability targets. This resulted in 10 HRM practices which are viewed by the panellists as 'sustainable HRM practices' and can be categorized into three overarching categories: work-life and diversity promotion, safety and compensation (see appendix 1). Still, the other 88 practices have also been classified as sustainable HRM practices and can be summarized into three more overarching categories: training, staffing, and performance evaluation and career management. Since all practices have been classified as sustainable HRM practices, they are all taken into account. Looking more closely at the 98 practices, they have been found to be very specific whereas research has been conducted to identify the core of the six categories. Therefore, the next step in this research is to clarify on the configuration of the sustainable HRM practices and find academic consensus regarding the contents of these policies. By

researching the categories individually the different layers within the categories are outlined (see table 1).

2.2.1. Work-life and diversity promotion

The work-life balance has become increasingly important to the HR department in retaining and motivating the best professionals within their organizations (Barrena-Martínez, López-Fernández, & Romero-Fernández, 2019). Accordingly, organizations are increasingly concerned with facilitating a proper balance between employee's work and family life and they have included this into their HRM practices (Maxwell, 2005). For these practices it is important to consider the flexibility an employee receives for changes in working hours and shifts depending on family needs. Fagan and Press (2008) have investigated that HR policies which enable employees who have flexible shifts tailored to their family needs deliver better performance.

Next to HR practices which facilitate a flexible working shift, employees should also be provided with licences for flexible regulations to take care of disabled children or support their parents and periods of paternity/maternity leave. Although these issues are often legally embedded in a multitude of countries, a positive attitude by the companies granting these permits and extensions helps employees perceive a company's commitment and concern regarding the care and maintenance of their human capital, which positively impacts their motivation and performance (Barrena-Martínez et al., 2019). Another aspect related to work-life balance are the practices of a company facilitating employees to stay together when transferring to other subsidiaries without having to experience a negative influence on their remunerations. This facilitation can be perceived as an extra effort the company makes to facilitate the family needs and can lead to a sense of belonging to the firm and positively influences their performance (Milkie, Kendig, Nomaguchi, & Denny, 2010).

Organizations place considerable emphasis on facilitating diversity and encouraging equality, assuming that, if properly embraced, diversity and equality management can lead to improved firm performance (Jackson, Joshi, & Erhardt, 2003). Other researchers have confirmed the positive influence of a diverse workforce on firm performance since it improves variables such as the degree of commitment, creativity, involvement or motivation among employees (Barrena-Martínez et al., 2019). Mismanagement of diversity can undermine employee social integration and effectiveness and can lead to lower group performance (Guillaume et al., 2014; van Knippenberg & Sitkin, 2013). Managing for diversity implies managing for all differences, whether they are based on race, ethnicity, gender, education, or function.

Nowadays, the diversity in the workplace is increasing even more due to a higher retirement age leading to higher heterogeneity and average age in the workplace (Rabl & Triana, 2014). Besides, firms have also focused on diversifying their workforce with respect to educational background to retain a larger pool of information resources (Chubin, May, & Babco, 2005). Therefore, organisations should support all different groups of employees in their needs such that they can succeed at work (Pitts, 2009). Considering all of the above, sustainable HRM practices in terms of diversity management include all practices which are focused on policies of the firm which ensures fairness and non-discrimination on grounds of race, sex, religion, creed, national origin, age or disability. Besides having the diversity measures in place is important for employees to be aware of these potential benefits. Hence, the communication of these regulations and the availability of information on the diversity policies/practices is important to take into account. When employees are aware of the social value of these practices within the organization, they are assumed to be more committed with the organization

in the long term thanks to a system of work able to procedure benefits from widespread cultures and different values. Therefore, when looking into diversity HRM practices, the communication about these practices should also be considered (Lee Cooke & Saini, 2012).

Next to focusing on increasing the diversity in the workforce, equal remuneration and presence in governance bodies is considered to be important as well (GRI, 2016). From a literature perspective, the socially responsible policies such as equal presence of female workers and the equal remuneration are the responsibility of the HRM department (Barrena-Martínez et al., 2019; Jamali, Dirani, & Harwood, 2015). Hence, when defining the diversity of the workplace in terms of equal remuneration the practices should be directed at offering equal remuneration and social benefits for all employees promoting a harmonious working environment (Cole, Bruch, & Vogel, 2006). The focus is on the practices which focus on granting remuneration based on the skills and performance of employees. Linking remuneration directly to performance increases the satisfaction and the sense of fulfilment in employees due to their appreciation of their efforts being fairly rewarded (Barrena-Martínez et al., 2019). The increased equality and justice in the system of remuneration of a company should lead to gradual increase in employee commitment regarding the organization which is in turn related to a better firm performance (Farndale, Hope-Hailey, & Kelliher, 2011).

2.2.2 Occupational Health and Safety

Occupational safety has been important to workers, companies and the society as a whole. Occupational accidents and diseases can have a major impact on productivity, competitiveness and reputation of the enterprises. This in turn can negatively impact job satisfaction, cause stress and lower production (Vandyck, 2015). For this reason, occupational health and safety at work is a growing concern in HRM. Companies are legally required to safeguard and ensure the occupational health of their employees by the implementation of Occupational Health and Safety (OHS) measurements (OSHA, n.d.). These safety measures are designed such that the performance of employees are improved by reducing the likelihood of injury, illness, absence, and other adverse outcomes (Grant, Christianson, & Price, 2007). Researchers argue, however, that it is necessary for companies to make an extra effort in promoting prevention and development measures of safety laws among employees (Cooke & He, 2010). Waring and Edwards (2008) show in their study that direct investments in health and safety trainings can increase the performance and satisfaction of employees who then perform their tasks with greater confidence and motivation.

In addition to the health and safety trainings, (new) employees should be made aware of the trainings and new developments with regard to health and safety (Iamandi, 2011). Therefore, the health and safety trainings should be monitored and controlled by the company on a regular basis. HRM practices which focus on the monitoring of these practices should be taken into account to ensure that the knowledge is distributed on a regular basis within the company. The last aspect of Health and Safety measures is directed at verifying whether health and safety are accredited through standards and certifications. Specific standards which are widely acknowledged are ISO 9001 and ISO 14001 which are previously known as OHS 18001 (NQA, n.d.). The scope of this study is focussing on the companies itself and is therefore not taking into consideration the health and safety measurements within the value chain since the HRM department does not have an influence on these other organizations and solely on their own organization. Lastly, researchers are increasingly concerned with healthy work environments which relate to aspects which go beyond the legal requirements. Therefore practices which are focused at minimizing risks such as absenteeism, stress and diseases which may affect the well-being of the employees and their families are also taken into account (Størseth, 2006).

2.2.3 Compensation

For many years, the trend has been that the lowest earning workers salaries decreased, while the compensation for the top managers increased greatly (Feenstra & Hanson, 1996; Juhn, Murphy, & Pierce, 1993; Mishel, Bernstein, & Schmitt, 1996). Some corporate governance structures have even allowed executives to receive extremely large pay packages in the form of stock options whereas investors suffered losses (Fox, 2002). Besides the issue of fairness towards the employees, there is also a concern that large disparities in pay may contribute to a variety of internal problems, such as discouraging cooperation and trust among workers (Cohen & Prusak, 2001). Even more, excessive payments for managers can decrease the responsibilities a manager experiences towards the stakeholders (Quinn, 2002; Sloan, 2003). Although these practices have been largely criticized, only a few companies have tried to decrease the large income disparities (Shin, 2008; Siegel & Hambrick, 2005).

The increasing awareness of income disparities has been picked up by some companies which are now proceeding in a more progressive way of allocating income (Morgenson, 2005). Researchers have argued that HRM has the capabilities and the expertise to design a pay system that rewards and recognizes both economic and social performance. In this way, employees can be rewarded for both their performance and for their participation in social volunteering activities (Ozlicky, 2006; Jamali et al. 2015). These interventions, which are part of the HRM domain, can ensure the alignment of incentives and processes with the pursued CSR goals.

2.2.4 Training

The overarching category training is addressing the sustainable HRM practice which is focused on employee development not only on current skills and capabilities, but rather on skill sets and capacities the employees will need in the future. From a sustainable HRM point of view, skilled employees are considered to be the company's main asset and the agents of change within an organisation (Hirsig, Rogovsky, & Elkin, 2014). Therefore, companies with a sustainable perspective are integrating human resource development in their business strategy. This includes investing in the training of workers and managers, promoting a culture of lifelong learning and innovation, and encouraging workplace learning and sharing knowledge (Hirsig et al., 2014). Educating employees in a broader perspective and not only in their critical job task is also in line with the foresights of the World Economic Forum (2029) which announced in The Future of Jobs report that by 2025, 44% of the skills that employees will need to perform their roles effectively will change (WEF, 2020 p.8). On the one hand, the development of employee skills is beneficial for employees since it also affects their future employability and career opportunities. On the other hand, the development of employees also results in higher productivity and therefore also creates benefits for the companies resulting in a win-win effect. Accordingly, cutting trainings and development even during economic crises creates longer-term problems for both the employees and the employers (Harry, 2014). Therefore, the sustainable HRM practice in this area is creating a work environment that encourages continuous learning for employees and providing these trainings accordingly (Schmidt & Wisberg, 2008; Tracy & Flinchbaugh, 2006).

Next to developing a policy and environment for encouraging employees to develop and upskill themselves, different learning methods to achieve their goals should be offered (Almond & Curie, 2011). For this companies should actively support their employees by providing different training methods to their needs in terms of contact and non-contact combining different methodologies. Learning takes place in different ways and can be facilitated in different ways. E.g. classroom trainings allows a closer participation and exchange of ideas between employees and their trainer, obtaining as

a result an efficient assimilation of concepts through tools such as the lecture, role-playing (practising the knowledge acquired in stimulating environments), debates and case studies, while distance learning promotes a larger adaptability of employees to different time constraints (Lazazzara & Bombelli, 2011).

2.2.5 Staffing

Employees are considered as one of the main internal stakeholders in the design and implementation of any organizational strategy. The outcomes of sustainable HRM within organisations with respect to staffing are that employees receive job-related support from their organisation. This implies support in the sense of internal promotion, active involvement with relocation of employees and after retirement possibilities. These activities will generate a reciprocal effect and are expected to have a positive effect on performance outcomes (Alfes, Truss, Soane, Rees, & Gatenby, 2013; Cropanzano & Mitchell, 2005). This effect has also been studied and explained within the framework of social exchange theory. The social exchange theory argues that organizational HRM practices send implicit signals to employees about the extent to which they are valued and trusted, giving rise to feelings of obligation on the part of employees, who then reciprocate through high levels of performance (Allen, Shore, & Griffeth, 2003; Gould-Williams, 2007; Purcell & Hutchinson, 2007). Sustainable HRM practices with respect to staffing are also viewed as a necessity by the employees. Nowadays companies are employing higher educated employees compared to the past. These employees do not only expect to be paid more, they also expect fair treatment and respect and the opportunity to engage in business activities such as decision making. Consequently, companies must implement practices such as support by relocation and internal promotion for employees without compromising on their strategic goals (Ybema, Vuuren, & Dam, 2020).

2.2.6 Performance evaluation and career management

Companies are carrying out activities which sustain their employees' career development by helping them obtain promotions and assist their transition into leadership positions (Vinkenburg & Weber, 2012). The notion of sustainable careers has recently gained attention as a key perspective on contemporary careers and is assumed to be critical for the resilience of individuals in an increasingly complex and unpredictable career environment. There are several challenges to the current careers of individuals to distinguish. Firstly, careers have become longer and less predictable since employees tend to switch more often between employers than they used to. Secondly, there is an increasing pressure on the individual to manage their own career (Tomlinson, Baird, Berg, & Cooper, 2018). Lastly, the meaning of the career has now been defined by the employee itself rather than adopting a socially shared view on the impact of a career (Ng, Eby, Sorensen, & Feldman, 2005). Moreover, actively managing the employees' careers is also a concern for the HR department since feeding the 'talent pipeline' is among the most important challenges for organisations (Clarke, 2013; Vos & Cambré, 2017).

Taking into consideration the dynamic context in which contemporary careers are shaped, sustainable careers should not be considered as a static outcome of career ambitions, preferences, affinities, abilities and decisions, nor should it be an indicator of career success. The individual choices together with the organisational and labour market context generate new opportunities over time for suitable employment which requires flexibility, renewal and balance (Newman, 2011). Building on the notion of sustainable careers it implies that employees and their careers are protected and supported rather than depleted by the organisation. Building upon the notion of sustainable careers, there is a rising need for evaluation methods for the performance of employees. Heslin, Keating and Ashford (2020)

propose that employees being in a learning mode cultivate their career sustainability. Although there are many researches on self-directed learning, experiential leadership development and growth mindsets, this research is focusing on HRM practices fostering this learning mode (Bjork, Dunlosky, & Kornell, 2013; Heslin & Keating, 2017; Heslin, Keating, & Minbashian, 2019). Currently incorporated practices are the application of 360 degrees feedback and providing personalized career paths for employees (Azwir & Sadanti, 2016).

2.3 Conclusion

The development and the characteristics of sustainable HRM have been outlined to address the scarcity of knowledge on how to make the concept of sustainable HRM more explicit and distinguish it from others. For this the six categories as identified by Diaz-Carrion et al. (2018) have been used as a guideline. Diaz-Carrion et al. (2018) have identified a substantial amount of sustainable HRM practices which have also been compared with other researches in the field of sustainable HRM. Through literature review, a holistic perspective has been given to get a better understanding of widely discussed sub-categories within the categories which are summarized in table 1.

Table 1: Literature overview on the six categories of sustainable HRM practices

	Categories of Sustainable Practices		Sub-categories
A	Work-life and diversity promotion	1	Flexibility in working hours (Fagan & Press, 2008).
		2	Licences for flexible regulation to take care of disabled children or support their parents (Barrena-Martinez et al., 2019).
		3	Efforts of the company to keep the employee's family together when transferring to another subsidiary (Milkie et al., 2010).
		4	Diversity management include all practices which are focused on policies of the firm which ensures fairness and non-discrimination on grounds of race, sex, religion, creed, national origin, age or disability (Pitts, 2009).
		5	Awareness of the diversity policies (Lee Cooke & Saini, 2012).
		6	Equal remuneration and presence in governance bodies (GRI, 2016)
B	Occupational Health and safety	1	Efforts beyond requirements by law in promoting a safe working environment (Cooke & He, 2010).
		2	Providing health and safety training (Waring & Edwards, 2008)
		3	Monitoring the health and safety training (Iamandi, 2011).
		4	Practices which are focused at minimizing risks such as stress and diseases for employees (Storseth, 2006)
C	Compensation	1	Implementation of a reward system that recognizes both economic and social performance (Ozlicky, 2006)
D	Training	1	Educating employees in a broad perspective and not only in their critical job tasks (Hirsig, Rogovsky, & Elkin, 2014).
		2	Creating a work environment that encourages continuous learning (Schmidt & Wrisberg, 2008)
		3	Providing multiple training methods (e.g. classroom training, exchange of ideas, lectures etc) (Lazazzara & Bombelli, 2011).
E	Staffing	1	Internal promotion, active involvement with relocation of employees and after retirement possibilities (Alfes et al., 2013).
F	Performance evaluation and career management	1	The careers of the employees are supported by organisations through a clear evaluation of performance (De Vos & Van der Heijden, 2017)
		2	Implementation of 360-degree performance evaluation system (Azwir & Sadanti, 2016).
		3	Employees are given the opportunity to make career switches (De Vos & Van der Heijden, 2017)

3. Methodology

This section is subdivided into two parts. The first part is elaborating on the selection of a suitable and reliable database and on the procedure of linking sustainable HRM practices to ESG indicators. The second part is describing the measurement method including the data analysis procedure. The selected ESG indicators from Thomson Reuters Eikon database are discussed. Lastly, the model capturing the relationship between sustainable HRM practices and firm performance is proposed.

3.1 Linking sustainable HRM practices to ESG indicators

Although the field of sustainable HRM is still evolving, researchers are slowly converging on overarching categories which are describing sustainable HRM practices. The interest in sustainable HRM does not only come from the academic field, but organizations have become more aware of their impact on their environment socially and ecologically. This has led to an increase in the reporting on their practices according to GRI standards and an increase in data availability. This research is adopting a qualitative research design in order to align the available data and the identified sustainable HRM practices. For this, a textual analysis of the sustainable HRM practices has been carried out to understand the concepts enabling the alignment with existing datasets. By aligning multiple datasets with the guideline of sustainable HRM practices as identified by Diaz-Carrion et al. (2018) it delivers insights to what extent the existing data can be used to measure sustainable HRM practices.

3.1.1 Dataset selection

For selecting the dataset for this study a number of features have been taken into account. First of all the data need to be collected from official reports such as; sustainability reports, integrated reports, status reports and annual reports. To ensure high quality analysis, indicators must have been investigated by an external committee (consisting of ESG and SDG experts). Moreover, since this research is investigating HRM data, the dataset has to include data in the area workforce. Another important aspect of the dataset is the accessibility for researchers. Although there is a multitude of datasets available online, most of the datasets are limited in their content on ESG data or are expensive to access. The most commonly used databases for studying ESG indicators are: Thomson Reuters Eikon database, MSCI, and KLD. There are more organisations procuring certifications ESG assessments, however, one should be cautious in using these since some indicators are less well specified and measured (Veenstra & Ellemers, 2020). Therefore, this study focused on a dataset which is commonly used by research institutes and universities increasing transparency and opportunities for repeated research. Taking all these features into account the Thomson Reuters Eikon database has been selected as being eligible for the study.

Database	Cited by researchers	Sources	Variables on workforce
Thomson Reuters Eikon	>7000	Sustainability reports	69

Table 2: Characteristics of potential databases

3.1.2 Matching procedure

This study used the article of Diaz-Carrion et al. (2018) as a basis to define the components of sustainable HRM. Diaz-Carrion et al. (2018) emphasized in their study on 10 practices particularly, however, comparing these practices to other research the question was raised whether only these ten practices should be included to define the components of sustainable HRM (Lopez-Cabrales & Valle-Cabrera, 2020). To have a holistic view on sustainable HRM, this study also searched for multiple keywords such as: 'components of sustainable HRM', 'sustainable HRM practices/strategies' or 'human resource' and 'firm performance'. From this research, broader definitions of the components of sustainable HRM have been provided such that the full dimension of sustainable HRM could be captured (see table 1 in 2.3). These broader definitions have been linked to the 98 sustainable HRM practices as identified by Diaz-Carrion et al. (2018) such that when comparing to the available ESG indicators within the Thomson Reuters Eikon database, the context is understood and the ESG indicators have been evaluated in light of the context definitions.

The matching procedure has been carried out as follows. First of all, only the indicators which have been labelled as ESG workforce data have been taken into account guaranteeing that the data is indeed focusing on the concept of CSR in relation to the workforce of the company. Secondly, the ESG indicators have been analysed on their content and placed within one of the six categories: work-life and diversity promotion, occupational health and safety, compensation, training, staffing and performance evaluation and career management. ESG indicators which could directly be linked to a category of sustainable HRM were marked 'green', the ones which were not clearly aligned were marked 'orange' and the ones not suitable for alignment were marked 'red'. Thirdly, the specific practices formulated by Diaz-Carrion et al. (2018) have been added to the categories and the content of the green marked ESG indicators has been re-analysed with regards to these specific practices. Consequently, a first order alignment has been made for ESG indicators that represent the content of the sustainable HRM practices perfectly, and a second order alignment has been made for ESG indicators that did not align perfectly but did say something about the category. This process has been repeated for the orange marked ESG indicators as well. Moreover, the measurement level of the ESG indicators has been noted which is important for the construction of the model. An overview of this procedure can be found in appendix 2. Lastly, it is important to verify whether the data is actually available within the dataset. Since the Thomson Reuters Eikon database team is looking at a multitude of ESG indicators, this does not automatically imply that companies are reporting to these standards. Therefore the data has been subtracted and checked on their missing values.

3.2 Analysis of the case selection

3.2.1 Data collection

The sample includes the data from firms which are listed worldwide. This is in line with researchers asking for the operationalization of sustainable HRM on international level and not only on national level (Diaz-Carrion et al., 2018; Ehnert, Parsa, Roper, Wagner, & Muller-Camen, 2016). Data on corporate governance and sustainability reporting have been hand-collected from sustainability reports, integrated reports, status reports and annual reports by the Thomson Reuters Eikon office. The ESG data are obtained from the Thomson Reuters Eikon database under the category ESG – Asset4 for the business years from 2015 till 2019 to allow for the impact of these sustainable HRM practices on firm performance. After taking out all the firms for which no ESG data is available in the Thomson Reuters Eikon database, 8774 firms remain. The data has been investigated on influential outliers, which have been carefully deleted to improve the quality of the analysis.

The ESG data is reporting on environmental, social and economic indicators. In February 2020, Thomson Reuters Eikon offered a document including the newest 'ESG indicators and scores' which is used to get a better understanding on what data has been measured and what is included. The control variables firm size, industry and country are also obtained from the same database. The dependent variable, firm performance is retrieved from the Thomson Reuters Eikon database by calculating the ratio of the market value of a company by the replacement value of the book equity (see 3.2.2.). The estimated sample size which is required to reach saturation is based on the amount of variables which are measured in the research. According to Hair et al. (2010: p176) the minimum ratio of respondents to the variables is 5:1. Meaning, this research should take into account that including more components of sustainable HRM, a larger sample size is required. This is necessary such that the research obtains an acceptable power (normally 80), such that the test would detect significant differences when these exist.

3.2.2 Dependent variable

The aim of this research is to establish whether there exists a relationship between incorporating sustainable HRM practices and the performance of an organisation. With performance, the financial aspect of an organisation is measured which can be profit or firm value. There are two commonly used measurements for performance which are the accounting-based measure and the market-based measure. The accounting-based measure is taking into account a firm's accounting aspects such as earning per share, return on investments (ROI), and return on equity (Krishnan, Hitt, & Park, 2007; Zollo & Singh, 2004). The market-based measure is commonly measured by Tobin's Q which equals the market value of a company divided by its assets' replacement costs. This ratio basically expresses the relationship between market valuation and intrinsic value and provides an idea whether a firm is overvalued or undervalued (Kim & Lyn, 1986).

For both measurements there are disadvantages and advantages in their usage. The disadvantage of using ROI as a performance indicator is that when making comparisons between firms, companies should use similar accounting policies and methods in respect of valuation of practical matters (e.g. stocks, fixed assets, apportionment of overheads etc) (Agarwal, 2015). The disadvantage of using Tobin's q as a performance indicator is that it is sensitive to uncertainty with respect to investments (Dybvig & Warachka, 2015). Despite these disadvantages, the ROI and Tobin's q are most commonly used as a proxy for organizational performance. This study is using Tobin's q as a proxy for organizational performance since Tobin's q also incorporates expectations of the firm's future economic returns linked with total economic return on investment and not only on innovation (Landsman & Shapiror, 1995). Thus, Tobin's q is in this study measured as:

$$Tobin's\ q = \frac{Market\ value\ of\ debt+equity}{Replacement\ cost\ of\ total\ assets}$$

3.2.3 The independent variables

From the matching procedure (3.1.2), fourteen ESG indicators have been selected. Twelve out of fourteen variables are measured binary (yes/no), one as a percentage and another one as a ratio. Table 3 provides an overview of all included variables in the analysis. Within the first column 'symbol' the first three letters refer to which category of sustainable HRM the variable belongs. The number followed by the letters refer to the specific practice as identified by Diaz-Carrion et al. (2018). The second column represents the content of the selected ESG indicators and the last column represents how the ESG indicators have been measured. This study also included three control variables which are: the company's size, industry and the country where the headquarters are situated. The company's size (SIZE) is measured through the amount of employees. The variable is expected to relate positively to the dependent variable, firm performance, since larger companies tend to have more resources and have benefits due to economies of scale (Ebben & Johnson, 2005). The industry is also included as a control variable since the context in which a firm is operating is also affecting their performance (Porter, 1979). Lastly, country has been taken as a control variable such that the differences between countries can be observed.

Table 3: Overview of all variables included in this research with their full name and measurement scale.

Symbol	Full name	Measurement scale
Independent variables		
DIV15	Percentage of women employees.	percentage
DIV16	Does the company have a policy to drive diversity and equal opportunity?	Y/N
DIV15_A	Does the company claim to provide flexible working hours or working hours that promote a work-life balance?	Y/N
DIV25_B	Does the company claim to provide day care services for its employees?	Y/N
SAF1_A	Does the company have a policy to improve employee health & safety?	Y/N
SAF1_B	Does the company have health and safety management systems in place like the OHSAS 18001 (Occupational Health & Safety Management System)?	Y/N
SAF2	Does the company have an employee health & safety team?	Y/N

SAF5	Does the company train its executives or key employees on health & safety?	Y/N
COMP2	CEO's total salary (or the highest salary) divided by average salaries and benefits.	ratio
TRAI1_A	Does the company have a policy to improve the skills training of its employees?	Y/N
TRAI1_B	Does the company have a policy to support the skills training or career development of its employees?	Y/N
TRAI1_C	Does the company claim to provide regular staff and business management training for its managers?	Y/N
EVAL1	Does the company have a policy to improve the career development paths of its employees?	Y/N
STAF2	Does the company claim to favour promotion from within?	Y/N
Control variables		
SIZE	Company Size	Amount of employees
COUNTRY	Countries	By grouping countries per continent
INDUSTRY	Industry profile	Grouping industry by using SIC codes
Dependent variable		
TOBIN'S Q	(Equity Market Value + Liabilities Book Value) / (Equity Book Value + Liabilities Book Value)	Ratio value

3.3 The Model

This section describes how the model has been selected which is most accurately describing the relationship between sustainable HRM practices and firm performance. Since this is an exploratory study, it is unknown upfront which statistical model is capable of modelling the relationship between sustainable HRM and firm performance best. To decide whether a parametric analysis can be carried out, the assumptions have to be tested. The normality assumption is tested, graphically and numerically. Since this study is dealing with a quite large number of observations, the statistical tests can be sensitive which is inspected by including the Q-Q plots. A Kolmogorov-Smirnov ($p > .05$) (Lilliefors, 1967) and the graphical inspection of the normal Q-Q plots showed that the firm performance measured as Tobin's Q, were not normally distributed for the years 2015-2019, with a skewness ranging of 41.66 (SE 0.028) to 69.51 (SE 0.027) and a kurtosis ranging of 2321.4 (SE 0.055) to 5579.37 (SE 0.054) (see appendix 3). The data points are skewed to the left of the plot, this can indicate that there exists a natural limit. The non-normal distribution of the dependent variable is problematic for conducting an OLS regression analysis since this will impact the precise p-values of the test and the coefficients.

The research has performed suggested remedies such as; removing outliers and data errors. Another option is to transform the dependent variable which is a harsh remedy and will lead to a normal distribution. The disadvantage, however, is that this will lead to interpretation issues. The dependent variable is measured as a ratio and transforming this to for example a log distribution would make the interpretation difficult (Hair et al., 2007). Therefore, to analyse the degree to which the selected sustainable HRM practices are associated with firm performance a generalised linear model (GLM) has been used instead of an OLS regression. An advantage of using the GLM is that both fixed and random effects can be included, which is convenient since this study is dealing with binary and scale variables. Since this concerns a non-experimental study including many variables, the only way to select the best GLM is to examine every possible combination of predictors, which is done through backward stepping (Rutherford, 2011).

This section describes how the combination of predictors that best describe the relationship between sustainable HRM practices and firm performance has been selected through the one by one exclusion of the least significant variables from the model. To decide whether the model has improved in terms of better-fit and therefore best expresses the relationship of sustainable HRM practices and firm performance, the Akaike's information criteria has been consulted (AIC; Akaike, 1973) (Wagenmakers & Farrell, 2004). For comparison of the models the delta-AIC gives the difference between the two AIC values of both models with more than -2 difference is significantly better than a model it is being compared to. The AIC model has been used to distinguish among a set of possible models describing the relationship between the selected sustainable HRM practices and firm performance including the control variables, size, country and industry.

4. Main Findings

This section presents the main findings of this research and is structured to the three sub-questions accordingly. By means of literature research, the concepts and dynamics of sustainable HRM have been analysed. This information has been aligned with ESG indicators in the Thomson Reuters Eikon database. Secondly, the data availability and usefulness has been assessed and lastly, the relationship between HRM practices and firm performance has been modelled.

4.1 The alignment of the sustainable HRM practices with the datasets

This step in the research is answering the first sub-question namely: *‘To what extent can the existing data be aligned with the sustainable HRM practices and be useful for researchers?’*. From this alignment, 14 indicators have been selected and been used in an analysis to get an indication of the relationship between the sustainable HRM practices and organisational performance. It appeared that most of the data was available in the category “Occupational Safety and Health” of which the content of four sustainable HRM practices corresponded to four ESG indicators. While within the category “performance evaluation and career development”, none of the ESG indicators corresponded. This section is discussing the outcomes of the matching procedure which can be found in appendix 2 and is structured according to the six categories as identified by Diaz-Carrion et al. (2018).

4.1.1 Work-life and diversity promotion

Diaz-Carrion et al. (2018) have identified 39 different sustainable HRM practices within the category of work-life and diversity promotion. These practices have been compared with the ESG indicators of the Thomson Reuters Eikon database. From this analysis, the content of six ESG indicators correspond well with the sustainable HRM practices formulated by Diaz-Carrion et al. (2018). The indicators are found in the sub-categories: flexibility in working hours (2 indicators), Diversity management (3 indicators), and awareness of the diversity policies (1 indicator). When checking the data availability, two ESG indicators had none or few observations (see table 4). Therefore the following variables have been included in the analysis: flexibility in working hours, provision of day care, policy on diversity and equal opportunities and percentage of women employees.

Table 4: Overview of sustainable HRM practices on work-life and diversity promotion with ESG indicators.

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database	Availability and measurement
Flexibility in working hours (Fagan & Press, 2008).	CODE: DIV25_A To favour the existence of a proper work–family balance for employees.	CODE: SODODP026 Eikon Does the company claim to provide flexible working hours or working hours that promote a work-life balance? - programs or processes that help employees to have a balance between their work and personal life - includes flexible work arrangements such as telecommuting, flexible working hours, job-share, and reduced and compressed work weeks	Available and Y/N measurement scale
	CODE: DIV25_B To favour the existence of a proper	CODE: SODOP027 Does the company claim to provide day care services for its employees?	Available and Y/N measurement scale

	work–family balance for employees.		
Diversity management include all practices which are focused on policies of the firm which ensures fairness and non-discrimination on grounds of race, sex, religion, creed, national origin, age or disability (Pitts, 2009).	CODE DIV 15 To guarantee the application of the principles of diversity and equal opportunities in all HRM practices	CODE: SODODP0151 Eikon Has the company set targets or objectives to be achieved on diversity and equal opportunity? - any objective/target set to increase or promote diversity in the workplace with a time frame	Only 29 observations Y/N measurement scale
		CODE: SODODP017 Eikon Percentage of women employees. - percentage of women employees to the total number of employees of the company - percentage of women employees = number of women/total number of employees*100	Available percentage measurement scale
	CODE DIV 23 To register incidents related to discrimination and carry out corrective actions.	CODE: SODODP036 Eikon Number of controversies linked to workforce diversity and opportunity (e.g., wages, promotion, discrimination and harassment) published since the last fiscal year company update.	Not available Y/N measurement scale
Awareness of the diversity policies (Lee Cooke & Saini, 2012).	CODE DIV 16 To have a formal equal opportunities policy.	CODE: SODODP0081 (Eikon) Does the company have a policy to drive diversity and equal opportunity? - program or practice to promote diversity and equal opportunities within the workforce - includes information on the promotion of women, minorities, disabled employees, or employment from any age, ethnicity, race, nationality, and religion - consider information from the code of conduct mentioning diversity policy together with the reporting of violations	Available and measurement scale Y/N

4.1.2 Occupational Health and safety

The benefits of incorporating health and safety measurements are often legalised by law. Consequently, there are many health and safety measurements which are already in place and followed by companies. Diaz-Carrion et al. (2018) have added on these legal requirements by focusing on the presence of these health and safety standards and on how this has been monitored within the companies. These practices have been compared with the ESG indicators of the Thomson Reuters Eikon database. From this analysis 5 ESG indicators correspond well with the definitions given by Diaz-Carrion et al. (2018) (see table 5). These indicators are found in the two sub-categories providing health and safety training (3 indicators) and monitoring the health and safety training (2 indicators). These indicators have been subtracted from the dataset to check the availability leading to the inclusion the following four indicators are included in the model: policy on employee health & safety, safety management systems, training of executives on health and safety and employee health and safety team.

Table 5: Overview of sustainable HRM practices on occupational health and safety with ESG indicators.

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database	Availability and measurement
Providing health and safety training (Waring and Edwards, 2008)	CODE SAF 1_A: To accredit an appropriate level of health and safety with standards and certifications such as OSHAS, ISOS etc	CODE: SOHSDP0121 Eikon Does the company have a policy to improve employee health & safety? - processes or initiatives in place to reduce occupational accidents, injuries, illness for employees of the company - information may refer to a system, project or a set of formal, documented processes for controlling health and safety impacts and driving continuous improvement - consider the process to reduce commuting accidents	Available and Y/N measurement scale
	CODE SAF 1_B: To accredit an appropriate level of health and safety with standards and certifications such as OSHAS, ISOS etc	CODE: SOHSDP014 Eikon Does the company have health and safety management systems in place like the OHSAS 18001 (Occupational Health & Safety Management System)? - consider if the company claims to have OHSAS 18001 or any internal management system for one site or more - include environment, health, and safety (EHS) management system - consider if companies complying with OHSA (Occupational Health and Safety Act)	Available and Y/N measurement scale
	CODE SAF 5:To provide training to improve accident prevention/health and safety beyond what is required by law.	CODE: SOHSDP0081: Eikon Does the company train its executives or key employees on health & safety? - consider employee health and safety related training such as on the job, classroom, distance or e-learning by the company or external trainers - information on training from the code of conduct which encompasses health and safety is considered.	Available and Y/N measurement scale
Monitoring the health and safety training (Iamandi, 2011).	CODE: SAFE 2 To have formal health and safety committees that carry out monitoring and control activities beyond those required by law.	CODE: SOHSDP004 Eikon Does the company have an employee health & safety team? - any individual or team operates on a day to day basis and responsible for health and safety inspection, incident investigation, making recommendations, implementing best practices and ensuring proper communication on health and safety - the team has to be responsible to carry out the implementation of the health and safety strategy, not only decision making - include if the company named the team as committee and the members of the team are employees of the company, who are operational on a day to day basis in the company and are not part of the board committees - the health and safety team are called with different names such as department, unit, division, manager, specialists, council, coordinator, representative, officers, etc	Y/N measure Available
	CODE SAF 8: To keep a record of	CODE SOHSDP026 Eikon Number of injuries and fatalities including no-lost-time injuries reported for employees relative to one million hours	Available and Y/N

job accidents, illnesses and workers at risk of suffering occupational diseases with the goal of improving health and safety at work.	worked. - total injury rate employees= total employees accident (number of injuries)/total employees working hours*1,000,000 - employees injuries include all work-related deaths, illnesses, minor & major injuries, lost time & non-lost time accidents, medical treatment injuries (MTI), recordable incidents and commuting accidents - unless the company provide the exact working hours, the total employees working hours= total number of employees* 2,000	measurement scale
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4.1.3 Compensation

Researchers argue that the HRM department has the capabilities and expertise to design a pay system that rewards and recognizes both economic and social performance (Ozlicky, 2006; Jamali et al. 2015). To get an indication of these interventions Diaz-Carrion et al. (2018) have sub-categorized this category into 19 sustainable HRM practices focusing on compensation. Of these 19 practices it has been possible to link three practices with ESG indicators. Unfortunately, looking more closely into the availability of the data only one indicator is suitable for the analysis which is the CEOs compensation divided by the average salary of workers.

Table 6: Overview of sustainable HRM practices on compensation with ESG indicators.

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database	Availability and measurement
Implementation of a reward system that recognizes both economic and social performance (Ozlicky, 2006)	COMP 1 Remuneration practices are transparent for all members of the organization	CODE: SOEQDP016 Eikon Total value of salaries and wages paid to all employees and officers, including all benefits, as reported by the company in its CSR reporting. - include all monetary benefits given by the company such as social security cost, pension, allowances, commissions, share-based payments, etc - information is considered from an annual report when it is reported in the sustainability section or the sustainability section in the company's website - the scope has to be global (100%)	Not available
	COMP 2: The salary gap between the highest and the lowest wage (including managers) is agreed between employees and managers of the company	CODE: SOEQO06V Eikon CEO's total salary (or the highest salary) divided by average salaries and benefits.	Available; float rate

	COMP 3: The reward policy does not discriminate by gender, type of contract etc	CODE: SODODP016 Eikon Percentage of remuneration of women to men, often for doing the same work.	Only 2 observations; Percentage
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4.1.4 Training

Most of the ESG indicators are focused on the provision of training and did not elaborate whether these trainings are also improving the skills of employees in their own interest. This last part is specifically defined as ‘sustainable’ by Diaz-Carrion et al. (2018). Therefore, only one of the nine sustainable HRM practices within the category “training” seem to correspond with ESG indicators. Thus, the following practices have been included in the analysis: policy improving the skills training, policy supporting skills training and career development, and business management training.

Table 7: Overview of sustainable HRM practices on training with ESG indicators.

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database	Availability and measurement
Educating employees in a broad perspective and not only in their critical job tasks (Hirsig, Rogovsky, & Elkin, 2014).	TRAI 1 To have skill training programmes and continuous learning that support workers' employability.	CODE: SOTDDP0091 Eikon Does the company have a policy to improve the skills training of its employees? - programs or processes that focus on developing employee's skills to meet the evolving strategic needs of the organization and/or the industry - include job specific training to employees - information to be on skills training for the general workforce	Available measurement scale: Y/N
		CODE: SOTDD01V Eikon Does the company have a policy to support the skills training or career development of its employees?	Available measurement scale: Y/N
		CODE: SOTDDP024 Eikon Does the company claim to provide regular staff and business management training for its managers? - consider training to existing managers (how to manage their team and process) - consider training to non-managers to develop leadership skill for future managerial positions	Available measurement scale: Y/N

4.1.5 Staffing

The ESG indicators mostly reported on the controversies linked to the company's relation with employees; relating to wages or wage disputes, layoff disputes and working conditions. Diaz-Carrion et al. (2018) focus on transparency about hiring procedures, selection processes and promotions. Moreover, actions directed at onboarding employees and supporting employees who retire or are replaced are included. The focus of ESG indicators is therefore substantially different than the focus of Diaz-Carrion et al. (2018) which resulted in the alignment of only one ESG indicator, namely: claiming to favour promotion from within.

Table 8: Overview of sustainable HRM practices on Staffing with ESG indicators.

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database	Availability and measurement
Internal promotion, active involvement with relocation of employees and after retirement possibilities (Alfes et al., 2013).	CODE STAF 2: To encourage internal promotion over external contracting as a mechanism for staff motivation	CODE: SOTDDP023 Eikon Does the company claim to favour promotion from within? - any advancement plan for general employees in rank or position in the organizational hierarchy system - the movement has to be from one level to the next level in the hierarchy - promotion from within (internal) has to be prioritized for all positions instead of external recruitment to give opportunities to current employees to enhance their career in the organization	Available measurement scale: Y/N

4.1.6 Performance Evaluation and Career Development

The category “performance evaluation and career development” corresponded only to one ESG indicator. Diaz-Carrion et al. (2018)’s sustainable HRM practices focused on transparency on the evaluation procedures of employee performance. However, none of the ESG indicators looked at performance policies or the implementation of feedback systems. Therefore only the ESG indicator, policy on career development paths, has been included in the analysis.

Table 9: Overview of sustainable HRM practices on Performance evaluation and career development with ESG indicators.

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database	Availability and measurement
Employees are given the opportunity to make career switches (De Vos & Van der Heijden, 2017)	EVAL 10 To give workers the opportunity to decide on their careers	CODE: SOTDDP0092 Eikon Does the company have a policy to improve the career development paths of its employees? - programs or processes that focus on the career progression of staffs - include if the company encourages and supports employee for career development - information to be on career development for the general workforce - consider training to non-managers or leaders to develop leadership skill for future managerial or leadership positions	Available measurement scale: Y/N

4.1.7 Conclusion alignment procedure

This section answered the sub-question: *'To what extent can the existing data be aligned with the sustainable HRM practices and be useful for researchers?'*. Diaz-Carrion et al. (2018) have identified 98 sustainable HRM practices within six overarching categories. Looking into the Thomson Reuters Eikon database, 69 ESG indicators related to workforce are provided. Therefore, it is not possible to link all 98 practices to actual data. Consequently, the 98 practices as identified by Diaz-Carrion et al. (2018) have been compared with literature to obtain a broader perspective on these specific practices. Comparing these practices with the dataset, 14 practices have been matched in all categories. Moreover, for the categories "work-life and diversity promotion", "occupational health and safety" four ESG indicators have been selected for the analysis. For the category "training" three ESG indicators have been selected and for the categories "staffing", "compensation", and "performance evaluation and career development" only one ESG indicator per category has been selected.

Looking at the alignment of the sustainable HRM practices with the ESG indicators differences in 'fit' can be observed. Some sustainable HRM practices have been perfectly aligned with an ESG indicator such as the practice as defined by Diaz-Carrion et al. (2018) *'To have a formal equal opportunities policy'* was linked to the ESG indicator *'Does the company have a policy to drive diversity and equal opportunity?'*. However, other sustainable HRM practices were less 'fitting' such as *'To guarantee the application of the principles of diversity and equal opportunities in all HRM practices'* which did not find a direct match to any ESG indicator. Concluding, all six categories of sustainable HRM practices have been aligned with 14 ESG indicators. Although the 'fit' between the sustainable HRM practices and the ESG indicators is not perfect in all cases, enough indicators are found in the dataset to cover at least some part of the sustainable HRM practices as defined by researches (see table 10).

Table 10: Summary of all the sustainable HRM practices

Literature based practices	Specific defined by Diaz-Carrion et al. 2018	Corresponding with content, code and database
Awareness of the diversity policies (Lee Cooke & Saini, 2012).	CODE DIV 15 To guarantee the application of the principles of diversity and equal opportunities in all HRM practices.	CODE: SODODP017 EIKON Percentage of women employees. - percentage of women employees to the total number of employees of the company - percentage of women employees = number of women/total number of employees*100
	CODE DIV 16 To have a formal equal opportunities policy.	CODE: SODODP0081 (Eikon) Does the company have a policy to drive diversity and equal opportunity? - program or practice to promote diversity and equal opportunities within the workforce - includes information on the promotion of women, minorities, disabled employees, or employment from any age, ethnicity, race, nationality, and religion - consider information from the code of conduct mentioning diversity policy together with the reporting of violations
	CODE DIV 25 To favour the existence of a proper work–family balance for employees.	CODE: SODODP026 EIKON Does the company claim to provide flexible working hours or working hours that promote a work-life balance? - programs or processes that help employees to have a balance between their work and personal life - includes flexible work arrangements such as telecommuting, flexible working hours, job-share, and reduced and compressed work weeks CODE SODODP027 EIKON Does the company claim to provide day care services for its employees?
Providing health and safety training (Waring and Edwards, 2008)	CODE SAF 1: To accredit an appropriate level of health and safety with standards and certifications such as OSHAS, ISOS etc	CODE: SOHSDP0121 Eikon Does the company have a policy to improve employee health & safety? - processes or initiatives in place to reduce occupational accidents, injuries, illness for employees of the company - information may refer to a system, project or a set of formal, documented processes for controlling health and safety impacts and driving continuous improvement - consider the process to reduce commuting accidents CODE: SOHSDP014 Eikon Does the company have health and safety management systems in place like the OHSAS 18001 (Occupational Health & Safety Management System)? - consider if the company claims to have OHSAS 18001 or any internal management system for one site or

		more - include environment, health, and safety (EHS) management system - consider if companies complying with OHSA (Occupational Health and Safety Act)
Monitoring the health and safety training (Iamandi, 2011).	CODE: SAF 2 To have formal health and safety committees that carry out monitoring and control activities beyond those required by law.	CODE: SOHSDP004 Eikon Does the company have an employee health & safety team? - any individual or team operates on a day to day basis and responsible for health and safety inspection, incident investigation, making recommendations, implementing best practices and ensuring proper communication on health and safety - the team has to be responsible to carry out the implementation of the health and safety strategy, not only decision making - include if the company named the team as committee and the members of the team are employees of the company, who are operational on a day to day basis in the company and are not part of the board committees - the health and safety team are called with different names such as department, unit, division, manager, specialists, council, coordinator, representative, officers, etc
	CODE SAF 5: To provide training to improve accident prevention/health and safety beyond what is required by law.	CODE: SOHSDP0081: Eikon Does the company train its executives or key employees on health & safety? - consider employee health and safety related training such as on the job, classroom, distance or e-learning by the company or external trainers - information on training from the code of conduct which encompasses health and safety is considered.
Implementation of a reward system that recognizes both economic and social performance (Ozlicky, 2006)	COMP 2: The salary gap between the highest and the lowest wage (including managers) is agreed between employees and managers of the company	CODE: SOEQDO06V Eikon CEO's total salary (or the highest salary) divided by average salaries and benefits.
Educating employees in a broad perspective and not only in their critical job tasks (Hirsig, Rogovsky, & Elkin, 2014).	TRAI 1 To have skill training programmes and continuous learning that support workers' employability.	CODE: SOTDDP0091 Eikon Does the company have a policy to improve the skills training of its employees? - programs or processes that focus on developing employee's skills to meet the evolving strategic needs of the organization and/or the industry - include job specific training to employees - information to be on skills training for the general workforce

		CODE SOTDD01V EIKON Does the company have a policy to support the skills training or career development of its employees?
		CODE: SOTDDP024 Eikon Does the company claim to provide regular staff and business management training for its managers? - consider training to existing managers (how to manage their team and process) - consider training to non-managers to develop leadership skill for future managerial positions
Internal promotion, active involvement with relocation of employees and after retirement possibilities (Alfes et al., 2013).	CODE STAF 2: To encourage internal promotion over external contracting as a mechanism for staff motivation	CODE: SOTDDP023 Eikon Does the company claim to favour promotion from within? - any advancement plan for general employees in rank or position in the organizational hierarchy system - the movement has to be from one level to the next level in the hierarchy - promotion from within (internal) has to be prioritized for all positions instead of external recruitment to give opportunities to current employees to enhance their career in the organization
Employees are given the opportunity to make career switches (De Vos & Van der Heijden, 2017)	EVAL 10 To give workers the opportunity to decide on their careers	CODE: SOTDDP0092 Eikon Does the company have a policy to improve the career development paths of its employees? - programs or processes that focus on the career progression of staffs - include if the company encourages and supports employee for career development - information to be on career development for the general workforce - consider training to non-managers or leaders to develop leadership skill for future managerial or leadership positions

4.2 Database quality

This section is investigating the data to check the quality of the gathered data which is done by Thomson Reuters Eikon. This section is therefore answering sub-question two which is stating: *'What is the quality of the data provided by companies to measure sustainable HRM practices?'*. All the variables as selected in section 4.1.7 have been included and investigated.

4.2.1. Missing data

This study entails a total number of observations of 8774 companies. Of these companies, across the years 2015 -2019 almost all companies 7557 (86.1%) to 8377 (95.5%) included in this study reported on their firm performance. Company size was also available for a large majority of companies, ranging from 7213(82.2%) to 8117 (92.5%) between 2015-2019. Similar percentages were available for each of the years, 2016 and 2017 are reporting 7431 (85%) and 7662 (87%) respectively. For the total salary of CEO's compared to the average salary of employees in the company, the database provides increasingly more information as years go by: while in 2015, this information was only available for 1779 companies (20.3%), by 2019 this number had steadily increased to 3784 (43.1%). The year 2016 is reporting 2089 (23.8%) and the year 2018, 2992 (34.1%) companies are reporting on the relative compensation of their CEO.

By contrast, the percentage of women employees was barely available: only 250 observations for this variable were available across all 8774 companies included in the study (2.8%) for each of the years. Similarly, the presence of flexible working hours and day-care were available for only 1.69% and 2.85% of the companies respectively. It is likely that the companies who did provide data on these two components of sustainable HRM, were especially the companies who do provide these services, as frequency tables indicated that a majority of companies who provide this information, do also provide the service, suggesting a reporting bias in relation to the missing data for these variables. In addition, the presence of safety policies to improve employee health and safety, as well as health and safety management systems and training of executives on health and safety were reported only very occasionally (all 2.85%).

4.2.2 Data errors and outliers

Analysis of the database indicated several issues with the data content. First, the variable measuring "Tobin's Q", providing a ratio which equals the market value of a company divided by its assets' replacement costs, contained negative values for 18 cases. This is not a valid value, as this would imply that either the market value of a company would be negative or the replacement costs which is not possible for yearly observations. A low Tobin's Q ratio, usually between 0 and 1, implies that the cost to replace a firm's assets is greater than the value of its stock and therefore the stock is undervalued. Conversely, a high Q (>1) indicates that a firm is overvalued since the firm's stock is more expensive than the replacement cost of its assets.

Second, CEO income in relation to the average salary and benefits of employees was reported as "0" in 26 cases, which seems incorrect as it is unlikely that the CEO earns less than the average employee. One possibility here is that the CEO in these cases is compensated entirely in shares, rather than in salary. However, this information is not available, making the value of "0" a data error. An implication of this is that the other lower values may also present cases where the CEO is compensated partly in shares, and thus underrepresents their actual income level. This means even after removing the "0" values, interpretation of this component of sustainable HRM should be done very cautiously.

Third, with regard to the number of employees, all companies in the database reported fewer than 300.000 employees, with the exception of twenty-one companies who reported more than 300.000 employees. An example is Walmart who reported 2.3 million employees and other companies such as Deutsche Post (488.824) and Toyota (344.109). As to not skew the average and standard deviation in further analysis, these outliers should be removed.

4.2.3 Measurement levels

The measurement level of the variable concerns the specificity with which data is recorded. In many cases (12 out of 14), the components of sustainable HRM were measured as categorical variables, which provides less information than scale variables. Many of these categorical variables were even provided as binary variables, providing only information about the presence (yes) or absence (no) of a policy or service. This decreases the quality of the database, as binary values only provide very little information and as such variation between companies, limiting the analyses which can be performed based on the database as well as the usefulness of the information. For example, the presence of a health and safety policy within a company does not in itself indicate on how a healthy and safe workplace is guaranteed. The risk of focusing on policies alone is that it would increase the burden of reporting on detailed and prescriptive regulations (Hale, Borys, & Adams, 2015).

4.2.4 Conclusion database quality

As mentioned, the database includes 8774 observations which is sufficient for this analysis. Nevertheless, there are also some problems with the database due to missing data, data errors outliers and most importantly the measurement levels. The missing data can be corrected in some cases but also causes problems for five variables which report less than 3% availability. Next to that, the data errors and outliers have been deleted from the analysis, however, the reason why these measurement errors occur have not been found. Lastly, the measurement levels of the variables for 12 (out of 14) variables is limited since it is measured on a binary scale (0=no; 1=yes). Concluding, the quality of the data has been improved with statistical remedies. Unfortunately, the binary scale of most of the variables cannot be adjusted and is therefore not very rich in explaining how the sustainable HRM practices are incorporated at organizational level.

4.3 Relationship between sustainable HRM practices and firm performance

This section is answering the third sub-question, namely: *'Can a relationship between sustainable HRM practices and firm performance be observed?'*. Firstly, the variables' statistics are summarized and evaluated and a correlation matrix has been carried out for the metric variables. Secondly, the assumptions for a regression analysis are tested and lastly the model is presented.

4.3.1 Descriptive statistics

The descriptive statistics are investigated to provide an overview of the relevant variables of sustainable HRM to investigate the relationship with firm performance, as well as firm performance itself. Firm performance, measured as the Tobin's Q ratio, varied across the five years, ranging from 2.27 (sd= 7.95) to 2.16 (st=2.66). Minimum firm performance was 2.05 (st=4.88) across these years, maximum firm performance was 2.39 (st=9.83). Within firm performance, there were significant differences between industries in each year (see attachment 4): healthcare scored significantly higher with almost double the score compared to all the other industries in 2015, 2016, and 2017 (One-way ANOVA, $F=12.07-18.10$, $p<0.001$), while in 2018, the technology, consumer non-cyclicals, and academic and educational services industries performed equal to the healthcare industry, but significantly higher than all other industries ($F=22.58$, $p<0.001$). In 2019, the healthcare industry

performed better than the technology, consumer non-cyclicals, and academic and educational services industries, which in turn scored higher than all other industries ($F=105.96$, $p<0.001$). The number of employees differed significantly between industries across all years. Consumer non-cyclicals, consumer cyclicals and industrials had significantly more employees than the other industries across all years (One-way ANOVA, $F=23.68-30.29$, $p<0.001$).

There were no significant differences between industries regarding the metric variables (see attachment 4). The percentage of female employees averaged 33.02% for the years 2015-2019, with the value ranging from 32.61 to 33.75%. There were no significant differences between industries or countries for this variable (see table 11). It is noteworthy that the number of observations for the measurement percentage of women employees is considerably lower than for the other three metric variables. This implies that apparently less companies seem to report on the percentage of women employees within the company and this should be taken into consideration for the further analysis.

Table 11. Overview of scale variables available in the dataset. Means and (standard deviation) are provided for each consecutive year. Significant differences in averages for industries are indicated with “a”, and significant differences between countries are indicated with ‘b’. N = 7557 and 8377

	2015	2016	2017	2018	2019
Firm performance	2.27 (7.95), a	2.17 (5.53), a	2.39 (9.83), a	2.05 (4.88), a,b	2.16 (2.66), a,b
Number of employees	14358.98 (31024.01),a,b	14474.53 (31638.18), a,b	14522.42 (31698.59), a,b	14497.05 (31419.25),a,b	14638.63 (31879.63),a,b
Compensation CEO/ average salary	320.79 (3432.08),a	192.51 (1949.77)	170.58 (1566.34)	155.94 (1665.8)	380.16 (14861.05)
% Female employees	32.61 (15.56)	32.4 (15.49)	33.02 (15.78)	33.32 (15.65)	33.75 (15.43)

The nominal variables are summarized in table 12 for the years 2015-2019. All variables are measured on a binary scale and therefore the percentages indicate the presence (“yes”) of a policy or service. Slightly more than 50% of the companies reported on the variable of *‘having a diversity and equal opportunity policy’* with a minimum of 71.7% indicating yes in the year 2015. Both, the amount of companies reporting on the policy as well as the presence of such a policy within the company has increased over the years with almost 95% of the companies reporting of which 80.4% indicated to have such a policy in the year 2019. For the variable *‘does the company have a health and safety team’* also the companies reporting on this variable doubled with 51.94% (2015) and 94.79% (2019). The presence of these safety teams within companies only slightly increased, ranging from 42.5% in 2015 to 43.1% in 2019.

The variables *‘does the company have a policy to improve the skills training of its employees’* and *‘does the company have a policy to support the skills training or career development of its employees’* show a slightly different pattern. Here, companies reporting to have these policies are in a smaller range (63.7% to 67.9% and 69.2% to 73.1% respectively), however, the amount of companies reporting on these policies have steadily increased across the years (51.94% to 94.79% and 51.05% to 93.99% respectively). For the variable *‘flexible working hours’* the presence increases over the years from 38.5% (2015) to 57.4% (2019), however only 1.69% of the total number of companies reported on this variable. There are four variables for which 2.85% companies have reported. This is the case for the

variable '*presence of day-care*' for which the presence in the companies is ranging from 19.6% to 30.4%. The variable '*does a company have a policy to improve health and safety*' is present in most of the companies that have reported on it, ranging from 88% (2015) to 95.6% (2019). Interestingly, the most common way to report on health and safety standards is by using the European standards, however, only 2.85% of the companies report on having this ranging from 59.2% (2015) to 67.2% (2019). More than 50% of the companies reported on the last three variables (see table 12), which is also steadily increasing across the years 2015 to 2019. However, a slight decrease is noticeable for the year 2016 for all three variables and also for the year 2017 for the last variable.

Table 12. Overview of nominal variables describing components related to sustainable HRM. Percentages are provided of presence ("yes") of these services, as well as the percentage of companies who reported on this variable in the first place, between (brackets). N=8774.

	2015	2016	2017	2018	2019
Does the company have a policy to drive diversity and equal opportunity?	71.7% (51.9%)	73.8% (61.64%)	75.8% (69.92%)	79.7% (79.82%)	80.4% (94.79%)
Does the company claim to provide flexible working hours or working hours that promote a work-life balance?	38.5% (1.69%)	40.5% (1.69%)	45.3% (1.69%)	51.4% (1.69%)	57.4% (1.69%)
Does the company claim to provide day care services for its employees?	19.6% (2.85%)	21.2% (2.85%)	24% (2.85%)	26.8% (2.85%)	30.4% (2.85%)
Does the company have a policy to improve employee health & safety?	88% (2.85%)	90% (2.85%)	92.8% (2.85%)	94% (2.85%)	95.6% (2.85%)
Does the company have health and safety management systems in place like the OHSAS 18001 (Occupational Health & Safety Management System)?	59.2% (2.85%)	59.6% (2.85%)	63.6% (2.85%)	64% (2.85%)	67.2% (2.85%)
Does the company have an employee health & safety team?	42.5% (51.94%)	40.3% (61.64%)	41.3% (79.86%)	43.3% (79.86%)	43.1% (94.79%)
Does the company train its executives or key employees on health & safety?	80.8% (2.85%)	85.6% (2.85%)	88% (2.85%)	90% (2.85%)	92% (2.85%)
Does the company have a policy to improve the skills training of its employees?	63.7% (51.94%)	60.4% (61.64%)	62.2% (69.92%)	65.7% (79.85%)	67.9% (94.79%)
Does the company have a policy to support the skills training or career development of its employees?	69.2% (51.50%)	66.2% (61.17%)	68% (69.32%)	71.2% (79.18%)	73.1% (93.99%)
Does the company have a policy to improve the career development paths of its employees?	49.8% (51.94%)	47.5% (61.63%)	49.8% (69.92%)	53% (79.85%)	54.7% (94.79%)
Does the company claim to provide regular staff and business management training for its managers?	62.1% (51.94%)	59.8% (61.64%)	62.1% (69.92%)	65.6% (79.85%)	67.2% (94.79%)
Does the company claim to favour promotion from within?	27.3% (51.94%)	25.7% (61.64%)	26.2% (69.92%)	27.6% (79.86%)	29% (94.79%)

4.3.2 Bivariate statistics

The correlation between the independent metric variables are tested since this can be problematic for the prediction of the dependent variable (Hair, 2009). The correlation table of the year 2015 (see table 13) indicates that there exists no correlation between the percentage of women employees in any of the other metric variables. The compensation that CEOs received compared to the average employee was significantly related to the number of employees in the companies. That means that if there are more employees, the CEO would usually make a more disproportionally high income. Furthermore it does not show any correlations with the other variables. The 'number of employees' indicates a correlation of -.033 with 0.006 significance level with firm performance. The correlations are relatively low implying that the line is almost flat but due to the large sample size the effects are visible. Since this study is investigating data gathered from five years, a correlation matrix between groups has been created. In addition, Firm performance was significantly correlated among each of the years, which means that firms who performed in previous years, were more likely to perform higher in successive years as well (see appendix 9). The correlation table highlights a problem earlier mentioned in 4.2.1 that there are a lot of values missing. This table shows that these values are often missing also in company, which leads to differences in observed values (n) per variable which is displayed in table 13.

Table 13: Correlation matrix of the metric independent variables and the dependent variable for the year 2015. The level of significance is between (brackets) and indicated with the stars where *p<0.05 and **p<0.01

		Women employees	Compensation of the CEO/average salary	Number of employees	Firm performance (Tobin's Q)
Women employees	Pearson correlation (sign. 2-tailed)	1	-.091 (.527)	0.065 (3.56)	0.002 (.979)
	N	250	51	205	218
Compensation of the CEO/average salary	Pearson correlation (sign. 2-tailed)	-.091 (.527)		.059 (.014)*	-.001 (.972)
	N	51	1779	1724	1769
Number of employees	Pearson correlation (sign. 2-tailed)	.065 (.356)	.059 (.014)*	1	-.033 (.006)**
	N	205	1724	7213	6988
Firm performance Tobin's Q	Pearson correlation (sign. 2-tailed)	.002 (.979)	-.001 (.972)	-.033 (.006)**	1
	N	218	1769	6988	7612

An One-way ANOVA was conducted to determine whether there were statistically significant differences in disposition of firm performance for each of the sustainable HRM practices for the years respectively. In 2015, five variables show that companies having a policy or a service are significantly performing better than companies without such a policy or service (see red circles in table 14). This is the case for companies having a health and safety team ($F= 29.265$; $p<.001$), companies having a policy to improve skills training ($F= 15.621$; $p<.001$), companies having a policy supporting skill training and career development ($F=13.118$; $p<.001$), regular management training ($F=17.820$; $p<.001$) and companies having a policy on career development ($F=7.341$; $p<.001$). The other years show similar

results for these variables. In 2016 also companies that favour promotion from within found to have a significantly higher firm performance for that year ($F=5.696$; $p<0.001$), similar results are observable for the years 2017, 2018 and 2019. Companies having diversity policies only show to significantly perform better than without in the years 2017 ($F=5.624$; $P<.001$) and 2019 ($F=30.473$; $p<.001$).

Table 14. Results of One-way ANOVA analysis testing for differences in firm performance based on binary components of sustainable HRM. F-statistics are provided, * indicates significance at the 0.05 level, ** indicates significance at the 0.01 level. N=8774

	Category	2015	2016	2017	2018	2019
DIV16	Diversity policy	1.016	1.510	5.624**	3.254	30.473**
DIV25_A	Flexible working hours	.003	.351	2.002	.527	.068
DIV25_B	Day care	2.351	2.388	.288	.764	.569
SAF1_A	Health and safety policy	.003	.726	2.062	.868	.495
SAF1_B	Occupational Health & Safety management systems	2.613	.964	2.050	.967	.504
SAF2	Health and safety team	29.265**	30.338**	71.326**	30.895**	85.212**
SAF5	Training for executives on health/safety	.184	1.292	1.200	.929	.220
TRAI1_A	Policy skills training	15.621**	20.795**	87.287**	38.945**	79.780**
TRAI1_B	Policy supporting skill training & career development	13.118**	19.587**	99.481**	41.816**	81.399**
TRAI1_C	Regular management training	17.820**	18.133**	78.602**	30.393**	86.507**
EVAL1	Policy on career development	7.341**	27.679**	88.305**	36.676**	73.126**
STAF2	Favour promotion from within	.992	5.696**	15.062**	6.677**	30.703**

4.3.3 The model

Results of non-parametric GLM indicated that for all years that could be analysed, some components of sustainable HRM were predictive of firm performance in their respective year. This suggests the database can be used to analyse the relevance of sustainable HRM components to factors of financial interests such as firm performance.

However, there was very little consistency between which components were predictive of firm performance across years: in the models for 2015 and 2017, the best fit included (almost) every single component of sustainable HRM, whereas in 2018 5 components and 6 components in 2019 of sustainable HRM had to be excluded from the model in order to achieve the best fit. Which components had to be removed, however, differed between the models predicting firm performance in 2018 and 2019. Three variables have been removed from both models which are the presence of a health and safety team, policy to improve career developments and promotion from within. Interestingly, the control variables country, industry and number of employees were included in all models except for the model measuring the effects over time. When the models were (accidentally) run without controlling for country and industry, only very few components of sustainable HRM were still significantly associated with firm performance in that year.

Since for so many components, the analysis indicated a significant association, the B-values were considered, as this value indicates the uncorrected strength of the effect of the component. Inspection of the B-values show that for some components, the effect on firm performance was only trivial, with B-values of .037 in 2015 and .058 in 2019 (% women employees), and B-values of .001 in 2015, -.005

in 2017, .012 in 2018 and 2019 (CEOs salary divided by average salary). The small effects should be interpreted cautiously since this study is using a large sample size where trivially small effects can be found significant which is commonly observed in studies with large sample sizes (Kaplan, Chambers, & Glasgow, 2014).

When considering the directionality of the effects, there was also little consistency across the years. Only the presence of day care facilities at companies was negatively associated with firm performance across all years. The analysis showed for 2015 that the presence of flexible working hours, health and safety team and a policy that supports skills training and career development was associated with a higher firm performance, while, the presence of a diversity policy, policy in skills training, regular management training and the policy on career development were all negatively associated with firm performance. This implies that companies not having these policies and services perform significantly better than companies having these policies. Lastly, the analysis shows that companies that favour promotion from within are significantly performing better than companies not doing this.

For the year 2017, the directionality of some variables change. Still, companies having diversity policies perform significantly worse than companies not having these policies, however, the presence of policies on skills training and policy on career development is now positively associated with firm performance. Furthermore, the presence of policies supporting skills training and career development as well as promotion from within is negatively associated with firm performance. The analysis of 2018 shows only four relevant variables for the model of which two are positively related to firm performance. Companies with health and safety policies and providing regular management training are found to significantly outperform companies not having these services and policies. Next to that the policies on skills training and policies supporting skills training and career development are found to be negatively associated with firm performance.

The analysis showed for 2019 that the presence of policy to improve skills training, the absence of a policy to improve skills training was associated with a higher firm performance, while for regular management training, the absence of management training for managers was associated with lower firm performance (see table 15). This pattern also emerged when simply comparing the average firm performance for the absence (mean=2.54, sd=3.17) and presence (mean =1.98, sd=2.36). This implies that companies who have policies to improve skills training do worse than companies who lack such policies. Similarly, according to this model, companies who had flexible working hours in 2019 performed significantly better than companies who did not have flexible working hours, whereas companies who had day care performed worse than companies who did not.

In addition, the goodness of fit of the final model differed very strongly between years: for 2017 the best fit was achieved (lowest AIC score, 21.405), while for 2019, a much higher AIC was the best fit (212.355). For the control variables industry and country the range of the differences between the groups is included.

Table 15. Best fit model for each year based on AIC, with firm performance as dependent variable and the components of sustainable HRM as independent variables in a Generalised Linear Model. B-values are provided for all components of sustainable HRM that were included in the best-fit model (with presence of the policy being the reference category), while components that were not included in the best-fit model are indicated with “x”. * indicates significance at the 0.05 level, ** indicates significance at the 0.01 level. Full models are provided in appendix 9.

		2015	2016	2017	2018	2019	2019_M EAN
AIC		63.834	n/a	21.405	117.112	212.355	278.957
Components of Sustainable HRM							
DIV 15	% women employees	.037*		X	X	.058**	.046**
DIV16	Diversity policy	10.922**		1.3317**	-.973	X	X
DIV25_A	Flexible working hours	-5.346**		1.236**	X	-1.019*	-1.307
DIV25_B	Day care	1.260**		.753**	X	1.084*	X
SAF1_A	Health and Safety Policy	n/a		-.454*	-2.741*	X	X
SAF1_B	Occupational Health & Safety management systems	-1.924**		.620**	.982	X	X
SAF2	Health and safety team	-5.059**		-.390**	X	X	1.007
SAF5	Training for executives on health/safety	n/a		n/a	-1.627	-1.346	x
COMP2	CEOs salary divided by average salary	.001**		-.005**	.012**	.012**	X
TRAI1_A	Policy skills training	6.047**		-1.045**	1.374**	3.149**	-2.957**
TRAI1_B	Policy supporting skills training & career development	-3.186*		9.536**	2.331**	0.924	X
TRAI1_C	Regular management training	5.206**		X	-2.054**	-3.055**	1.720*
EVAL1	Policy on career development	5.922**		-3.241**	X	X	X
STAF2	Favour promotion from within	-6.481**		1.716**	X	X	X
Control Variables							
Industry		11.206**		5.377**	3.725**	5.795**	4.726**
Country		12.404**		5.629**	2.397**	7.683**	4.201*
# employees		.000		.000**	.000**	.000**	X

4.3.4 Conclusion relationship between HRM practices and firm performance

This section is answering the third sub-question: '*Can a relationship between sustainable HRM practices and firm performance be observed?*'. To answer this question a generalised linear model has been carried out and found that some components of sustainable HRM predict firm performance, however, the way in which components related to firm performance across the five years that were analysed in this study were very inconsistent. This implies that the validity of these results might be worrisome hence it is very unlikely that a particular component is related to firm performance in 2015, not related at all in 2016, related strongly negative in 2017 and 2018, and not related at all in 2019 which is observed for the policy supporting skills training & career development. Nevertheless, it can be carefully concluded that the variables flexible working hours, the presence of a policy that improves health and safety and management training on health and safety are positively related to firm performance for most of the years. Companies providing day care and having policies on evaluation and career development are significantly worse performing than companies not having these services and policies for most of the years. The other variables are not conclusive in their direction and strength across the years. Lastly, looking into the mean effect of the components of sustainable HRM on firm performance, the direction as well as their strength differentiate with the previously observed years. Indicating that when transforming binomial variables into metric variables, the effect on firm performance is influenced.

5. Conclusion and Discussion

This section is summarizing and explaining the findings of the research by linking this literature. The second part of this section is discussing the contribution of this paper with respect to the emerging field of sustainable HRM and discussing the practical implications of the research for this field of study.

5.1 Conclusions

This research is contributing to the field of sustainable HRM by analysing the relationship of different components of sustainable HRM with firm performance. The following research question has been used: *'To what extent can datasets be used to gain insights in how sustainable HRM practices are currently incorporated by companies and can a relationship between sustainable HRM and firm performance be established?'*. First, the three sub-questions will be answered, after which the main question will be answered and discussed in relation to the relevant literature.

The first sub-question is directed at aligning the components of sustainable HRM as described in the literature to ESG indicators provided by the Thomson Reuters Eikon database. Although this database is the most comprehensive database on CSR reporting (Koseoglu, Uyar, Kilic, Kuzey, & Karaman, 2021), only a very small percentage of the components of sustainable HRM could be aligned with actually existing data in the database. This means that for those wanting to use the database to study sustainable HRM, 84 components will not be able to be included, as the database either does not measure them at all, or does not measure them in such a way that they align with current theoretical understanding. Even of the 14 variables in the database that can be argued to align with the literature, the alignment is imperfect in many cases. The consequence is that any analysis based on the Thomson Reuters Eikon database is limited from the start in the way in which it can accurately describe sustainable HRM practices within firms. Possibly, this severe seeming problem can be nuanced by some recent criticism on including 98 practices, which is perhaps a too-detailed approach to define such concepts. For example, some of the categories entailed a large number of detailed practices (e.g. "work-life and diversity promotion" entailing 57 practices) leading to the question whether all these practices are equally important. This has also been realised by the authors Diaz-Carrion, López-Fernández and Romero-Fernandez who have in spring 2021 published an article with a revised approach that defines 77 practices instead of 98 and added weights to the practices in terms of their relevance to the CSR dimensions (Diaz-Carrion, López-Fernández, & Romero-Fernandez, 2021).

The second sub-question was directed at the quality of the subtracted data from the Thomson Reuters Eikon database. The database included 8774 observations which is sufficient for carrying out a generalised linear model with 17 variables (Hair et al., 2009). Nevertheless, there were some problems with the database due to missing data, data errors, outliers and most importantly the measurement levels. Although the quality of the dataset has been improved through statistical remedies not all problems could be solved. For example, many concepts within the categories regarding policies, are measured only with a yes/no measurement level, which in addition to providing statistical poverty of data also causes problems if such databases would be analysed: as long as the way of reporting on such sustainable HRM practises remains a yes/no measurement, it remains attractive for companies to simply create a document in order to appear sustainable, incentivising green washing rather than true sustainable practises as long as the quality of the document is not evaluated. This can be problematic, as many companies use CSR reporting as a way to convey a transparent image (Pérez, 2015). The same argument applies to the database problem of missing data: many companies do only

communicate partly about their CSR activities which often depends on the pressure of specific stakeholders in the industry (Fernandez-Feijoo, Romero, & Ruiz, 2014).

The third sub-question investigated the relationship between sustainable HRM and firm performance. Looking more closely into the model presenting the relation between sustainable HRM practices and firm performance across the years some interesting patterns can be distinguished. For example, companies having a diversity policy in 2015 significantly outperform companies not having such a policy in 2015, while the effect decreases for 2017 and is not significant anymore for the years 2018 and 2019. Apparently across years 2015-2019, the companies reporting on diversity policies have doubled which can be interpreted as a positive signal. However, when more companies started to incorporate diversity policies within their companies the positive effect on firm performance decreased and eventually had no significant relation anymore. This pattern can be interpreted that having a diversity policy has become a standard and therefore the effect on firm performance has decreased over time.

Another interesting pattern is that companies providing day care for their employees are significantly performing worse than companies who do not provide such services. This is in contrast with literature claiming that companies actively supporting child care are experiencing a decrease in absenteeism and increased employee performance (Kossek & Nichol, 1992). Nevertheless, another research may have a possible explanation for the finding of this study since they have found that on-site child care is leading to less engaged employees when their companies are unsupportive toward their family life and are dissatisfied with the childcare provider (Ratnasingam et al., 2012). Related to the provision of child care, many companies are still struggling with finding the right work-life balance for their employees while also guaranteeing efficient and effective performance (Austin-Egole & Iheriohanma, 2020). However, researchers have not found consistent evidence for incorporating flexible working hours arrangements (Menezes & Kelliher, 2011; Giovanis, 2016). The implication of this study is multiple to the field: the results show that there exist some relationship between flexible working hours and day care services and firm performance, however, from the analysis it cannot be conclusive that it concerns a causal relationship. It may in effect also be very likely that there exist mediating effects which have not been analysed here. Consequently, more research should be done to understand the underlying mechanisms of sustainable HRM.

To answer the main question, sustainable HRM is a very fluid area of study in which the definitions of the concepts are changing as our understanding changes to which concepts are exactly relevant to HRM. Therefore, the applicability of using the data within the Thomson Reuters Eikon database to study sustainable HRM is highly dependent on the topic being studied. On the one hand, studies focussing on content analyses of sustainable HRM are not recommended to use the Thomson Reuters Eikon database or other comparable databases. The data availability is very limited in terms of accurately describing *how* sustainable HRM has been incorporated at organisational level and is sometimes even missing. On the other hand, this study has also shown that some sustainable HRM practices are available and measured in the Thomson Reuters Eikon database. It was beyond the scope of this research to further investigate whether some of these practices would have a mediating role rather than a direct effect on firm performance. As Davidescu et al. (2020) have found in their study among Romanian employees that work flexibility has an effect on job performance which is moderated by job satisfaction. Consequently, researchers could extend this study by using the data within the Thomson Reuters Eikon database. One should, certainly also try to investigate how the data is collected on job performance and satisfaction rates, however, it would be interesting to investigate this since

the components of sustainable HRM are more complex and intertwined than that a linear relationship with firm performance could have been suggested.

5.2 Discussion

As previously mentioned, the field of sustainable HRM is still fluid and emerging. Ehnert et al. (2016) have called for the operationalization of sustainable HRM such that companies can be advised on what it means to manage their employees in a sustainable way. As a response to the question, researchers have dedicated their time to define the characteristics of sustainable HRM (Diaz-Carrion et al., 2018; Stankevičiūtė & Savanevičienė, 2018). Although it is widely recognized that the emergence of sustainability within the field of HRM is important (De Prins et al., 2014; Ehnert et al., 2014), there still does not exist a consensus on when particular HRM practices deserve the attribute 'sustainable' and when these practices are considered conventional. This leads to uncertainty in what HRM practices academics would view as 'sustainable' and therefore would lead to issues in determining the effectiveness of sustainable HRM practices. As a response, literature is categorizing sustainable HRM into different types, namely: socially responsible HRM, Green HRM, Triple bottom line HRM and Common Good HRM (Aust, Matthews, & Muller-Camen, 2020). Although the identification of the different types of sustainable HRM fosters research in the conceptualization of sustainable HRM, it still does not solve the issue of identifying which HRM practices could be implemented and would indeed guide a company in transforming their conventional HRM system towards a more sustainable one.

The identification of conceptualizing sustainable HRM is important since companies would use sustainability both as a 'means' to reach CS objectives and as an 'end' to design HRM practices and processes (Taylor, Osland, & Egri, 2012). Implementing (sustainable) HRM practices often lead to paradoxical tensions for businesses due to the involvement of different stakeholders, both inside and outside organizations, having dissimilar interpretations of these practices (Poon & Law, 2020). This research has contributed to the field by examining whether it could already be observed to what extent organisations are currently incorporating practices which are viewed as sustainable. Although the outcome of this research is rather disappointing, it is currently not possible to measure sustainable HRM practices with available ESG indicators, this study also encourages scholars to harmonize on a reporting system such that it can empirically investigate on how strategic choice has been made and how this would affect the sustainable HRM paradoxes companies are facing.

As an example on how to address the challenge of harmonizing numerous reporting systems on sustainability performance by companies, one could look at the accomplishments of the Global Reporting Initiative (GRI). The voluntary reporting on environment and social performance by business and other organisations worldwide has been amazingly successful since the inception in 1999 (Brown, de Jong, & Lessidrenska, 2009). The founders' strategy was to first, mobilize a broad coalition of actors and to engage them in a discussion around a set of rules and practices embodied by the GRI Reporting Guidelines; secondly, to create a mechanism for maintaining the discussion well into the future and for building a sense of shared ownership of the new rules and practices; and third, to create an organization which would serve as steward of the Guidelines and of the evolutionary processes which became the GRI Secretariat (Brown, de Jong, & Levy, 2009). Linking these steps to the field of sustainable HRM, the amount of publications in this field so recently show that practitioners of sustainable HRM are vigorously discussing how HRM strategies should be transformed to sustainable ones. The relatively young field of sustainable HRM is still debating about the characteristics and appears to have trouble moving to second and more importantly, the third step. Be that as it may, it is

important to involve business and other organisations as well within the discussion since they have to develop a sense of ownership of making this transformation (Brown, de Jong, & Levy, 2009).

This study contributed in that direction by attempting to link sustainable HRM practices to firm performance to incentivize companies to become part of this debate. When business and organisations do become actively part of the debate, this could lead to opportunities in reducing uncertainty and increasing legitimacy of the companies reporting on their practices. The success of achieving sustainability within the HRM department is assuming that when organisations are informed and actively involved, this would empower them to mobilize societal actors and demand accountability and a certain performance from all companies, and as such is an instrument of civil-private regulation. In particular, standardized information that could be used for benchmarking, ranking and cross-comparisons was presumed to be a powerful tool by way of political action and market-based mechanisms (Characklis & Richards, 1999; Hitzhusen, 2000)

6. Limitations and recommendations

This section outlines the research limitations and recommendations for future research. Firstly the limitations with respect to the methodology is reflected, secondly the limitations of the database are discussed and lastly generalizability of the research is discussed. This section concludes with recommendations for future research.

6.1 Research limitations in the methodology

The foundation of this research is the article of Diaz-Carrion et al. (2018) who established practices that describe sustainable HRM based on the components of CSR. Aligning such specific practices to ESG indicators disclosed that sometimes there were conflicts in assigning the ESG indicator to the most suitable category of sustainable HRM. This leads to interpretation issues since one ESG indicator could be placed in multiple categories. When realising this issue, more literature has been consulted to get a holistic view on the different components of sustainable HRM. However, this should have been done before analysing the database to reduce risks of selection bias. Nevertheless, the field of sustainable HRM is still fluid and expanding and therefore selecting managerial practices to measure the relationship with firm performance is also contributing to understanding what specific practices are relevant to incorporate for companies.

Some components of sustainable HRM have been expected to be related. For example, policies that encourage employees to take training can also affect the employee's career opportunities and the development. The potential relatedness of sustainable HRM practices could have also caused issues in executing a generalised linear model, since the model is sensitive for collinearity and therefore less accurate in estimating the effects. Besides, the model is also sensitive to outliers which could be a potential problem in this dataset since the dependent variable was not normally distributed. These two limitations of the model could be an explanation that the model did not provide any results for the year 2016. Excluding either one of the control variables, country or industry, delivered outcomes, however, the model had no problems for the other years and therefore this phenomenon could not be explained within the current analysis. Future research should be conducted to understand why the model was having problems with running one of the analyses.

The results showed that there exists inconsistency between the relation of some components of sustainable HRM and firm performance. For example, the component *having policies supporting skills training & career development* is related to firm performance in 2015, not related at all in 2016, strongly negative in 2017 and 2018, and not related at all in 2019. The pattern is difficult to explain since the variable is following a similar pattern as the variable measuring the presence of diversity policies (see table 12). An explanation for this phenomenon could be that there exists a reporting bias to companies only reporting that actually have such policies leading to different outcomes across the years. To establish whether this is actually a problem within the database, an in-depth research should be conducted to check whether there exists a reporting bias. Another aspect with regards to limitations in validity is the subjectivity of the researcher with regards to interpretation of the concepts. As mentioned before, some ESG indicators could be placed within multiple categories of sustainable HRM leading that when someone would re-execute the research could come with other outcomes. Therefore, it is recommendable to attribute different ratings to the aspects that should be included during the matching procedure. In this way, a more comprehensive understanding can be built on the availability of sustainable HRM practices within large databases such as the Thomson Reuters Eikon database.

6.2 Limitations of using Thomson Reuters Eikon database

The data contained some errors, for example, the ESG indicator “CEOs compensation divided by the average salary of the workers”, showed values between 0 and 910468. Mathematically, values below zero are invalid. Values between 0 and 1 are also disputable since that implies that the CEOs would earn less than the average worker within a company, however, other values are extremely high. A possible explanation for this issue is that companies have different ways of compensating their CEOs such as bonuses and stock ownerships (Jensen & Murphy, 1990). Although this would explain the variance within this variable, it still does not increase reliability. Therefore, to use this indicator appropriately it is recommendable to measure the relative CEOs compensation in an alternative way. This has also been recommended by other researchers who propose the measurement of CEOs compensation by including the pay-for-performance relationship (CFP) and the corporate social performance (CSP) (Callan & Thomson, 2014). Considering the large dataset and more than eight thousand observations, the data errors were not substantive.

Only a small amount of sustainable HRM practices was represented by ESG indicators, consulting or combining other databases could lead to the inclusion of more variables representing sustainable HRM practices. Suitable databases for such investigations are the widely used KLD database or the growing ESG database which has been consulted by other researchers (Harrison & Freeman, 1999; Kang, 2015; Wang, Hsieh, & Sarkis, 2018). Unfortunately these databases were not available to the researcher and therefore not included in this study. Considering that 12/14 ESG indicators are measured as binary values, the quality was limited and provided very little information. The measurement problem could have been captured by conducting more research on understanding the gathering process of data. By looking into how the data is gathered, researchers could alongside capture in what ways companies are implementing sustainable HRM practices. By doing so, researchers would be able to observe more than companies just having policies and would also understand the effectiveness of the policies. Linking this to the perspective of sustainable HRM, an organization should not ‘consume’ the employee but should contribute to the personal development of the employee (Ehnert et al., 2016), which is more than just providing a policy. The interest for HRM is on how employees *perceive* a certain policy or service (e.g. diversity policies) at the workplace, and *how* this in return affects their work-related outcomes. The programs and policies of diversity management vary significantly between organizations, involving training programs, family-friendly policies, mentoring opportunities and advocacy groups (Kellough & Naff, 2004). Considering the outcomes of the mean variables on firm performance in 2019 also gave different results than the previous analyses. This indicates that measuring components of sustainable HRM on a metric scale will give slightly different and more precise results which could be studied. Consequently, studying the effectiveness of sustainable HRM on any organizational performance, financial, social or ecological, it is not enough to just study a database providing policy indicators which are measured at a binary scale (yes/no). Therefore, researchers are encouraged to develop a more comprehensive tool for measuring the different components of sustainable HRM preferably on a metric scale.

6.3 Generalizability

The results of this study can be first of all generalized to the academic field of sustainable HRM because this study has used extensive literature research to evaluate the characteristics of sustainable HRM and linked this to ESG indicators present in a commonly used Thomson Reuters Eikon database. Researchers have called for an operationalization of the characteristics of sustainable HRM such that

it can be made useful for businesses (Ehnert et al., 2016). To the knowledge of the researcher, it has not been attempted to investigate available ESG indicators which can be considered as describing components of sustainable HRM practices and study the relationship with firm performance. Unfortunately, the database has not been sufficient in providing ESG indicators accurately describing the components of sustainable HRM. Although some of the ESG indicators have been found to 'fit' well, there were still issues in terms of missing values and data errors. Nevertheless, the issues discussed in this paper are important to all researchers who are trying to measure sustainable HRM. The results of this study showed that using binary measurement levels for sustainable HRM is troublesome for testing relationships with organizational performance. Besides, it is expected that some components of sustainable HRM are intertwined or even have a mediating role with respect to firm performance, which is difficult to study with the current measurement levels. Another issue that this research points out is that there might also exist a reporting bias, leading that companies are simply writing a policy but are not executing this properly. The reporting bias, also known as signalling, is not a new phenomenon. Companies have been reporting on specific CSR activities such that their stakeholders assess their CSR quality (Moratis, 2018). Future researchers should be aware of this potential issue and are encouraged to uptake measurements that prevent reporting biases.

With respect to generalising the results to the use of other databases, this study only looked at the Thomson Reuters Eikon database. As discussed, the data has not been adequate to study the components of sustainable HRM. During the selection process of the right database, other databases providing ESG data have also been considered. Judging from the available descriptions of the measured ESG indicators and their measurement levels, these databases would probably have similar issues as the currently used database. Besides, the other issues revealed in this study, such as a potential reporting bias and lack of transparency within industries are still problematic since this is not a data collection issue. Concluding, the datasets have only been briefly examined on the descriptions of ESG indicators and reported measurement levels (when available), however, with respect to data errors and missing data the datasets might be more competent.

6.4 Future recommendations

This research has explored whether sustainable HRM practices can be aligned with available ESG indicators and used to determine the relationship with firm performance. To extend our understanding on how sustainable HRM could be beneficial for individual companies and to build upon the limitations of this research some future recommendations can be made.

Firstly, it is important that the researchers continue to discuss the characteristics of sustainable HRM, however, in this debate also businesses and other organisations should be included. By including businesses and organisations in the debate about sustainable HRM the principles of a civil-private regulation are followed. In this way social reporting is used as a mechanism to empower civil society groups to engage with corporate social performance, whereas companies are focusing on the instrumental value of incorporating sustainable HRM practices to their stakeholders. Consequently, companies would probably report more accurately on their HRM practices which would improve the quality of the collected data. As this study has primarily shown that sustainable HRM practices might be intertwined or there may even exist mediating effects with other employee performance indicators (e.g. job satisfaction, turnover rates), improving the quality of the data would make deeper analysis of the underlying mechanisms of sustainable HRM possible. Therefore researchers are encouraged to create an open atmosphere and learn from the GRI in how to successfully create a reporting mechanism preferably within the current boundaries of the institutions such that sustainable HRM can be developed from there.

With regards to the underlying mechanisms of sustainable HRM, it would be interesting to investigate whether institutional differences and culture would affect the relationship of sustainable HRM with firm performance and whether there exists a difference between countries of the incorporation of sustainable HRM practices within firms. Already research has been carried out which compares the differences in the application of sustainable HRM at European level (Díaz-Carrion, López-Fernández, & Romero-Fernandez, 2021). In light of this research, it would be interesting to extend this to more countries and include this as a factor in the analysis as presented in this research. Moreover, the research could be extended such that practical advice can be given for HR managers on how they could improve their human resource department in sustainability. As extensively discussed, this research has dealt with data issues in terms of measuring sustainable HRM practices. Future research could make the scope smaller by focusing on one sector and country at the same time and provide clearer advice. It is also recommended to not only focus on financial performance as a dependent variable, but to consider social or ecological outcomes as well such as job satisfaction or turnover rates. This would expand other studies which have only been looking into one specific industry in one country and other effects such as institutions and cultures could be studied (Davidescu et al., 2020; Wikhamn, 2019).

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Appendix 1 : Sustainable HRM practices

Table 16: Practices as defined by Diaz-Carrion et al. (2018). The average value is given by the Panellists in importance (1-10; with 10 being very important)		
Item	Sustainable HR practice	
COMP3	The reward policy does not discriminate by gender, type of contract etc.	7.74
SAF4	To minimize psychological and physical work risks	7.58
DIV28	To give the possibility of extending maternity/paternity leave when the child is affected by a disability	7.54
DIV9	The report on the performance of the company in economic, social and environmental issues	7.46
SAF8	To keep a record of job accidents, illnesses and workers at risk of suffering occupational diseases with the goal of improving health and safety at work.	7.42
DIV15	To guarantee the application of the principles of diversity and equal opportunities in all HRM practices	7.38
DIV25	To favour the existence of a proper work-family balance for employees	7.33
DIV23	To register incidents related to discrimination and carry out corrective actions	7.25
DIV16	To have a formal equal opportunities policy	7.17
DIV19	To facilitate employees affected by a disability to remain in their job position by adjusting working hours etc	7.17

Appendix 2: Matching Procedure

Table 17 shows the matching procedure with in the first column all the 98 practices as identified by Diaz-Carrion et al. (2018), the green highlighted practices are the ten selected practices by the panel experts. The orange column represents the first order matching (fitting) and the yellow column the second order matching (related).

Sustainable HRM Practice		RED (not available)/ GREEN(available) / ORANGE (need to be checked)	Eikon database fitting well	CODE	RED (not available)/ GREEN(available)/ ORANGE (need to be checked)	Eikon database not fitting
To conduct climate surveys to achieve a comfortable working environment in which the dignity of employees is respected and their needs are considered.	DIV 1					
To facilitate the free interaction between employees and their representatives.	DIV 2					
To involve workers' representatives in relevant decisions (collective agreements, the percentage of temporary staff etc.).	DIV 3					
To ensure that most of the workers are covered by collective agreements.	DIV 4					
To communicate to employees the changes that might affect their contractual relationship with the company ahead of the minimum period required by law.	DIV 5					
To encourage decentralization and employee autonomy for making decisions.	DIV 6					
To perform audits of suppliers and subcontractors to assure that they treat their employees in a responsible manner.	DIV 7					
To encourage employees' engagement in social projects as part of their working week.	DIV 8					
To report on the performance of the company in economic, social and environmental issues.	DIV9					
To implement formal and informal mechanisms for communication with employees.	DIV 10					
To try to improve communication among employees.	DIV 11					
To encourage communication between employees and line managers.	DIV 12					
To encourage participation and ideas exchange at both horizontal and vertical levels.	DIV 13					
To have formal mechanisms for workers to anonymously express their concerns about unethical or illegal actions.	DIV 14					
To guarantee the application of the principles of diversity and equal opportunities in all HRM practices.	DIV15	0	Has the company set targets or objectives to be achieved on diversity and equal opportunity? - any objective/target set to increase or promote diversity in the workplace with a time frame - includes information on the promotion of women, minorities, disabled employees, or employment from any age, ethnicity, race, nationality, and religion	SODODP0151	1	Percentage of women employees. - percentage of women employees to the total number of employees of the company - percentage of women employees = number of women/total number of employees*100 Percentage of new women employees. - percentage of new women employees to the total number of new employees hired during the year - percentage of new women employees=number of new women employees/total number of new employees*100 - new women employees = women employees at the end of the year- women employees at beginning of year -women employees leaving Percentage of women managers. - percentage of women managers among total managers of the company - if there is a breakdown by category in percentage such as top, senior, middle, junior management, then we consider the percentage of middle woman managers - percentage of women managers= number of women managers/total number of managers*100 Number of controversies published in the media linked to workforce diversity and opportunity (e.g., wages, promotion, discrimination and harassment). - consider any issues to employees relating to discrimination - whistleblowers is considered - consider information where equal opportunities is not provided for employees
To have a formal equal opportunities policy.	DIV16	1	Does the company have a policy to drive diversity and equal opportunity? - program or practice to promote diversity and equal opportunities within the workforce - includes information on the promotion of women, minorities, disabled employees, or employment from any age, ethnicity, race, nationality, and religion - consider information from the code of conduct mentioning diversity policy together with the reporting of violations	SODODP0081		Has the company set targets or objectives to be achieved on diversity and equal opportunity? - any objective/target set to increase or promote diversity in the workplace with a time frame - includes information on the promotion of women, minorities, disabled employees, or employment from any age, ethnicity, race, nationality, and religion
To create an environment in which groups of workers in a minority (e.g. of colour, with mobility challenges etc.) feel integrated in the organization.	DIV 17				0	Does the company have an employee resource group which is voluntarily formed by group of employees with common characteristics like ethnicity, sexual orientation or disability status?
To aim to increase the presence of workers in a minority (e.g. of colour, with mobility challenges etc.) in management positions.	DIV 18					
To facilitate employees affected by a disability to remain in their job position by adjusting working hours etc.	DIV 19	0	Percentage of employees with disabilities or special needs. - percentage of disabled employees or special needs to the total employees of the company - percentage of disabled employees=number of disabled employees/total number of employees*100	SODODP032		
HR policies are always aimed at assessing the merit of the worker.	DIV 20					
To provide training on ethical codes of conduct, respect for human rights, environmental sustainability etc.	DIV 21					
To provide training for both workers and managers on the importance of diversity.	DIV 22					
To register incidents related to discrimination and carry out corrective actions.	DIV 23		Number of controversies linked to workforce diversity and opportunity (e.g., wages, promotion, discrimination and harassment) published since the last fiscal year company update.	SODODP036		
To have a person or team responsible for managing diversity in the organization.	DIV 24					

To favour the existence of a proper work–family balance for employees.	DIV25	1	Does the company claim to provide flexible working hours or working hours that promote a work-life balance? - programs or processes that help employees to have a balance between their work and personal life - includes flexible work arrangements such as telecommuting, flexible working hours, job-share, and reduced and compressed work weeks Does the company claim to provide day care services for its employees?	SODODP026	
To allow modifications of the workday and shifts according to workers' personal needs	DIV 26				
To be flexible when authorizing paternity/maternity, breastfeeding leave and unpaid leave for family reasons.	DIV 27				
To give the possibility of extending maternity/paternity leave when the child is affected by a disability.	DIV 28				
To facilitate the transfer to other locations for personal or professional reasons (family, health etc.).	DIV 29				
To guarantee the employee the possibility of returning to the same position after the maternity/paternity leave.	DIV 30				
To provide monetary compensation during the maternity/paternity leave beyond what is required by law.	DIV 31				
To provide workers with childcare facilities, both during working hours and outside work.	DIV 32				
To subsidize and advise about childcare services and assistance to dependant family members.	DIV 33				
To organize educational play activities for employees' families.	DIV 34				
To offer employees holiday destinations at lower prices.	DIV 35				
To carry out regular audits to verify the company's compliance with the work–family balance policy.	DIV 36				
To have a formalized code of conduct based on the main international sustainability standards (Global Compact, Equator Principles etc.).	DIV 37				
To present reports verified by independent consulting companies according to internationally accepted standards such as GRI, ISO26000 etc.	DIV 38				
To publish any progress, gaps and challenges in the field of responsible personnel management.	DIV 39				
HEALTH AND SAFETY					
To accredit an appropriate level of health and safety with standards and certifications such as OSHAS, ISOS etc	SAF 1	1	Does the company have a policy to improve employee health & safety? - processes or initiatives in place to reduce occupational accidents, injuries, illness for employees of the company - information may refer to a system, project or a set of formal, documented processes for controlling health and safety impacts and driving continuous improvement - consider the process to reduce commuting accidents	SOHSDP0121	Does the company have a policy to improve employee health & safety in its supply chain? - consider if the company describes that it strives to select and/or work with suppliers who apply minimum security standards for their employees - consider the information if the company visits suppliers sites, monitoring, inspection, guiding and working with suppliers to improve the health and safety performance in the supply chain - information is considered from the supplier's code of conduct where the company details the requirement with regards to the protection of health and safety of suppliers' workforce - information is considered from industry code such as the electronic industry citizenship principles (EICC) code of conduct and pharmaceutical industry principles (PSCI). However, the company has to describe its own actions/programs and initiatives related to the specific principles stipulated in the codes - legal compliance data is considered
					SOHSDP0123
					SOHSDP021
To have formal health and safety committees that carry out monitoring and control activities beyond those required by law.	SAF 2	1	Does the company have health and safety management systems in place like the OHSAS 18001 (Occupational Health & Safety Management System)? - consider if the company claims to have OHSAS 18001 or any internal management system for one site or more - include environment, health, and safety (EHS) management system - consider if companies complying with OHSAS (Occupational Health and Safety Act) Does the company have an employee health & safety team? - any individual or team operates on a day to day basis and responsible for health and safety inspection, incident investigation, making recommendations, implementing best practices and ensuring proper communication on health and safety - the team has to be responsible to carry out the implementation of the health and safety strategy, not only decision making - include if the company named the team as committee and the members of the team are employees of the company, who are operational on a day to day basis in the company and are not part of the board committees - the health and safety team are called with different names such as department, unit, division, manager, specialists, council, coordinator, representative, officers, etc	SOHSDP014	The percentage of the company sites or subsidiaries that are certified with any occupational health and safety management system (OHSMS).
					SOHSD01V
To involve employees in the establishment of a plan for prevention of occupational risks.	SAF 3				
To minimize psychological and physical work risks.	SAF 4				
To provide training to improve accident prevention/health and safety beyond what is required by law.	SAF 5	1	Does the company train its executives or key employees on health & safety? - consider employee health and safety related training such as on the job, classroom, distance or e-learning by the company or external trainers - information on training from the code of conduct which encompasses health and safety is considered	SOHSDP0081	Number of controversies linked to workforce health and safety published since the last fiscal year company update. - instances where safety of the employees is harmed - lawsuits against a company relating to employees health
					SOHSDP046
To promote sport and healthy living inside and outside work; for example, developing sports activities, raising awareness of the benefits of healthy living etc. To be concerned about both workers' and their families' health by providing free medical reviews, psychological support services etc.	SAF 6				Total hours of employee training on health & safety policies and procedures. - consider total employees health and safety training hours provided by the company - consider if the company reports environmental health and safety (EHS) training hours - if health and safety training hours are given per employee the multiply by total employees to get total health and safety hours
					SOHSDP009
	SAF 7				

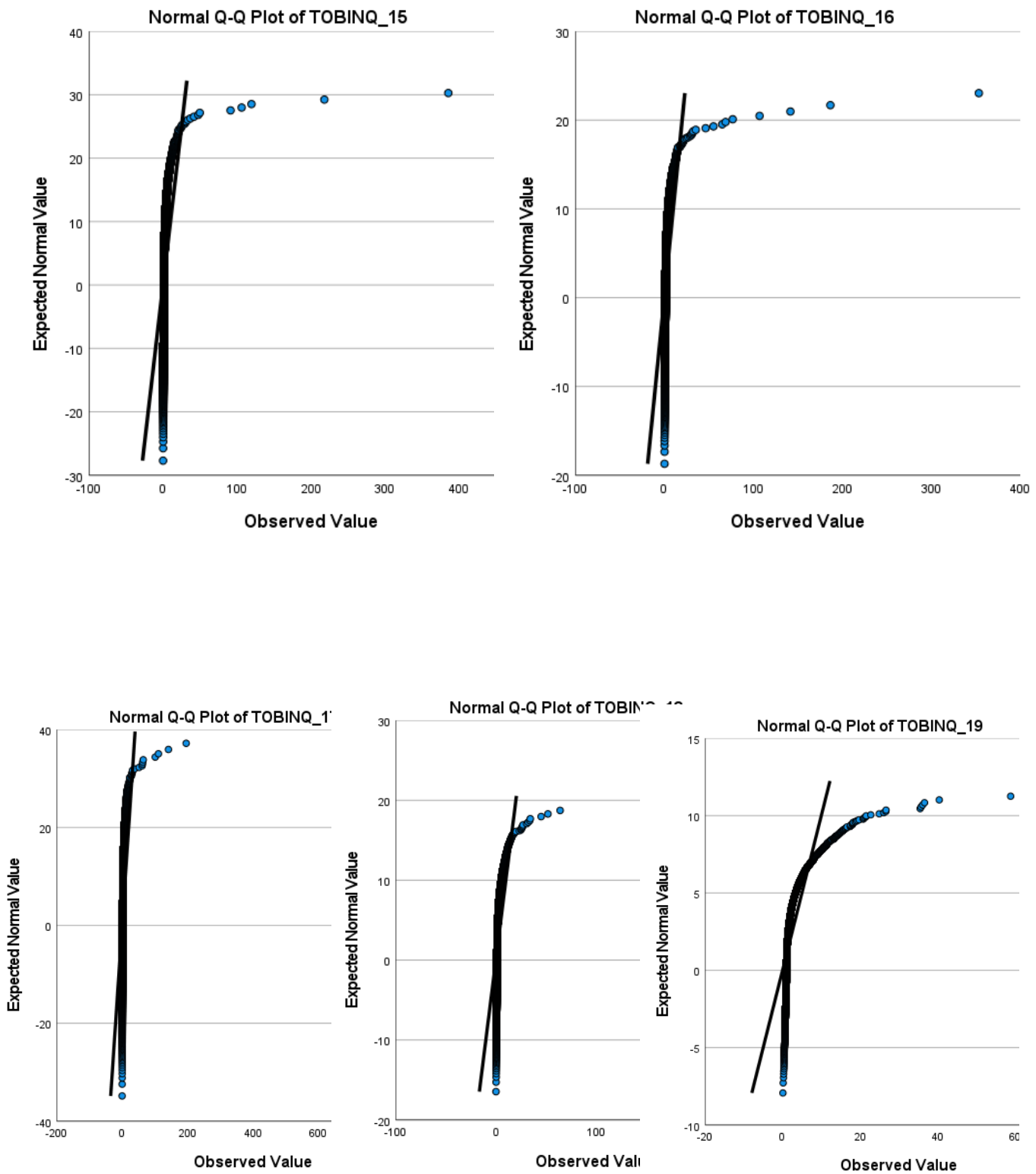
To keep a record of job accidents, illnesses and workers at risk of suffering occupational diseases with the goal of improving health and safety at work.	SAF 8	0	Number of injuries and fatalities including no-lost-time injuries reported for employees relative to one million hours worked. - total injury rate employees= total employees accident (number of injuries)/total employees working hours*1,000,000 - employees injuries include all work-related deaths, illnesses, minor & major injuries, lost time & non-lost time accidents, medical treatment injuries (MTI), recordable incidents and commuting accidents - unless the company provide the exact working hours, the total employees working hours= total number of employees * 2,000	SOHSDP026	Does the company show through the use of surveys or measurements that it is improving the level of employee health & safety in its supply chain? - consider if the company claims to monitor or assess its suppliers through survey, audit, and questionnaire on health and safety performance while showing progress - consider if both absolute and normalized figures are provided shows progress - information is not qualified if the company claims or shows to study or assess the company's performance during the year under review but does not provide historical data and therefore cannot show to have improved - information is considered from industry code such as the electronic industry citizenship coalition (EICC) code of conduct and pharmaceutical industry principles (PSCI). However, the company has to describe its own actions/programs and initiatives related to the specific principles stipulated in the codes	SOHSDP0183
			Number of occupational diseases or any disease caused by continued exposure to conditions inherent in a person's occupation reported relative to one million hours worked. - occupational diseases rate = number of occupational diseases/total working hours *1,000,000 - total working hours = total number of workers * 2,000 - consider any abnormal condition or disorder (other than an injury) that resulted from work-related exposure to a biological, chemical or physical agent, these include both acute and chronic illnesses or diseases that may be caused by inhalation, absorption, ingestion or direct contact - include respiratory illnesses, skin diseases, illnesses caused by chemical agents, occupational illnesses/diseases caused by physical agents such as disorders of the musculoskeletal system caused by repeated trauma, occupational illnesses/diseases caused by biological agents	SOHSDP030		
To agree with trade unions with regard to improving health and safety.	SAF 9					
COMPENSATION						
Remuneration practices are transparent for all members of the organization.	COMP 1				Total value of salaries and wages paid to all employees and officers, including all benefits, as reported by the company in its CSR reporting. - include all monetary benefits given by the company such as social security cost, pension, allowances, commissions, share-based payments, etc - information is considered from an annual report when it is reported in the sustainability section or the sustainability section in the company's website - the scope has to be global (100%)	SOEQDP016
The salary gap between the highest and the lowest wage (including managers) is agreed between employees and managers of the company	COMP 2	1	CEO's total salary (or the highest salary) divided by average salaries and benefits.	SOEQ006V		
The reward policy does not discriminate by gender, type of contract etc.		0	Percentage of remuneration of women to men, often for doing the same work.	SODODP016		
The compensation system considers the employee's skills, job position and performance	COMP 4					
To link rewards to both individual and collective performance.	COMP 5					
To provide social benefits as motivation and a retention mechanism (retirement plan, health insurance etc.).	COMP 6					
To offer rewards by way of company shares	COMP 7					
To take into consideration employees' expectations when establishing compensation	COMP 8					
To have a flexible compensation plan in which employees can decide which parts of their salary are monetary and which are social benefits.	COMP 9					
To revise salaries yearly in order to adjust them both to performance and to external indicators, such as the CPI (consumer price index).	COMP 10					
To perform audits of salary review processes to ensure that they are not discriminatory, and use them to improve the remuneration system.	COMP 11					
To link part of the compensation to employees' compliance with CSR goals.	COMP 12					
To provide non-monetary compensation to employees	COMP 13					
To reward employees for giving suggestions about quality or organizational health and safety improvements.	COMP 14					
To offer compensation above the minimal pay required by the host country national laws	COMP 15					
Pensions, health insurance etc. are better than the legislation of the host country.	COMP 16					
To set wages above collective agreements of each country.	COMP 17					
TRAINING						
To have skill training programmes and continuous learning that support workers' employability.	TRAI 1	1	Does the company have a policy to improve the skills training of its employees? - programs or processes that focus on developing employee's skills to meet the evolving strategic needs of the organization and/or the industry - include job specific training to employees - information to be on skills training for the general workforce	SOTDDP009I		
			Does the company have a policy to support the skills training or career development of its employees? Does the company claim to provide regular staff and business management training for its managers? - consider training to existing managers (how to manage their team and process) - consider training to non-managers to develop leadership skill for future managerial positions	SOTDD01V		
				SOTDDP024		
To provide periodic training to all employees regardless of their professional category, gender, age etc.	TRAI 2				Total training costs from all the training performed by all employees. - consider total training costs from all the training performed by all employees - include all types of cost of training given to general employees (such as health & safety, environmental, emergency response, skills & career development training)	SOTDDP021
					Total training hours performed by all employees. - consider only employee training hours - include all types of training given to general employees (such as health & safety, environmental, emergency response, skills & career development training) - if the value is given in days, multiply by 8, assuming that 1 day = 8 hours worked	SOTDDP019

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Appendix 3: Normal distribution firm performance

		2015			2016			2017			2018			2019		
		Statistic	Std. Error		Statistic	Std. Error		Statistic	Std. Error		Statistic	Std. Error		Statistic	Std. Error	
Mean		2.265	0.09112		2.1684	0.06249		2.3896	0.1091		2.0489	0.05332		2.1583	0.02867	
95% Confidence Interval for Mean	Lower Bound	2.0863			2.0459			2.1757			1.9444			2.1021		
	Upper Bound	2.4436			2.2909			2.6035			2.1534			2.2145		
5% Trimmed Mean		1.74			1.7373			1.8611			1.6627			1.7818		
Median		1.3577			1.3984			1.456			1.2801			1.3367		
Variance		63.203			30.568			96.742			23.816			7.051		
Std. Deviation		7.95005			5.52887			9.83577			4.88014			2.65529		
Minimum		0.07			0.17			0.04			0.14			0.09		
Maximum		462.69			353.55			808.45			286.05			77.77		
Range		462.62			353.37			808.42			285.92			77.68		
Interquartile Range		1.17			1.14			1.29			1.06			1.22		
Skewness		43.928	0.028		41.659	0.028		69.512	0.027		45.988	0.027		9.669	0.026	
Kurtosis		2268.886	0.056		2321.398	0.055		5579.369	0.054		2597.079	0.054		190.727	0.053	

Figures 4: Graphical display of the non-normal distribution of the dependent variable



Appendix 4: One-way ANOVA INDUSTRY

Table 19: Outcomes of the one-way anova comparing the different industries with the metric variables used in this study.

		Sum of squares	Df	Mean Squares	F	Sig.
Firm Performance (Tobin's Q) 2015	Between Groups	10478364	10	1047836	16926	.000
	Within Groups	470562389	7601	61908		
	Total	481040753	7611			
Firm Performance (Tobin's Q) 2016	Between Groups	5413270	10	541327	18095	.000
	Within Groups	233876334	7818	29915		
	Total	239289604	7828			
Firm Performance (Tobin's Q) 2017	Between Groups	11521446	10	1152145	12072	.000
	Within Groups	774607670	8116	95442		
	Total	786129116	8126			
Firm Performance (Tobin's Q) 2018	Between Groups	5241624	10	524162	22576	.000
	Within Groups	194239581	8366	23218		
	Total	199481205	8376			
Firm Performance (Tobin's Q) 2019	Between Groups	6656377	10	665638	105964	.000
	Within Groups	53809106	8566	6282		
	Total	60465484	8576			
CEO's salary divided by the average worker's salary 2015	Between Groups	1,92423E+11	10	19242291387	1639	.090
	Within Groups	2,0751E+13	1768	11736978910		
	Total	2,09434E+13	1778			
CEO's salary divided by the average worker's salary 2016	Between Groups	50989964105	10	5098996411	1343	.201
	Within Groups	7,88673E+12	2078	3795344546		
	Total	7,93772E+12	2088			
CEO's salary divided by the average worker's salary 2017	Between Groups	7094775094	10	709477509	.288	.984
	Within Groups	6,19271E+12	2517	2460352845		
	Total	6,1998E+12	2527			
CEO's salary divided by the average worker's salary 2018	Between Groups	19654797413	10	1965479741	.708	.718
	Within Groups	8,28002E+12	2981	2777599754		
	Total	8,29968E+12	2991			
CEO's salary divided by the average worker's salary 2019	Between Groups	2,54185E+12	10	2,54185E+11	1151	.319
	Within Groups	8,32936E+14	3773	2,20762E+11		
	Total	8,35478E+14	3783			

Number of employees 2015	Between Groups	2,29877E+14	10	2,29877E+13	24667	.000
	Within Groups	6,7116E+15	7202	9,31907E+11		
	Total	6,94147E+15	7212			
Number of employees 2016	Between Groups	2,29995E+14	10	2,29995E+13	23678	.000
	Within Groups	7,20725E+15	7420	9,71327E+11		
	Total	7,43724E+15	7430			
Number of employees 2017	Between Groups	2,5844E+14	10	2,5844E+13	26579	.000
	Within Groups	7,43934E+15	7651	9,72335E+11		
	Total	7,69778E+15	7661			
Number of employees 2018	Between Groups	2,65887E+14	10	2,65887E+13	27855	.000
	Within Groups	7,48734E+15	7844	9,54531E+11		
	Total	7,75323E+15	7854			
Number of employees 2019	Between Groups	2,97142E+14	10	2,97142E+13	30293	.000
	Within Groups	7,95124E+15	8106	9,80908E+11		
	Total	8,24838E+15	8116			
Percentage women employees 2015	Between Groups	2603490	10	260349	1078	.379
	Within Groups	57695024	239	241402		
	Total	60298514	249			
Percentage women employees 2016	Between Groups	2943888	10	294389	1238	.267
	Within Groups	56838679	239	237819		
	Total	59782567	249			
Percentage women employees 2017	Between Groups	2491698	10	249170	1001	.443
	Within Groups	59490170	239	248913		
	Total	61981868	249			
Percentage women employees 2018	Between Groups	3075454	10	307545	1269	.248
	Within Groups	57902105	239	242268		
	Total	60977559	249			
Percentage women employees 2019	Between Groups	3126617	10	312662	1331	.215
	Within Groups	56159835	239	234978		
	Total	59286451	249			

Table 19B: Differences between groups per industry for firm performance											
TUKEY HSD a,b											
	2015				2016				2017		
Industry	N	1	2	Industry	N	1	2	Industry	N	1	2
Utilities	285	1.2684		Financials	1260	1.2994		Real Estate	618	1.3447	
Financials	1225	1.3242		Utilities	296	1.3039		Utilities	303	1.3756	
Energy	421	1.3311		Real Estate	597	1.3472		Financials	1305	1.387	
Real Estate	581	1.3912		Energy	430	1.5349		Basic Materials	754	1.8315	
Basic Materials	730	1.5827		Basic Materials	740	1.8652		Energy	447	1.9294	
Industrials	1131	1.8631		Industrials	1153	1.877		Industrials	1181	1.9927	
Academic & Educational Services	27	2.2833		Academic & Educational Services	28	2.2442		Consumer Cyclical	1100	2.3697	
Consumer Non-Cyclical	547	2.3622		Consumer Non-Cyclical	560	2.3876		Consumer Non-Cyclical	582	2.5477	
Consumer Cyclical	1034	2.5747		Consumer Cyclical	1067	2.5442	2.5442	Academic & Educational Services	32	2.6133	
Technology	912	2.9621	2.9621	Technology	943	2.8991	2.8991	Technology	996	3.0976	3.0976
Healthcare	719		5.4361	Healthcare	755		4.1005	Healthcare	809		5.5717
Sig.		0.51	0.053	Sig.		0.087	0.108	Sig.		0.679	0.173
Means for groups in homogeneous subsets are displayed.											
a. Uses Harmonic Mean Sample Size = 244.958.											
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.											

Table 19C: Differences between groups per industry for firm performance												
TUKEY HSD a,b												
2018						2019						
Industry	N	1	2	3	4	Industry	N	1	2	3	4	5
Real Estate	640	1.203				Real Estate	650	1.2899				
Utilities	305	1.2588				Utilities	307	1.316				
Financials	1343	1.315				Energy	462	1.3244				
Energy	458	1.3897	1.3897			Financials	1370	1.3708				
Basic Materials	764	1.5556	1.5556			Basic Materials	773	1.6446	1.6446			
Industrials	1210	1.7508	1.7508	1.7508		Industrials	1223	1.929	1.929	1.929		
Consumer Cyclical	1115	2.0733	2.0733	2.0733		Consumer Cyclical	1135		2.1241	2.1241		
Academic & Educational Services	33	2.2485	2.2485	2.2485	2.2485	Consumer Non-Cyclical	597			2.4121	2.4121	
Consumer Non-Cyclical	587		2.7703	2.7703	2.7703	Academic & Educational Services	37				2.9	
Technology	1046			2.979	2.979	Technology	1089				3.0911	
Healthcare	876				3.621	Healthcare	934					4.0945
Sig		.366	.058	.150	.061	Sig.		0.111	0.501	0.489	0.067	1
Means for groups in homogeneous subsets are displayed.												
a. Uses Harmonic Mean Sample Size = 244.958.												
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.												

Table 19D: Differences between groups per industry for employees											
TUKEY HSD a,b											
2015						2016					
N	1	2	3	4	5	N	1	2	3	4	5
453	3343.342					471	3404.554				
31	7376.161	7376.161				34	8365.882	8365.882			
670	8554.848	8554.848	8554.848			704	9020.553	9020.553	9020.553		
394	9879.094	9879.094	9879.094			403	9104	9104	9104		
279	9896.982	9896.982	9896.982			283	9841.947	9841.947	9841.947		
683	11187.59	11187.59	11187.59			696	11021.68	11021.68	11021.68		
1138	11973.99	11973.99	11973.99	11973.99		1176	12412.62	12412.62	12412.62	12412.62	
904		15316.34	15316.34	15316.34		939		15946.86	15946.86	15946.86	15946.86
1128			17558.84	17558.84	17558.84	1157			17581.11	17581.11	17581.11
1004				20708.51	20708.51	1028				21232.12	21232.12
529					25957.53	540					24920.79
	0.098	0.179	0.068	0.089	0.121		0.06	0.219	0.094	0.073	0.062
Means for groups in homogeneous subsets are displayed.											
a. Uses Harmonic Mean Sample Size = 244.958.											
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.											

Table 19E: Differences between groups per industry for employees					
TUKEY HSD a,b					
2017					
Industry	N	1	2	3	4
Real Estate	490	3522.943			
Healthcare	746	8983.202	8983.202		
Energy	419	8993.668	8993.668		
Academic & Educational Services	35	9333.514	9333.514		
Utilities	292	9665.219	9665.219		
Basic Materials	713	10810.84	10810.84		
Financials	1203	12145.99	12145.99		
Technology	983		15836.81	15836.81	
Industrials	1180		17842.59	17842.59	17842.59
Consumer Cyclical	1053			21647.88	21647.88
Consumer Non-Cyclical	548				25892.26
Sig.		0.078	0.061	0.6	0.134
Means for groups in homogeneous subsets are displayed.					
a. Uses Harmonic Mean Sample Size = 244.958.					
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.					

Table 19F: Differences between groups per industry for employees												
TUKEY HSD a,b												
2018							2019					
Industry	N	1	2	3	4	5	N	1	2	3	4	5
Real Estate	512	4195.334					523	4631.115				
Healthcare	792	8140.472	8140.472				903	7707.473	7707.473			
Energy	429	9297.403	9297.403				444	9406.878	9406.878			
Utilities	296	9630.97	9630.97	9630.97			300	9824.933	9824.933	9824.933		
Academic & Educational Services	36	9995.806	9995.806	9995.806			39	10463.18	10463.18	10463.18		
Basic Materials	723	10852.17	10852.17	10852.17			728	11354.52	11354.52	11354.52		
Financials	1226	11925.46	11925.46	11925.46			1251	12035.64	12035.64	12035.64		
Technology	1021		16046.96	16046.96	16046.96		1056		16047.69	16047.69	16047.69	
Industrials	1191			18269.73	18269.73	18269.73	1202			18151.98	18151.98	18151.98
Consumer Cyclical	1075				21710.75	21710.75	1108				22353.89	22353.89
Consumer Non-Cyclical	554					25506.95	563					26735.2
Sig.		0.152	0.13	0.062	0.605	0.231		0.181	0.074	0.075	0.409	0.057
Means for groups in homogeneous subsets are displayed.												
a. Uses Harmonic Mean Sample Size = 244.958.												
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.												

Appendix 5: One-way ANOVA COUNTRY

Table 20A: Outcomes of the one-way Anova comparing the different countries with the metric variables used in this study						
		Sum of Squares	df	Mean Square	F	Sig.
Number of employees 2015	Between Groups	1.56E+10	5	3.11E+09	3.241	0.006
	Within Groups	6.93E+12	7207	9.61E+08		
	Total	6.94E+12	7212			
Number of employees 2016	Between Groups	1.85E+10	5	3.71E+09	3.709	0.002
	Within Groups	7.42E+12	7425	9.99E+08		
	Total	7.44E+12	7430			
Number of employees 2017	Between Groups	1.57E+10	5	3.13E+09	3.122	0.008
	Within Groups	7.68E+12	7656	1E+09		
	Total	7.7E+12	7661			
Number of employees 2018	Between Groups	1.9E+10	5	3.8E+09	3.855	0.002
	Within Groups	7.73E+12	7849	9.85E+08		
	Total	7.75E+12	7854			
Number of employees 2019	Between Groups	1.8E+10	5	3.61E+09	3.557	0.003
	Within Groups	8.23E+12	8111	1.01E+09		
	Total	8.25E+12	8116			
TOBINQ_15	Between Groups	233.246	5	46.649	0.738	0.595
	Within Groups	480807.5	7606	63.214		
	Total	481040.8	7611			
TOBINQ_16	Between Groups	174.972	5	34.994	1.145	0.334
	Within Groups	239114.6	7823	30.566		

	Total	239289.6	7828			
TOBINQ_17	Between Groups	432.151	5	86.43	0.893	0.484
	Within Groups	785697	8121	96.749		
	Total	786129.1	8126			
TOBINQ_18	Between Groups	280.868	5	56.174	2.361	0.038
	Within Groups	199200.3	8371	23.796		
	Total	199481.2	8376			
TOBINQ_19	Between Groups	95.798	5	19.16	2.72	0.018
	Within Groups	60369.69	8571	7.043		
	Total	60465.48	8576			
CEO's salary divided by the average worker's salary 2015	Between Groups	27753070	5	5550614	0.471	0.798
	Within Groups	2.09E+10	1773	11796756		
	Total	2.09E+10	1778			
CEO's salary divided by the average worker's salary 2016	Between Groups	21428753	5	4285751	1.128	0.343
	Within Groups	7.92E+09	2083	3800426		
	Total	7.94E+09	2088			
CEO's salary divided by the average worker's salary 2017	Between Groups	10899480	5	2179896	0.888	0.488
	Within Groups	6.19E+09	2522	2453966		
	Total	6.2E+09	2527			
CEO's salary divided by the average worker's salary 2018	Between Groups	9140531	5	1828106	0.658	0.655

	Within Groups	8.29E+09	2986	2776470		
	Total	8.3E+09	2991			
CEO's salary divided by the average worker's salary 2019	Between Groups	5.25E+08	5	1.05E+08	0.475	0.795
	Within Groups	8.35E+11	3778	2.21E+08		
	Total	8.35E+11	3783			
Percentage women employees 2015	Between Groups	1055.529	5	211.106	0.869	0.502
	Within Groups	59242.99	244	242.799		
	Total	60298.51	249			
Percentage women employees 2016	Between Groups	1043.217	5	208.643	0.867	0.504
	Within Groups	58739.35	244	240.735		
	Total	59782.57	249			
Percentage women employees 2017	Between Groups	933.515	5	186.703	0.746	0.59
	Within Groups	61048.35	244	250.198		
	Total	61981.87	249			
Percentage women employees 2018	Between Groups	1142.11	5	228.422	0.931	0.461
	Within Groups	59835.45	244	245.227		
	Total	60977.56	249			
Percentage women employees 2019	Between Groups	1146.275	5	229.255	0.962	0.442
	Within Groups	58140.18	244	238.279		
	Total	59286.45	249			
INDUSTRY	Between Groups	78.983	5	15.797	2.153	0.056
	Within Groups	64324.27	8768	7.336		
	Total	64403.26	8773			

Table 20B: Differences between groups per country for number of employees										
Tukey HSD	Subset for alpha = 0.05									
	2015		2016		2017		2018		2019	
Country	N	1	N	1	N	1	N	1	N	1
North America	2903	12938.96	3000	12950.55	3124	13172.76	435	12553.67	449	12696.49
Oceania	402	13239.23	412	13656.53	426	13193.86	3206	13169.65	3335	13439.07
Europe	1552	14458.38	1601	14373.98	1633	14633.51	1681	14363.4	1740	14360.44
Africa	300	15937	1866	16356.65	1906	16159.34	333	16201.24	344	16202.81
Asia	1819	16041.1	308	16682.98	323	16505.99	1943	16501.8	1986	16659.45
South America	237	18093.12	244	18071.85	250	17883.16	257	17854.68	263	17700.53
Sig.		0.08		0.087		0.134		0.052		0.08
Means for groups in homogeneous subsets are displayed. a. Uses Harmonic Mean Sample Size = 518.186. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.										

Table 20C: Differences between groups per country for firm performance				
Tukey HSD	Subset for alpha = 0.05			
	2018		2019	
Country	N	1	N	1
North America	367	1.8203	380	1.8876
Oceania	267	1.824	276	1.9445
Europe	2045	1.8502	2081	2.043
Africa	1783	1.9471	475	2.2215
Asia	456	2.0824	1822	2.2271
South America	3459	2.2561	3543	2.2278
Sig.		0.634		0.212
Means for groups in homogeneous subsets are displayed. a. Uses Harmonic Mean Sample Size = 518.186. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.				

Appendix 6: Overview of the scale variables

TABLE 21: DESCRIPTIVES OF ALL THE SCALE VARIABLES INCLUDED IN THIS STUDY

	Year	Observations	Mean	Std Deviation	Minimum	Maximum
DIV 15 <i>PERCENTAGE WOMEN EMPLOYEES</i>	2015	250	32.6091	15.56158	8.00	76.30
	2016	250	32.3965	15.49486	7.92	76.20
	2017	250	33.0198	15.77730	7.57	75.90
	2018	250	33.3211	15.64896	6.83	75.60
	2019	250	33.7505	15.43043	7.66	75.50
COMP2 <i>CEO'S TOTAL SALARY (OR THE HIGHEST SALARY) DIVIDED BY AVERAGE SALARIES AND BENEFITS</i>	2015	1779	320.79	3432.083	1	125807
	2016	2089	192.51	1949.766	1	61836
	2017	2528	170.58	1566.341	1	57268
	2018	2992	155.94	1665.798	1	54279
	2019	3784	380.16	14861.045	1	910468
SIZE <i>SIZE OF THE COMPANY MEASURED BY NUMBER OF EMPLOYEES</i>	2015	7213	14358.9777	31024.00948	1.00	293592
	2016	7431	14474.5330	31638.18220	1.00	291526
	2017	7662	14522.4163	31698.58699	1.00	295800
	2018	7855	14497.0475	31419.24717	1.00	298757
	2019	8117	14638.6431	31879.63129	1.00	298683
PERF <i>FINANCIAL PERFORMANCE MEASURED BY TOBIN'S Q</i>	2015	7612	2.2650	7.95005	0.07	462.69
	2016	7829	2.1684	5.52887	0.17	353.55
	2017	8127	2.3896	9.83577	0.04	808.45
	2018	8377	2.0489	4.88014	0.14	286.05
	2019	7557	2.1583	2.65529	0.09	77.77

Appendix 7: Detailed overview of the nominal variables

TABLE 22: DESCRIPTIVES BINOMINAL VARIABLES INCLUDED IN THIS STUDY

VARIABLE NAME	year	Percentage of companies reporting	percentage yes
DIV_16	2015	51.94	71.7
DIV_16	2016	61.64	73.8
DIV_16	2017	69.92	75.8
DIV_16	2018	79.86	79.7
DIV_16	2019	94.79	80.4
DIV_25_A	2015	1.69	38.5
DIV_25_A	2016	1.69	40.5
DIV_25_A	2017	1.69	45.3
DIV_25_A	2018	1.69	51.4
DIV_25_A	2019	1.69	57.4
DIV_25_B	2015	2.85	19.6
DIV_25_B	2016	2.85	21.2
DIV_25_B	2017	2.85	24
DIV_25_B	2018	2.85	26.8
DIV_25_B	2019	2.85	30.4
SAF1_A	2015	2.85	88
SAF1_A	2016	2.85	90
SAF1_A	2017	2.85	92.8
SAF1_A	2018	2.85	94
SAF1_A	2019	2.85	95.6
SAF1_B	2015	2.85	59.2
SAF1_B	2016	2.85	59.6
SAF1_B	2017	2.85	63.6
SAF1_B	2018	2.85	64
SAF1_B	2019	2.85	67.2
SAF2	2015	51.94	42.5
SAF2	2016	61.64	40.3
SAF2	2017	69.92	41.3
SAF2	2018	79.86	43.3
SAF2	2019	94.79	43.1
SAF5	2015	2.85	80.8
SAF5	2016	2.85	85.6
SAF5	2017	2.85	88
SAF5	2018	2.85	90
SAF5	2019	2.85	92
TRAI1_A	2015	51.94	63.7
TRAI1_A	2016	61.64	60.4
TRAI1_A	2017	69.92	62.2
TRAI1_A	2018	79.85	65.7
TRAI1_A	2019	94.79	67.9
TRAI1_B	2015	51.50	69.2

TRAI1_B	2016	61.17	66.2
TRAI1_B	2017	69.32	68
TRAI1_B	2018	79.18	71.2
TRAI1_B	2019	93.99	73.1
TRAI1_C	2015	51.94	49.8
TRAI1_C	2016	61.63	47.5
TRAI1_C	2017	69.92	49.8
TRAI1_C	2018	79.85	53
TRAI1_C	2019	94.79	54.7
EVAL1	2015	51.94	62.1
EVAL1	2016	61.64	59.8
EVAL1	2017	69.92	62.1
EVAL1	2018	79.85	65.6
EVAL1	2019	94.79	67.2
STAF2	2015	51.94	27.3
STAF2	2016	61.64	25.7
STAF2	2017	69.92	26.2
STAF2	2018	79.86	27.6
STAF2	2019	94.79	29

Appendix 8: Correlation matrix dependent variable

Table X: Correlation matrix of the dependent variable, firm performance						
		TOBINQ_15	TOBINQ_16	TOBINQ_17	TOBINQ_18	TOBINQ_19
TOBINQ_15	Pearson Correlation	1	.423**	.777**	.150**	.287**
	Sig. (2-tailed)		0	0	0	0
	N	7612	7598	7596	7589	7581
TOBINQ_16	Pearson Correlation	.423**	1	.658**	.191**	.281**
	Sig. (2-tailed)	0		0	0	0
	N	7598	7829	7818	7808	7799
TOBINQ_17	Pearson Correlation	.777**	.658**	1	.149**	.243**
	Sig. (2-tailed)	0	0		0	0
	N	7596	7818	8127	8107	8098
TOBINQ_18	Pearson Correlation	.150**	.191**	.149**	1	.552**
	Sig. (2-tailed)	0	0	0		0
	N	7589	7808	8107	8377	8359
TOBINQ_19	Pearson Correlation	.287**	.281**	.243**	.552**	1
	Sig. (2-tailed)	0	0	0	0	
	N	7581	7799	8098	8359	8577
**. Correlation is significant at the 0.01 level (2-tailed).						

Appendix 9: Outcomes GML

Table 23A: Outcomes GLM 2015			
Goodness of fit, a			
	Value	df	Value/df
Deviance	2.275	1	2.275
Scaled Deviance	27	1	
Pearson Chi-Square	2.275	1	2.275
Scaled Pearson Chi-Square	27	1	
Log Likelihood, b	-4.917		
Akaike's Information Criterion (AIC)	63.834		
Finite Sample Corrected AIC (AICC)	.		
Bayesian Information Criterion (BIC)	98.821		
Consistent AIC (CAIC)	125.821		
Dependent Variable: TOBINQ_15			
Model: (Intercept), INDUSTRY, COUNTRY, DIV16_15, DIV25_A_15, DIV25_B_15, SAF1_A_15, SAF1_B_15, SAF2_15, SAF5_15, TRAI1_A_15, TRAI1_B_15, TRAI1_C_15, EVAL1_15, STAF2_15, DIV15_15, COMP2_15, EMPL_N_15			
a. Information criteria are in smaller-is-better form.			
b. The full log likelihood function is displayed and used in computing information criteria.			

Table 23B: Outcomes GLM 2017			
Goodness of fit , a			
	Value	df	Value/df
Deviance	0.552	3	0.184
Scaled Deviance	29	3	
Pearson Chi-Square	0.552	3	0.184
Scaled Pearson Chi-Square	29	3	
Log Likelihood,b	16.298		
Akaike's Information Criterion (AIC)	21.405		
Finite Sample Corrected AIC (AICC)	1533.405		
Bayesian Information Criterion (BIC)	58.322		
Consistent AIC (CAIC)	85.322		
Dependent Variable: TOBINQ_17			

Model: (Intercept), INDUSTRY, COUNTRY, DIV16_17, DIV25_A_17, DIV25_B_17, SAF1_A_17, SAF1_B_17, SAF2_17, SAF5_17, TRAI1_A_17, TRAI1_B_17, EVAL1_17, STAF2_17, DIV15_17, COMP2_17, EMPL_N_17

- a. Information criteria are in smaller-is-better form.
- b. The full log likelihood function is displayed and used in computing information criteria.

Table 23C: Outcomes GLM 2018

Goodness of fit, a

	Value	df	Value/df
Deviance	14.763	12	1.23
Scaled Deviance	35	12	
Pearson Chi-Square	14.763	12	1.23
Scaled Pearson Chi-Square	35	12	
Log Likelihood, b	-34.556		
Akaike's Information Criterion (AIC)	117.112		
Finite Sample Corrected AIC (AICC)	237.112		
Bayesian Information Criterion (BIC)	154.441		
Consistent AIC (CAIC)	178.441		

Dependent Variable: TOBINQ_18

Model: (Intercept), INDUSTRY, COUNTRY, DIV16_18, SAF1_A_18, SAF1_B_18, SAF5_18, TRAI1_A_18, TRAI1_B_18, TRAI1_C_18, EVAL1_18, COMP2_18, EMPL_N_18

- a. Information criteria are in smaller-is-better form.
- b. The full log likelihood function is displayed and used in computing information criteria.

Table 23D: Outcomes GLM 2019			
Goodness of fit, a			
	Value	df	Value/df
Deviance	63.942	28	2.284
Scaled Deviance	53	28	
Pearson Chi-Square	63.942	28	2.284
Scaled Pearson Chi-Square	53	28	
Log Likelihood, b	-80.177		
Akaike's Information Criterion (AIC)	212.355		
Finite Sample Corrected AIC (AICC)	266.355		
Bayesian Information Criterion (BIC)	263.582		
Consistent AIC (CAIC)	289.582		
Dependent Variable: TOBINQ_19 Model: (Intercept), INDUSTRY, COUNTRY, DIV25_A_19, DIV25_B_19, SAF5_19, TRAI1_A_19, TRAI1_B_19, TRAI1_C_19, EVAL1_19, DIV15_19, COMP2_19, EMPL_N_19a			
a. Information criteria are in smaller-is-better form. b. The full log likelihood function is displayed and used in computing information criteria.			