Examination of the relationship between national culture and probability of Integrated Reporting adoption mediated by sustainability disclosure

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ABSTRACT

The concept of integrated thinking is gaining momentum. However, it is not known whether integrated thinking and its important manifestation namely integrated reporting (IR) can be uniformly applied across the globe when cultural barriers affect the disclosure of companies guided by the IR framework. Knowledge about why IR is not being adopted by firms located in various countries is still being investigated and there is no clarity in the literature on the various issues that surround IR adoption. This research conducted a literature search which revealed that national cultural factors can have a direct influence on the probability of IR adoption although current knowledge about this aspect is not deep. The national cultural factors were identified using Hofstede model which included power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint. This research argued that there is a need to test the direct relationship between those factors and the probability of IR adoption need to be tested and compared with another path containing interventions in the aforementioned relationship. Such an argument was posited to improve the predictive power of the models developed by other researchers and provide a deeper understanding of the influence of the cultural factors on the probability of IR adoption by manipulating the interventions. Accordingly, a conceptual model was drawn with one path depicting a direct relationship between the six national cultural factors and the probability of IR adoption and another path which included three interventions namely environmental, social and governance (ESG) disclosure based on the support offered by the stakeholder, legitimacy, upper echelon and Hofstede theories. The paths were linked to 27 hypotheses.

Quantitative research method was used to test the model by using secondary data available on Hofstede Insights, Bloomberg and Global Reporting Initiative (GRI) concerning 628 firms situated in five countries namely Brazil, Japan, Sweden, UK and USA. Positivist research philosophy was adopted for the research supported by objective ontology, deductive research approach and quantitative research method. GRI report formed the basis to identify the final set of 628 companies located in the five countries from amongst 7122 companies located in 122 countries. The process of determining the sample set of companies followed a strandardised method described in the related literature.

15 hypotheses were supported while 12 were rejected. Using logistic and linear regressions it was found that power distance, individual vs collectivism, uncertainty avoidance and indulgence vs restraint were found to have a direct relationship with probability of IR adoption. These findings differed from those of the other researchers' and offered a deeper and better understanding of the relationship between cultural factors and probability of IR adoption. The paths related to the relationships drawn between the six cultural factors and ESG factors on the one hand and ESG factors and probability of IR adoption on the other were tested.

The findings revealed that power distance, masculinity, uncertainty avoidance and long-term orientation affected the probability of IR adoption through environmental disclosure while masculinity, uncertainty avoidance and long-term orientation affected probability of IR adoption through social disclosure. Governance did not affect the probability of IR adoption. The results obtained between the direct and indirect relationship between the national cultural factors and probability of IR adoption were compared. The results showed that introduction of interventions provided a greater understanding of how the cultural factors could affect probability of IR adoption. A notable finding is that cultural aspects could be tackled to enhance the chances of companies to adopt IR through a matrix of combinations discovered in this research. Thus, this research provides an opportunity to deal with IR adoption in firms situated in various countries using cultural factors. Three matrices were developed to show how those matrices could be used as templates to predict the probability of IR adoption using cultural factors. Theoretically the model expands the application of Hofstede model, stakeholder, legitimacy, and upper echelon theories. In addition, the outcomes contribute to practice by enhancing the prospects of mandating the adoption of IR across the world which was a challenge till now.

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DEDICATION

This Thesis is dedicated to my north star my mother Amina alsulaiti, thank you for always believing in me.

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TABLE OF ABBREVIATIONS

Abbreviation	Explanation
CSR	Corporate Social Responsibility
Env_D	Environmental Disclosure
ENVSORT10	Environmental Disclosure score
ESG	Environmental Social Governance
Gov_D	Governance Disclosure
GRI	Global Reporting Initiative
IIRC	International Integrated Reporting Council
IFRS	International Financial Reporting Standards

INDG	Indulgence vs. restraint Dimension
INDV	Individualism vs. collectivism Dimension
IR	Integrated Reporting
JSE	Johannesburg Stock Exchange
KPI	Key Performance Indicators
LOR	Long vs. short term Orientation Dimension
MAS	Masculinity vs. Femininity Dimension
PD	Power Distance Dimension
SPSS	Statistical Package for the Social Sciences
Social_D	Social Disclosure
UA	Uncertainty avoidance Dimension
WBCSD	World Business Council for Sustainable Development

Chapter 1 Introduction

1.1 Introduction

Information is power. Integrated report (IR) is thus a powerful document that conveys a variety of information to the stakeholders, investors and shareholders of a company and can shape up a corporate model (Bernardi, 2020). This report has been widely investigated by researchers because of the potential impact it has on various entities concerned with the report. For instance, the European Banking Authority (2021) argues that current standards of integrated reporting are inefficient and costly to prepare. In addition, research has shown that stakeholders' demands are increasing with regard to many aspects of reporting including transparency, corporate social responsibility, sustainability and accountability (Abeywardana et al., 2021) which are not being consistently addressed by companies. This has led to investigations into the entire process of reporting and concerns associated with those reports by researchers (Hifni et al. ,2021; Piesiewicz et al., 2021 ;Bernardi, 2020). An important aspect one witnesses when going through the literature is the confusion that prevails with regard to disclosure by companies and the many problems surrounding the process of reporting. For instance, companies produce different types of reports including IR, the balance scored card, the triple bottom line and sustainability reporting or corporate responsibility reporting (Nigri and Baldo, 2018). It is not clear in the literature which of these reports need to be produced by companies, why those reports need to be presented, whether standards exist, is it voluntary or mandatory, are there theories addressing the issue of disclosures and what needs to be reported and not reported. Current knowledge available in the literature about IR implementation is contradictory, affected by serious limitations, in many instances unconnected to practices witnessed in different parts of the world, lacks depth and needs further investigation (Vitolla et al., 2019). In no other type of disclosure than IR these problems are more pronounced with

some arguing for implementing IR uniformly across the world while many others criticizing the very concept of IR (Raimo et al., 2019; Vitolla et al., 2019). Such a nebulous situation has caused concern in companies, investors, other stakeholders and users of IR and created challenges to the adoption of IR. Amongst those challenges is the one related to the factors that influence or impact the adoption of IR by companies (Escandon-Barbosa et al., 2021; Vitolla et al., 2019). Vitolla et al. (2019; p.518) argue that "Several studies have been conducted since the 2011 of the Discussion Paper "Towards Integrated Reporting: Communicating Value in the 21st Century" by the International Integrated Reporting Council. However, conflicting opinions and the wide range of extant studies underscore the need to better understand the current contributions in the field". This argument shows the mire in which the topic of IR has been caught. In fact, researchers accept that the field of IR needs to be researched and a lot needs to be understood (Vitolla et al. 2019). Particularly literature shows that there is a lack of clear understanding of how cultural aspects affect the implementation or adoption of IR (Escandon-Barbosa, 2021;Fuhrmann, 2019; Garcı´a-Sa´nchez et al. 2013).

1.2 Origins of the concept for the research project

Research in the field of governance has been very dynamic and a number of research publications are being produced by researchers in many areas including financial reporting, non-financial reporting, corporate governance, sustainability, quality of reporting and the like (Eccles and Krzus, 2010; Van Bommel, 2014; Higgins et al., 2013 and Vitolla et al., 2019). However, one area that has recently attracted the attention of the researchers as important and needs to inquire into is the area of integrated reporting and integrated thinking (Dumay et al.,2016). Stakeholders have been always concerned about how companies present their information statements in many areas including those concerning company's strategy, corporate governance, performance and prospects (Garcia et al., 2013). The problem gets

compounded further because stakeholders are finding it difficult to access and understand information statements concerning the different areas of corporate performance in a way that is composite, organised and cohesive.

On the other hand, companies are finding it difficult to present information statements concerning various areas of performance in one single document that could satisfy both the stakeholders and government. Governments on the other side are not able to mandate the companies to provide information in one format although annual reports are mandatory to be published by companies in every country. For instance, annual reports that have information statements provide financial information is mandatory but need not include non-financial information that have potential disclosures that could impact the stakeholder interests as well as the companies. Many times, stakeholders are presented with disclosures on non-financial information voluntarily by companies and such disclosures do not have any particular format or presentation standards. To make the situation complicated further companies produce reports that separately address disclosures on financial and non-financial information independent of each other making it difficult for stakeholders to interrelate those disclosures and get a holistic view about the performance and prospects of the companies. This affects the companies as the image of the companies as well as the prospects of the companies get affected if stakeholders are not attracted by the information statements and disclosures made by those companies. To ease the situation researchers, practitioners and others tried to work out a method of integrating the various disclosures since 2004 which resulted in forming the International Integrated Reporting Committee (IIRC, 2011) 2010. Initiatives were taken in 2009 to bring together organisations like investors, standard setters, accounting bodies, UN representatives, International Federation of Accountants and Global Reporting Initiative to establish IIRC to oversee the development of globally accepted integrated reporting framework (de Villiers et al., 2017). These efforts resulted in the establishment an official body called

International Integrated Reporting Council (IIRC) in 2011 which led to the creation of the International Integrated Reporting Framework.

IIR Council comprised of international entities including regulators, investors, companies, standard setters, accounting professional organisations and non-governmental organisations. This collusion of entities decided to focus on the evolution of next generation of corporate reporting with a focus on communicating the business value created to the stakeholders and not just the profit generated (Dumay et al, 2016). This evolution led to integrated reporting (IR) standards and integrated thinking amongst the companies. South Africa was the first and only country to mandate IR as the information disclosure standard by companies and there has been a lack of consensus on the part of different regulators belonging to different countries to impose the production of annual reports that is based on IR (Garcia et al, 2013).

While on the one hand efforts are on to evolve a standardized reporting method by integrating both financial and non-financial information in the annual report, on the other, there is no consensus amongst the various regulators, stakeholders, firms and researchers on what could be considered as acceptable IR standard, how to implement it and monitor the implementation and who will be responsible for overseeing the implementation (Flower,2015). As a person involved in the field of accounting the research came across the challenges faced in implementing the IR standards globally and focused on the stakeholders' concern in this regard. When the researcher studied the IR implementation problem both from the points of view of the literature and practical aspects it was found that definite problems existed in the implementation of IR in companies having presence in more than one country (Garcia et al., 2013). As much as the stakeholders are concerned about companies providing adequate, appropriate and accurate information that produces business value for investors and other stakeholders, the companies that are located and doing business in multiple counties are faced with a different problem. The problem was the differing values that the stakeholders in varying

cultures and nations bring with them which makes it difficult for the companies to produce a unified annual report that is acceptable to all stakeholders concerned. Adding to the concern of the companies is the legitimacy of the disclosures as some are mandated by regulators for instance financial statements and annual reports while some others are voluntary for instance the sustainability and corporate governance reports. Although such publications enable the users of those reports to know about the quality of governance in those companies (Garcia et al., 2013), yet companies having presence in different countries are affected by differing values of users of the reports published by firms in different countries caused by cultural variations in those countries, which some researchers feel will impact the accountability of people in firms (Bustamante, 2011; Carroll, 1979). Literature relevant to cultural concepts shows that cultural variations and similarities across countries are seen to affect stakeholder preferences and actions (Tsakumis, 2007). Thus, the focus of this research shifted to the concept of culture and its influence on IR adoption by firms.

According to the literature accounting practices and publication of reports differ from country to country due to differing cultural systems such as gender equality, institutional collectivism or a humanistic orientation, prevailing in those countries (Ferna´ ndez-Feijoo, Romero, & Ruız, 2012; Adams & Kuasirikun, 2000; Gray, 1998; Neu et al., 1998; Salter & Niswander, 1995; Langlois & Schlegelmich,1990; Radebaugh, 1975). There is research evidence to show in the literature reviewed that IR could be a solution to this vexed problem (Garcia et al., 2013). But the research evidence available shows that those research efforts are focused on a single type of report and one particular country and does not address a comparison of IR reporting with regard to countries having different culture (Garcia et al., 2013). This leaves a vacuum in the literature on how to tackle the issue of producing based on IR by companies located in various countries with differing cultures and value systems. Although some research efforts have tried to address the impact of changing cultures on IR adoption on the part of the companies, there

is scarcity of those publications that have addressed the influence of cultural dimensions on the IR adoption practices in those companies. The research found it compelling to investigate this issue of the influence of cultural dimensions on IR adoption as the research outcomes available currently are plagued by limitations.

Adding to this vacuum, the researcher found that there is no suggestion coming forth from any researcher on how to deal with cultures that do not favour the production of reports based on a standardized IR. There is hardly any evidence produced by researchers that have identified the role of mediators between the cultural dimensions and adoption of IR in companies. Literature also shows that there is growing awareness among companies as also amongst stakeholders and users of those reports about the need to publish both mandatory and voluntary reports (Hoque, 2017). Thus, it can be seen that in the background of the forging arguments where knowledge about differing cultures and varying values of stakeholders affect the adoption of IR in firms, the origin of the concepts of this research are grounded.

1.3 Related work to Integrated reporting (IR)

IR is concerned with the field of accounting and management. According to literature the concept of IR was initiated in 2013 by International Integrated Reporting Council (IIRC) as a movement (Gibassier et al., 2019). Before the advent of IR there have been other reports produced by firms annually including the the balance scored card, the triple bottom line and sustainability reporting or corporate responsibility reporting (Nigri and Baldo, 2018) The IR movement while promising to add value to companies has also attracted criticisms and a number of research articles have already appeared in various journals arguing for and against IR adoption or implementation. For instance, researchers question the sustainability of IR as it prioritizes providers of financial capital and defines materiality in their favour (Flower, 2015; Bebbington and Larrinaga, 2014; Brown and Dillard, 2014; Gray, 2010). Similarly, some argue

that IR is not reliable and has shortcomings for instance IR is not regulated (Stent and Dowler, 2015; de Villiers et al., 2014; Busco et al., 2013; Hahn and Kühnen, 2013).

Furthermore, literature shows that IR as a concept is affected by cultural aspects although attention paid to cultural aspects in IR is almost nil. The effect of culture in reporting a firm's performance has been recently studied by a few researchers including Garcia et al. (2013). The paper published by Garcia et al. (2013) is one of the earliest that concerns with the relationship between factors in Hofstede model and IR implementation. There are others for instance Sierra-Garcia et al. (2015) who have dealt with relationship between sustainability parameters (environmental, social and governance (ESG)) and IR. Recently there have been some studies that have linked IR quality to culture and ESG for instance Raimo et al. (2019). Results of the work done by Garcia et al. (2013) and Ramio et al. (2019) are inconclusive and incomplete. For instance, the work of Garcia et al. (2013) did not investigate all the cultural factors identified in Hofstede's model and left out indulgence as a cultural factor affecting IR. Similarly, the work of Raimo et al. (2019) involved only uncertainty avoidance as the cultural variable used to determine IR quality. There is hardly any study that has linked cultural factors through ESG to IR and directly measured the influence of all the Hofstede factors on IR. This leaves a gap in the literature as ESG disclosures are widely reported and is contemporary to IR and non-inclusion of ESG report in IR, determined by culture could conceal knowledge that could be useful in tackling challenges related to IR adoption.

Furthermore, literature shows that IR as a concept could be driven by contemporary reports like the ESG reports. The influence of culture on IR through sustainability disclosures is another important area that has been neglected by researchers. While IR movement is aiming to bring some sort of an order to the standard of disclosing the performance of firms, at the same time it is not possible to ignore the fact that IR is surrounded by limitations and reports like ESG could provide some remedy to overcome those limitations.

1.4 Relating Environmental, social and governance (ESG) disclosure with integrated reporting (IR)

There is a concern amongst researchers related to the widespread reporting of non-financial information in the annual reports of companies namely the sustainability aspects concerning environmental, social and governance (ESG) related disclosure and their integration with the IR (Raimo et al. 2019). For instance, Lai et al. (2016) found a positive relationship between ESG disclosure ratings and IR implementation while Sierra-Garcia et al. (2015) argue that firms whose Corporate Social Responsibility (CSR) disclosures are subject to assurance are likely to adopt IR. These arguments suggest that ESG reporting is linked to IR implementation although there is no clear understanding of how ESG disclosure can predict IR when cultural aspects drive ESG reports. For instance, Raimo et al. (2019) argue that IR quality is determined by ESG and cultural factors. Raimo et al. (2019) showed that the following regression equation can be used to establish a relationship between IR implementation as a dependent construct and culture and sustainability factors as the independent constructs.

$$IRQUALITY = \beta_0 + \beta_1 PERFORM + \beta_2 ASSERT + \beta_3 INST - COL + \beta_4 UNC - AVD + \beta_5 FUTURE + \beta_6 HUMANE + \beta_7 SIZE + \beta_8 AGE + \beta_9 ROE + \beta_{10} EU + \beta_{11} ENVSEN + \varepsilon$$

In the above equation it can be seen that UNC-AVD is the uncertainty avoidance construct, which is identified by Hofstede model as a cultural factor while ENVSEN is the environmental sensitivity factor of the industry in which the company operates. While some researchers for instance Raimo et al. (2019), have attempted to link culture and sustainability factors in one research to determine IR implementation, such research efforts do not incorporate all the cultural factors making those research outcomes incomplete. It is therefore necessary to know whether limitations surrounding IR could be overcome by relating ESG and IR in a model

where cultural aspects drive ESG. This research has developed one such model that could explain the importance of culture and its influence on IR adoption with the intervention of ESG reports.

1.5 Context

This research is a study of industries other than the financial sector, randomly chosen from five different countries having different cultural backgrounds. The research has chosen five countries namely Brazil, Japan, Sweden, UK and USA as the representatives in this research and the cultural aspects are different in each country. The possibility of adoption of IR in firms that have not adopted IR yet and those that have already adopted have been studied. The countries were found to have different cultural indices measured by Hofstede sense. In these countries there is no mandate on the part of the companies to follow IR. Hence adoption is voluntary. This provided an opportunity to understand what cultural aspects were important in IR adoption in companies situated in different cultures.

1.6 Literature review

The focus of this research is IR adoption, the cultural factors that could determine IR adoption and other factors that could intervene in the relationship between cultural factors as determinants and IR adoption as hardly any study has been conducted in the cultural domain (Raimo et al. ,2019; Garcı´a-Sa´nchez et al., 2013). Knowledge about cultural factors as antecedents of IR adoption is expected to provide deeper insights on many aspects concerning IR adoption including answering such questions as whether IR adoption should be mandatory across the world or should be left to the discretion of individual firms located situated in different cultures (Vaz et al. ,2016).

The following table (table 1.1) extracted from the work of Abeywardana et al. (2020) gives a bird's view of the current work going on in the field of IR.

	Antecedent	Supported theories from IR research and rationale developed by this article	Methodological Approach/es used in IR research	Supported IR Articles to the antecedent
Firm Specific Factors	Firm Size	Legitimacy Theory Agency Theory Stakeholder Theory Shareholder Theory Signaling Theory	Quantitative Secondary data	(Frias-Aceituno et al., 2014; García-Sánchez &Noguera-Gámez, 2018; Girella et al., 2019; Lai et al., 2016; Nicolo et al., 2020; Vaz et al., 2016; Velte&Stawinoga, 2017; Vitolla, Raimo, et al., 2020)
	Industry/ Business Sector	Signaling theory Legitimacy Theory	Quantitative Secondary data	(Frias-Aceituno et al., 2014; Girella et al., 2019; Lai et al., 2016; Nicolo et al., 2020; Vaz et al., 2016)
	Profitability	Agency theory Signaling theory Legitimacy theory	Quantitative Secondary data	(Frias-Aceituno et al., 2014; García-Sánchez &Noguera-Gámez, 2018; Girella et al., 2019; Lai et al., 2016; Vitolla, Raimo, et al., 2020)
	Industry concentration/ Industry competitiveness	Signaling theory	Quantitative Secondary data	(Frias-Aceituno et al., 2014; García-Sánchez &Noguera-Gámez, 2018)
	Growth Opportunities/ Market to Book ratio	Agency theory	Quantitative Secondary data	(Frias-Aceituno et al., 2014; García-Sánchez &Noguera-Gámez, 2018; Girella et al., 2019)
	Leverage	Legitimacy Theory Agency Theory	Quantitative Secondary data	(Girella et al., 2019; Lai et al., 2016; Vitolla et al., 2020a)
	Market Orientation	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
	External Assurance	Legitimacy Theory	Quantitative Secondary Data	(Nicolo et al., 2020)
Isomorphic Influence	Coercive Influence (Pressure from IIRC, local IR council, stakeholders, government and regulations on IR)	Institutional Theory	Primary data (Case study, interviews)	(Adhariani& de Villiers, 2019; Bananuka et al., 2019; Katsikas et al., 2017; Macias &FarfanLievano, 2017)
	Normative Influence (IR awards, training and workshops on IR, audit firm influence, consulting firm influence and view IR as the right thing to do	Institutional Theory	Qualitative Primary Data (Case study, interviews)	(Adhariani& de Villiers, 2019; Bananuka et al., 2019; Gunarathne& Senaratne, 2017; Katsikas et al., 2017; Macias &Farfan-Lievano, 2017)
	Mimetic Influence (Imitate other organizations i.e, successful IR adopters	Institutional Theory	Qualitative Primary Data Case study	(Adhariani& de Villiers, 2019; Gunarathne& Senaratne, 2017; Katsikas et al., 2017)
innovation characteristics/ Perceived attributes of IR as an innovation	Relative advantage of IR/ Perceived benefits of IR (image, reputation, competitive advantage)		Qualitative Primary Data (semi structured interviews, selfadministrated questionnaire)	(Bananuka et al., 2019; Gunarathne& Senaratne, 2017; Lodhia, 2015; Macias &Farfan-Lievano, 2017; Robertson &Samy, 2015; Steyn, 2014
	Compatibility – degree to which IR is perceived as being consistent with the			

	existing values, past experiences and needs	Diffusion of Innovation Theory	Qualitative Primary Data (semi-structured interviews)	(Robertson &Samy, 2015)
	Complexity – Degree to which IR is perceived as difficult to understand and use			
	Trialability – Degree to which IR may be experimented on a limited basis			
	Observability – Degree to which results of IR is visible to others			
Stakeholder perspective	Stakeholder pressure	Stakeholder Theory	Qualitative Primary Data (semi structured interviews)	(Farneti et al., 2019)
	To address information needs of stakeholders		Qualitative Primary Data (semi structured interviews)	(Farneti et al., 2019)
	To satisfy stakeholders		Qualitative Primary Data (semi structured interviews)	Adhariani& de Villiers, 2019)
Internal corporate governance factors	Board diversity	Agency Theory	Quantitative Secondary data	(Frias-Aceituno et al., 2013b; García-Sánchez &Noguera-Gámez, 2018; Girella et al., 2019; Velte&Stawinoga, 2017; Vitolla et al., 2019
	Board Size	Agency Theory		(Frias-Aceituno et al., 2013b; García-Sánchez &Noguera-Gámez, 2018; Girella et al., 2019; Vitolla et al., 2019)
	Independence of the board directors	Agency Theory		(Frias-Aceituno et al., 2013b; Girella et al., 2019; Vitolla et al., 2019)
	Activity of the board	Agency Theory		(Frias-Aceituno et al., 2013b; Vitolla et al., 2019
Ownership Structure	Ownership Concentration	Agency Theory	Quantitative Secondary data	(Raimo et al., 2020)
	Managerial Ownership			
	Institutional Ownership			
Economic Factors	Economic development	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012; Vaz et al., 2016; Velte&Stawinoga, 2017
	ESG rating	Legitimacy Theory		(Lai et al., 2016)
External corporate governance factors	Country‘s civil law	Institutional Theory	Quantitative Secondary data	(Dragu&Tiron-Tudor, 2013; Frias-Aceituno et al., 2013a; Jensen & Berg, 2012; Vaz et al., 2016; Velte&Stawinoga, 2017; Vitolla, Raimo, et al., 2020)
	Country‘s Legal enforcement mechanism	Institutional Theory	Quantitative Secondary data	(Frias-Aceituno et al., 2013a)
	Investor protection requirement	Institutional Theory	Quantitative Secondary data	(García-Sánchez &Noguera-Gámez, 2018; J. C. Jensen & Berg, 2012; Vaz et al., 2016)

	Employee Protection Laws	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
	Market Orientation	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
	Ownership Concentration	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
Educational Factors	Share of private expenditure on tertiary education	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
Labor relations factors	Density of trade unions	Institutional Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
Cultural Factors	National corporate responsibility	Institutional Theory Stakeholder Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
	Value of human concern	Institutional Theory Stakeholder Theory	Quantitative Secondary data	(Jensen & Berg, 2012)
	Individualism/collectivism	Institutional Theory Stakeholder Theory	Quantitative Secondary data	García-Sánchez et al., 2013; Girella et al., 2019; Vaz et al., 2016; Vitolla et al., 2019c)
	Masculinity/femininity	Institutional Theory Stakeholder Theory	Quantitative Secondary data	García-Sánchez et al., 2013; Girella et al., 2019; Vaz et al., 2016; Vitolla et al., 2019c)
	Uncertainty avoidance	Institutional Theory Stakeholder Theory	Quantitative Secondary data	(García-Sánchez et al., 2013; Vitolla et al., 2019a)
	Power distance	Institutional Theory Stakeholder Theory	Quantitative Secondary data	(García-Sánchez et al., 2013; Vitolla et al., 2019a)
	Long-term orientation	Institutional Theory Stakeholder Theory	Quantitative Secondary data	García-Sánchez et al., 2013; Girella et al., 2019; Vitolla et al., 2019c)
	Indulgence	Institutional Theory Stakeholder Theory	Quantitative Secondary data	(Vitolla et al., 2019c)

Table 1. 1, Exemplars of previous research work on IR adoption (Adopted from Abeywardana et al. ,2020)

While table 1.1 have provided exemplars of the contemporary research going on in the field of IR adoption, it is silent on the following:

1. Do cultural factors determine IR adoption? (Fuhrmann, 2019; Garcı´a-Sa´nchez et al., 2013).
2. What is the nature of relationship between cultural factors and IR adoption? (Garcı´a-Sa´nchez et al. 2013; Eccles and Serafeim, 2011)
3. What other factors can intervene in the relationship between cultural factors and IR adoption for example environmental, social and governance disclosures (Mata et al. 2018; Baldini et al. 2018; Kalev and Wallace, 2012)?
4. What theories are most useful to explain the relationship between cultural factors as determinants of IR adoption and the interventions that affect the relationship between the cultural factors and IR adoption (Hifni et al. 2021).

These are the gaps in the knowledge this research is addressing.

1.7 What is the problem?

The main problem is the lack of consensus and knowledge on IR adoption, antecedents of IR adoption, the role of culture with regard to IR adoption and the interventions that could affect the relationship between the cultural antecedents of IR adoption and IR adoption. This has resulted in dilemma in the minds of investors, company owners and other stakeholders whether the disclosures made by firms are meaningful, purposeful, and reliable. This research investigates this problem.

1.8 Research Aim and Objectives

The main aim of this research is to examine whether a research framework that addresses the gaps in the literature can provide a practical way to understand the concept of IR adoption, its cultural antecedents and interventions that affect the relationship between the antecedents of IR adoption and IR adoption.

- To critically review the concepts of IR adoption, cultural antecedents of IR adoption and interventions that affect the relationship between cultural antecedents of IR adoption and IR adoption
- To identify the specific cultural antecedents of IR adoption and interventions required for this research.
- To identify the theories that could enable establishing theoretical relationship between the cultural antecedents, interventions and IR adoption.
- To determine the contribution to practice and policy, Kholwadge and theory.

1.9 Research questions

- What are the cultural factors that determine IR adoption?

- What are the interventions that affect the relationship between the cultural factors and IR adoption?
- What is the nature of the relationship between the cultural antecedents that determine IR adoption and IR adoption and the interventions that affect this relationship?

1.10 Research Methodology

This research work relied upon the research published by Barile et al. (2019) , Fuhrmann (2019) ,Vaz et al, (2016) and Garcı´a-Sa´nchez et al. (2013). A quantitative research method was used to answer the research questions which were concerned with quantities that need to be measured numerically while testing a theoretical model using hypotheses. A theoretical model was drawn based on the literature and relationships were conceived with the two papers mentioned above as the basis. The models developed by Barile et al. (2019) and Garcı´a-Sa´nchez et al. (2013) were expanded to address the limitations affecting those models. The complete details about the model, the hypotheses developed, data collection and analysis are provided in the attached document. The data was analysed using secondary data already published and available online (panel data) for conducting research. Hofstede theory was used to identify the cultural factors namely power distance, individualism vs collectivism, masculinity vs feminism, uncertainty avoidance, long term orientation vs short term orientation and indulgence. The model developed by Garcı´a-Sa´nchez et al. (2013) was used to relate Hofstede factors and IR adoption. The model developed by Garcı´a-Sa´nchez et al. (2013) was modified to include a sixth factor namely indulgence. The papers by Barile et al. (2019) and Pucheta-Martínez and Gallego-Álvarez (2019) were used to introduce ESG disclosure as an intervention between the cultural antecedents of IR adoption and IR adoption.

The entire model was tested using secondary data collected from reliable sources. The secondary data pertains to the following:

Data about cultural constructs power distance, individualism, masculinity, uncertainty avoidance, long term orientation and indulgence obtained from Hofstede website. Hofstede website provides indices for these six factors in terms of the countries in which the companies under investigation are located.

Data on ESG factors namely environmental, social and governance factors were obtained from the company Bloomberg. The data pertains to the level of disclosure by companies situated in various countries with varying cultural measures. Self-declared information on IR adoption or non-adoption data was obtained from Global Reporting Initiative database.The regression equations that were used to test the model are provided in chapter 3.

The hypotheses tested and results of the hypotheses testing are provided in the attached document. Since IR adoption was a binary scale, logistic regression was used to test the relationships in the model and test the hypotheses. The hypotheses tested were developed based on prior work in found in the literature.

1.11 Significance of work

This research contributes the knowledge related to the field of integrated reporting by filling the gap existing in the literature which indicates lack of understanding on how national culture affects integrated reporting and its adoption. In addition, it addresses another gap in the literature which shows that there is no clarity on whether national culture affects individual components of IR and hence IR adoption. In the final analysis in order to argue for or against IR adoption in varying cultural contexts, this research has come up with the discovery which shows that culture as a construct cannot be changed but IR adoption and its components may need to be tackled to encourage IR adoption. Additionally, the findings show that IR may need to be redefined to suit different cultures. For instance, IR could be tailored to suit different

cultures and in such a situation it is possible some part of the IR is made mandatory and some voluntary. This is new contribution to knowledge and this was demonstrated with the inclusion of ESG as a mediating factor in the relationship between national culture and IR adoption.

1.12 The thesis layout

Chapter 2 - will review the relevant literature, identify knowledge gap, determine potential cultural factors that could influence the IR adoption as antecedents, analyse theories that could explain the concept of IR adoption, cultural factors that act as antecedents of IR adoption, interventions, and the relationship amongst them leading the definition of the theoretical framework in Chapter 3.

Chapter 3 - will discuss the development of the theoretical framework based on the theories that have been critically reviewed and presented in Chapter 2. In addition, theoretical relationships will be identified amongst the cultural antecedents of IR adoption, interventions and IR adoption based on the theories and hypotheses will be formulated.

Chapter 4 - will explain the research methodology that is required to answer the research questions which includes the research philosophy, epistemological and ontological concerns, research approach (inductive vs deductive), research method (qualitative vs quantitative), research design, research strategy, sampling method, data collection aspects, secondary data collection, reliability and validity concerns, data analysis aspects and use of logistic regression.

Chapter 5 - will provide a complete analysis of the data using descriptive statistics, logistic regression and linear regression. In addition, hypotheses will be tested to identify which hypotheses support the relationships and which hypotheses are rejected.

Chapter 6 - provides a complete discussion of the various findings derived through the data analysis covered in Chapter 5.

Chapter 7- concludes the research by including discussions on the achievement of aim, objectives, contribution to knowledge, contribution to theory, contribution to methodology, contribution to practice, limitations of the research and recommendation for future research.

Chapter 2: Literature Review

2.1 Introduction

The twin issues of sustainability and transparency are increasingly becoming important for stakeholders and management of a firm after the financial crisis of 2008/2009. In order to address the sustainability and transparency organizations which are using the current traditional corporate reporting systems. However, literature shows that the traditional systems are insufficient to meet the information needs of a variety of stakeholders (Jensen and berg, 2012). In fact, stakeholders like investors, financiers and shareholders are raising difficult questions related to sustainability and transparency in firms. For instance, what is financial position of the company, potential risks that could affect the future of the firm and what impact the company activities have on the environment and society. In response to such concerns, some companies attempted to provide non-financial information, i.e. matters relating to environment, governance and social performance (Zubair et al., 2011). In addition to the existing corporate financial report was sought to be examined by the firms in order to improve the available information to support stakeholders to take appropriate decisions (Cohen et al., 2012). However, the extent of non-financial information has overwhelmingly increased in its quantity and the reports provided could be voluminous, exhaustive and difficult to comprehend (KPMG, 2011). Such reports could not be simply handled and presented to stakeholders to easily understand (Zhou et al , 2017).

In order to tide over this situation in 2013, the newly formed international integrated reporting council (IIRC) proposed to the companies to produce an integrated report comprising financial information and nonfinancial information. It was expected that this would be a possible solution to overcome the drawbacks of the current reporting system. IIRC proposed that an integration between companies' financial performance and non-financial information including environmental, social responsibilities and governance aspects. Integrated reporting (IR) is an

emerging phenomenon in the field of corporate reporting, and gained more attention when it was introduced by IIRC in 2013 as the most recent reporting practice that could serve as a replacement to the current reporting systems (Brown and Dillard, 2014). As Stubbs and Higgins (2014) assert integrated reporting is a "Radical innovation" and significant changes are occurring in corporate reporting due to it. In spite of its voluntary nature, IR has attracted marked attention among academics, practitioners and stander setters (Higgins et al , 2014). Furthermore, IR literature has vastly expanded as leading academic journals have begun to cover this practice. Yet limitations in some aspects in IR and related fields affect corporate reporting one of them being the lack of knowledge about the influence of cultural aspects on the adoption of IR and the predictability of IR adoption. Thus, the central issue of this review is the predictability of the probability of IR adoption. This issue has been studied taking into account the factors that are purported to affect probability of IR adoption and discussed in the extant literature.

2.2 Literature focusing on cultural issues

As far as the factors that affect the predictability of IR adoption is concerned, one area that has attracted the attention of researchers has been the cultural aspects that is known to vary from one place to another and has the potential to influence decision makers. A discussion about one of the widely used models in literature concerning culture has been the Hofstede's model (Hofstede et al., 1980; 2010). This review therefore has critically reviewed six factors that have been identified in the Hofstede model namely power distance (high vs low), individualism vs collectivism, masculinity vs feminism, uncertainty avoidance (low vs high), long term vs short term orientation and indulgence vs restraint. Each one of these factors has been reviewed critically to understand how those factors influence the probability of IR adoption and what could be the impact of culture on disclosure of information.

Further to discussing the cultural factors based on Hofstede's model and their relationship to probability of IR adoption, this chapter reviews the importance of the influence of the CSR components on IR adoption as well as the impact of cultural aspects on those components. There is an important caveat about IR which is that it is not mandatory to adopt IR by companies and that the non-financial information including the sustainability information need to not be disclosed and is voluntary. Despite such contradictions, many have adopted IR and have started to disclose their performance through IR but the number of companies that have. However, there is confusion in both the literature and in the practitioners' minds on how to exploit the strengths of IR. This is found to be a challenging aspect as IR is not mandated. One of the challenges has been the cultural factors. Therefore cultural factors have been identified a reason for the non-adoption of IR in companies in many countries in the extant literature (Garcia et al., 2013). Current outcomes that have investigated cultural factors are not conclusive (Garcia et al. 2013). More research is needed to gain knowledge on the influence of the cultural factors on IR adoption. Similarly, literature shows that CSR disclosures can be determined directly by cultural dimensions thus creating a dilemma on whether CSR factors should be separately investigated or as part of the research concerning the relationship between the cultural dimensions and IR adoption. These aspects have been reviewed in this research. Each one of the six cultural aspects and their relevance and relationship to IR adoption as well as another form of reporting namely sustainability reporting have been critically reviewed in the following sections. As far as the sustainability dimensions are concerned environmental, social and governance related disclosures have been critically reviewed. These reviews are provided in the following sections.

Review of the Hofstede's dimensions

2.3 Power distance dimension

As can be seen from the publications of researchers, for instance Velte (2021) and García-Sánchez et al. (2013), national culture affects IR adoption. One of the important cultural factors that affects IR adoption is the power-distance. Hofstede et al. (2010, p. 9) define power distance as "the extent to which the less powerful member of institutions and organizations within a country expect and accept that power is distributed unequally". This represents the degree to which a member of an organization within a given culture accepts the fact that power distribution within the organisation is unequal (Ringov and Zollo, 2007). However, GLOBE model defines power distance as "the degree to which members of an organization or society expect and agree that power should be stratified and concentrated at higher levels of an organization or government" (House et al, 2004; p. 12). These two definitions although different, the commonality in them is that both Hofstede and GLOBE models deal with power vested in persons occupying different positions in an organisation and the distance that exists between the higher and lower level employees. However, this research focuses on the power distance construct based on the Hofstede model as investigating the relationship between power distance and probability of IR adoption with two different cultural models in one research is beyond the scope of the research.

The above explanation provided by the Hofstede model can also be extended to societies (Woods Jr et al, 2021). For instance, Woods Jr et al. (2021) cite Hofstede et al. (1984) and explain power distance as a phenomenon which indicates from small to large the variation in power pertaining to an individual in a society. Such a variation can describe how the least powerful persons (e.g., subordinates in an organization) are agreeable to a certain degree of unequal treatment within a structure of a cultural hierarchy in organizations. If one applies this concept to the context of IR adoption, then using literature support it can be shown that power

distance affects disclosures and that companies in various countries with different cultures need to be encouraged to adopt integrated reporting (Velte, 2021). However, despite efforts made by both researchers and practitioners, adoption of IR in companies situated in multiple cultures is turning out to be challenging and there is a lack of comprehensive knowledge on how cultural factors, for instance power distance, affect IR adoption (Vitolla et al. ,2019). In fact, adoption of IR could become even more of a challenge when the cultural differences between countries are contradictory. For instance, Vitolla et al. (2021) argue that cultural differences affect ethical aspects which in turn could affect the ethical aspect. Literature shows that there is a relationship between power distance as an independent variable affects the performance of a firms differently in different countries (Nicolò et al,2021)

2.3.1 Difference between low and high-power distance

Hofstede (1997, p. 52) points out that power distance explains the gap that is perceived or felt by the citizens of a country between the powerful and powerless. Nawaz et al. (2020) point that many researchers have identified the existence of low and high-power distance amongst the citizens or a community. Low power indicates close relations and collaboration between the leaders and followers while high power distance could indicate a large hierarchical gap between rich and poor, administrator and administered, younger or older and so on (Hofstede, 2011). Furthermore, most of the advanced countries have lower PD-Scores as compared to the developing and developed countries (Kirkman et al, 2017). The PD-Scores of Pakistan and some developed and developing countries are Pakistan (55), UK (35), the USA (40), and the Philippines (94) (Hostede-insights, 2019a; 2019b). Some of the examples of the difference between small and large power distance found in organisations is provided by Hofstede and Hofstede (2005) and is listed in the table 2.1 below.

Low Power distance	High power distance
Hierarchy implies an inequality of rules formulated for convenience	Hierarchy implies existential inequality between two levels, the high and the low.
Decentralization is common	Centralization is common
Number of supervisory personnel is small	Number of supervisory personnel is high
Managers depend on their own experience and those of who are subordinates	Managers depend on higherups and formal rules are applied
Consultation with subordinates expected	It is expected that subordinates will be told what to do
It is understood that a resourceful democrat is the ideal boss.	A benevolent autocrat or "good father" is expected to be the ideal boss.
Privileges and status symbols are not expected and frowned	Privileges and status symbols are expected, normal and popular
The status of the manual and office work have the same status	Blue collar jobs are valued less than the white collar jobs

Table 2. 1, Differences identified between low and high-power distance in organisations (Hofstede and Hofstede, 2005).

2.3.2 Relationship between power distance, probability of IR adoption and sustainability factors

While literature provides some way forward in terms of publications produced by researchers like García-Sánchez et al. (2013) in regard to understanding the relationship between national culture and IR adoption, such publications do not address some of the gaps found in the literature. For instance, although it is widely accepted that IR comprises both financial and non-financial information, however it is not clear whether power distance as a cultural factor will independently affect IR adoption or in conjunction with other cultural factors as a whole. Some researchers argue that power distance operates in conjunction with uncertainty avoidance (Murzi et al. ,2016) although such arguments are sporadic and do not provide conclusive evidence on whether power distance operates in conjunction with other cultural factors. A second question that arises is that if power distance is influencing the adoption of IR in different cultural settings, then does it mean that such an adoption is a direct result of power distance only and not a consequence of the interaction of power distance with any performance factor. For instance, there is evidence in the literature which shows that power distance can affect performance factors including corporate social responsibility and corporate reputation (Pérez-

Cornejo et al., 2021; Kucharska and Kowalczyk, 2019). Kucharska and Kowalczyk (2019) claim that their research is the first effort that investigated how the five cultural constructs identified by Hofstede (1980) affect corporate social responsibility perception, practice and company performance in the context of individual organisations.

If power distance were to affect IR adoption directly, then it is possible to infer that the result of such a direct influence could be that IR may or may not be adopted by a firm regardless of the quality of results achieved by the firm with regard to financial or non-financial aspects. If one wants to see the direct impact of power distance on IR adoption in play, then there is a need to understand how it happens. While national cultural scores derived by Hofstede (2001) can be used to see what role power distance plays on IR adoption, at the same time it is also possible that national scores may not exactly indicate the real situation. The reason for this is that researchers point out that power distance is not a unique feature applicable only to nations, but can also be applied to employees, organizations, and societal levels (Daniels and Greguras, 2014). Whether this is likely to happen is not easy to predict because it is unlikely that the managers responsible for publishing IR will ignore the quality of results, before disclosing the results. Even assuming that a firm is very transparent in disclosing results, there are always situations that could create dilemma in the minds of the managers responsible for disclosures on whether to publish or not information that could affect its competitive advantage or brand image or investor support. This situation shows that power distance may not influence IR adoption but produce better performance. These contradictory arguments are complicated. Real life examples show that power distance while affecting different organs of a firm, can lead to both positive and negative outcomes in a firm. Literature shows that performance disclosures of companies that have adopted IR, could be negatively related to power distance meaning higher the power distance lower is the chance of IR adoption (Halkos and Skouloudis, 2017). For instance, if Brazil whose power distance score measured by Hofstede sense is 69, is

compared to USA whose power distance score measured by Hofstede sense is 40, then it is probable that chances of implementation of IR are higher in USA than Brazil. However, the same power distance scores in Hofstede sense when applied to the environmental performance of firms in the two countries, it can be seen that Brazil emits lower carbon-di-oxide (2.04 metric tonnes emitted in 2016) when compared to USA which emitted higher carbon-di-oxide (16 metric tonnes emitted in 2016) in comparison in the same year (Data Commons, 202).This example shows that higher the power distance, better is the performance in the environmental domain. That is to say mere analysis of the relationship between power distance and IR adoption might not necessarily be a useful way of understanding a firm's performance. This could be an important limitation that needs further investigation of the relationship between cultural factors and IR adoption. Despite inconsistencies, it is possible to conclude based on the extant literature that IR provides a comprehensive and detailed compilation of both financial and non-financial information and acts as a one stop shop facility for stake holders to understand about the performance of a firm (Fuhrmann,2019).

At this point it is essential to understand the various effects of power distance on an organisation. The reason for this is the possible impact power distance as a cultural construct will have on the performance of an organisation and hence the results of a firm. Table 2.2 provides an idea of the various effects of power distance on organisational aspects and IR adoption and identifies some of the gaps in the literature concerning the impact of power distance on IR adoption.

Organisational Context	Nature of relationship between power distance and the context	Behavioural examples	Author	Concerns related to IR	Gap in the literature
	- High power distance organisations	- Top managers not answerable to	Khatri (2009)	Ethical behaviour is an important aspect of IR adoption (Vitolla et al.	Relationship between power distance and IR

Power distance + employee behaviour + organizational communication	are prone to **unethical behaviour**. - High power distance: Communication takes place top down. Unlikely to witness any horizontal communication	the lower level employees or to rest of the organisations. Results in unethical behaviour of managers who try to cover it up. - Communication gap is found in the organisation usually between top officers and subordinates		2019). Power distance as a cultural factor affecting organisations is in congruence with national culture (Vitolla et al. 2019) Relationship between power distance and IR adoption could help interpret managers ethical behaviour. Additionally, communication style in the organisation could be understood. IR by itself should act as a tool to communicate with both internal and external constituencies and helps in understanding IR adoption and implementation (Sierra-García et al. 2015).	adoption that involves ethical and moral aspects is not well understood. Investigations on this aspect is sparse except the one by Vitolla et al. (2019)
Power distance +Sustainability	- Power Distance influences sustainability. - Power distance influences the market. - Power distance influences the way companies are managed.	- Exploitation of activities, e. g. innovation (Jamal et al., 2021). - Market depends on the power distance (Escandon-Barbosa et al. 2021)	Escandon-Barbosa et al, (2021)	- Sustainability is determined by power distance (Kazmi et al. 2021). - Power distance affects the market for a product or products of a company (Escandon-Barbosa et al, 2021). - Power distance influences the management of a company (Escandon-Barbosa et al, 2021).	Sustainability influences IR adoption (Velte, 2021). This includes environmental, societal and governance related aspects (Trucco et al, 2021) The gap ”how organisations utilise <IR> to resolve actual, not perceived, strategic, governance and management control (sustainability) problems to test whether the process of implementing <IR> has the ability to create

					integrating thinking
Power distance + country wide environment performance	- Power distance has no influence on environmental performance measures; (e.g., Burns et al., 1994; Shane, 1993; Thompson, 1967), - Most previous empirical evidence demonstrated that power distance has a negative effect on the environmental performance	- This results in low capabilities of companies to innovate - Environmental performance of a society is not affected by power distance implies no link between power that is centralized, control of the society, hierarchy and resistance to changes in the distribution of power.	- (Husted,2005; Katz et al,2001) ;Onel and Mukherjee ,2014);Vachon ,2010). - (Lahuerta-Otero and González-Bravo, 2018; Park et al., 2007; Peng and Lin,2009)	- The results are mixed. One result says no relationship between power distance and environment (e.g., Burns et al., 1994). - Another result shows that there is negative relationship between power distance and environment (Lahuerta-Otero and González-Bravo, 2018) - A third result shows mixed results (Vachon ,2010). - Environment is part of the sustainability aspect of firms. Therefore, environment is linked to IR directly (Trucco et al, 2021). That is to say power distance may or may not be related to environment and therefore IR through environment.	The results show contradictory findings. That is to say power distance may or may not affect IR adoption through environment as a construct.
Power distance + investor's behaviour (Herding)	- Low power distance and values that encourage competition and that hinder herding like trust and equality, are of importance. - Low power distance is closely related to values such as trust, equality and cooperation.	- Low power distance hinders herding. - High power distant countries protect shareholders. - Linkage between power distance and institutional quality.	(Mihet ,2012; Chui et al, 2010).	- Power distance directly influences herding. That is low power distance implied low herding and vice-versa (Mihet, 2012). - Also, power distance is related to institutional quality and influences trust, equality and cooperation considered as values. IR is concerned with integrated thinking and creation of values (Vitolla et al., 2019).	IR is concerned with integrated thinking and creating values (IIRC, 2013). However, Lower power distance increases integrated thinking and adds value while high power distance decreases integrated thinking and does not add value.

Table 2. 2, Examples publications and their outcomes concerning power distance

Table 2.2 shows that power distance affects a number of aspects including sustainability, marketing, management of organisations, investor behaviour, societal issues, institutional quality, environment, shareholders, innovation, ethical behaviour and communication. There could be more aspects that could be affected by power distance, for instance leadership and ambidextrous learning (Escandon-Barbosa et al. ,2021; Nawaz et al. ,2020) . As far as operationalisation of power distance and its relationship to probability of IR adoption is concerned, the table 2.2 above shows that a few researchers have already investigated how power distance directly affects probability of IR adoption or simply IR adoption. The table 2.2 also shows that power distance as cultural factor affecting sustainability factors including environment.

2.3.3 Operationalisation of power distance

Furthermore, literature shows that power distance has been operationalised as an independent variable that determines probability of IR adoption (Fuhrmaan,2019) as well as sustainability disclosure (Pucheta-Martínez1 and Gallego-Álvarez,2019 ;Gallén and Peraita ,2018; Gallego-Álvarez and Ortas ,2017;Halkos and Skouloudis,2017;Thanetsunthorn ,2015; Garcia-Sanchez et al,2016; Peng et al,2014 ;Ioannou and Serafeim ,2012;Ho et al,2012;Orji,2010; Ringov and Zollo ,2007). In addition, Vena et al. (2020) found that power distance moderated the relationship between IR adoption and weighted average of the cost of the capital. These arguments show that there is no consistency in the literature on how to operationalize the concept of power distance. There are contradictory findings also in the literature. When operationalised as an independent variable García-Sánchez et al. (2013) found that power distance is not influencing IR adoption significantly while Fuhrmann (2019) found a negative relationship between power distance and probability of IR adoption. This is a clear contradiction. Furthermore, literature indicates that the current papers who have conducted of

an investigation on the relationship between power distance and probability of IR adoption except for a few which includes Fuhrmann (2021) and García-Sánchez et al. (2013). A clear knowledge on how power distance influences IR adoption will help investors and other stakeholders including employees to understand what to expect in an organisation. Lack of clarity in the knowledge concerning how power distance needs to be conceptualised is an important gap in the literature. In practical terms it can be seen that if one is able to identify the power distance score say for Japan (54) in Hofstede sense then it is possible to understand and predict IR adoption using the power distance score. Thus, a direct relationship between power distance and IR adoption as established by García-Sánchez et al., (2013) gains currency for using in further research although she found the relationship statistically insignificant. The results obtained by García-Sánchez et al. (2013) is contradicted by Fuhrmann (2019) who found low power distance is inversely related to IR adoption.

The contradictory results found in the literature cause confusion on the nature of relationship between power distance and IR adoption. In fact such contradictions could also be seen in real life. Taking into account the definition of power distance it can be seen that when two countries are taken as examples say Japan where the power distance is high and USA where the power distance very low in comparison, IR adoption is likely in USA than in Japan. That is to say IR adoption decision could become insignificant in Japan where if superiors take a decision in a firm, then such decision is simply followed by subordinates but very significant in USA where subordinates can influence superiors in decision making. This implies that the culture pertaining to power distance in two different countries can have two different results with regard to decision making on adoption of IR. It is difficult to say which of the two is correct as adoption of IR can have varying implications to firms. For instance, a company in USA dealing in production of power can find itself contributing to environmental pollution, say carbon emission (USA is one of the countries that contributes to high carbon emission) (Data

Commons, 2021). That company will hesitate to publish information related to carbon emission even if it is mandated by IR. Here the company as a whole may decide not to publish information that is detrimental to its interests. On the contrary, in Japan a similar firm could publish results of environmental pollution as the superiors in that firm would like to be transparent and incidentally Japan emits lower carbon than USA (Data Commons, 2021). Thus, a more detailed investigation of PD is needed to know how intercultural and multicultural aspects affect decision making in disclosures because the results produced by a few researchers like García-Sánchez et al. (2013) and Fuhrmann (2019) are too few to rely upon. It is therefore reasonable to argue that further research could yield different results if the relationship between power distance and IR adoption is reexamined. For instance, the influence of power distance of companies located in Japan and its subsidiary located in other countries e.g. USA, could be assessed through the direct relationship between the power distance and adoption of IR. Such a cross country assessment will help companies to adopt policies and procedures to guide the adoption of IR and also predict the probability of adoption of IR.

In addition, power distance has been shown to affect the sustainability factor directly (Escandon-Barbosa et al. ,2021; Kazmi et al. ,2021; Lahuerta-Otero and González-Bravo ,2018;Vachon,2010). For instance, in table 2.2 it can be seen that Lahuerta-Otero and González-Bravo (2018) and Vachon (2010) have argued that there is a relationship between power distance and environmental disclosures. However, the results obtained by various researchers are not identical. For instance, Burns et al. (1994) did not find any relationship between power distance and environmental aspects whereas Lahuerta-Otero and González-Bravo (2018) found a negative relationship between the two while Vachon (2010) found mixed results. This implies that an important aspect IR adoption which is sustainability disclosure and its relationship to power distance is not well understood in the literature and makes the current

situation with regard to predicting sustainability disclosure based on cultural aspects like power distance difficult. This is another gap in the literature. In fact, there could be other components of IR adoption that may also get influenced by power distance which is an area that has been neglected by researchers as there appears to be a lack of investigations on such aspects as the relationship between cultural aspects and disclosures about business model or strategy.

Furthermore, one important area that has been neglected in the literature is the possibility of testing the indirect relationship between power distance and IR adoption. For instance, Fuhrmann (2019) examined the direct relationship between power distance and IR adoption whereas Trucco et al. (2021) found a direct relationship between sustainability disclosure and IR. Taken together the investigations carried out by Fuhrmann (2019) and Trucco et al. (2021) yield a new conception which could be represented as follows:

(Power distance → IR adoption) + (Sustainability disclosure → IR adoption) =

(Power distance → Sustainability disclosure → IR adoption)

No such innovative relationship as mentioned above has been investigated in the extant literature which is a gap. Theoretically such a relationship can be established. For instance, the relationship between power distance and IR adoption can be explained by Hofstede model and stakeholder theory (García-Sánchez et al. ,2013) while the relationship between sustainability disclosure and IR adoption can be supported by a combination of institutional, stakeholder and legitimacy theories which is explained next. Results that could be obtained through studying the relationship above can reveal knowledge on how to predict the IR adoption using interventions. If interventions are found to be useful, then predictability of probability of IR adoption becomes simpler and could provide firms with wider number of constructs to control the predictors as well as the predicted.

2.3.4 Theories affecting power distance and its relationship with disclosures

The operation of power distance as an important cultural factor affecting IR adoption has been explained the in the literature using different theories. While the basic theory that is used by researchers to define and explain power distance as a cultural factor is the one developed by Hofstede (1980), researchers have used other theories to explain the influence of power distance on IR adoption or disclosures of companies. For instance, García-Sánchez et al. (2013) and Vitolla et al. (2019a) have used institutional theory and stakeholder theory to explain the influence of power distance on IR. Similar arguments have been echoed by other researchers (Chen and Roberts, 2010; Adams, 2002). Although literature shows researchers have successfully used institutional theory and stakeholder theory to explain the relationship between power distance and disclosures including IR and sustainability, such usage is not without criticism. For instance, Baldini et al. (2018) explains that institutional theory is largely concerned with the behaviour of companies with regard to adjusting themselves to making disclosure decisions to the national characteristics of the country in which those companies reside and not multicultural environment. Here the term national characteristics could be related to the national culture, for instance power distance. Thus, care should be exercised while applying the institutional theory in research concerning the IR adoption. This theory supports hypothesising the relationship namely power distance → IR adoption.

Further, stakeholder theory states that stakeholder management and the achievement of corporate objectives such as growth and profitability are either connected or not connected. It is used to specify corporate characteristics and behaviour (Donaldson and Preston, 1995).

Integrated reporting is a concept that is concerned with informing stakeholders about the economic, social and environmental impact of corporate performance to enable those stakeholders to either continue waiving of resources or punish lack of adequate performance

by calling back the support provided by them (Hess, 2008). These arguments are supported by stakeholder theory. According to Freeman (1984), stakeholder theory is concerned with expectations of specific groups within society (Smith et al. 2011). The seminal work of Freeman (1984) posits that disclosures which are informative and provided to some stakeholders is more powerful than others and it has an effect on the stakeholders' expectations concerning the performance of the organization. These aspects are important to be addressed while investigating the integrated report adoption by companies and their stakeholders who could have varying cultural backgrounds.

As far as the application of stakeholder theory to understand the relationship between power distance and probability of adoption of IR, it can be seen that this relationship is essentially driven by stakeholders of a firm like investors (Fuhrmann, 2019). For instance, when stakeholders like investors and customers of a firm insist on disclosures, then power distance cannot become a contentious issue and managers in a firm need to satisfy the stakeholders needs so that the interest of the firm is taken care of. However, some have criticised stakeholder theory for lack of specificity and hence cannot be operationalised in an understandable manner (Key, 1999). Lack of unanimity amongst researchers raises concern about its applicability to understand the relationship between power distance and disclosures including IR and sustainable disclosures. However, evidence of its usage in research concerning IR adoption points towards its applicability to this research with caution. This theory supports hypothesising a relationship namely power distance → IR adoption and power distance → sustainability disclosure, sustainability disclosure → IR adoption.

In addition, researchers have used legitimacy theory to discuss environmental, social and governance (ESG) disclosures. It states that "a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). According to

researchers, legitimacy theory is dominating research in sustainability and is applied to predict particular managerial sustainability reporting practices (Deegan 2019, 2002; Dyduch and Krasodomska 2017; Mousa and Hassan ,2015; Hooghiemstra ,2000; Gray et al. ,1995). Although many researchers have suggested the use of legitimacy theory to explain sustainability reporting, Bebbington et al. (2014) criticise legitimacy as lacking answers to structural or class based conflicts within society. Legitimacy theory has been criticised for making such assumptions as the one which says that the activities of a firm or organisation is governed by a unified and pluralistic society. This contradicts the existence of power distance but supports implementation of rules that force firms to report sustainability aspects. This theory supports hypothesising the relationship namely sustainability disclosure → IR adoption.

2.4 Individualism vs collectivism dimension

Hofstede et al., (2010; p. 92) define individualism and collectivism as follows. Individualism is the feature of those societies in which individuals are important and the relationship between individuals is not strong with the result that each individual in the society takes care of himself or herself and his or her immediate family members. In contrast, collectivism is a feature of those societies wherein individuals are integrated since they were born, into in-groups that are bonded together strongly with those groups acting as protectors of those individuals throughout the individuals' life in exchange for loyalty that is beyond doubt. This definition is aligned with the definition of GLOBE (Brewer and Venaik, 2011). However, Brewer and Venaik (2011) argue that with regard to the GLOBE standard, a major contradiction could be found in regard to the definitions given by Hofstede model and suggest that relabeling of individualism vs collectivism as self-orientation vs work-orientation. These differences in the definitions can cause concern on which one of the definitions need to be used for explaining the concept of individualism of collectivism. Nevertheless, it is clear that individualism and its opposite the collectivism can be considered as an attribute of culture concerning different societies. As far

as this research is concerned, investigations on the effect or impact of individualism or collectivism have been carried out by researchers (Fuhrmann ,2019; Vaz et al., 2016 and García-Sánchez et al. ,2013) in recent times to know their relationship with the concept of IR and the probability of IR adoption. Results obtained by those researchers clearly indicate that there can be both positive and negative relationship between individualism or collectivism and IR or probability of IR adoption which are discussed in the following sections.

2.4. 1 Difference between individualism and collectivism

Table 2.3 povides an idea of some of the differences that are identified by researchers.

#	Individualism	Collectivism	Authors
1	Prefer less income redistribution		(Hammar , 2019)
2	Personal freedom and achievement	Embeddedness of individuals in larger group	(Hammar , 2019)
3		Considerations beyond the individual self, i.e., for the group	(Hammar , 2019)
4	Less income equality		(Hammar , 2019)
5		Have tight-knit social frameworks where members can expect any relative or in-group member	(Insights, 2021)
6		Tend to spend more time in the negotiation process building relationships and focusing on harmony management instead of discussing contracts.	(Gonzalez , 2021)
7	very explicit (low-context culture)	exchange information indirectly (high-context culture)	(Gonzalez , 2021)
8	Precedence to own personal goals	Give precedence to group goals	(Luomala et al. 2015)
9	Self-image is defined by "I"	Define their self-images as "we"	(Gonzalez, 2021)

Table 2. 3, Difference between individualism and collectivism

Also, literature shows that researchers talk about individualism and collectivism by countries for instance American individualism, Australian individualism and collectivism of Malaysia (Triandis, 1990; 1995) These things point out that certain countries and the firms in those countries can be identified to have a specific culture with regard to individualism and collectivism. In fact, Hofstede (1980) argues that individualism and collectivism are bipolar dimensions. These aspects clearly indicate that the adoption behavior of companies with regard to probability of IR adoption could necessarily be influenced by the type of culture namely individualism or collectivism an argument that is supported by literature (Vaz et al. , 2016). However, there is a lack of clarity in the literature with regard to how individualism vs collectivism and IR adoption or probability of IR adoption have been related and to what extent the probability of IR adoption could be predicted using this cultural dimension in different countries (Fuhrmann, 2019).

2.4. 2 Relationship between individualism vs collectivism and IR adoption

According to Vena et al. (2020) individualism acts as a moderator of the relationship between IR adoption and weighted average of the cost of the capital. However, García-Sánchez et al. (2013) related individualism to IR adoption. These examples show that individualism vs collectivism as a cultural construct is varyingly related to adoption of IR. Although literature shows that the relationship between individualism and collectivism is varyingly described in the literature, it is clear that a relationship between the constructs namely individualism vs collectivism and probability of IR adoption can be established. In practical terms it can be seen that firms that are found in nations where collectivism as a culture is predominant (that is where low individualism is predominant) are more likely to adopt IR (García-Sánchez et al. ,2013). This means that in countries where individualism is not dominant there is a possibility that diverse stakeholders determine decision making in a firm based on IR. This could happen because those stakeholders could compare the performance of the firm and compare the

performance with other similar firms in the sector and influence decision making based on their collective effort. This could usually happen when stakeholders like funding agencies, investors and customers need to negotiate with the officials in firms and in such situations cultural factors have an impact (Gonzalez, 2021). According to Gonzalez (2021) both Hofstede's cultural dimensions and GLOBE project's nine cultural dimensions could be used to explain the impact of cultural factors attributed to societies on decisions made by the firms.

As far as identifying whether individualism or collectivism is the cultural order in a firm, it could be noted that researchers agree on the fact the societal cultural measurements meaning national cultures can be used to determine the type of culture that prevails or could prevail in a company. For instance, Hofstede's cultural scales have been widely used to understand the accounting practices in different nations (Vitolla et al., 2019).

While the evidence in the literature shows that many researchers have investigated the nature of relationship between individualism vs collectivism on the one hand and probability of IR adoption on the other (Vena et al., 2020; García-Sánchez et al., 2013), the research outcomes produced by those researchers suffer due to limitations. For instance, Vaz et al. (2016) investigated the differences among firms located in 13 countries and the issues that may account for these differences but used data collected over a 1-year period which could make the results less reliable due want of adequate samples over multiple years. The researchers tested the influence of individualism on IR adoption. Secondly the results obtained by Vaz et al. (2016) show that collectivism was positively associated with integrated reporting. However, the result of the investigation carried out by Fuhrmann (2019) found no significant results in the association between collectivism and IR adoption. These results are not conclusive as the results suffer due to limitations like the lower number of samples used and lack of generalizability across the spectrum of stakeholders and their needs. Further research needs to

be conducted to analyse how individualism vs collectivism affects probability of IR adoption and disclosures concerning IR with regard to various stakeholder requirements concerning IR adoption.

2.4. 3 Relationship between individualism vs collectivism and sustainability factors

As mentioned earlier sustainable factors include environmental, social and governance disclosures by firms. According to Pucheta-Martínez and Gallego-Álvarez (2020) cultural factors including individualism vs collectivism is found to affect the sustainable disclosures. However, the research results found in the extant literature shows mixed outcomes. For example, sustainability related disclosures are mandatory in many countries (Halkos and Skouloudis ,2017). However how individualism or collectivism is likely to influence such disclosures are not clear in the literature, for instance Ho et al. (2012) who found a negative relationship between individualism and disclosures on sustainability factors, while Disli et al. (2016) found a positive relation. These examples show that there is no clarity on how decision making related to disclosure about company performance will be affected by individualism or collectivism. Taking into account one of the features of individualistic societies which is that individuals worry about themselves and their families, then the outcome of the decisions made by individuals occupying positions of power in companies could lead to results that can be either to disclose or not disclose. The same applies to collectivism. Although literature posits in general that collectivism influences disclosure decisions positively (Garcia-Sánchez et al., 2016) such outcomes are rarely reported in the literature indicating the necessity to validate such sporadic findings. In the absence of a substantial knowledge produced by many researchers, it becomes important to understand in-depth how individualism and collectivism affect sustainability related disclosures. This is a gap in the literature. Considering the increasing importance given by stakeholders to the sustainability reports, deeper investigations

to understand the nature of the relationship between individualism vs collectivism and sustainability reporting become necessary.

2.4. 4 Operationalisation of the relationship between individualism vs collectivism and probability of IR adoption

Most of the researchers (Garcia-Sánchez et al. , 2020; Furhmann, 2019; Vaz et al., 2016) have directly linked individualism vs collectivism to IR adoption or sustainable reporting. Contradictory results have been reported by researchers on the direct relationship between individualism vs collectivism on the one hand and IR adoption and sustainability reporting on the other (see previous paragraphs). However, a notable omission in the research conducted on the relationship between individualism vs collectivism and probability of IR adoption is the role of mediator in that relationship. For instance, it has been already mentioned in the previous paragraphs that there is evidence which indicates that individualism vs collectivism can be directly linked to IR adoption as well as sustainability factors including environment, social and governance related disclosures. There is also evidence in the literature which shows that sustainable factors related reports influence IR adoption (Raimo et al. ,2021 ; Gerged ,2021). However, there is no evidence found in the literature how interventions can affect the relationship between individualism vs collectivism and IR adoption. There is reason to believe that such an operationalization of the relationship between individualism vs collectivism and IR adoption could yield results not investigated so far. For instance, literature shows that sustainable reports which are non-financial information, have to be part of IR (Dumey et al.,2016). This implies that sustainable reports impact IR. Taking into account this aspect and the arguments in the previous paragraphs which show that individualism vs collectivism can be linked to sustainable reporting it is possible to conceive that there could be a hypothetical relationship which could be represented as (individualism vs collectivism) → (sustainability factor reporting) → IR adoption. Such a conception could provide an understanding of how

multicultural environments could be dealt with in firms that want to adopt IR. This is a major gap in the literature that needs to be understood. In addition, how the various cultural factors influence the decision-making process of managers in companies when those factors operate together is not reported well in the literature although there are a few examples of researchers examining the impact of two cultural factors working in tandem on IR adoption (Vaz et al.,2016). An understanding of these aspects could provide the way forward to make decisions on the part of governments to either mandate IR adoption on the part of firms or not.

2.4. 5 Theoretical aspects

Foremost Hofstede's theory provides the basis to draft in cultural factors including individualism and collectivism in this research. Furthermore, according to the literature (Vaz et al., 2016) it is seen that institutional theory and stakeholder theories can be used to explain the cultural construct individualism vs collectivism and IR adoption or sustainability disclosures. Baldini et al. (2018) explains that institutional theory is concerned with the behavior of companies with regard to adjusting themselves to making disclosure decisions to the national characteristics of the country in which those companies reside. This indicates the cultural factors which are part of the national characteristics need to be taken into consideration while making decisions with regard to disclosures including IR and sustainability. As explained earlier (section 2.3.4) IR and sustainability disclosures are governed by stakeholder theory. Thus, it can be seen from section 2.3 that literature provides support to apply theories using which it is possible to develop hypothetical relationships which can be tested to examine the predictability of probability of IR adoption in various countries using cultural factors. Finally, it can be seen that legitimacy theory (see section 2.3.4) provides the basis to explain the relationship between the sustainability disclosures and IR adoption.

From the foregoing review of the literature, it can be seen that investigations into the relationship between individualism vs collectivism and IR adoption or sustainability disclosure

is an under investigated area. There are significant gaps in the literature that need to be addressed to gain a deeper knowledge about how individualism vs collectivism influences both probability of IR adoption and sustainability disclosure. This research investigates those gaps.

2.5 Masculinity vs femininity dimension

This is another cultural factor initially coined by Hofstede et al. (1980). This was subsequently reviewed and redefined by the GLOBE model (House et al., 2004). According to Hofstede et al., (2010; p. 140) masculinity vs feminism is defined as "The degree to which a society differentiates and emphasizes traditional roles between genders.". In contrast the GLOBAL model has defined masculinity vs feminism in terms of gender egalitarianism which is defined as "the degree to which an organization or a society minimizes gender role differences while promoting gender equality" (House et al., 2004; p. 12). As far as evidence of using masculinity vs feminism in the literature in investigations concerning the influence of culture, it can be seen that literature is weak on a few issues including the impact of masculinity or femininity on the adoption of IR, relationship between masculinity vs feminism and sustainability and role of interventions in understanding the relationship between masculinity vs feminism and probability of IR adoption. As mentioned in section 2.1 this research focuses on the Hofstede model and not GLOBAL model for understanding the influence of culture on the probability of adoption of IR.

2.5.1 Difference between masculinity and femininity

Masculine	Feminine
Strongest to win will be the basis of conflict resolution	Compromise and negotiation are the basis of conflict resolutions
Equity forms the basis of rewards	Equality forms the basis of rewards
Larger organisations are preferred	Smaller organisations are preferred
Live to work is the order	Work to live is the order
Preference for money over leisure time	Preference for leisure time over money
Men feel career is compulsory while women feel it is optional	Both genders feel career is optional
In professional jobs the share of working women is lower	In professional jobs the share of working women is high

Men are competitive in manufacturing and bulk-chemistry	Women are competitive in agriculture and service industry

Table 2. 4,Differences between feminine and masculine societies (example: workplace) (Hofstede & Hofstede, 2005)

From table 2.4 it can be seen that masculinity and feminism are contrasting each other in regard to their characteristics. The table 2.4 shows what could be expected of a society in which either masculinity or femininity is dominant. It is clear that probability of adoption of IR, a decision that would be taken by firms, could have a bearing on the dominant. For instance, in a feminist society what be a decision to adopt IR mean? If one takes into account the characteristics of feminism given in table 2.4then it is reasonable to argue that both masculinity and feminism could support IR adoption or may not. It is not possible to clearly say. There is need for a method to predict the adoption or non-adoption of IR. It can be seen in the literature that in feminist culture it is likely that confidentiality is maintained in disclosing information to stakeholders which may not be the case in a society where masculinity culture prevails (Gray and Vint, 1995). This is contradicted by Nabar and BoonlertU-Thai (2007) who argue that there is a possibility of interference of masculinity in accounting choices. These arguments show that there is no clarity on how to predict IR adoption or disclosures (e.g. sustainability) when a cultural factor like masculinity or feminism is involved as decision on disclosures could be influenced by either of the cultural aspects are involved. Thus, differences in the culture in a society like masculinity or feminism-based culture do not automatically imply or enable prediction of IR adoption or sustainability disclosure. These two aspects are the focus of this research.

2.5.2 Relationship between masculinity vs feminism, probability of IR adoption and sustainability disclosure

Literature shows that the relationship between masculinity vs feminism has been varyingly posited by researchers. For instance, Hsiao (2018) used masculinity vs feminism as a control variable and related it directly to IR by a firm. Similarly, Goicoechea et al. (2021) used masculinity vs feminism as a control variable and related it directly to IR assurance. These

examples show clearly that there is evidence in the literature for relating masculinity vs feminism to IR adoption. In practical terms it can be argued that it is possible to classify societies as masculinity or femininity dominated. Whether such societies can be related to IR adoption for predicting the probability of IR adoption based on the few relationships established in the literature is an important question that needs to be answered and is an important gap in the literature. Examples of masculinity and femininity and their characteristics could be used to understand this aspect. For instance, Uyar et al. (2021) found that higher propensity to assure integrated reports prevail in societies that are dominated by feminine values rather than masculine values. Similarly, Al-Jubouri et al. (2021) argue that women's values vary to a lesser extent than masculinity in societies which indicates that societies where feminism is dominating, there women would be more consistent in decision making than men. However, when the question of IR adoption arises then the impact of masculinity and feminism on IR adoption could vary from society to society because the values men focus on in term of firmness and competitiveness viz-a-viz the modesty and care for women's values differ from one society to another. This implies that it is not easy to predict the probability of IR adoption in different countries based on cultural values because the values that are attached to culture in the various societies may influence the probability of IR adoption differently and not in the lines predicted by some. For instance, Uyar et al. (2021) suggest that IR assurance in societies dominated by feminism, a key activity that is concerned with the auditing of the firms and is based on the reports produced by the firm, tendencies to assure integrated reports could be prevalent. This is not supported by the findings of Vaz et al. (2016) who did not find a significant relationship between masculinity vs feminism and probability of IR adoption. However, both Garcia-Sanchez et al. (2013) and Fuhrmann (2019) found masculinity is negatively related to IR adoption and feminism if positively related to IR adoption, implying that probability of IR adoption is more likely in countries having feministic orientation. While

the above discussions provide an evidence of the possibility of linking masculinity vs feminism and probability of IR adoption, at the same time it must be noted that not all countries are not feminism oriented. This indicates that it is not possible to conclusively say that it is only in feminism-oriented societies where in companies are located, probability of IR adoption will be high. This gap in the literature needs to be examined.

Further to establishing the fact that probability of adoption of IR can be linked to the cultural factor masculinity vs femininity, it is important to know whether such a relationship could produce a different result if interventions that could act as a mediator between the two constructs namely masculinity vs feminism and probability of IR adoption are introduced. Whether introduction of an intervention in the relationship masculinity vs feminism and probability of IR adoption is an important question. This question arises because of the contradictory outcomes found by researchers for instance Uyar et al. (2021) who found a positive relationship between masculinity vs feminism and probability of IR adoption. Does this mean that probability of adoption of IR in masculinity-oriented societies will be low? Even if that is the case, is it possible something could be done about it? Literature shows that one possible way of examining the relationship between masculinity vs feminism and probability of IR adoption is to find intersections that could be present in the relationship. For instance, there is evidence in the literature that shows that masculinity vs feminism can be linked to the accounting information of a company (Batistella et al. ,2021) and sustainability disclosure (Pizzi et al. ,2021). However, these two concepts are part of an integrated report. This implies that without understanding how culture affects the accounting information or sustainability disclosure directly assessing the influence of culture on probability of IR adoption may produce results that cannot explain how the intersecting principles have affected the probability of IR adoption in countries that have specific cultural characteristics. However, literature is silent on

the interventions that could affect the relationship between masculinity vs feminism and probability of IR adoption. This is an important gap that needs to be addressed as knowledge gained on the influence of interventions can be used to probe how companies located in masculinity-oriented societies could tackle probability of IR adoption in case the relationship between masculinity vs feminism and probability of IR adoption is found to be negative.

2.5.3 Operationalisation of the relationship between masculinity vs feminism and probability of IR adoption

Literature shows that researchers have established a direct relationship between masculinity vs feminism and probability of IR adoption and found that feminism positively influences IR adoption (Garcia-Sanchez et al.,2013; Fuhrmann,2019) with masculinity vs feminism as independent variable and probability of IR adoption as the dependent variable. This signifies that if masculinity or femininity changes, then probability of IR adoption should change. However, some have suggested that masculinity vs feminism can act as a moderator, for instance Muttakin et al. (2020) who found that culture moderates the relationship between IR adoption and a firm's debt side. In the absence of a clear cut operationalization of the concept of masculinity vs feminism, it is necessary to define the way by which masculinity vs feminism could be conceived to influence probability of IR adoption. The evidence available in the literature shows that masculinity vs feminism is widely used as an independent variable (Fuhrmann, 2019; Vaz et al., 2016; Garcia-Sanchez et al., 2013) that is linked to IR adoption directly as a determinant of IR adoption. Similarly, as far as the use of interventions between masculinity vs feminism and IR adoption is concerned there can be a possibility to use a component of IR itself as the intervention using the following logic

Garcia-Sanchez et al. (2013) showed that (masculinity vs feminism) → Probability of IR adoption

Trucco et al. (2021) showed that (sustainability disclosure) → Probability of IR adoption

Then combining the two relationships it is possible to posit [(Masculinity vs feminism) → Probability of IR adoption] + [(sustainability disclosure) → Probability of IR adoption] = [Masculinity vs feminism → Ssustainability disclosure → Probability of IR adoption]

Thus, this formulation of an indirect relationship between masculinity vs feminism and probability of IR adoption provides a new way to examine how masculinity vs feminism can affect probability of IR adoption in the presence of an intervention. As far as interventions are concerned it is possible to replace sustainability disclosure by other components that make up IR including strategy, business model and sustainability disclosure (see section 2.1 in power distance). While these arguments show how it is possible to use interventions to predict probability of IR adoption, at the same time it is important to point out that no researcher has either formulated or investigated the above conception. This is a gap in the literature.

2.5.4 Theories affecting masculinity vs feminism and its relationship with disclosures

As explained in sections 2.3 and 2.4 it can be seen that the Hofstede model provides the basis to explain the construct masculinity vs feminism (Hofstede and Hofstede, 2010) and the institutional and stakeholder theories provide the basis to explain probability of IR adoption and the relationship between masculinity vs feminism and IR adoption. The culture of societies oriented as masculine or feministic is explained by the Hofstede index (Hofstede and Hofstede, 2010). Garcia-Sanchez et al. (2013) and Vitolla et al. (2019a) have used institutional and stakeholder theory to explain the relationship between masculinity vs feminism and IR adoption. As in the case of power distance and individualism vs collectivism it can be seen that institutional and stakeholder theory can used to explain the behaviour of firms located in a specific society. Next the relationship between masculinity vs feminism and sustainable disclosure can be explained based on the stakeholder theory in similar lines as explained in section 2.4.4 concerning power distance. Finally, the relationship between sustainable

disclosure and probability of IR adoption can also be explained using the arguments given in section 2.4.5 related to legitimacy theory and cultural factors.

2.6 Uncertainty avoidance

According to Hoafstede's model, uncertainty avoidance is defined as "Uncertainty avoidance describes the extent to which members of a culture feel threatened by unknown or uncertain situations" (Hofstede et al., 2005; p.191). However, GLOBE model says that "Uncertainty avoidance involves the extent to which ambiguous situations are threatening to individuals, to which rules and order are preferred, and to which uncertainty is tolerated in a society" (House et al., 2004; p.602). Although the two definitions appear to be different, the underlying meaning is the same and hence it can be posited that the concept of uncertainty avoidance is having a singular definition that could be used in research. However, the research conducted by GLOBE model has been criticized by Hofstede et al. (2005) as having serious limitations in regard to the various contexts to which the concept could be applied and how the explanations need to be understood keeping in view the definitions offered by Hofstede model (Hofstede et al., 1980). In this research the researcher has focused on the definition given by Hofstede et al., 2005)

2.6.1 Difference between low and high uncertainty avoidance

Weak uncertainty avoidance	Strong uncertainty avoidance
Acceptance of inherent uncertainty in life and take each day as it comes	Inherent uncertainty in life considered a continuous threat and needs to be countered
Ease, lower stress, self-control, low anxiety	Higher stress, emotionality, anxiety, neuroticism
Health and well-being associated with high scores subjectively	Health and well-being associated with low scores subjectively
Deviant persons' tolerance and ideas: what is different is curious	Deviant persons' intolerance and ideas: what is different is dangerous
Chaos and ambiguity do not affect comfort	Structure and clarity are needed.
No problem in changing jobs	Even if not liked, continue to remain in jobs

Written or unwritten, rules are disliked	Even if rules are not obeyed emotionally attached to rules

Table 2. 5, Differences in weak and strong uncertainty avoidance. (Source: Hofstede & Hofstede,2005)

Uncertainty avoidance examples have been shown in table 2.5, The important aspect of uncertainty avoidance is that when two cultures with differing degrees of uncertainty avoidance are involved, then decision making with regard to disclosures could become difficult. For instance, in table 2.5 a weak uncertainty avoidance behaviour of a society when confronted with a society with strong uncertainty avoidance then the result could be a confusion. Companies that are located in societies (e.g. Greece) with less tolerance to uncertainty (strong uncertainty avoidance) need support of a formal structure and rules for living, the reason being people in such a society are averse to change and new ideas (De Mooij and Hofstede, 2010; Yaveroglu and Donthu, 2002). In such societies business practices including reporting are promoted by rules and regulations. This in turn leads to rigid and standardized modes of operation for instance normative reporting which incorporate within them scarce sustainability information. On the contrary companies located in low uncertainty avoidance (e.g. Singapore) do not have problems with changes and lead a relaxed life with low stress resulting in a situation where in annual reports are provided as per the requirements (Hofstede, 2011). These examples provide some clue on how the different societies could act in regard to IR and probability of IR adoption.

2.6.2 Relationship between uncertain avoidance, probability of IR adoption and sustainability factors

Relationship between uncertainty avoidance and probability of IR adoption has been more or less uniformly conceptualised by researchers with a few exceptions. For instance, Garcia-Sanchez et al. (2013) related uncertainty avoidance to IR adoption and investigated the influence of uncertainty avoidance on IR adoption from a multi-country perspective. The results obtained by Garcia-Sanchez et al. (2013) showed that there is no significant relationship

between uncertainty avoidance and IR adoption. Similar results were obtained by Fuhrmann (2019). However, Vitolla et al. (2019) found a significant but negative relationship between uncertainty avoidance and IR quality (a construct that follows IR adoption). Thus, it can be seen that in research concerning cultural influence on IR adoption researchers have identified uncertainty avoidance as an independent variable and IR adoption as the dependent variable. The relationship posited by other researchers is one that is a direct relationship between uncertainty avoidance and IR adoption. An important inference that comes to the fore from the above discussion is that it is not clear why uncertainty avoidance did not find a significant relationship with IR adoption despite the fact that both Hofstede model (2010) and GLOBE model clearly articulate how uncertainty avoidance affects a family. Additionally, hardly any research publication was found in the literature that has investigated the direct relationship between uncertainty avoidance and IR adoption with the exception of the ones published by (Fuhrmann, 2019; Vitolla et al., 2019; Garcia-Sanchez et al., 2013). Thus, it is possible to argue that there a paucity of research that have investigated the relationship between uncertainty avoidance and probability of IR adoption. This lack of knowledge has a serious implication to firms situated in multiple societies characterized by varying cultural characteristics. Some of them include the necessity go publish accounting information annually, sustainability disclosures (Batistella et al., 2021) voluntary disclosures, mandated disclosures, and IR adoption (Dumay et al., 2016). That is to say predictability of probability of IR adoption by firms located in culturally sensitive countries. Lack of predictability of the probability of adoption could be a major disadvantage to many stakeholders would like to invest in firms or support firms to overcome difficulties in achieving the required performance or meet regulations or manage interest groups. Especially firms dealing with cultural differences in their operation need to know how to tackle performance reports in the face of contrasting uncertainty avoidance cultures. This is a major challenge and not well addressed in the

literature. Even the ones that have investigated like Garcia-Sanchez et al. (2013) and Vitolla et al. (2019) have produced contradictory results. This gap needs to be addressed by appropriately operationalizing the relationship between uncertainty avoidance and probability of IR adoption. Apart from the above, there is also another aspect concerning the relationship between uncertainty avoidance and probability of IR adoption that are important but have not been addressed in the literature. That is the role of disclosures like sustainability disclosure or IR strategy (Abeywardana, 2016) on IR adoption. Literature shows that some researchers have investigated the relationship between uncertainty avoidance and sustainability disclosures (Dangelico et al.,2020; Lahuerta-Otero and González-Bravo, 2018; Onel and Mukherjee, 2014; Peng and Lin, 2009). Since one of the foci of this research is sustainability disclosures and their relationship to cultural aspects, the review will focus on sustainability disclosures only. Literature shows that sustainable disclosures are essential components of IR (Eccles and Krzus, 2010). Investigations by the some of the researchers mentioned above show that uncertainty avoidance has a clear role in determining the disclosure of sustainable reports, the reason being sustainability performance of firms for instance the environment performance as well as social and governance performance can be important to individuals living in a particular society having a particular cultural characteristic. When people come to know of the deterioration of the environmental conditions then they believe the result of such a deterioration could lead to unknown situations, that could put the individuals in a society at risk. Some would like to have a stable environmental condition that is dependable while some may take the risk by finding methods to address the situation. Investigations carried out in this area of sustainable disclosures clearly show that researchers have no consensus and have produced mixed results. For instance, Peng and Lin (2009) and Onel and Mukherjee (2014) found that uncertainty avoidance is positively related to environmental performance while Vachon (2010) produced a negative relationship. In addition, Lahuerta-Otero and González-Bravo (2018) and Park et al.

(2007) found that the relationship between uncertainty avoidance and environmental performance insignificant. There is no clarity in the literature on what is the nature of the relationship between uncertainty avoidance and sustainable disclosure or performance. This is a gap in the literature and needs to be addressed. While this example discussed is related to sustainability disclosures, similar arguments can be found in the literature with regard to other aspects like IR strategy and business model. Furthermore, as far as the relationship between the sustainable disclosures and IR adoption, the review has been provided already under section. After identifying the possible relationships that could be established between uncertain avoidance, probability of IR adoption and sustainability factors the review proceeds next to the operationalization of the relationships between the cultural, IR and sustainability disclosure.

2.7 Long term orientation vs short term orientation dimension

According to Hofstede et al. (2010; p.239) long term and short-term orientation has been defined as "long-term orientation stands for the fostering of virtues oriented toward future rewards—in particular, perseverance and thrift. Its opposite pole, short-term orientation, stands for the fostering of virtues related to the past and present—in particular, respect for tradition, preservation of "face," and fulfilling social obligations". However, the GLOBE project (House et al., 2004; p. 12) describes what is called "future Orientation and is defined as the degree to which individuals in organizations or societies engage in future-oriented behaviors such as planning, investing in the future, and delaying individual or collective gratification". It is interesting to note that GLOBE project definition of future orientation is criticized by Hofstede et al. (2010) while Hofstede definition of long-term orientation or short-term orientation is criticized by House et al. (2004) each one arguing the definition posited by the other is not acceptable. Nevertheless, keeping the focus of this research on the topic of probability of IR adoption and its relationship with cultural factors, this research uses the definition of Hofstede model for the investigation of the relationship between long term orientation and probability

of IR adoption. Examples of and differences between long term or short-term orientation are discussed in the next section. However, the importance of this cultural factor to this research can be identified based on the arguments of Batistella et al. (2021) who argue that long term or short-term orientation impact compliance disclosures. For instance, Batistella et al. (2021) claim that the quality of accounting information likely to be superior in societies characterized by a culture of long-term orientation while in short term-oriented cultures the quality could suffer due to greater encouragement provided to earn instant profit based on the immediate advantages available (Hofstede, 2011). While these arguments show that long- or short-term orientation is important for disclosures at the same time whether these cultural aspects can be used to predict IR adoption is a concern that seems to have been neglected by researchers. This is a gap in the literature and requires investigation. What literature says in regard to the impact of long or short term orientation and what is the current status of the research regarding the relationship between long and short term orientation and IR adoption is discussed in the following sections.

2.7.1 Difference between long term and short-term orientation

Table 2.6 provides the examples of the differences identified by Hofstede et al. (2010)

Short-term orientation	Long-term orientation
Involve in efforts that are expected to produce quick results	Involve in sustainable and persevering efforts that are expected to produce slow results
Social and status obligations are of concern	To be a subordinate willingly to oneself to serve a purpose
Traditions are respected	Circumstances are respected
Personal stability is of concern	Personal adaptiveness is of concern
Imperatives guide family life	Shared tasks guide family life
Characterised by consumption and social spending	Characterised by large savings and use funds for investment

Table 2. 6, List of differences between long term and short term orientation (Source:Hofstede et a.l, 2010)

Table 2.6 clearly shows the differences between short term and long-term orientation can exist among societies. Hofstede et al. (2010) argue that where the culture prevailing is short term

oriented, in those cultures there could be problems in decision making. Particularly when decisions have to be made in firms that need to deal with differences in culture certain phenomena like compliance disclosures including accounting information disclosure are likely to be affected by cultural differences. For instance Pucheta-Martínez and Gallego-Álvarez (2020) assert that cultural differences affect the management and also the organization. However, in the context of predicting the probability of adoption of IR how the difference in culture a country with regard to long or short term orientation can affect probability of IR adoption is not well addressed in the literature (Dumay and Dai, 2017). This is a gap in the literature. In addition, it can be seen that while examining the cultural differences of countries and their relevance to IR adoption, it is important to consider whether any interventions are likely to affect this relationship

2.7.2 Relationship between long term vs short term orientation, probability of IR adoption and sustainability factors

According to the literature researchers have examined the direct relationship between long term vs short term orientation and IR adoption (Fuhrmann, 2019; Garcia-Sanchez, 2013). Radebaugh and Gray (2002, p.12) argue that the level of disclosures made by companies characterized by long term orientation and hence prefer secrecy, are negatively correlated. This implies that short-In contrast Hooi (2007) found positive relationship between long-term orientation and disclosure and argued that firms located in societies that are found to be culturally long term oriented are likely to disclose more information than those located in those short-term oriented ones. However, both Fuhrmann (2019) and Garcia-Sanchez (2013) did not find any significant relationship between long term vs short term orientation and probability of IR adoption. The reason for this could be that those firms could be working to build long term relationships with business entities to consolidate their market position and could use long-

term orientation as an important governance strategy to deal with a highly competitive business environment. The above arguments clearly show that in the literature, predicting the disclosure decisions of firms and adopting specific standards to report like IR is not well addressed and the current evidence available shows that the outcomes produced by researchers are contradictory with some finding a positive relationship, some finding a negative relationship and some finding no significant relationship. This is a major gap as it is not clear which cultural relationship between long term vs short term orientation and probability of IR adoption is likely to yield a consistent result that can be used to predict the probability of IR adoption when differences in culture are encountered.

In addition to the above while dealing with disclosures it is seen that researchers have posited that long-term vs short term orientation culture in firms can also predict certain components that are part of IR, for instance sustainability disclosures (Halkos and Skouloudis, 2017; Campbell, 2007). However, researchers have produced contradictory results while investigating the relationship between long term vs short term orientation and sustainability disclosures. For instance, Halkos and Skouloudis (2017) found a positive relationship between long term orientation and CSR disclosure. On the contrary Pucheta-Martínez and Gallego-Álvarez (2020) found a negative relationship between long term orientation and environmental report. This implies that short term orientation is likely be positively related to the environmental report. These arguments show that there is no clarity on the operationalization of the relationship between long-term vs short term orientation culture and disclosures which includes IR adoption.

An important aspect found in the literature is the lack of research that has investigated the usefulness of interventions in the relationship between long-term vs short term orientation culture and probability of IR adoption with the possible exception of Garcia-Sanchez et al. (2021) who tested the relationship between environmental innovation and IR mediated by

environmental performance. The result of the investigation by Garcia-Sanchez et al. (2021) clearly shows that mediators could play a significant role in predicting IR adoption by cultural aspects (environmental innovation). However, this singular example does not provide the basis to conclude how and whether it is possible to explain the use of interventions in the relationship between long-term vs short term orientation culture and probability of IR adoption. This is a gap in the literature. Finally, it can be seen that in case an intervention is used in the relationship between long-term vs short term orientation culture and probability of IR adoption then the relationship between the intervention and IR adoption comes into picture. As far as this research is concerned the intervention that is has been identified is one of the components of IR namely the sustainability disclosure. As explained in section 2.1 concerning power distance it can be argued that while it is possible to bring in any component of IR as a mediator, considering the scope of this research, sustainability disclosure has been reviewed as an intervention. As far as the relationship between sustainability disclosure and IR adoption, the review provided in section 2.8 is also applicable here. Further to reviewing the literature concerning the relationship between long-term vs short term orientation culture and probability of IR adoption, the next section deals with the operationalization of the relationship amongst long-term vs short term orientation culture, sustainability disclosure and probability of IR adoption.

2.7.3 Operationalisation of long-term vs short term orientation

Much of the literature has described the relationship between long-term vs short term orientation culture and probability of IR adoption as direct and have identified long-term vs short term orientation culture as the independent variable and probability of IR adoption as the dependent variable (Pucheta-Martínez and Gallego-Álvarez, 2020; Halkos and Skouloudis, 2017). However, some have suggested the use of long-term vs short term orientation culture as

a moderator of relationship concerning culture and sustainability reporting (Escandon-Barbosa et al, 2021). There are contradictions in conceptualization of long-term vs short term orientation culture as a construct. Similarly, sustainability disclosure has been found to be used as independent, mediating and dependent variables by researchers (Garcia-Sanchez et al., 2021; Lu and Wang, 2021). Here again it is not clear which of the three conceptions that can be opertionalised uniformly in research involving cultural aspects as independent or moderating variables. However there appears to be some uniformity in operationalizing the relationship between long-term vs short term orientation culture and IR adoption with IR adoption being widely used as the dependent variable (Garcia-Sanchez et al., 2013). These arguments clearly point out that there are multiple ways to operationalize the concept of long-term vs short term orientation culture as a construct and its relationship with other variables and there is no universal depiction of long-term vs short term orientation culture as a construct. The above argument show that knowledge about depicting long-term vs short term orientation culture as a construct is unclear and further investigations are needed.

An important inference that can be arrived at from the discussions above is the conceptualization of the following relationship:

(long-term vs short term orientation → Probability of IR adoption) + (sustainability disclosure → Probability of IR adoption) = (long-term vs short term orientation → sustainability disclosure → Probability of IR adoption)

While the above conceptualization has been arrived at based on the discussion given in the previous sections, such a conceptualization can be criticized due to lack of validity as no empirical testing appears to have been conducted. After discussing the operationalization of long-term vs short term orientation culture as a construct the next sections discusses the theoretical support employed by researchers in investigating the relationship between long-

term vs short term orientation culture as a construct, probability of IR adoption and sustainability disclosure.

2.7.4 Theories affecting long term vs short term orientation and its relationship with disclosures

From the literature it can be seen that researchers have used both stakeholder theory and institutional theory to describe the relationship between (long-term vs short term orientation → Probability of IR adoption) and (long-term vs short term orientation → sustainability disclosure) (Girella et al.,2019; Vitolla et al., 2019c). On the other hand, legitimacy theory has been used to describe the relationship between sustainability disclosure and probability of IR adoption (Bebbington et al., 2014). As far as the critical review of these theories and their applicability to this research, the same has been provided in section 2.3.4 and that review is applicable in this section also.

2.8 Indulgent vs restrained dimension

According to Hofstede et al. (2010; p.281) indulgence vs restraint is defined as "Indulgence stands for a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun. Its opposite pole, restraint, reflects a conviction that such gratification needs to be curbed and regulated by strict social norms". GLOBE project does not define indulgence. However, criticizing the Hofstede's model Catalin (2012) says that the model does not pay attention to cultural commonalities. In fact, some others have questioned the wisdom of Hofstede et al. (2010) on how a few cultural dimensions can adequately explain all the cultural differences that exist (Dimitrov, 2014). Nevertheless, these criticisms perhaps will enable further refinement of Hofstede's model. However, of interest to this research is the usefulness of the construct indulgence vs restraint to determine the concept of adoption of IR. The following critically review the literature to this extent.

2.8.1 Difference between indulgent and restrained

Indulgent	Restrained
The percentage of very happy people is higher	The percentage of very happy people is lower
Personal life control is an important perception	Perception of people in this culture is one of helplessness. That is to say that what happens to a person in this culture is not caused by the person himself.
Leisure is given higher importance	Leisure is given lower importance
Having friends is of higher importance	Having friends is of lower importance
Thrift is not of high concern	Thrift is of high concern
Loose society	Tight society
Attitude of the people is positive in nature	Attitude of people is one of cynicism
Moral discipline is low	Morally disciplined
The number of extraverted personalities is higher	The number of neurotic personalities is higher
The likelihood of people remembering positive emotions is high	The likelihood of people remembering positive emotions is low
The number of optimistic people are higher	Number of pessimistic persons are high
This culture is found in societies charaterised by well educated people and higher birth rates	This culture is found in societies charaterised by well educated people and lower birth rates
Lesser death rate caused due to cardiovascular diseases	Higher death rate caused due to cardiovascular diseases

Table 2. 7, Difference between indulgent and restrained cultures (Hofstede et al., 2010)

The differences that have been provided in table 2.7 are significant to this research as adoption of IR as a standard practice in a firm is not just a decision but a culture. IR represents integrated thinking across a firm and has major implications to a firm (Dumay and Dai, 2017). If one takes into account these debates and the table 2.7 above into account, then it is reasonable to argue that indulgent vs restrained can have an influence on the probability of IR adoption (Vittola et al., 2019b). For instance, in a country (e.g. Sweden) (Itim International, 2019) whose culture is characterized as indulgent, the firms located in that country could have people whose attitude is positive in nature, remembering positive emotions is high and who are optimistic (table 2.7). Such indulgent population can take decisions in favour of adopting IR as IR is a report that has serious implications to the stakeholders like investors, financiers and shareholders who depend

on the annual report. On the contrary it can be seen that countries (e.g. Romania) (Itim International, 2019) with a population that is restrained in Hofstede sense may hesitate to adopt IR due to such characteristics as negative attitude, remembering positive emotions is low and who are pessimistic (table 2.7). Thus, it is clear that indulgent vs restrained can be an important cultural dimension that can influence adoption of IR. Similar arguments can also be posited with regard to any other disclosures including accounting information, non-finance information, sustainability and corporate social responsibility.

Relationship between power distance, probability of IR adoption and sustainability factors

Research concerning relationship between indulgent vs restrained and disclosures including IR or sustainability are sparce (Escandon-Barbosa et al., 2021). Sustainability disclosure is one of the focus areas of this research and hence a review of this phenomenon will be provided here. However, there is some evidence in the literature which shows that indulgent vs restraint can be related to disclosures like IR or sustainability. For instance, Vitolla et al. (2019b) found a negative relationship between indulgent and IR quality implying that restrained could have a positive relationship with IR quality. Similar sentiments were reported by Fuhrmann (2019). However hardly another research publication has been found in the literature that has investigated the relationship between indulgent vs restrained and disclosures including IR or sustainability. This implies that an important cultural factor like indulgent vs restrained in Hofstede sense has hardly been examined by researchers. A similar inference can be drawn with regard to other disclosures like sustainability disclosure also as hardly any research has been conducted to understand the relationship between the cultural dimensions indulgent vs restrained and disclosures including sustainability (Lu and Wang, 2021; Dangelico et al., 2020).

As far as the available evidence in the literature is concerned it can be seen that the relationship between indulgent vs restrained and adoption of IR both Vittola et al. (2019b) and Fuhrmann

(2019) have directly related the construct indulgent culture in Hofstede sense to adoption of IR. To the knowledge of the researcher no other conception is reported in the extant literature. The two research outcomes mentioned above found a negative relationship between indulgent vs restrained and adoption of IR. These two research outcomes far fewer to conclude that the negative relationship between the construct indulgent and adoption of IR is conclusive. Further research is needed to understand the relationship between indulgent vs restrained and adoption of IR in-depth to unearth the underlying knowledge. This is a gap in the literature.

With regard to sustainability disclosure or corporate social responsibility there are some publications that have posited a direct relationship between indulgent vs restrained and corporate social responsibility (sustainability reporting). For instance, Lu and Wang (2021) found a direct but negative relationship between indulgence and CSR disclosure. Pizzi et al. (2021) established a direct and positive relationship between the construct indulgent vs restrained and SDG reporting. However, Dangelico et al. (2020) found a direct and positive relationship between indulgence on the one hand and environmental performance index and environmental health on the other and indirect but positive relationship mediated by income and population growth. García-Sánchez et al. (2021) used environmental performance as a mediator between environmental innovation (culture) and IR. However, while not covered under the discipline of disclosures, Gu et al. (2021) used national culture dimensions developed by Hofstede et al. (2010) as a mediator between job characteristic and job satisfaction to study the work orientations of workers in 33 countries using secondary data. Thus, it can be seen that the relationship between the cultural construct indulgent vs restrained and adoption of IR and sustainability disclosures, the construct indulgent vs restrained has been widely used as the independent variable while IR adoption has been used as a dependent variable. As far as sustainability disclosure is concerned it can be seen that it has been used as both dependent

variable and mediating variable in literature. From the above discussions two inferences can be derived. The first one is that research concerning the influence of the cultural construct indulgent vs restrained on IR adoption and sustainable disclosure are sparse and no definite conclusions can be drawn on the nature of the relationship from the current outcomes found in the literature. The second one is that the relationship between the cultural construct indulgent vs restrained and adoption of IR to the knowledge of the researcher has not been tested by researchers using any interventions. For instance, the study by García-Sánchez et al. (2021) provides a clue to use sustainability disclosure as a mediating factor in the relationship indulgent vs restrained → adoption of IR. These are gaps in the relevant literature. The necessity to investigate the role of interventions in the relationship between indulgent vs restrained and adoption of IR arises because the results produced by García-Sánchez et al. (2021) show that mediator can be used to understand the relationship better and is likely help stakeholders to make better decision. In fact García-Sánchez et al. (2021) recommend further research to be conducted in the area of environmental innovation using mediators and moderators.

Finally, the relationship between sustainable disclosure and IR adoption has not been well addressed in the literature. Details of the review of this relationship has been already provided in section 2.9. Since this aspect is common to all the sections in which the Hofstede's cultural dimensions have been reviewed critically, the same review can be applied here. Based on these discussions the next section reviews the literature regarding the operationalization of the cultural construct indulgent vs restrained.

2.8.2 Operationalisation of indulgent vs restraint

According to IIRC the integrated report is considered as a document that offers insights into the various actions that have been taken by a firm with regard to the culture, ethical values and

relationships by those charged with governance (IIRC, 2013). This argument points out to the fact that IR is a composite report that has relevance to both cultural issues on the one hand and governance issues on the other. Keeping this in view and based on the review of the literature given in the previous sections it can posited that the cultural construct indulgent vs restrained is seen as a driver of IR and hence it could be conceived as an independent variable in any research concerning IR adoption and culture (Fuhrmann, 2019). There is also evidence of the possibility of establishing an indirect relationship between the cultural construct indulgent vs restrained and IR adoption using intervening variables (e.g. García-Sánchez et al., 2021) but to the knowledge the researcher no such research outcome has been found in the literature. However, there are some evidence in the literature to suggest that cultural factors including indulgent vs restrained can also be used as moderators (Gu et al., 2021). As far as the relationship between the cultural construct indulgent vs restrained and sustainability disclosure, there is evidence to show that both direct and indirect relationships have been tested in the literature (e.g. Dangelico et al., 2020). However, none of the operationalisations are free of limitations and hence further research is a necessity to know clearly what kind of operations could be thought of. Finally, the relationship between sustainability disclosure and IR have been already been reviewed for its operationalization and this is common for all the sections that are involved in this research concerning Hofstede's six cultural dimensions.

As far as the interventions between the cultural construct indulgent vs restrained and IR adoption is concerned it is possible to conceive of a relationship based on the discussed in section 2.6 and the foregoing discussions which is provided as follows:

(Indulgent vs restrained → Probability of IR adoption) + (Sustainability disclosure → Probability of IR adoption) = (Indulgent vs restrained → Sustainability disclosure → Probability of IR adoption).

Similar conceptions have not been found in the extant literature that can inform about the nature of the relationship that could exist amongst the variables. A conception like this can provide insight into the role of sustainability disclosure in predicting the influence of the cultural construct indulgent vs restrained on probability of IR adoption. This is a gap that needs to be addressed. Further to the review of the operationalization of the cultural construct indulgent vs restrained it is necessary how researchers have dealt with the theoretical support for the operationalization of the cultural construct indulgent vs restrained. This is discussed next.

2.8.3 Theories affecting indulgent vs restrained and its relationship with disclosures

Literature shows that the concept of culture and the cultural dimensions have been widely explained in research concerning culture using Hofstede's model (Andrijauskienė and Dumčiuvienė, 2016). Despite its purported limitations (section 2.4.5), Hofstede cultural dimensions are continuing to be used by researchers. Next the concept of IR adoption and sustainability disclosure and their relationship to the cultural construct indulgent vs restrained has been explained using a combination of institutional and stakeholder theories in the literature (Vitolla et al., 2019; Fuhrmann, 2019). Finally, the relationship between sustainability disclosure and IR adoption has been explained in the literature using legitimacy theory the review about which is provided in the section 2.6.4. Finally, using the above theories to understand the relationships amongst the cultural construct indulgent vs restrained, probability of IR adoption and sustainability disclosure a limitation in the literature. There is need to know whether these theories when applied whether can enable the researcher to explain the abovementioned relationships due to the inherent limitations described in the literature. This gap in the literature needs to be examined.

Review of sustainability constructs

2.9 Sustainability constructs

According to the literature the main constructs that are considered as part of sustainability are environmental, social and governance disclosures termed as ESG disclosures as well as corporate social responsibility (CSR) disclosures (Lu et al., 2020; Orij, 2010). Environmental disclosure includes a number of issues including concerns about production and consumption activities and the need to enhance their environmental performance including promoting eco-innovations, green products (Song et al., 2020; Fraccascia et al., 2018; Dangelico, 2016), health impacts, air quality and water and sanitation (Dangelico et al., 2020). Social disclosure includes disclosure about such items as occupational health and safety, human rights, community, and product responsibility (GRI, 2014) Governance includes such factors as separation of board chair/CEO, board independence, ESG committees, executive compensation, gender diversity, capital structure and legal environments (Lu and Wang, 2020).

Context	Literature	Reference
ESG benefits	• It expands the content of the information disclosed by companies • It expands the number of recipients of the information • Information related to pollution, emissions, waste, human rights, gender policies,labor standards and corporate governance that are not captured by financial disclosure. • Recognize the effect of ESG issues on the reputation, **corporate image and competitive advantage of companies** • Represent a **proxy for management quality assessment** for many investors. • **Allows stakeholders to assess the level of transparency of companies**, **current and future performance, opportunities and risks** • It is plausible to expect that high levels of ESG disclosure can also allow companies to **obtain a reduction in cost of debt.**	(Ramio et al., 2021b),(Vitolla et al., 2018) (Tamimi and Sebastianelli ,2017) and (Albarrak et al., 2019).
Examples of ESG disclosures	• **Environmenta**l (i.e., industrial emissions, waste management, aquatic resource exploitation etc**.),**	(Chauhan and Kumar ,2019)

	• **Social** (i.e., product/service innovation, worker-motivation, consumer linked, etc.), and • **Governance** (i.e. Diversity in composition of board, anticorruption measures, political lobbying, etc.) activities.	

Table 2. 8, Benefits and examples of CSR factors

There is a growing concern amongst the various stakeholders about the CSR disclosures made by companies as the CSR disclosures are linked to the sustainability of those companies (Freeman, Wicks and Parmar, 2004; Belal and Roberts, 2010; Zhang, 2015). Especially investors are concerned about the sustainability of companies before any investment is made by those investors in companies. CSR disclosures are important indicators for investors to decide on investing in companies. As far as this research is concerned the importance of CSR disclosures is its relationship to integrated reporting and the influence of cultural aspects on CSR disclosures. Thus, the following sections discusses the relationship between CSR disclosures, cultural aspects, and integrated reporting.

2.9.1 Relationship between culture and CSR disclosure

The importance of the relationship between the three main components of CSR disclosure namely environmental, social and governance disclosures and the six cultural components identified in Hofstede model have already been discussed in sections 2.1 to 2.7. As can be seen from those sections' environmental disclosure, social disclosure and governance disclosures were found to be affected by each one of the six cultural factors in Hofstede sense. It can be seen that a total of eighteen relationships are possible by linking the six cultural factors to the three environmental factors. The conceptualization of each one of the six factors and their relationship to every CSR factor has been critically reviewed. The discussions show that there could be direct links between each one of the six cultural factors and the three corporate social responsibility factors supported by the stakeholder theory. However, literature shows that the

nature of the relationship between each one of the cultural factors and each one of the three CSR factors is not well understood (Pucheta-Martínez and Gallego-Álvarez,2019). Furthermore, although literature shows that there could be a relationship between the cultural factors and the CSR factors, operationalization of the relationship between the cultural factors and the CSR factors is not clear and predictability of the extent of CSR disclosure is still not well explained in the literature (sections 2.3 to 2.8). Knowledge about the relationship between cultural factors and CSR factors is expected to enable firms to make decisions regarding the possibility of utilizing and adjusting the CSR factors to determine the probability of IR adoption (section 2.3). These gaps in the literature need to be addressed in order to make decisions such as those concerning the mandating of the IR disclosure in various countries. After discussing the relationship between the cultural dimensions and CSR disclosure the next discussion focuses on the relationship between the CSR factors and probability of IR adoption.

2.9.2 Relationship between CSR disclosure and IR

As can be seen from the literature CSR disclosure is an inherent part of IR as it represents the non-financial information (section 2.1) However, there are contradictory opinions on this aspect. For instance, Lai et al. (2016) say that it is possible that companies that adopt IR may have significantly lower 'ESG disclosure score' with respect to non-adopters. In another instance Wilburn and Wilburn (2016) argue that ESG disclosure can lack strategic focus and neglect profit reporting. This indicates that when regulations force companies to disclose their CSR performance then the companies just go through the process of disclosing performance that may not represent the real situation. In addition, CSR disclosure is a voluntary disclosure and this option can hinder the standardization that is being aimed

through mandating IR (Sebayang et al., 2021). These contradictions imply that it is not easy to understand the exact relationship between IR adoption and ESG disclosures.

2.9.3 Operationalisation of ESG disclosures

The following sections discuss the details about the operationalization of the relationship between the factors six cultural factors, the three ESG factors and probability of IR adoption. As far as the 18 relationships between the six factors cultural factors and the three ESG factors have already been discussed under the respective sections concerning the cultural aspects. These 18 relationships have been provided in table 2.8

Cultural variables	ESG disclosure variable	Resulting relationship	Authors suggested direct relationship
Power distance (PD)	Environmental (ENV_D)	PD →ENV_D	(Pucheta-Martínez and Gallego-Álvarez,2019 ; Gallén and Peraita ,2018; Gallego-Álvarez and Ortas ,2017;Halkos and Skouloudis,2017)
Individualism (INDV)	Environmental (ENV_D)	INDV →ENV_D	(Pucheta-Martínez and Gallego-Álvarez ,2020 ; Disli et al, 2016; Ho et al,2012)
Masculinity (MAS)	Environmental (ENV_D)	MAS →ENV_D	(Pizzi et al, 2021)
Uncertainty avoidance (UA)	Environmental (ENV_D)	UA →ENV_D	(Dangelico et al.,2020; Lahuerta-Otero and González-Bravo, 2018)
Long orientation (LOR)	Environmental (ENV_D)	LOR→ENV_D	(Escandon-Barbosa et al, 2021;Pucheta-Martínez and Gallego-Álvarez ;2020 Girella et al, 2019)
Indulgence (INDG)	Environmental (ENV_D)	INDG →ENV_D	(Pizzi et al. 2021; Lu and Wang ,2020)
Power distance (PD)	Social (Social_D)	PD →Social_D	(Orij, 2010 ; Gallén and Peraita ,2018)
Individualism (INDV)	Social (Social_D)	INDV →Social_D	(Garcia-Sánchez et al, 2016)
Masculinity (MAS)	Social (Social_D)	MAS →Social_D	(Gallén and Peraita , 2018)
Uncertainty avoidance (UA)	Social (Social_D)	UA →Socia_D	(Onel and Mukherjee, 2014; Peng and Lin, 2009)
Long orientation (LOR)	Social (Social_D)	LOR →Social_D	(Pucheta-Martínez and Gallego-Álvarez, 2020)
Indulgence (INDG)	Social (Social_D)	INDG →Social_D	(Lu and Wang, 2021)
Power distance (PD)	Governance (GOV_D)	PD→GOV_D	(Gallén and Peraita, 2018)
Individualism (INDV)	Governance (GOV_D)	INDV→GOV_D	(Garcia-Sánchez et al, 2016)
Masculinity (MAS)	Governance (GOV_D)	MAS→GOV_D	(Lu and Wang ,2021;Orij, 2010)
Uncertainty avoidance (UA)	Governance (GOV_D)	UA→GOV_D	(Lu and Wang ,2021 ; Gallén and Peraita ,2018)
Long orientation (LOR)	Governance (GOV_D)	LOR→GOV_D	(Lu and Wang, 2021)

Indulgence (INDG)	Governance (GOV_D)	INDG→GOV_D	(Lu and Wang, 2021)

Table 2. 9, List of possible relationships that could be formed between the cultural dimensions in Hofstede sense and ESG as suggested by various researcher

As for as the basis of operationalizing the relationships mentioned in table 2.8 it can be seen that the stakeholders and institutional theories provide the support (section). However, it must be noted that while the literature provides some evidence of the linkages suggested and used in past research as mentioned in table 2.8, it can be seen that there is no clear conceptualization of how the cultural dimensions perform while determining the ESG disclosures in the context of the ESG factors being part of IR (Dumey et al., 2016). This indicates that there is a need to know whether the cultural dimensions identified in the Hofstede's model can predict ESG as components of IR or as independent components that disclose CSR related information. This aspect has not been well addressed in the literature and there is a need to fill this gap in order to clearly conceptualise the relationship between the cultural and CSR factors that could lead to the prediction of the ESG factors using cultural factors. As far as the operationalization of the relationship between the ESG factors and IR adoption, it can be seen that literature suggests that legitimization theory can be used to explain the relationship (section 2.7.4). With regard to operationalizing the relationship between the ESG factors and probability of IR adoption, it can be seen from the literature that very rarely a relationship between each one of the three factors and probability of IR adoption has been found (Trucco et al., 2021; Oprean-Stan et al. ,2020). Such a relationship has been established generally directly. However, there is a paucity of research in this area which has led to a lack of knowledge on how ESG can be conceptualized and shown to affect IR adoption. Each one of the relationships between ESG factors and IR adoption is discussed next.

2.9.4 Environmental disclosure and IR adoption

Researchers have argued that companies must be made accountable with regard to environmental aspects and IR provides a forum to achieve the above (Velte, 2021; Raimo et al., 2021; Gerged, 2021; Trireksani and Djajadikerta, 2016). Investors and stakeholders these days are particularly concerned about climate change and green environment, higher the environment disclosure more likely is the encouragement a firm derives and adopts IR. Some of the results found in the literature (Raimo et al., 2021; Gerged, 2021; Trireksani and Djajadikerta, 2016) show that a positive relationship between board related aspects (e.g. board size) and IR exist. However, Oprean-Stan et al. (2020) found a negative relationship between sustainability disclosure and financial performance and reporting. These arguments show that there is no consensus on the influence of environmental disclosures on reporting decisions of firms. It can therefore be argued that environmental disclosure can drive IR adoption but environmental disclosures themselves can be driven by cultural aspects (Halkos and Skouloudis, 2016). Those cultural aspects influence ESG has been discussed in section 2.7.3 and 2.6.3. That is to say that if one takes into account the argument that cultural dimensions affect IR and ESG, then taking into account the discussions given above it can be seen that a new relationship amongst the cultural, IR and ESG dimensions emerges. For instance, it is possible to argue that there could be a formation of three different relationships namely (culture → probability of IR adoption), (culture → environmental disclosure) and (environmental disclosure → probability of IR adoption). The emerging relationship that is (culture → environmental disclosure → probability of IR adoption) is a new conception that has not attracted the attention of researchers. Such a conception could lead to new knowledge on how to control the cultural and CSR factors and predict IR adoption. The need to link disclosures to cultural aspects arises because of the reason that cultural aspects are found to interfere in the disclosure of information related to both IR and ESG (Pucheta-Martínez and Gallego-Álvarezm ,2020). Such interference need to be understood if one wants to predict the probability of IR

adoption when affected by cultural dimensions and CSR factors. These gaps in the literature need to be addressed to advance the understanding of probability of IR adoption and how to predict it.

It can be seen from the foregoing discussions that while environmental disclosure influences the probability of IR adoption, at the same time, when the influence of cultural factors on environmental disclosure is taken into account alongside.

2.9.5 Social, governance and IR adoption

Literature shows that social disclosure as a non-financial information (Cho et al., 2012; Stocken, 2000; Leuz, 1999). These researchers also found that low performance can lead to greater disclosure in various circumstances. Next, most of the findings reported in the literature show that when social disclosure is high (SOCIALSORT10 (1)) the probability of IR adoption is high (IR adoption high). Bernardi et al., (2018) showed that environmental, social and governance disclosures can determine the effectiveness of IR and Gallardo-Vázquez et al. (2019) reported that the relationship between social disclosure and IR reporting is not statistically significant. Nguyen (2019) claimed that the CSR performance may affect CSR disclosure positively or negatively. These arguments show the lack of consensus on the relationship between social disclosure and IR adoption. However, Bernardi et al. (2018) and Gallardo-Vázquez et al. (2019) provide evidence to show that social disclosures can drive IR adoption. Further, in various sections in this chapter a critical review concerning the relationship between cultural dimensions and social disclosure have been discussed and evidence has been provided to show that cultural dimensions can influence social disclosures. When taken together the above arguments enable the emergence of a new relationship amongst

the cultural dimensions, CSR factors and IR adoption. Extending similar arguments as in the previous section, it can be seen that the following conceptualisations can be brought out namely (culture → probability of IR adoption), (culture → social disclosure) and (social disclosure → probability of IR adoption) and (culture → social disclosure → probability of IR adoption). These are new conceptualisations that have not been investigated by other researchers. Lack of knowledge of this relationship could lead to cultural problems and social disclosure problems affecting the IR adoption and stakeholder decision making. Thus, this gap needs to be addressed to predict the probability of IR adoption and also gain knowledge on how the social disclosure could be used as an intervention between cultural dimensions and probability of IR adoption, a concept that is not discussed in the extant literature. As far as the theoretical basis required to explain the relationship between IR adoption and social disclosure, it can be seen from section 2.6 that legitimacy theory can be applied to understand the relationship. This is already discussed critically in sections 2.3 to 2.8.

Extending similar arguments to the relationship between governance and IR adoption, it can be seen that researchers have already provided some evidence that these two aspects can be related (Zaro et al, 2020; Suttipun and Bomlai, 2019). Zaro et al. (2020) found a negative relationship between governance and IR adoption. However, Frias-Aceituno et al. (2012), Hurghiş (2017); Velte and Stawinoga (2017) found a positive relationship between corporate governance and IR adoption. These arguments show that the nature of the relationship between corporate governance and IR adoption lacks clarity in the literature. Furthermore, it can be seen that as in the case of environmental and social disclosure cultural dimensions affect both IR and governance disclosure an aspect that needs to be considered as the impact of cultural dimensions on both IR and ESG factors is an important consideration in this research. Drawing a parallel with the discussions provided in the previous sections related to environmental and social disclosures it can be seen that a new relationship between cultural dimensions, IR and

governance disclosures can be brought out which is: (culture → governance disclosure → probability of IR adoption). It can be seen here that governance disclosure can act as an intervention in the relationship between cultural dimensions and IR adoption examination of which is not found in the extant literature. Knowledge about such a relationship can provide an understanding of how to tackle the predictability of the probability of IR adoption. This is a gap in the literature which needs to be addressed. Additionally, as mentioned in section 2.3, it can be seen that legitimacy theory provides the basis for discussing the relationship between governance disclosure and probability of IR adoption.

2.10 Chapter summery

The foregoing discussions have provided a critical review of the central issue of this research namely the investigation into the probability of IR adoption in multiple cultural contexts. The various gaps in the literature concerning this issue have been brought out. The various relationships that could be used to plug the gaps have been critically looked at. The application of various theories including the Hofstede model, institutional, stakeholder and legitimacy theories have been critically discussed. Overall, this chapter provides the basis to proceed to the next step of answering the research questions using a model that will be drawn in the next chapter using the theories discussed in this research.

Chapter 3: Theoretical Framework

3.1 Introduction

It can be seen from the literature review that Integrated Reporting (IR) is a new phenomenon which is in vogue since 2013. Although companies disclose information about their performance through reporting in various ways, IR as a concept appearing to attract the attention of the different communities, in particular the owners and stakeholders of firms. While arguments for and against adoption of IR are raging, there is a broad consensus that implementing IR could happen only after the challenges that hinder adoption have been addressed. A significant challenge that has not been investigated well and has the potential to derail implementation of IR is the cultural aspect of countries in which companies are situated. There is some evidence in the literature to show that culture as a factor can determine adoption or non-adoption of IR (Garcı´a-Sa´nchez et al. ,2013). However, such evidence found in the literature are far and few. But the outcomes produced by researchers including Garcı´a-Sa´nchez et al. (2013), Hoque (2017), Bananuka and Tumwebaze (2018), Balasingam et al. (2019) and Gibassier et al. (2019) argue that cultural factors can be important determinants of disclosures of companies that have adopted the IR framework as well sustainability disclosures. Those outcomes have also indicated that the current knowledge on the cultural factors as determinants of probability of IR adoption in firms or implementing IR framework in companies lacks depth, inconclusive and much more needs to be done. This important gap in the literature which indicates that influence of cultural factors on IR implementation is understudied is being addressed in this chapter through a theoretical framework. In this research Hofstede's cultural dimensions have been used as examples of determinants of probability of IR adoption and literature review. In addition, this research investigates the effect of interventions in the relationship between the determinants of probability of IR adoption and probability of IR adoption. Based on the literature review ESG factors were chosen as the

possible interventions. The effect of interventions in the relationship between probability of IR adoption and probability of IR adoption. Using the literature review in the following sections the theoretical framework required for answer the research questions is drawn and the hypotheses that are required to test the relationships are formulated.

3.2 IR adoption

The basic concept of creating value using IR framework is well addressed in the literature. As pointed by Adams (2015, p. 23) IR is a bold and worthy approach using which firms can think in longer term planning, evaluate what value means to people within the organsiation and recognize the importance of staff, larger society and environment. While IR is often considered to be a way for firms to incorporate sustainability as a component in a better manner in their strategy through integrated thinking (Gibassier et al., 2016), at the same time it is not clear in the literature in what way one's own culture or the culture in which a firm is situated could affect IR implementation (Garcı´a-Sa´nchez et al. ,2013). This research posits that cultural factors can affect IR adoption in a company and such a thought is supported by Hofstede's theory. According to Hofstede (2001) there are consequences that an organization or institution need to face because of cultural aspects across nations. This applicable to any organization that is aiming to create a value to the society. For instance, it is argued that investors and stakeholders in a country are deeply affected by the way IR is presented and Vaz et al. (2016) showed that there is a positive association between collectivism, a factor identified as representing culture by Hofstede (2001), and IR adoption. IR framework itself is argued to be explained by institutional theory, stakeholders' theory, and legitimacy theory amongst others. While various researchers have used different theories to explain the phenomenon of IR framework and factors associated with it (tables 1,2 and 3) this research is based on

predominantly stakeholder's theory identified as a dominant theory by Garcı´a-Sa´nchez et al. (2013). This research finds it useful to build on the findings of Garcı´a-Sa´nchez et al. (2013) taking the support of Hofstede's theory, stakeholder theory, institutional theory and legitimacy theory.

According to stakeholder's theory firms must create wealth for all participants for instance stakeholders, when compared to the traditional financial model and the basis for which is the creation of value for the principal agent who is the shareholder (Gonza´ lez Esteban, 2007). In addition the theory argues that a contract exists between a firm and the society in which it is situated and such a contract aims at creating wealth for all stakeholders and interest groups by allowing the firm to use the natural resources, manpower and other resources to generate goods and services as well as waste (Mathews, 1993). Applying this theory, it can be argued that IR implementation should show such an involvement of the company thereby informing both the stakeholders and interest groups. Thus, IR happens to be determined by stakeholders' needs and wants. Inexplicably such a society of stakeholders is governed by the cultural aspects as indicated by Hofstede. Expanding on these arguments in this research it is posited that the six cultural factors identified by Hofstede namely power distance, individualism vs collectivism, masculinity vs feminism, uncertainty avoidance, long term orientation vs short term orientation and indulgence affect the stakeholders.

Further to the stakeholders theory this research also uses the institutional theory to formulate the relationships concerning the cultural factors and the CSR factors as recommended by researchers including Lai et al., (2016) and Garcia et al., (2013). Baldini et al. (2018) explains that institutional theory is concerned with the behavior of companies with regard to adjusting themselves to making disclosure decisions to the national characteristics of the country in which those companies reside. Literature shows that in some cases where a researcher has investigated the relationship between cultural factors and disclosures both stakeholder and

institutional theories have been applied in combination. This indicates the cultural factors which are part of the national characteristics need to be taken into consideration while making decisions with regard to disclosures including IR. Furthermore, literature shows that to explain the relationship between cultural factors, IR and CSR factors researchers have used legitimacy theory (Lai et al., 2016). According to this theory a company's legitimacy will be the threatened when a disparity occurs between its action and the expectations of a social system for its conduct, and its executives can influence the external perception concerning the company using communication strategies Dowling and Pfeffer, 1975; Lindblom, 1994). These theoretical aspects provide the support for this research in establishing the theoretical relationships between constructs namely the cultural dimensions of Hofstede and Hofstede (2010), ESG disclosure and probability of IR adoption.

3.3 The six cultural factors of Hofstede's model

Definitions of these six cultural components by Hofstede and others are provided in the table below.

National culture dimension	Definition	Author
Power distance	''The extent to which the less powerful members of institutions and organizations accept and expect that power is distributed unequally''	(Hofstede et al. 2010, p. 61)
Individualism vs Collectivism	''Societies in which the ties between individuals are loose: everyone is expected to look after her/ himself and her/his immediate family''	(Hofstede et al. 2010, p. 92)
Masculinity vs Feminism	"The degree to which a society differentiates and emphasizes traditional roles between genders."	(Hofstede 1980, p. 298)

Uncertainty Avoidance	‘‘The extent to which the members of a culture feel threatened by ambiguous or unknown situations’’	(Hofstede et al. 2010, p. 191)
Long term orientation vs short term orientation	‘The fostering of virtue oriented toward future rewards—in particular, perseverance and thrift’	(Hofstede et al. 2010, p. 239)
indulgence vs restraint	“Society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. Restraint stands for a society that controls gratification of needs and regulates it by means of strict social norms”	(Hofstede, 2011, pp.15)

Table 3. 1,Definitions of Hofstede dimensions. (Hofstede, 2011)

Any firm adopting IR must take into account the cultural aspects affecting the stakeholders while reporting. While the research of Garcı´a-Sa´nchez et al. (2013) does not involve indulgence as a cultural factor as a determinant of IR adoption, this research argues that indulgence which is exclusion of indulgence leaves behind a serious gap in determining probability of IR implementation or adoption. As explained in the literature indulgence is the degree to which a person is prone to express emotions and enjoy momentary pleasures as well a suppression of the two personal attributes (Hofstede, 2010). It applies to societies also and explains about the levels of gratification allowed by societies where members of the society consider that fun and individual happiness are more important than hardwork (Escandon-Barbosa et al., 2021). In addition to the above, the literature review shows that CSR factors can be conceptualized as interventions affecting the relationship between the cultural factors and the three ESG factors. These are also discussed in subsequent sections.

4.4.1 Relationship between power distance and probability of IR adoption

From section 2.3 in chapter two it can be seen that power distance as a cultural construct can be construed to drive the probability of IR adoption. The stakeholder and institutional theories provide the basis to relate these two dimensions. The relationship between these two constructs have been posited as a direct one and varies in various countries with differing cultural aspects. However, literature shows that widely used conceptualization of the relationship between the two is one of inverse relationship (section 2.3). Thus, it is possible to hypothesise as follows.

H1a: The probability of IR adoption will be lower in companies located in countries with higher power distance in Hofstede sense than the those located in countries with higher power distance.

4.4.2 Relationship between individualism vs collectivism and probability of IR adoption

From section 2.4 in chapter two it can be seen that individualism vs collectivism as a cultural construct can be construed to drive the probability of IR adoption. The stakeholder and institutional theories provide the basis to relate these two dimensions. The relationship between these two constructs has been posited as a direct one based on the literature review and varies in various countries with differing cultural aspects. However, literature shows that widely used conceptualization of the relationship between the two is one of inverse relationship (section 2.4.4). Thus, it is possible to hypothesise as follows.

H1b: The probability of IR adoption will be lower in companies located in countries with higher individualism in Hofstede sense than the those located in countries with lower individualism (collectivism).

4.4.3 Relationship between masculinity vs feminism and probability of IR adoption

From section 2.5 in chapter two it can be seen that masculinity vs feminism as a cultural construct can be construed to drive the probability of IR adoption. The stakeholder and institutional theories provide the basis to relate these two dimensions. The relationship between these two constructs has been posited as a direct one based on the literature review and varies in various countries with differing cultural aspects. However, literature shows that widely used conceptualization of the relationship between the two is one of inverse relationship (section 2.5.3). Thus, it is possible to hypothesise as follows.

H1c: The probability of IR adoption will be higher in companies located in countries with low masculinity (vs feminism) in Hofstede sense than the those located in countries with lower masculinity.

4.4.4 Relationship between uncertainty avoidance and probability of IR adoption

From section 2.6 in chapter two uncertainty avoidance as a cultural construct can be construed to drive the probability of IR adoption. The stakeholder and institutional theories provide the basis to relate these two dimensions. The relationship between these two constructs has been posited as a direct one based on the literature review and varies in various countries with differing cultural aspects. However, literature shows that widely used conceptualization of the relationship between the two is one of positive relationship (section 2.6.4). Thus, it is possible to hypothesise as follows.

H1d: The probability of IR adoption will be higher in companies located in countries with higher uncertainty avoidance in Hofstede sense than those located in countries with lower uncertainty avoidance.

4.4.5 Relationship between long term vs short term orientation and probability of IR adoption

From section 2.7 in chapter two it can be seen that long term vs short term orientation as a cultural construct can be construed to drive the probability of IR adoption. The stakeholder and institutional theories provide the basis to relate these two dimensions. The relationship between these two constructs has been posited as a direct one based on the literature review and varies in various countries with differing cultural aspects. However, literature shows that widely used conceptualization of the relationship between the two is one of positive relationship (section 2.7.3). Thus, it is possible to hypothesise as follows.

H1e: The probability of IR adoption will be higher in companies located in countries with long term orientation in Hofstede sense than the those located in countries with short term orientation.

4.4.6 Relationship between indulgence vs restraint and probability of IR adoption

From section 2.8 in chapter two it can be seen that indulgence vs restraint as a cultural construct can be construed to drive the probability of IR adoption. The stakeholder and institutional theories provide the basis to relate these two dimensions. The relationship between these two constructs has been posited as a direct one based on the literature review and varies in various countries with differing cultural aspects. However, literature shows that widely used conceptualization of the relationship between the two is one of negative relationship (section 2.8.2). Thus, it is possible to hypothesise as follows.

H1f: The probability of IR adoption will be lower in companies located in countries with higher indulgence in Hofstede sense than the those located in countries with lower indulgence (restraint).

3.4 ESG reports

Further to identifying the relationship between the six cultural factors identified Hofstede's model, this research argues that IR implementation needs to consider the prospect of including non-financial information such as environmental, social and governance disclosures (Islam and Islam, 2018). While literature shows that ESG disclosures need to be part of IR (Mervelskemper and Streit, 2017), this research posits that such an integration of ESG information in IR needs to consider the association between ESG information and culture (Hawn et al., 2018). While ESG as a concept is associated with sustainability in the literature, researchers have explained the concept of ESG using institutional theory as suggested by Vaz et al. (2016). The work of Hawn et al. (2018) stops at linking cultural factors identified in Hofstede's model to the ESG factors and does not link the concept of ESG disclosure to IR adoption. Furthermore, while this research agrees with the arguments of Lai et al. (2016) and Sierra-Garcıa et al. (2015) who linked ESG as independent variables to IR adoption (dependent variable) at the same time uses the arguments of Hawn et al. (2018) to integrate the six cultural factors as antecedents of the ESG disclosures. Using a combination of institutional theory and Hofstede's model this research posits that the six culture factors of Hofstede sense are related to the ESG components which in turn determine IR implementation. The institutional theory (Baldini et al., 2018) explains that the behavior of companies with regard to adjusting themselves to making disclosure decisions to the national characteristics of the country in which those companies reside. Using this theory, it can be argued that a firm's outcomes, for instance ESG disclosures and hence IR adoption, depend on the behavior of companies with regard to adjusting themselves to making disclosure decisions to the national characteristics of the country in which those companies reside.

Using the above arguments, the following hypotheses are posited:

H2a	There is a statistically significant relationship between power distance in Hofstede sense of companies located in different countries and environmental disclosure
H2b	There is a statistically significant relationship between individualism in Hofstede sense of companies located in different countries and environmental disclosure
H2c	There is a statistically significant relationship between masculinity in Hofstede sense of companies located in different countries and environmental disclosure
H2d	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and environmental disclosure
H2e	There is a statistically significant relationship between long term orientation in Hofstede sense of companies located in different countries and environmental disclosure.
H2f	There is a statistically significant relationship between indulgence in Hofstede sense of companies located in different countries and environmental disclosure.
H3a	There is a statistically significant relationship between Power distance in Hofstede sense of companies located in different countries and social disclosure
H3b	There is a statistically significant relationship between individualism in Hofstede sense of companies located in different countries and social disclosure
H3c	There is a statistically significant relationship between masculinity in Hofstede sense of companies located in different countries and social disclosure.
H3d	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and social disclosure
H3e	There is a statistically significant relationship between long term orientation in Hofstede sense of companies located in different countries and social disclosure.
H3f	There is a statistically significant relationship between indulgence in Hofstede sense of companies located in different countries and social disclosure.
H4a	There is a statistically significant relationship between Power distance in Hofstede sense of companies located in different countries and governance disclosure
H4b	There is a statistically significant relationship between individualism in Hofstede sense of companies located in different countries and governance disclosure.
H4c	There is a statistically significant relationship between masculinity in Hofstede sense of companies located in different countries and governance disclosure.
H4d	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and governance disclosure.

H4e	There is a statistically significant relationship between long term orientation in Hofstede sense of companies located in different countries and governance disclosure
H4f	There is a statistically significant relationship between indulgence in Hofstede sense of companies located in different countries and governance disclosure
H5	There is a positive association between the level of environmental disclosure of companies located countries with varying culture in Hofstede sense and IR adoption.
H6	There is a positive association between the level of social disclosure of companies located countries with varying culture in Hofstede sense and IR adoption
H7	There is a positive association between the level of governance disclosure of companies located countries with varying culture in Hofstede sense and IR adoption

Table 3. 2, IR adoption and national culture with intervention of ESG hypotheses

The foregoing discussions provide the assumptions made based on the theoretical aspects reviewed in the literature and provided in Chapter 2. The resulting theoretical framework is provided below (figure 3.1).

The resulting theoretical framework is provided below.

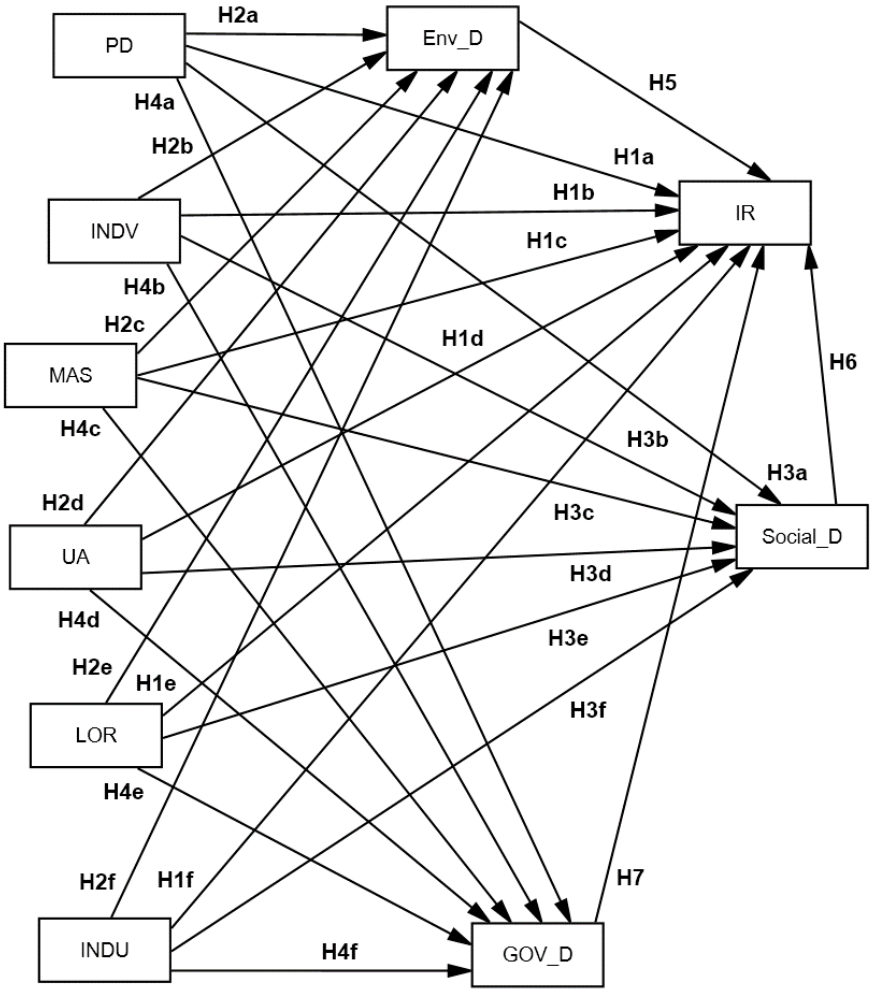


Figure 3. 1, Theoretical Framework

3.5 Chapter summary

This chapter has provided the theoretical framework that will be used to address the research gaps identified in the literature. Three theories namely the Hofstede's model, stakeholder theory and institutional theory have been used to determine theoretical factors that could be used to address the research gap. The model developed provides a holistic framework that could be used to determine the IR adoption using Hofstede sense cultural factors and ESG concepts. Thus, this research paves the way to define the research methodology that will be used to test the research model.

Chapter 4: Methodology

4.1 Introduction

This chapter discusses the research methodology to be used for this research. The research methodology is based on the research questions. The research questions point towards finding the cultural factors that determine IR adoption and interventions that affect the relationship between the cultural factors and to determine the factors and the interventions a theoretical framework has been drawn in the previous chapter. Taking into consideration the above the following research methodology has been developed. The chapter discusses the research philosophy aspects in terms of the epistemological and ontological issues, followed by the research approach and methodology issues. The research framework that has been drawn for these issues has been discussed further followed by aspects including research design, data collection and data analysis.

4.2 Epistemology

According to Saunders et al., (2019), epistemology is concerned with assumptions about knowledge and discusses what constitutes acceptable knowledge (Bryman, 2012). It also concerns with what is valid and legitimate knowledge and such knowledge could be communicated to others (Burrell & Morgan 1979). Additionally considering the fact that business and management are multidisciplinary in nature, then it is possible to argue that different types of knowledge can be considered to be legitimate, for instance, facts to interpretations, narratives, numerical data to textual to visual data, and fictional accounts. This implies that different epistemological stances will be adopted by different researchers pursuing different types of knowledge (Saunders et al., 2019). In fact, those researchers who pursue

archival research and autobiographical accounts also adopt a particular epistemological position as required by their research (Martí & Fernández 2013). Thus, every pursuit to discover knowledge by any researcher must begin with an epistemological stance of the researcher.

An important aspect of epistemological consideration is that the stance to be taken by the researcher depends on the research question on hand (Garrow & Hasenfeld, 2017) [. Thus, epistemological assumptions made by researchers are based on the research questions to be answered. Furthermore, epistemology is considered to be part of the philosophy the researcher would adopt in the investigation being conducted and the philosophical underpinnings in any research are usually difficult to be proven or disproven empirically as those philosophical underpinnings are based on conjectures or assumptions (Scotland, 2012). This implies that a researcher begins with a belief about the existence of certain knowledge based on the philosophical stance the researcher takes. For instance, in this research one of the research questions is concerned with the investigation of the influence of the cultural constructs on IR adoption in firms located in multicultural environments. Here the basic assumption is that there exists a relationship between the cultural constructs and IR adoption and knowledge about this could be discovered with an assumption. Thus, the epistemological stance of the researcher could be a philosophy that says that if there is multicultural then there should be an impact of that culture on IR adoption. An opposite view is also possible. That is to say that the researcher could feel that there could be multiple ways by which cultural constructs could be linked to IR adoption and it depends on a number of issues not just culture. Here the belief of the researcher is that there could be multiple ways to explore the influence of certain constructs other than cultural constructs on IR adoption which indicates an assumption that the research question

could be answered taking into account multiple assumptions. In this situation, the research question needs to be redefined.

In order to understand what epistemological stance a researcher would adopt it is necessary to know the different philosophical positions a researcher could assume which are described in the extant literature. Widely used philosophical positions include positivism and interpretivism. However, there are other philosophical positions that have discussed which include postmodernism, feminism, critical inquiry, interpretivism, constructionism and realism (Creswell & Cresswell, 2018; Bryman, 2012). There is evidence in the literature to suggest that researchers specializing in the accounting field widely adopt either positivist or interpretive philosophical position (Major, 2017). Applying this argument to the context of the current research that investigates into the cultural constructs, sustainability constructs and their influence on IR adoption in firms located in multiple cultures, it is possible to approach the current research by applying either positivism or interpretivism. Thus, in this research only positivist and interpretive philosophical positions have been discussed in the following sections and to determine which one of the two could be applied for this research.

4.3 Positivism

According to Lamont (2021) a positivist researcher enables the researcher to identify as well as test a causal phenomenon that could be generalized as a law-like regularities. To this extent as long as the conditions are met, there is every possibility that outcomes could be predicted. Saunders et al. (2019) provide the various aspects concerning positivism and are outlined in table 4.1.

Positivism			
Real, eternal, independent, one true reality (universalism) Granular (things) ordered	Scientific method observable and measurable facts Law like generalisations Numbers Causal explanation and prediction as a contribution.	Value-free research A researcher is detached, neutral and independent of what is researched Research maintains an objective stance	Typical deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analysed.

Table 4. 1, Positivism and its features (Saunders et al., 2019; p. 144)

If one applies the concepts of positivism to IR adoption as narrated by Saunders et al., (2019) it can be seen that IR adoption is a phenomenon that is real, independent of the researcher, is observable and there is a possibility to explain IR adoption as a dependent variable (Garcia et al., 2013). In addition, a causal relationship between the cultural constructs and sustainable factors could also be attempted (Fuhrmann, 2019) which is the focus of this research. In contrast, it is possible to argue that cultural factors may require the application of interpretive philosophy. Researchers argue that the cultural constructs can be construed as bearers of social identities that are formed by self-definition and ascription as well as interpretations of others which cannot be explained by the positivist approach (Li et al., 2015; Geertz, 1973). However, literature shows that much of the research concerning cultural aspects is embedded in the positivist approach since the last three decades (Taras and Steel, 2009). Similar arguments could be extended to the sustainability factors. In this research ESG factors were studied with regard to a sample of companies to know how those companies are engaged with cultural differences and disclose ESG performance annually. This entails the measurement of variables without direct contact with human subjects. Thus, it is possible to argue that a positivist philosophy need to be applied in this research (Bryman, 2012).

However, there are also arguments that suggest the use of interpretive philosophy to understand the impact of ESG performance as it involves the stakeholders who are particular about the true disclosures to be made by companies. Further ESG disclosures made by companies will be observed by stakeholders over a long period of time and there is a need for companies to create opportunities for closer contact with stakeholders within with context of the sustainable environment. This is only possible if the researcher chooses an interpretive research philosophy. While weighing in both options it can be seen that many researchers argue that ESG performance needs to studied using a positivist stance as it is able to explain the influence of ESG factors on company performance in an objective manner (Jha & Rangarajan, 2020; Chams & García-Blandón, 2019; Nizam et al., 2019). In addition, in the field of integrated reporting, it can be seen that beliefs such as transparency in IR will help the company earn goodwill amongst investors are seen. Such beliefs also point towards the need to provide objective information. This also points towards the need to apply positivism in any research that concerns with IR adoption.

Furthermore, a key characteristic of positivism is that it is associated with objective ontology, deductive research approach, and quantitative research method (Bryman, 2012; Nieuwenhuis, 2011). This implies that any researcher who adopts a positivist philosophical stance is likely to use a quantitative research method that involves collection of objective data and derives findings based on the process of deduction. For instance, an ontological stance of a researcher could be either objective or subjective (Saunders et al., 2019). The ontological position implies that the researcher has to decide whether the research questions need to be addressed in an objective manner (meaning using statistical methods, quantitative research method and deductive research approach) or a subjective manner (meaning using qualitative research method and inductive research approach) (Bryman, 2012). Similarly, a researcher could deduce

results from the research findings or induct results from the research findings. For instance, in the deductive approach, a researcher could directly test hypotheses and derive inferences while in the inductive approach the researcher may come up with propositions based on the outcome of the research. Finally, the use of quantitative research method involves collective quantitative data and dealing with numbers and statistical tools whereas in qualitative research much of the research uses information gathered based on such methods as semi-structured interviews, action research or case study (Saunders et al., 2019). Thus, it can be argued that if one chooses a positivist research philosophy then it is possible that the researcher would in on likelihood use objective ontology, deductive research approach and quantitative research method.

However, there are limitations to applying positivism as a philosophy that need to be understood by researchers before they apply this philosophy. They are (Kaliyamurthi, 2021; Basu, 2009; Kuhn, 1970):

- People are considered as numbers and therefore does not take into account the values and emotions that are part of those people.
- The concept of what could be bad and good is not considered
- Facts are taken into account with the assumption that there exists no difference between actor and matter
- The principle of cause and effect related to a phenomenon is considered without observation on motives within the phenomenon.
- The outcome of studying a large population might just be an abstract and it may so happen that such an outcome is not fit for the local population in specific context.
- There is a possibility that the researcher's theory is not understood or linkable to the subjects
- The person investigating a phenomenon just focuses on testing a theory or hypothesis but not generating a theory

- There can be questions raised on the theory used by the researcher to explain phenomena but the theory itself could be flawed.

It can be seen that positivism is widely used in integrated report research. Examples include the research conducted by Gibson and Brown (2009, p. 329) who argues that monologic accounting is often positivist. However, prior to adopting the positivist philosophical stance it is necessary to understand the interpretive research philosophy so that proper justification can be given. Thus, the next section discusses the interpretive philosophy.

4.4 Interpretive epistemology

According to Lamont (2022) interpretivist researchers associate importance to a specific context or time that enables them to assign meanings that are likely to change, because of which it is practically not possible to derive hard-and-fast and generalizable conclusions or laws. Such research philosophies lay stress on ideas, concepts and ethical standards. For instance, if one analyses the question of masculinity and its relationship to violence in conflict settings, then investigations will reveal how the knowledge derived from interpretive research can be used to know how gendered understandings of masculinity can lead to such a violence.

Features of interpretivism are provided in table 4.2.

Interpretivism			
Complex, rich Socially constructed through culture and language Multiple meanings, interpretations, realities flux of process, experiences, practices	Theories and concepts Too simplistic Focus on narratives stories perceptions and interpretations of new understandings and worldviews as contributions.	Value-bound research Researcher as part of what is researched Subjective Researcher interpretation key to the contribution Researcher reflexive	Typically, inductive. Small samples, in-depth investigation, and qualitative methods of analysis, but a range of data can be interpreted.

Table 4. 2, Interpretivism and its features (Saunders et al., 2019; p. 145)

An example of the application of interpretative philosophy in research concerning IR could be the study of the managers of the firms on their behavioural aspects related to transparency and

sustainability which could reveal the actual intentions, thinking and ideas behind their decision-making with regard to IR adoption. In fact, literature shows that in the field of business and management which includes the faculty of accounting and organizational behaviour more and more researchers are turning to the application of interpretative philosophy (Worm et al., 2015). Although the literature shows that positivism is the dominant philosophy adopted by most of researchers in the field of business and management, researchers seem to have realized the potential of interpretative philosophy for application in understanding various issues like adoption of IR in firms (Iacuzzi et al., 2020; Engelbrecht et al., 2018).

The main advantage of applying interpretive philosophy to any research is that it enables researchers to explore complex phenomena that are socially constructed through culture and language (Saunders et al., 2019). That is to say in any study is concerned with culture then interpretive philosophy could be more useful than probably the positivist approach. For instance in the current research, the researcher is dealing with a cultural problem and is investigating the impact of cultural dimensions on IR adoption in firms as well as ESG performance of those firms. Here there could be a possibility to explore how firms located in different cultures when compared with each other perform with regard to disclosures using IR standard and ESG disclosures. However, in this situation if the researcher wants to use the interpretive philosophy, then the problem that is being investigated must aim at understanding of the experiences, opinions, ideas and behavioral aspects of various stakeholders. If the problem is concerning an understanding of the causal relationship between variables identified like the six cultural constructs investigated in this research and the IR adoption, then interpretive philosophy is unlikely to direct the researcher to answer the question. Thus it can be seen that the application of interpretive philosophy is only useful in exploratory research where research questions are concerned with such questions as how are being tackled. For instance if a firm is aiming to change the culture within an organization to one of integrated

thinking, then it requires deeper exploration of the various stakeholders and their behaviour before the change could be initiated. In this situation it is possible for the researcher to consider the adoption of the interpretive research philosophy (Iacuzzi et al., 2020).

The above arguments can also be extended to the concepts of ESG also. Sustainability involves stakeholders and ESG disclosures are found to be linked to the concepts of culture. Literature shows that some have studied the concept of ESG and its linkage to culture and IR adoption using interpretive philosophy (Maroun et al., 2022) In their research on integrated thinking Dumay and Dai (2017) argued that existing organisational structures and cultures have the potential to hinder integrated thinking which includes ESG disclosures also (Refinitive, 2021). These arguments point towards the utility of interpretive research philosophy in the field of IR and sustainability disclosures.

Additionally, interpretive research is found to be linked to subjective ontology, inductive research approach and qualitative research method (Saunders et al., 2019; Bryman, 2012; Nieuwenhuis, 2011). Subjective ontology concerning IR adoption implies that the nature of knowledge that is being sought cannot be explained objectively and need to be explored. For instance, IR adoption behaviour of firms can be difficult to predict or explain if those firms do not want to disclose financial or non-financial information that could hurt those firms. In such situations, making the firms to comply with the IR or CSR guidelines could be difficult especially when the firms are not mandated to adopt IR. In such situations it may be useful to adopt the subjective ontology to determine the nature of knowledge concerning the behaviour of the firms in either adopting IR standards or complying with CSR regulations. Any study in such a fluid situation could need the researchers to apply subjective ontology to derive knowledge on the actual behaviour of those firms. Furthermore, subjective ontology points

towards inductive approach which implies that inferences need to be derived based on continuous observation or using qualitative research methods (Bryman, 2012). Thus it can be seen that adopting an interpretive philosophical stance is likely to lead researchers to unearth knowledge that cannot be explained objectively and requires an inductive method to discover knowledge. As far as this research is concerned, use of subjective ontology and inductive research is not a widely used method in IR studies with exceptions like that of the research conducted by Maroun et al., (2022) and Iacuzzi et al., (2020).

However, there are limitations to the application of interpretivism. These include (Saunders et al., 2019; Marsh & Stoker, 2010; Lin, 1998; Rosenberg, 1996)

- Unique but applicable to the local situation only.
- Results cannot be generalized.
- A research finding applicable to a specific community/tribe/ region cannot be applied universally.
- Could be criticized as “our constructions of other people’s constructions”.
- Unlikely to predict the future.
- Not easy to validate research findings
- Tedious and time-consuming process
- Researchers are part of what is researched and hence could introduce researcher bias
- Subjective

It can be seen that in the field of accounting and reporting, interpretive philosophy is gaining popularity amongst researchers. However, adopting interpretive philosophy in any research needs proper justification that is linked to the research questions.

4.4.1 Justification on the choice of the research method

The foregoing discussions have provided a critical review of the two widely epistemological and philosophical positions researchers can adopt in research. In order to choose the appropriate research philosophy, it was necessary to understand the research questions set for this research. The research questions set for this research aim at explaining the nature of the relationship between the cultural factors and IR adoption behaviour of firms located in different countries and interventions that have a role in the relationship between the cultural factors and IR adoption behaviour. This requires a positivist approach that enables an objective understanding of the nature of knowledge about the relationship amongst the independent, dependent and mediating variables. Furthermore, the relationships could be studied and tested using secondary data already published in regard to the variables by organisations like Hofstede insights, GRI and Bloomberg. These data are numbers and could be analysed statistically to test the relationship between the three variables and there was no need for any information that is qualitative in nature. Furthermore, the hypotheses concerning the relationships could be tested in an objective manner and explain how the relationships function using established theories. In addition, the secondary data available was already tested for its reliability and validity by the primary source and hence the credentials were already established. This also ensured that the target population of the firms that adopt or do not adopt IR are not in contact with the researcher meaning that there is no researcher bias. The data enabled the prediction of the influence of cultural factors on IR adoption in the presence of sustainability factors. These aspects clearly point towards the necessity to use positivist research philosophy in this research that is associated with objective ontology, deductive research approach and quantitative research method. There was no need to consider the interpretive research philosophy as here data was available to test the hypotheses objectively and the theoretical relationships that have been established and provided in the theoretical framework in figure 3.1. Statistical techniques

could be used to test the hypotheses and the model. Thus choice of the positivist research philosophy was justified for this research.

4.5 Research framework

The research framework which is also called the theoretical framework is the description of the research model and the way the research will be carried out to answer the research questions by testing the research model. Using the research framework the researcher will be able to develop the research design, collect data to test the model and analyse the research work (Saunders et al., 2019). As far as this research is concerned the theoretical model (figure 3.1) was tested by adopting the positivist research philosophy, objective ontology, deductive research approach and quantitative research method. As far as the quantitative research method is concerned this research used secondary data already published by different agencies like the Hofstede Insight, GRI and Bloomberg. Thus this research framework was implemented to develop the research design for this research which is discussed next.

4.6 Research design

The research design is considered to be a general plan that elaborates the way the researcher goes about answering the research questions (Saunders et al., 2016).It involves methodological choices, for instance, whether the method used is qualitative, quantitative or mixed method research design. Further, the research design should have determined the purpose of the research study (for instance exploratory, descriptive, or hypothesis testing), the place where the study would be conducted, the level to which the researcher manipulated the investigation, and whether the research was longitudinal or cross-sectional, sampling design which included

identifying the type of sample used, the method of data collection, identifying how the variables will be measured and the data analysis method (Sekaran & Bougie, 2019). Thus, for this study, the research design considerations suggested by Sekaran & Bougie (2019) were employed.

The main purpose of this study was to test hypotheses meaning that the purpose is to explain the nature of the relationships thus providing an understanding of the cause and effect relationship that exists among variables. For instance, in this research, it has been posited that cultural components measured by Hofstede sense have an influence on the IR adoption by different companies located in different countries having varying cultures. In this situation whether the cultural components identified using Hofstede's theory have a relationship with IR adoption was investigated. This also implies that the variance in the dependent variable due to the independent variables was measured. As far as the type of study is concerned this study is a causal – correlational study meaning that it investigates whether there is a cause-and-effect relationship between variables associated with the problem under study. For instance, culture is found to be an independent variable in literature (Garcia et al.,2013;vaz et al 2016) and some researchers have found that Hofstede's cultural components can be the cause that affects the managerial behaviour of executives in companies (Fruham,2019). This implies that there could be an underlying cause and effect relationship between the independent and dependent variables. This shows that the investigation was about the existence of a possible cause and effect relationship between the two variables namely the cultural components and IR adoption.

As far as the study setting was concerned this research depended on secondary data published by other organizations namely Hoefstede Insights (2022), Global Reporting Initiative (GRI), and Bloomberg which collected data through their research in non-contrived settings. For instance, IR adoption or non-adoption data was self-reporting data provided by the companies and collected by GRI. This is actual data collected from the various companies directly by GRI. Similarly, the cultural indices computed by Hofstede Insights is a regularly updated by collecting data about different countries based on a metric developed by Hofstede Insights. Again it can be seen that Bloomberg collects data regularly about ESG published by various companies which is the actual setting. Thus it can be seen that the study settings are non-contrived.

4.6.1 Unit of Analysis

The unit analysis selected for study was the individual companies located in five countries namely. As far as the unit of study is concerned it provides information on the level of aggregation of the data collected at the stage of data analysis. Each data collected through the secondary data source was considered as a data source.

4.6.2 Time horizon of the research

Studies conducted are commonly either cross-sectional or longitudinal. This research was conducted on a cross-sectional basis taking into account secondary data for the year 2016 because the study aims at understanding the relationship between the independent and dependent variable that is not time-variant and is able to provide the basis to achieve the

objectives of this research. As far as the longitudinal study is concerned, the data related to the dependent variable is collected more than one time to answer the research question and in this research, there is no such characteristic associated with the dependent variable namely IR adoption that is time variant.

4.6.3 The extent to which researcher interference was found with the study

The research was based on secondary data and hence there is no researcher influence on the study and data collection process.

4.6.4 Data collection

Data is of two types namely primary data and secondary data (Saunders et al., 2016). While primary data is new data collected from participants in the research using research instruments, secondary data is that data that is already published and could be used for the purpose of achieving the objectives of any research. Secondary data include both raw data and published summaries and could be analysed to unearth additional or different knowledge (Saunders et al., 2019; Bulmer et al., 2009) by using other research studies other than those it was collected. In this research secondary data published by Hoefstede Insights, GRI and Bloomberg were used to answer the research questions and test the various hypotheses formulated for this research. Thus the following sections describe the datasets and the organisations that provided the dataset for this research as also the concept of secondary data and the steps involved in data analysis.

4.7 Detailed description of the chosen databases, reasons for the choice and how they were accessed

Three different databases were used in this research. They were Country Comparison data of national culture by Hoefstede sense (Hoefstede insights, 2022), Bloomberg's Environmental, Social & Governance (ESG Data) dataset (Bloomberg Professional Services, 2022)] and the Global Reporting Initiative (GRI) database. Each one of these databases is described next.

4.7.1 Country Comparison data of national culture by Hoefstede sense

This database provides information and data about the national culture of various countries. The database concerned with six dimensions of culture namely power distance, individualism versus collectivism, masculinity versus feminism, uncertainty avoidance, long-term orientation versus short-term orientation, and indulgence versus restraint (Hofstede et al., 1980; 2010). Those dimensions have been measured as cultural indices by Hofstede sense and those indices provide objective measures of the cultural dimensions. The Hofstede indices have been found to be useful in understanding, explaining, investigating, classifying, comparing, and measuring the cultural dimensions of countries in an objective manner (Hofstede et al., 1980; 2010). It is used in research to understand the behavioural aspects of societies and executives in companies, decision-making in companies, and the cross-cultural impact of nations on disclosures (Ramio et al., 2021b). Decision-making in organizations including those related to IR adoption are concerned with culture, an argument that is supported by researchers (Pucheta-Martínez and Gallego-Álvarez,2019 ; Gallén and Peraita ,2018; Gallego-Álvarez and Ortas ,2017). The cultural aspects of a nation can have a bearing on such decisions including those related to annual reports and disclosures made in those reports. For instance, South Africa mandates IR adoption while in USA it is not. The cultural aspects as defined by Hofstede sense varies between South Africa and USA (Hofstede et al., 2010). Such a variation in culture impacts disclosures. For example, the figure 4.1 provides a comparison of the cultural dimensions measured by Hofstede's sense between South Africa and USA.

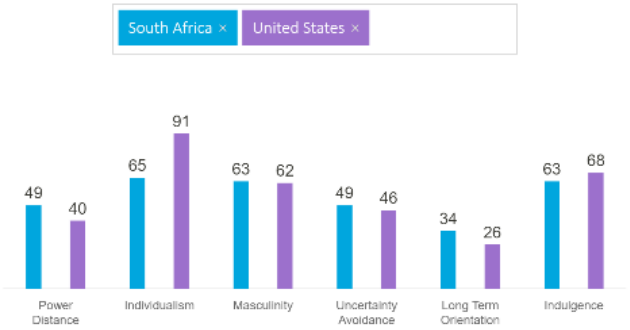


Figure 4. 1 South Africa-USA cultural dimensions' comparison by Hofstede sense (Hoefstede insights, 2022b)

If one applies the results of the research conducted by Garcia et al., (2013) it can be seen that IR adoption decisions in companies located in South Africa and USA could vary because of cultural variations between the two countries. This explanation clearly shows that data provided by the Country Comparison database about cultural dimension measurements by Hofstede sense could be useful in research that concerns with IR adoption.

Additionally in this research cultural aspects have been identified as influencing IR adoption and CSR disclosures. Furthermore, in this research, Hofstede's cultural model has been used as the basis to determine whether cultural dimensions that vary across countries and hence the industries located in those countries, could influence the IR adoption and CSR disclosures or not. That is to say any investigation that is concerned with understanding the decision-making aspects in firms located in various countries in regard to the disclosures need not be uniform or constant and could vary based on the cultural characteristics of particular countries. Although Country Comparison data provided by Hofstede Insights (2022) could be criticized for data being relatively old and replications could ignore recent changes in the environment in a country or workplace (Ghemawat & Reichem, 2011) yet researchers concede that this data is useful for any research that involves variation in culture across nations (Zhang et al., 2022). Access to the cultural dimensions and their indices measured by Hofstede sense database is through the Country Comparison (2022) website which is available online and is easy, free and straightforward. Thus the need for the data obtained from the Country Comparison database is justified for this research.

4.7.2 Global Reporting Initiative's (GRI) data

GRI is a multi-stakeholder standard concerning sustainability reporting and accountability (De Villiers et al., 2022). GRI publishes information about IR adoption by companies in various countries. Researchers have used GRI data in investigating areas concerning IR adoption in companies (Vaz et al., 2022), impact of national culture on IR adoption (Sierra-Garcia et al., 2013) and voluntary sustainability reporting (De Villiers et al., 2022). A sample of the GRI report is presented in figures---.

	A	B	H
1		Organization data	
2	Featured Report?	Name	Country
3	No	Anhui Water Resources Development Company	Mainland China
4	No	Baosteel Co., Ltd.	Mainland China
5	No	Baowu Steel	Mainland China
6	No	Chengtun Mining Group Co., Ltd.	Mainland China
7	No	Energy China	Mainland China
8	No	Guangdong Guanhao High -Tech	Mainland China
9	No	Hikvision	Mainland China
10	No	Ilumno	Colombia
11	No	NanJing Iron & Steel	Mainland China
12	No	Phillip Bank	Cambodia
13	No	Rizhao Port Co., Ltd.	Mainland China
14	No	Shandong Hi-speed Company Limited	Mainland China
15	No	Taiyuan coal Gasification Company Limited	Mainland China
16	No	Tiantan Bio	Mainland China
17	No	Titan Company Limited	India
18	No	XI'AN INTERNATIONAL MEDICAL INVESTMENT	Mainland China

Figure 4. 2 Sample of the GRI report (Adapted from GRI Reports List 2016, GRI (2016))

	A	B	N	O	
1		Organization data			
2	Featured Report?	Name	Integrated	Type	Adherence
3	No	Anhui Water Resources Development Company	No	Non - GRI	
4	No	Baosteel Co., Ltd.	No	Citing-GRI	
5	No	Baowu Steel		Citing-GRI	
6	No	Chengtun Mining Group Co., Ltd.		Non - GRI	
7	No	Energy China	No	GRI - G4	Undeclared
8	No	Guangdong Guanhao High -Tech		Non - GRI	
9	No	Hikvision		Non - GRI	
10	No	Ilumno	Yes	GRI - G4	In accordan
11	No	NanJing Iron & Steel		Non - GRI	
12	No	Phillip Bank		Non - GRI	
13	No	Rizhao Port Co., Ltd.		Non - GRI	
14	No	Shandong Hi-speed Company Limited		Non - GRI	
15	No	Taiyuan coal Gasification Company Limited		Non - GRI	
16	No	Tiantan Bio		Non - GRI	
17	No	Titan Company Limited		Non - GRI	
18	No	XI'AN INTERNATIONAL MEDICAL INVESTMENT		Non - GRI	

Figure 4. 3Sample of the GRI report (Adapted from GRI Reports List 2016, GRI (2016))

The GRI was founded in 1997 as a result of a public outcry related to environmental problems and publishes sustainability data annually since 1999-2000 (figure 4.4).

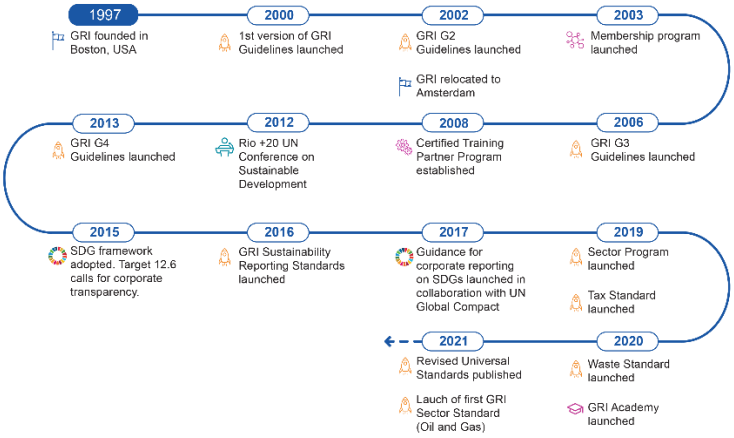


Figure 4. 4, History of GRI (Adapted from GRI, 2022)

GRI was founded in Boston in 1997 following a public outcry over the environmental damage of the Exxon Valdez oil spill. Our roots lie in the non-profit organizations CERES and the Tellus Institute (with the involvement of the UN Environment Programme). The report provides various details including names of the company, size, sector, country located in and whether IR was adopted or not. As far as this research is concerned this report of GRI provides the basis for getting secondary data related to IR adoption in various companies located in different countries. This in turn provides a linkage to the culture of the country in which the company is located and IR adoption an argument supported by Garcia et al., (2013). Access to GRI data is through a process of an application to the organization itself. A formal request was made to GRI by the researcher through a form provided by GRI. The organization then sent the data on a spreadsheet to the researcher. The data provided was for the year 2016. Whether a company in a particular country adopts IR or not provides a binary data for investigating the relationship between the cultural aspects of the nation in which the company is located and IR adoption. A number of researchers have used GRI data for research that are concerned with cultural influence on IR adoption (e.g. Vaz et al,2016). The above arguments provide the basis for using GRI data for this research where IR adoption has been used a construct in the conceptual model as the dependent variable and the impact of cultural dimensions on it. Although GRI data suffers due to some limitations like lack of reliability arising out of the limited use of resources (Tauringana, 2020) and lower emphasis on sustainability reporting by governments (Halkos and Nomikos,2021). Additionally, some (Safari & Areeb, 2020) argue that the reliance of GRI on the accountability aspect is a high cost activity. Despite such limitations, yet GRI has been considered to be an effort that is

setting standards across the world and is dominant in providing information regarding the influence of reporting organisations on society as well as the environment around human beings. For instance the International Financial Reporting Standards (IFRS) Foundation started initiating the process of standardization of annual reports of companies by integrating sustainable reports as part of the annual reports which usually contained only financial reports and tried to set new standards. This led to many authorities and organizations to create new frameworks like the one developed by International Integrated Reporting Council (IIRC) (De Villiers et al., 2020). This relationship between integrated reporting and sustainability reporting is an important aspect that had bearing on this research. In the conceptual model, it is posited that culture of an organisation influences integrated report adoption and sustainability variables namely environmental, social, and governance have been posited to influence IR adoption. In both the cases GRI data was important to test the hypotheses concerning the relationships Cultural dimensions → IR adoption and ESG → IR adoption. Although there are other datasets provided by different agencies like IIRC in this research GRI data was only used. The reason for this is that IIRC data does not provide data on companies that have not adopted IR (IIRC, 2022) while Bloomberg and Thomson Reuters do not specifically mention IR adoption as a construct but are considered by other researchers as representing proxies of IR adoption (de Villiers et al., 2017). In the absence of clarity with regard to providing data on IR adoption explicitly in their database, this research did not consider both Bloomberg and Thomson Reuters to obtain secondary data on IR adoption.

4.7.3 Bloomberg data

Bloomberg is a private organisation that deals with data (Bloomberg, 2022) Particularly data related to ESG factors made available by Bloomberg are used by researchers as a proxy to represent an organisation's level of environmental, social, and governance disclosure (e.g. García-Sánchez et al., 2021; Baldini et al., 2018; Lai et al., 2016). With growing public awareness in regard to social, environmental, and ethical issues (Reverte, 2009) and the importance of companies to societies, there is an increased expectation amongst societies about the responsible behaviour of companies concerning those issues. Problems like change in climate, dwindling natural resources, deteriorating working conditions, and rocking corporate scandals have made societies to apply pressure on companies to

behave responsibly in regard to ESG factors. Taking note of this Bloomberg embarked on providing ESG data about thousands of companies. A sample screenshot of data provided by Bloomberg is presented in figure 4.5.

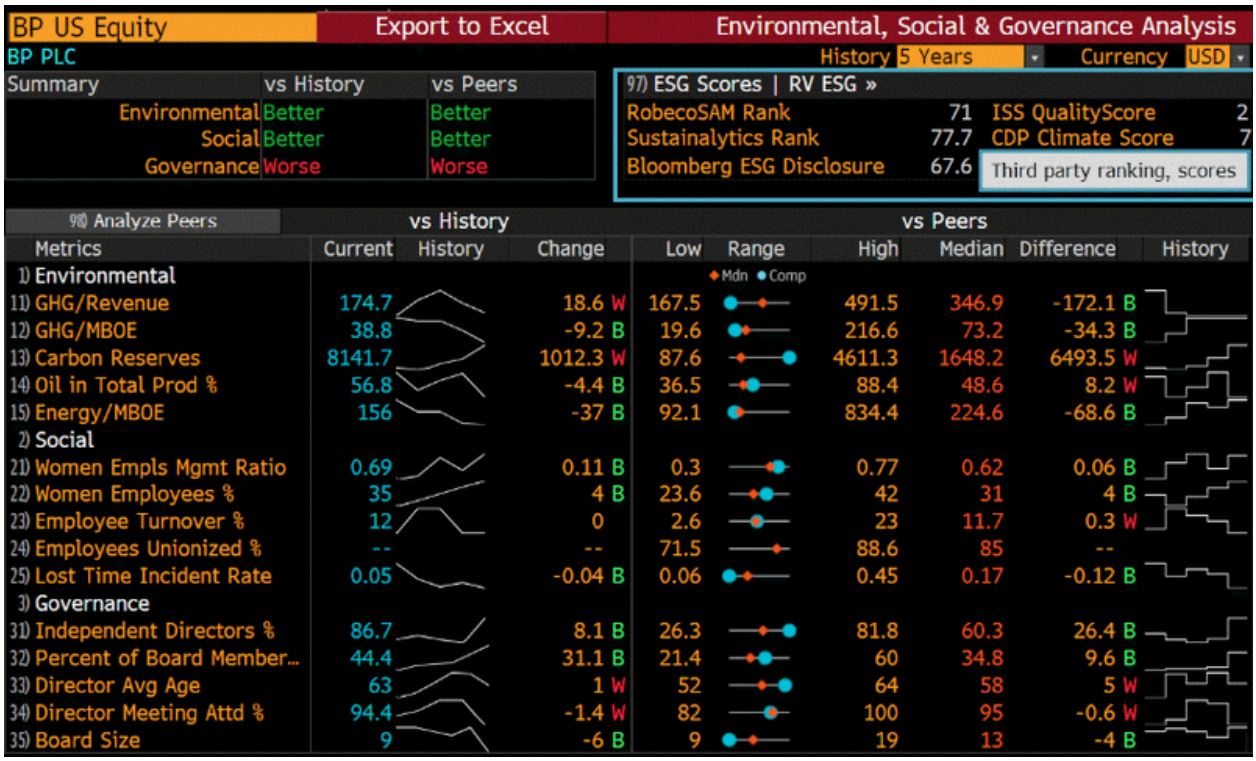


Figure 4. 5 Sample ESG report from Bloomberg (Bloomberg, 2022)

Bloomberg (2022) offers ESG data and provides ESG disclosures for companies exceeding 11,800 in number located in over 100 countries. Some of the important features of the data provided by Bloomberg include global coverage, transparent coverage of ESG topics, standardization, content updated on a daily basis, and historical data. In addition, literature shows that ESG scores are not a figure of merit of the quality but measure only the degree to which ESG-related data is disclosed by the firm (Lopez-de-Silanes et al., 2019). According to Lopez-de-Silanes et al., (2019) the scores range from 0.1 representing companies disclosing minimum quantum of ESG data and goes up to 100 representing companies that disclose every ESG-related data point obtained by Bloomberg and cover multiple industry sectors. While Bloomberg's ESG scores provide companies with their ESG performance, it must be mentioned that the scores are reported based on voluntary disclosures of companies and not independently assessed scores by third parties. In addition, those scores do not indicate the quality of

performance of a company at any data point. These two limitations could lead to lack of standardization (Lopez-de-Silanes et al., 2019).

As far as ESG scores or ratings are concerned there are other agencies that provide such scores also which include RobecoSAM, Sustainalytics, and Thomson Reuters (Lopez et al., 2020). There is a lack of consensus amongst researchers on accepting and choosing the ESG scores provided by a particular agency as each one has its own merits and demerits (Lopez et al., 2020). In this research Bloomberg's ESG scores have been used. A more detailed description or comparison of the ESG scores provided by different agencies is not presented in this sections as it is beyond the scope of this research which is primarily focused on the IR adoption behaviour of companies affected by cultural dimensions and mediated by ESG scores. Accessing Bloomberg's ESG datasets is through either a license provided by the company or by creating an account on the website Data.Bloomberg.com (Bloomberg, 2022).

Further to the discussions on the various datasets used in this research as seocndry data next section dwells on the secondary data types used in this reaseard and their analysis

4.8 Secondary data and analysis

Secondary data need not be collected as it exists already and is collected by someone else for the purposes of records or any other that is currently not under consideration or both and is considered as second-hand data. While this data is primary for the first researcher, it is secondary data for the second researcher (Saunders et al., 2019; McCaston, 2005; Cnossen, 1997) .The use of secondary data depends on the research questions to be answered. Dealing with secondary data and its analysis involves two main aspects. This includes identifying the dataset and evaluating the dataset (Johnston, 2014). Identification of a dataset involves gaining knowledge about what is already known and what is not known (Creswell & Creswell, 2018). Evaluation of secondary data involves ascertaining the credentials of the sources that provide secondary data, advantages (or benefits) and disadvantages (or limitations) of secondary data,

the original purpose of the data collection, error and accuracy, currency, objectives, timeliness, and nature and dependability concerns (Malhotra & Birks, 2007). The above are described in the following sections.

4.8.1 Identification of the dataset and evaluation

The main research questions that are to be addressed in this research are:

- What are the cultural factors that determine IR adoption?
- What are the interventions that affect the relationship between the cultural factors and IR adoption?
- What is the nature of the relationship between the cultural antecedents that determine IR adoption and IR adoption and the interventions that affect this relationship?

In order to answer the research questions, a conceptual model (figure 3.1) was developed to understand how and to what extent the cultural factors will influence IR adoption by firms in different countries directly and with the intervention of ESG factors. Thus, the variables were defined in the model and the secondary datasets were evaluated based on the method described in the extant literature. While identification of the dataset involved identifying the most useful dataset already published, its usefulness was determined using an evaluation process. Figure 4.6 provides the schematic diagram of the evaluation steps used in this research.

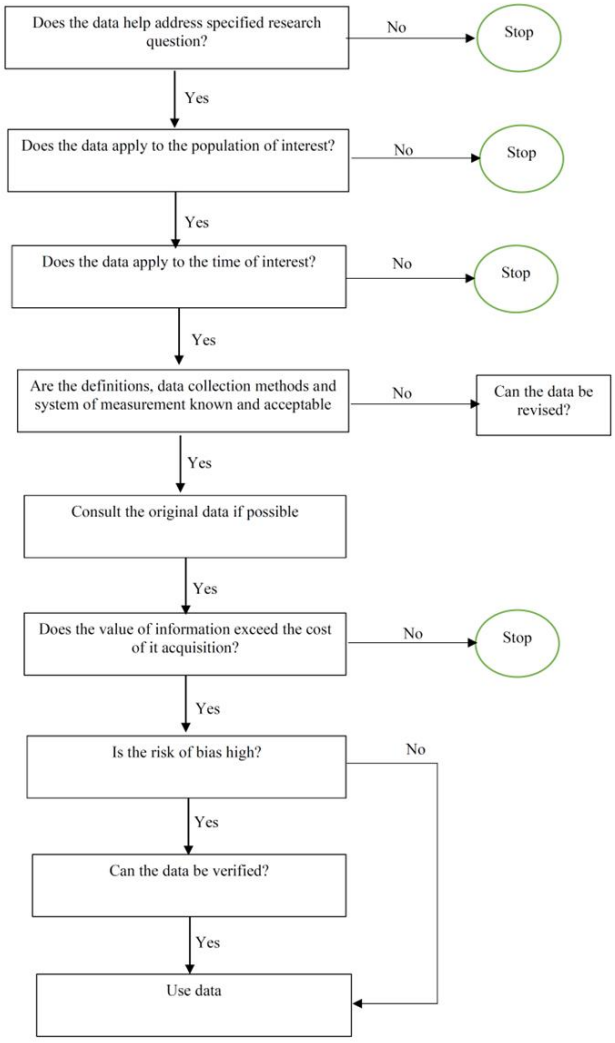


Figure 4. 6 Evaluation steps used in this research

In order to depict the actual evaluation, a template was developed and used. A detailed discussion follows on the variables used, their measurement using appropriate datasets and the evaluation of the dataset for use in this research.

4.8.2 Independent variables

Identification of the dataset: The independent variables identified were six cultural factors namely power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint. These items were measured using cultural indices expressed as quantities in Hofstede sense. Data for computing

the Hofstede indices was collected by the organization Hofstede Insight (Hofstede Insight,2022). A discussion on Hofstede Insights and the dataset concerning the cultural indices is already provided in section 4.5.6 above.

4.8.3 Evaluation of the Hofstede cultural indices

The indices are computed at the country level and each country was positioned relative to other countries through a score on each one of the six dimensions mentioned above. It must be noted here that each one of the dimensions in Hofstede's sense are statistically distinct and are observed to be present in all possible combinations. It is possible that some combinations occur more frequently than others (Hofstede, 2011). It must be noted here that literature shows that Hofstede's cultural six dimensions are considered to be comprehensive enough to define culture as a concept across nations (Hofstede, 2011).

These indices are computed based on data collected from different nationalities through a survey conducted by Hofstede Insight at different periods of time. The last time it was updated was in 2013. The indices provide important data that can be used to investigate values through cross-cultural comparisons and these values are expected to lasting influence on human conduct and thought (Gerlach & Eriksson, 2021). These data thus provided the measures to investigate the influence of the cultural factors in Hofstede sense on IR adoption. There are competing concepts for instance the GLOBE model (House et al, 2004) that also provide data on cultural dimensions like Hofstede sense. But the Hofstede dimensions have been found to be widely recognized and are argued to have supported cross-cultural research across a wide variety of academic disciplines including social sciences (Orr and Hauser, 2008). For instance, Hofstede dimensions have been used in IR adoption research by Fuhrmann (2019) and Garcia et al., (2013). Thus the choice of Hofstede dimensions could be justified. However, there are criticisms leveled against Hofstede dimensions. For instance, the survey instrument developed by Hofstede called the Values Survey Module (VSM) used to collect data about cultural aspects

has been criticised for not providing any evidence concerning the internal consistency of the instrument and the data collected. However, Hofstede argues that such criticisms suffer due to a lack of strong methodological support including inadequate sample sizes and that the reliability of the measures could be understood by the large-scale use of these scores in research (Hofstede, 2002). Despite such criticisms Hofstede model continues to be widely used. The main advantages of using the Hofstede model include that it is based on quantifiable yet comprehensible, accessible cross-border comparisons, the measurements are repeatable and acceptable as those measurements are based on a cultural taxonomy that supports international business research (Leonavičienė & Burinskienė, 2021).

Furthermore, it was found from the literature (e.g. Garcia et al., 2013) that the cultural indices are quantities that could be used to test the hypotheses concerning the research model that linked the six dimensions of culture to IR adoption using established statistical methods. It was also found from the literature that the reliability and validity of the data as well as the statistical significance of the relationships could be established through regression analysis. Thus the choice of the Hofstede model for collecting data in this research can be justified.

Indices were used to measure the independent variables in two ways. One was to take the average of the cultural indices for the six dimensions concerning five nations chosen for investigation and convert it into a dichotomous scale of below or above the average. The other was taking the indices directly as the indices vary by dimensions as well as countries.

The average was used to identify which country's Hofstede index for a particular dimension is above and which country's Hofstede index for a particular dimension is below. The scale devised was dichotomous for testing the relationship between the independent and dependent variables. The actual data was used to test the relationship between the independent and

mediating variables where no coding was used. SPSS provides direct correlation and regression analysis using data directly without coding.

The final evaluation is reported in table 4.3below.

	Database: Hofstede indices					
#	Evaluation parameter of the measure	Last update or other details	Whether acceptable or not	Reference document	Author	Whether useful for this research?
1	Original purpose of the data collection	Useful in understanding, explaining, investigating, classifying, comparing and measuring the cultural dimensions of countries in an objective manner	Yes, as it is widely used over the last few decades	Website; Journal papers	Hofstede insights (2022); Hofstede et al., (1980; 2010)	Yes. The researcher used the indices to test hypotheses.
2	Do numbers make sense?	2013 updated data on cultural indices	Yes, updated over 2010 data	Journal papers	Xu and Hao (2021); Hofstede (1980)	Yes. The indices were used to measure cultural dimensions
3	Consistency	Consistent with the previous methods	Yes as the latest update has followed previous methods	Journal papers	Gerlach and Eriksson (2021)	Yes. The data was consistent across the different countries and cultures.
4	Currency of the dataset	The dataset addresses changes that have occurred and gathered data with new set of participants	Yes. The methodology used by Hofstede insights is the same but with new target population.	Website	Hofstede insights (2022)	Yes. The researcher was guided by prior research.
5	Timely or not	Published in 2016 as per schedule	Researchers are able to use the dataset for current research which is needed in research concerning culture.	Website	Hofstede insights (2022)	Yes. 2013 published data was the latest data available and hence was useful to this research.
6	Accessible or not	Accessible	The website of Hofstede insights is easily accessible.	Website	Hofstede insights (2022)	Yes. The website and the data were easily accessible online.
7	Method used	Survey using the instrument Values Survey Module (VSM) developed by Hofstede	Yes. Acknowledged by researchers	Journal paper	Gerlach and Eriksson (2021); Hofstede (2011)	Yes. The researcher was guided by prior research.
8	Intended audience	Researchers involved in investigations that are linked to cross-cultural contexts	Yes. Researchers have widely used Hofstede scores.	Journal paper	Gerlach and Eriksson (2021)	The researcher identified Hofstede scores for the investigation on IR adoption in multiculture context
9	The index's/ document's coverage of the topic area	Wide coverage of various cultures	Yes. Researchers have used the indices for multicultural studies.	Journal papers	Gerlach and Eriksson (2021)	Yes. The researcher was guided by published research.
10	Accuracy	The methodology used is found to produce accurate results. The indices have been acclaimed to produce predictable and practicable results for researchers with reasonable accuracy.	Yes. The data produced is considered to be accurate by researchers.	Journal papers	Blodgett et al., (2008)	Yes. The researcher was guided by published research.
11	Error	Minimum error.	Yes. Although internal consistency is argued to be weak, the VSM instrument has been argued to produce repeatable results.	Journal paper	Taras et al., (2012)	Yes. The researcher was guided by published research.
12	References for the data and information reported or not	Yes. Reported	Yes. The primary researchers have reported all reference information.	Website	Hofstede insights (2022)	Yes. The researcher was guided by published research.
13	Nature and dependability	Easy to understand and use in research.	Yes. This data is widely used by researchers.	Website	Hofstede insights (2022)	Yes. The researcher was guided by published research.
14	Benefits and Limitations	Benefits out beat limitations	Yes. The researcher found the data beneficial to measure cultural	Journal paper	Gerlach and Eriksson (2021)	Yes. The researcher was guided by published research.

			dimensions as well as test the relationships identified in the research.			
15	Measurable	Yes. Measured as numbers.	Yes. The researcher used the measurement methods already employed by researchers.	Journal papers	Garcia et al., (2013)	Yes. Used the measurement methods employed by other researchers.

Table 4. 3, Evaluation of secondary data related to Hofstede dimensions

4.8.4 Dependent variable

The dependent variable identified was IR adoption by firms. Data concerning IR adoption just revolved around the compilation of the reports published by companies chosen for investigation in this research. GRI simply obtained the information of there IR standards were adopted by the companies under investigation from the annual disclosures made by those companies (GRI, 2013). This data is collected annually by GRI (GRI, 2020). The data used for this research was that published by GRI in 2016 which is an update over the published data of 2015.

4.8.5 Evaluation of GRI data

The researcher approached GRI directly and sought to get the data from GRI which was acceded to by the organization. Thus a spreadsheet with data for 2016 in MS-Excel was provided by GRI to the researcher. That spreadsheet provided three types of data with regard to IR adoption namely whether the firm adopted IR standards, whether firm did not adopt IR standards or no report on adoption. However in this research the companies that did not consider those firms that did not report whether IR standards were adopted or not and only those firms that reported were considered. GRI reports are widely used and since this data on adoption of IR standards is a self reported data, it was considered reliable and valid by GRI (GRI, 2013). This data was used to measure the dependent variable using a dichotomous scale of one and zero with one representing adoption of IR and zero representing non-adoption of IR. That GRI is a dependable organization and the data collected by GRI can be used for research is acknowledged by researchers (Furham,2019 and Vaz et al ,2016). In addition, the

accuracy of data is established by the fact that organisations that want to have their disclosures reported by GRI need to follow the GRI manual and compliance to the GRI manual is verified by GRI. Thus the choice of GRI data with regard to IR adoption or non-adoption could be justified. Although there are competing organisations like Bloomberg and Thomson Reuters, those data do not specifically mention IR adoption as a construct but are considered by other researchers as representing proxies of IR adoption (de Villiers et al., 2017) and GRI provides this advantage. Other advantages of using GRI data include (NCSR, 2022) reporting voluntary initiatives like reporting the IR adoption by firms and comparison of organizational performance which is useful to this research. Finally, Moneva et al., (2006) argue that GRI has helped companies to report their ESG performance to widen their accountability. In doing so GRI has updated its database to include voluntary reporting by companies of their decision-related adoption of IR. This aspect is useful to this research. With regard to the limitations of GRI it can be seen that some researchers consider that the CSR data comprises only financial information which is further used to make social disclosures. Such social disclosures are considered to be irrelevant and unjustified (Beretta & Bozzolan, 2008). This could be a limitation as such disclosures do not describe the actual social disclosures indicating the need for a separate framework to report social disclosures (Chakroun & Hussainey, 2014).

As far as measuring IR adoption is concerned in this research IR adoption was measured as a dichotomous variable with IR adoption as ‘1’ and non-adoption of IR as ‘0’. This is in line with the measurement of IR adoption by other researchers for instance Garcia et al., (2013). The final evaluation of the dependent variable is posited as a table (table 4.4) below.

Database: GRI						
#	Evaluation parameter of the measure	Last update or other details	Whether acceptable or not	Reference document	Author	Whether useful for this research?
1	Original purpose of the data collection	To promote and develop a standardized approach to reporting that enables stimulation of demand for sustainability information.	Yes. This benefits reporting organizations and those who use report information alike	National Center for Sustainability Reporting (NCSR) website.	NCSR	Yes. This indicates the need for reporting IR adoption.
2	Do numbers make sense?	Yes. The number of companies that have been found to report IR adoption is high and hence useful for research.	Yes. This report from GRI has been widely used by researchers.	The spreadsheet supplied by GRI.	GRI	Yes. Data about the number of companies adopting IR was extracted from this report.
3	Consistency	The reporting is consistent as seen by the year-on-year reporting by GRI.	Yes. The IR adoption or non-adoption is reported and hence accepted.	The spreadsheet supplied by GRI.	GRI	Yes. The report has been consistent in reporting information that is authenticated by the manual of GRI.
4	Currency of the dataset	Last update in 2016 which was used in research.	Yes. This report is updated annually.	The spreadsheet supplied by GRI.	GRI	Yes. When compared to the previous year's report, there is updated data available in 2016.
5	Timely or not	Yes. The report is timely.	Yes. The data can be used for research based on the update.	The spreadsheet supplied by GRI.	GRI	Yes. The latest data available in 2016 was used for this research.
6	Accessible or not	Yes. Easily accessible and the data could be requested from GRI directly.	Yes. The latest data was submitted to the researcher by GRI.	The spreadsheet supplied by GRI.	GRI	Yes. The spreadsheet was provided in MS-Excel format which was easy to use and access.
7	Method used	The method was to collect self reported information by the firms found on the annual reports.	Yes. The latest data reported for 2016 was available for use by researchers.	Website	GRI	Yes. Provides basis to conclude the reliability and validity of the data collected.
8	Intended audience	Reporting organizations and those who use report information alike.	Yes. The researcher is one of the users of the GRI report.	The spreadsheet supplied by GRI.	GRI	Yes. The researcher was one of the users of the GRI data concerning IR adoption by firms.
9	The document's coverage of the topic area	The GRI has covered all firms that have registered with it.	Yes. The coverage is comprehensive	The spreadsheet supplied by GRI.	GRI	Yes. The researcher was able to get the required number of readings
10	Accuracy	The data was found to be accurate as IR adoption reporting was a self reporting data provided by the firms themselves. According to the latest GRI manual any disclosure made by any firm registered with GRI will be verified for its accuracy.	Yes. The data provided by the firms follow the guidelines of GRI manual.	GRI manual	GRI	Yes. The data was accepted as accurate by the researcher based on the recommendation of other researchers.
11	Error	If at all there could be any error it could creep in only when GRI guidelines are not followed. This is not the case with the IR adoption data as GRI itself submitted	Yes. No error could not be established as the data provided by GRI was considered to be reliable and valid by researchers.	Journal papers	Ismail et al., (2021)	Yes. The researcher went by the recommendation of other researchers in accepting that there is no error in the GRI data.

		the data to the researcher.				
12	References for the data and information reported or not	Yes. Latest references are reported by GRI.	Yes. GRI data explains how and from where the data was gathered.	GRI manual.	GRI	Yes. The researcher went by the declarations of GRI.
13	Nature and dependability	The data is just based on the self reporting of the firms and only three types of possible information is provided with regard to IR adoption. One is adopted IR, the other is not adopted IR and the third is no information. GRI data is considered dependable by researchers.	Yes. These data have been used by researchers previously in investigations concerning IR adoption.	Journal paper	Navarrete-Oyarce et al., (2022)	Yes. The researcher went by information and recommendations available in the extant literature.
14	Benefits and Limitations	Benefits include the direct use of self reported information about IR adoption by firms which is verifiable if one goes through their annual report. No specific limitations found in the extant literature.	Yes. The researcher was guided by the extant literature.	Journal paper.	Ismail et al., (2021)	Yes. The researcher went by information and recommendations available in the extant literature.
15	Measurable	Yes. The measurements used by other researchers show that the measurements are the latest.	Yes. The researcher used the measurement methods already employed by researchers.	Journal papers	Garcia et al., (2013)	Yes. Used the measurement methods employed by other researchers.

Table 4. 4Evaluation of secondary data related to GRI data and IR adoption

4.8.6 Mediating variables

The three mediating variables identified were the sustainable factors namely economic (E), social (S) and governance (G) factors. Disclosure about ESG factors has become mandatory in many countries for instance USA, Canada, and the UK (Gajadhur, 2022). These variables were operationalized as intervening between the independent and dependent variables. This data was to be collected from already published material to test the relationship between the independent variables and mediating variables on the one hand and mediating variables and dependent variable on the other. The secondary data required for measuring the independent variables have been described already in section 4.5.9.2 and that of the dependent variable in section 4.5.9.4. As far as the mediating variables were concerned as mentioned in section 4.5.9.7 data published by an organization called Bloomberg was used in this research. A detailed

description of Bloomberg has been provided in section -. The data published by Bloomberg is not easily accessible and is available only on subscription. The researcher accessed Bloomberg data using the access given by Brunel University London which subscribes to Bloomberg data. The next proceeds with the evaluation of the Bloomberg data

4.8.7 Evaluation of Bloomberg data

The data provided by Bloomberg is in terms of scores for each company against E, S and G. Lopez-de-Silanes et al., (2019) argue that the scores range from 0.1 representing companies disclosing minimum quantum of ESG data and goes up to 100 representing companies that disclose every ESG-related data point obtained by Bloomberg and cover multiple industry sectors. The dataset provided by Bloomberg covers 50 countries and 20,000 companies (Bloomberg, 2014) [BloombergLookBeyond2014]. Bloomberg conducts research and publishes its reports regularly. Bloomberg collects data from many sources including company-sourced filings such as Corporate Social Responsibility reports, annual reports, and company websites. In addition, Bloomberg conducts a survey on its own and collects data directly from corporates. Bloomberg makes every effort to cover virtually the entire investable universe that discloses ESG data (Bloomberg, 2014) In addition, Bloomberg displays ESG data on an electronic screen that is available online. An example of the electronic screen presented by Bloomberg is provided in figure 4.5. Bloomberg's data have been widely used and considered to be consistent, reliable, accurate and valid (Huys, 2020). Bloomberg updates data regularly and provides ESG data annually. Although there are competing platforms that provide ESG data for instance GRI, Bloomberg data is found to be widely used by researchers in investigations that involve CSR concepts because of the benefits it offers. The main benefit of Bloomberg is that it provides a fully integrated ESG information in one convenient location and displayed on an electronic medium. Users of Bloomberg's ESG data have access to

objective, up-to-the minute global information that is particularly tied to ESG and Socially Responsible Investing (SRI) topics. As far as limitations of Bloomberg's data is concerned researcher's have expressed their concern on the independence with which Bloomberg is able to rate the firms. According to Rostoum (2018), companies and rating agencies like Bloomberg conduct the rating process over time in regular intervals due to which the relationship between the two grows. This affiliation of the rating agency with the companies which they rate can lead to questions on the independence of the rating agencies. As far as using the ESG scores of Bloomberg, in this research dichotomous coding was used to test the relationship between the ESG variables and IR adoption. The mean of the ESG scores was found out and those scores above the average were assigned a '1' while those scores below the average were assigned a '0'. However for testing the relationship between the independent variables and ESG factors codes were not assigned as SPSS could provide a direct correlation between cultural indices and ESG scores. Thus it is possible to justify the use of secondary data for this research to test the various hypotheses. After going through the various aspects of the ESG data provided by Bloomberg entire evaluation is summarized in a table (table 4.5) below

Database: Bloomberg						
#	Evaluation parameter of the measure	Last update or other details	Whether acceptable or not	Reference document	Author	Whether useful for this research?
1	Original purpose of the data collection	Offers related to sustainable financial products and ESG scores of firms. Updated frequently and regularly.	Yes. Researchers use Bloomberg's ESG data in investigations concerning sustainability issues.	Journal paper	Huber and Comstock (2017)	Yes. ESG scores provided by Bloomberg were useful to this research.
2	Do numbers make sense?	Yes. The scores are computed based on data collected through multiple sources. Widely used by researchers.	Yes. The scores provide measures that could be used to test the related hypotheses.	Bloomberg publication	Bloomberg (2014)	Yes. The scores were useful in testing the related hypotheses.
3	Consistency	The methods and reporting by Bloomberg were found to be consistent with regard to the latest update published.	Yes. Accepted by researchers dealing with areas concerning sustainability issues.	Journal paper	Huys (2020)	Yes. The scores were found to be consistent across various countries and firms across sectors.
4	Currency of the dataset	Yes. The ESG data are up to date and offered on an electronic terminal online with	Yes. Acceptable and is recommended by researchers.	Bloomberg publication; Journal paper	Bloomberg (2014); Huys (2020)	Yes. Based on the recommendations of found in the extant literature,

		regular updating taking place constantly.				the consistency was accepted.
5	Timely or not	Yes. The data is continuously made available on a 24/7 basis. Hence could be used in research at any point of time.	Yes. The data was readily available for use in this research.	Bloomberg (2016) data offered through online method.	Bloomberg (2016)	Yes. Updated and consistent data was accessible throughout the period of research for the researcher.
6	Accessible or not	Yes. Accessibility through Brunel University London permission.	Yes. Easily accessible.	Bloomberg (2016) data offered through online method.	Bloomberg (2016)	Yes. Updated and consistent data was accessible throughout the period of research for the researcher.
7	Method used	A variety of methods have been used by Bloomberg.	Yes. A number of reliable and valid methods have been used by Bloomberg to collect and compile data.	Bloomberg publication	Bloomberg (2014)	Yes. The data accessed were reliable and valid which indicates that the methodology used was acceptable.
8	Intended audience	Organisations that aim to achieve transparency, users who care for ESG scores and researchers.	Yes. The data were useful to test the relationships posited in this research.	Bloomberg publication	Bloomberg (2014)	Yes. The data provided required information to the researcher.
9	The document's coverage of the topic area	The updated dataset covers the topic ESG disclosure widely. 50 countries and over 20,000 companies have been covered in the dataset.	Yes. The dataset provides the required information and covers companies under multicultural environment in different countries.	Bloomberg publication	Bloomberg (2014)	Yes. The dataset provided information related to ESG disclosures by various companies in different cultures.
10	Accuracy	The dataset has been found to be accurate by researchers. It is also reported by Bloomberg based on the rigorous methodology it applies.	Yes. The rigour used in data collection and the recommendations of researchers were taken as the basis for concluding that the dataset provided by Bloomberg on ESG disclosures is accurate.	Bloomberg publication; Journal paper.	Bloomberg (2014) ;Huys (2020)	Yes. The researcher depended on the Bloomberg report on the methodology used and the recommendations of other researchers.
11	Error	Usually tracking of portfolios and getting the most updated and accurate data could lead to error. However with regard to Bloomberg the ESG dataset was considered to be prone to least error due to the elaborate methodology used by Bloomberg.	Yes. The researcher went by the recommendations of Bloomberg as well as other researchers and accepted that the error in the dataset, particularly tracking error is minimum.	Bloomberg publication; Journal paper.	Bloomberg (2014) ;Ehlers et al., (2022)	Yes. The researcher depended on the Bloomberg report on the methodology used and the recommendations of other researchers.
12	References for the data and information reported or not	Bloomberg reports the references it has used to compile the dataset.	Yes. The Bloomberg dataset is considered to be well supported by appropriate references to the various resources used to gather data and information. This is reported in	Bloomberg publication	Bloomberg (2014)	Yes. The researcher verified the references and got satisfied with the basis on which the data and information were collected by Bloomberg which is in line with the

			the Bloomberg document.			recommendations of other researchers.
13	Nature and dependability	The dataset provided the scores required for this research. These scores were objectively presented and were based on a rigorous methodology. Hence was found toe be dependable. This is corroborated by extant literature.	Yes. The nature of the dataset is simple, easily accessible with permission and up to date. Hence dependable.	Bloomberg publication; Journal paper.	Bloomberg (2014) Huys (2020)	Yes. The nature of the data and its dependability were found to be acceptable based on the recommendations of other researchers.
14	Benefits and Limitations	The main benefit of the Bloomberg dataset is that it is dependable and up-to-date. The limitation could be tracking error that generally creeps in while calculating the ESG score.	Yes. Despite the possible limitation of tracking error, Bloomberg dataset provides a single platform that provides an up to date information on the ESG scores of various companies arrived at using rigorous research.	Bloomberg publication; Journal paper.	Bloomberg (2014) Huys (2020)	Yes. Bloomberg data has been very useful to test the hypotheses of this research which was in line with the use of Bloomberg data by other researchers.
15	Measurable	Yes. The ESG scores were measurable as numbers.	Yes. The ESG scores were used in this research.	Bloomberg publication; Journal paper.	Bloomberg (2014) Garcia et al., (2013).	Yes. The data was useful for this research for testing the hypotheses using statistical methods.

Table 4. 5 Evaluation of secondary data related to ESG scores of Bloomberg

The foregoing discussions have identified the various aspects that need to be considered before accepting secondary for the current research. Further to this, the next section deals with the research strategy adopted in this research.

4.9 Research strategy

The main research strategy was to use secondary data for answering the research questions. According to Creswell and Creswell (2018) strategy of inquiry indicates the research method that has been used for instance survey or experimental research. Creswell and Creswell further argue that mentioning the research strategy makes the researcher anticipated the discussion of the method as well as enables the reader to link the relationship of the variables to the inquiry approach. As the research strategy in this research secondary data were chosen concerning the six independent variables representing culture, one dependent variable that represents IR adoption and three mediating variables that represent the sustainability factors. The choice of the secondary dataset and their usefulness for this research have

been discussed and the chosen datasets were evaluated in the previous section. The datasets were pertaining to the annual disclosures of the firms that were chosen for study and were related to the year 2016. The firms were chosen based on certain criteria which are discussed in the next section.

4.10.1 Choice of the firms for this study

The primary purpose of this study is understanding the IR adoption behaviour of firms located in a multicultural environment and the influence of culture on IR adoption behaviour. It also tries to understand the importance of sustainability factors as mediators in the relationship between cultural factors and IR adoption behaviour of firms. In order to understand this the researcher undertook a study of the various countries and firms within those countries using the basic search factor which was IR adoption. GRI provided the data on how many companies had indicated that they have either adopted or did not adopt IR in the year 2016. Thus GRI dataset became the basis to know the number of companies that have indicated either an adoption or non-adoption of IR distributed over many companies. The following table (table 4.6) provides knowledge on how the filtering process was carried out across countries.

Selection criteria	Number of Companies	Number of countries over which these companies are distributed
Total number of companies on GRI list for the year 2016	7122	122
Number of companies on GRI list for the year 2016 which have declared about IR adoption or non-adoption on their own with 'Yes' indicating adoption and 'No' indicating non-adoption.	4393	103
Number of companies on GRI list after eliminating those in the financial services sectors in 2016.	3781	102
Number of companies on GRI list after eliminating those in South Africa in 2016.	**3661**	**101**

Table 4. 6 Selection criteria of firms from GRI dataset

From the 101 countries five leading countries namely Brazil, Japan, Sweden, United Kingdom and United States of America located over four continents were chosen as representative samples. The reason for this was that these countries together amount to 45% of the total number 3661 companies spread over 101 countries. This implies that the remaining 55% of the companies were distributed over 96 nations. Thus potentially the number of companies that were studied in the five chosen countries provide a variety in terms of a good number pertaining to the culture in which they are embedded and

the IR adoption behaviour. The following table (table 4.7) provides details on the number of companies and the countries in which they are located.

	USA	**UK**	**Japan**	**Sweden**	**Brazil**	**Total**
Total on GRI list for year 2016	562	303	341	187	253	1646
Number of companies on GRI list for the year 2016 which have declared about IR adoption or non-adoption on their own with 'Yes' indicating adoption and 'No' indicating non-adoption.	510	250	201	143	204	1308
Number of companies on GRI list after eliminating those in the financial services sectors in 2016.	334	125	181	124	181	945
Number of companies on GRI list after eliminating those companies which were not assigned ESG score on Bloomberg.	216	101	172	79	60	**628**

Table 4. 7 Distribution of companies listed in GRI dataset that have disclosed about IR adoption and ESG located in five countries

Table 4.7 shows the number of companies located in five countries chosen from the GRI dataset that have disclosed about adoption and non-adoption of IR. Further, those companies that have been found not to have indicated about IR adoption were filtered. For instance, the number of companies listed in GRI located in the USA was found to be 562. The number of companies that did not disclose about IR adoption was 52. Thus 510 companies were taken up for investigation. During analysis companies that were in the financial services sector were not included in the investigation. The number of firms in the finance sector that were excluded stood at 176. The remaining 334 companies were taken up for investigation. Then Bloomberg was perused to know what were the ESG scores for the 334 companies but it was found that EFG scores were available only for 216 companies. Thus, in the entire USA, only 216 companies were available for investigation. A similar analogy was applied to the firms in the remaining four countries and the number of companies that were investigated were tabulated in table 4.7.

Thus it can be seen that except for the choice of the countries no sampling process was used. The Census method was used in each country that was chosen to investigate the IR adoption behaviour and the influence of cultural factors on their IR adoption behaviour. The choice of the five countries was based on the fact that Brazil, Japan, and the USA represent the cultural behaviour of the continents South America, North America, and Asia. Sweden and UK represented the culture of Europe. However, the choice of two nations within one continent also provides knowledge about the cultural variations within

the same continent as the culture in Sweden and UK were found to vary when one used the Hofstede dimensions. Although there could be wider variations if one takes into account all the countries found in the GRI dataset, however, the number of firms found to satisfy the conditions mentioned above in each country would be very limited. Thus it can be argued that the choice of the five countries for investigation into the relationship between the cultural components and IR adoption as well as the role of mediators was reasonably sufficient enough to carry out this research. In the final analysis, it can be seen from table 4.7 that 628 companies were investigated located in five different cultures. Once the number of companies and the cultural base in which they were located were identified the next step taken was to analyse the data which is discussed next.

4.10 Data analysis

The main variables that were investigated are provided in table 4.8 which includes the coding used to represent those variables and their definitions.

Variable	Type of variable	code	Definition	Authors
Integrated reporting adoption	Dependent	IR	"An integrated report is a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term"	IIRC (2020)
Power distance	Independent	PD	"The extent to which the less powerful member of institutions and organizations within a country expect and accept that power is distributed unequally"	Hofstede et al., (2010, p. 61)
Individualism vs. collectivism Dimension	Independent	INDV	''Societies in which the ties between individuals are loose: everyone is expected to look after her/ himself and her/his immediate family''	(Hofstede et al. 2010, p. 92)
Masculinity vs. Femininity Dimension	Independent	MAS	"The degree to which a society differentiates and emphasizes traditional roles between genders."	(Hofstede 1980, p. 298)
Uncertainty avoidance Dimension	Independent	AU	''The extent to which the members of a culture feel threatened by ambiguous or unknown situations''	(Hofstede et al. 2010, p. 191)
Long vs. short-term Orientation Dimension	Independent	LOR	'The fostering of virtue oriented toward future rewards—in particular, perseverance and thrift'	(Hofstede et al. 2010, p. 239)
Indulgence vs restraint Dimension	Independent	INGD	"Society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. Restraint stands for a society that	(Hofstede, 2011, pp.15)

			controls gratification of needs and regulates it by means of strict social norms"	
Environmental Disclosure	Mediating	Env_D	"Environmental disclosure includes a number of issues including concerns about production and consumption activities and the need to enhance their environmental performance including promoting eco-innovations, green products"	(Song et al., 2020; Fraccascia et al., 2018; Dangelico, 2016),
Social Disclosure	Mediating	Social_D	"Social disclosure includes disclosure about such items as occupational health and safety, human rights, community, and product responsibility"	(Pucheta-Martínez and Gallego-Álvarez ,2020; Lu and Wang ,2021)
Governance Disclosure	Mediating	GOV_D	"Governance includes such factors as separation of board chair/CEO, board independence, ESG committees, executive compensation, gender diversity, capital structure and legal environments"	(Pucheta-Martínez and Gallego-Álvarez ,2020; Lu and Wang ,2021)

Table 4. 8 Details of the variable, their coding and definition

The datasets from where data concerning each one of the variables investigated in this research were obtained and their access details are provided in table 4.9 below.

Variables			**Sources**	**Access**
Cultural dimensions	Power Distance	PD	Hofstede insights (https://www.hofstede-insights.com)	Free access and Brunel library
	Individualism	INDV		
	Masculinity	MAS		
	Uncertainty Avoidance	UA		
	Long Term Orientation	LOR		
	Indulgence	IND		
Integrated reporting (IR)	IR Adoption	IR	Global Reporting Initiative (GRI)	Requested through application
ESG disclosure	Social disclosure	S_D	Bloomberg	Brunel university
	Environmental disclosure	ENV_D	Bloomberg	Brunel University
	Governance Disclosure	G_D	Bloomberg	Brunel University

Table 4. 9 Variables used in this research, coding the variables, source of the dataset and accessibility

Once the variables and datasets were identified the actual scores were obtained for each variable except for IR adoption, the dependent variable. Thus, for the cultural dimensions the scores for the independent variables were obtained from Hofstede insights and are provided in table 4.10 below.

	Power distance	**Individualism**	**Masculinity**	**Uncertainty avoidance**	**Long term orientation**	**Indulgence**
USA	40	91	62	46	26	68
UK	35	89	66	35	51	69
Japan	54	46	95	92	88	42
Sweden	31	71	5	29	53	78
Brazil	69	38	49	76	44	59

Table 4. 10, Cultural measurement in terms of Hofstede sense

The mean and the standard deviation of the cultural values in Hofstede sense are provided in table 4.11.

Descriptive stat	Power distance	Individualism	Masculinity	Uncertainty avoidance	Long-term Orientation	Indulgence
Minimum	31	38	5	29	26	42
Maximum	69	91	95	92	88	78
Range	38	53	90	63	62	36
Size	5	5	5	5	5	5
Mean	45.8	67	55.4	55.6	52.4	63.2
Standard Deviation	15.61	24.28	32.81	27.23	22.57	13.63

Table 4. 11 Cultural dimensions measured in Hofstede sense and the average score of each variable

The average scores were used in this research to derive the dichotomous scale points for each one of the independent variables. Converting the cultural scores into dichotomous variables was needed in order to conduct logistic regression regarding the relationship between the independent variables and IR adoption as the dependent variable. For instance the average of the power distance scores was computed as 45.8 for the five countries. Any score of a country if it is lower then it was assigned the value zero or one while higher than the average was assigned the value one or zero as the case may be. Table 4.12 provides an idea on the assignment of zero and one to the dichotomous variables used in testing the relationship between the cultural constructs and IR adoption

Dimensions	1	0
Power distance	If a country score for PD is lower than the average, then a '1' will be assigned to the variable (this is termed as **Low PD**), else '0' will be assigned.	If a country score for higher PD is higher than the average, then a '0' will be assigned to the variable (this is termed as **High PD**) else '1' will be assigned.
Individualism vs Collectivism	If a country score for collectivism is lower than the average, then a '1' will be assigned to the variable (this is termed as **Collectivism)**. else '0' will be assigned.	If a country score for individualism is higher than the average, then a '0' will be assigned to the variable (this is termed as **Individualism)**. else '1' will be assigned.
Masculinity vs feminism	If a country score for feminism is lower than the average, then a '1' will be assigned to the variable (this is termed as **Feminism**) else '0' will be assigned.	If a country score for masculinity is higher than the average, then a '0' will be assigned to the variable (this is termed as **Masculinity**) else '1' will be assigned.
Uncertainty Avoidance	If a country score for higher uncertainty avoidance is higher than the average, then a '1' will be assigned to the variable (this is termed as **High UA**) else '0' will be assigned.	If a country score for low uncertainty avoidance is lower than the average, then a '0' will be assigned to the variable (this is termed as **Low UA**) else '1' will be assigned.
Long vs short orientation	If a country score for long term orientation is higher than the average, then a '1' will be assigned to the variable (this is termed as	If a country score for short orientation is lower than the average, then a '0' will be assigned to the variable (this is termed as

	Long orientation) else '0' will be assigned.	**Short orientation**) else '1' will be assigned.
Indulgence vs restraint	If a country scores lower than the average, then a '1' will be assigned to the variable (this is termed as **Restraint**), else '0' will be assigned.	If a country score for restraint is higher than the average, then a '0' will be assigned to the variable (this is termed as **Indulgence**) else '1' will be assigned.

Table 4. 12, Indicates the assignment of binary (dichotomous) values to the cultural dimensions based on the average value provided in table 4.11.

The relationship between the cultural dimensions and the EFG scores were not assigned a '0'or a '1' as the scores were directly regressed to test the relationship between the cultural dimensions and the EFG scores of the companies.

The GRI data was obtained as simple 'Yes' or 'No' with 'Yes' given a value '1' and 'No' given a value '0'. Thus '1' indicates IR standard adopted and '0' indicates IR standard not adopted. Annex 2 provides the set of 628 companies and their IR adoption disclosure along with the values assigned to them. Finally, the data concerning the ESG were obtained from Bloomberg. The actual scores for the ESG for the 628 companies are provided in Annex 3. The average score computed for E, S and G has been used to assign '0' and '1' against each score which indicates whether a particular company's ESG score is below the average ('0') or above the average ('1'). However, the relationship between the cultural constructs and the variables ESG the cultural indices were directly regressed with the EFG scores. There was no need for assigning the values by grouping the scores separately. The procedure is consistent with the procedures adopted by other researchers for instance Fuhrmann (2019) and Garcia et al., (2013). Further to identifying and evaluating the secondary data used in this research and defining the research strategy, the next step taken was the method of data analysis used in this research.

4.10.1 Regression analysis

In this research in order to test the hypotheses and the proposed relationship in the model in figure 3.2, regression analysis was chosen. Regression is a statistical method. In this research, two different regression methods namely linear regression and logistic regression are discussed next.

4.10.2 Linear regression

It is a simple statistical method that enables the prediction of the dependency of the dependent variable on other expressive variables (Gujarati, 1988). Regression enables researchers to make estimates through data collected in the past.

The mathematical model is $Y=k_0 + \beta_1 X_i + e$

where β_1 is the coefficient of regression, k_0 is the constant of proportionality and 'e' is the error component (Janssens et al., 2008).

While linear regression is useful for analysing continuous variables, linear regression is not useful in analysing discrete variables. Where discrete variables (categorical variables) are involved, logistic regression is used (Korkmaz et al. 2012). In this research linear regression was used to understand the relationship between the six independent cultural constructs and the three sustainability constructs namely ESG. The data obtained from Hofstede insights and Bloomberg here were found to be continuous in nature.

4.10.3 Logistic regression

This is a regression method that estimates the effects of independent variables on the dependent variables as a probability (Korkmaz et al. 2012). The main aim of logistic regression is to explain a categorical variable that is divided into two groups based on the interval or ratio scaled or categorical variables. Logistic regression is recommended over other techniques like linear regression or variance analysis or discriminant analysis or multinomial logistic regression due to the specific combination of measurement levels (for instance the combination of interval and categorical variables) of the independent and dependent variables. Predicting whether an event will happen or not, needs the calculation of probability that the event will occur (Janssens et al., 2008). This is depicted through the following formulae.

4.10.3.1 Single independent variable

Probability of an event occurring = $\{e^{(B_0)+B_1X}\}/[1+\{e^{(B_0)+B_1X}\}]$ where

- B0 and B1 are the coefficients estimated on the basis of the data applying the maximum likelihood. According to literature maximum likelihood method uses the coefficients in a way that the observed values for the dependent variable are those that are most likely to happen.
- X is the independent variable and
- e = 2.718 (Janssens et al., 2008).

4.10.3.2 More than one independent variable

Probability of the event occurring = $[e^z /(1 + e^z)]$

where $Z = B_0 + B_1X_1 + B_2X_2 + \ldots + B_nX_n$

B_n : coefficient estimated on the basis of the data, making use of the 'maximum likelihood' method

X_n: nth independent variable

e = 2.718 (Janssens et al., 2008)

However, logistic regression has limitations. For instance, validation and collinearity problems affect logistic regression (Park, 2013. Despite such limitations, yet logistic regression provides an opportunity to predict the probability of an even occurring using a logit model. In this research logistic regression was used to examine the relationship between the six independent cultural constructs and the dependent IR adoption construct. Here IR adoption was a categorical variable with a '1' or '0' value. The six independent cultural constructs were converted into categorical variables which are depicted in table 4.11. Thus, logistic regression was used to determine the probability of occurrence of IR adoption determined by the independent six cultural constructs. Similarly, the examination of the relationship between the three mediating sustainability constructs namely ESG and the dependent variable IR adoption was conducted using logistic regression. As mentioned above IR adoption is measured as a dichotomous variable. Sustainable scores of the mediating variables ESG although are continuous, were converted into dichotomous variables. This is explained already in section chapter 5. A detailed analysis of both the linear and logistic regression are provided.

4.10.4 Reliability and validity concerns

In this research, the reliability of the variables related to linear regression analysis were checked using Cronbach's alpha. That is the cultural and the sustainability variables were tested for reliability using Cronbach's alpha, a method that is widely used by researchers concerned with quantitative analysis (Janssens et al., 2008). Pearson's correlation was used to test the validity of the constructs which is also another recommended method by researchers (Karlas, 1997).As far as the logistic regression is

concerned, the analysis provides details about the validity of the model. Researchers could determine the model fit using the SPSS output titled Block ‘0’ and Block ‘1’ model.

4.11 Conclusion

This chapter provides the research methodology adopted for the research. From the chapter it can be concluded that the research methodology has been developed to address the research questions. The various sections provided are in line with the research methodology related literature. Finally the complete chapter provides the way forward to conduct the data analysis provided in Chapter 5.

Chapter 5 : Analysis and Result

5.1 Introduction

This chapter addresses the data analysis conducted on the secondary data collected for this research. As mentioned in chapter secondary data was collected from established organizations. The collected data cleaned up and was checked for accuracy, missing data, multicollinearity and outliers. Since the dependent variable was measured using binary numbers, logistic regression was used to analyses the relationship between the independent and dependent variables. The details are given below.

5.2 The basis

This research work relied upon the research published by Barile et al. (2019) and Garcı´a-Sa´nchez et al. (2013). A quantitative research method was used to answer the research questions which were concerned with quantities that need to be measured numerically while testing a theoretical model using hypotheses. A theoretical model was drawn based on the literature and relationships were conceived with the two papers mentioned above as the basis. The models developed by Barile et al. (2019) and Garcı´a-Sa´nchez et al. (2013) were expanded to address the limitations affecting those models. The complete details about the model, the hypotheses developed, data collection and analysis are provided in the attached document. The data was analysed using secondary data already published and available online (panel data) for conducting research. Hofstede theory was used to identify the cultural factors namely power distance, individualism vs collectivism, masculinity vs feminism, uncertainty avoidance, long term orientation vs short term orientation and indulgence. The model developed by Garcı´a-Sa´nchez et al. (2013) was used to relate Hofstede factors and IR adoption. The model developed by Garcı´a-Sa´nchez et al. (2013) was modified to include a sixth factor namely indulgence. The papers by Barile et al. (2019) and Pucheta-Martínez and Gallego-Álvarez

(2019) were used to introduce ESG disclosure as an intervention between the cultural antecedents of IR adoption and IR adoption.

The entire model was tested using secondary data collected from reliable sources. The secondary data pertains to the following:

Data about cultural constructs power distance, individualism, masculinity, uncertainty avoidance, long term orientation and indulgence obtained from Hofstede website. Hofstede website provides indices for these six factors in terms of the countries in which the companies under investigation are located.

Data on ESG factors namely environmental, social and governance factors were obtained from the company Bloomberg. The data pertains to the level of disclosure by companies situated in various countries with varying cultural measures.

Self-declared information on IR adoption or non-adoption data was obtained from Global Reporting Initiative database.

The regression equations that were used to test the model

$Ln(Odds)= k1 +[\beta_1(PD)] \rightarrow (1)$ (PD refers to power distance)

$Ln(Odds)= k2 +[\beta_2(INDV)] \rightarrow (2)$ (INDV refers to individualism vs collectivism)

$Ln(Odds)= k3 +[\beta_3(MAS)] \rightarrow (3)$ (MAS refers to masculinity vs feminism)

$Ln(Odds)= k4 +[\beta_4(UA)] \rightarrow (4)$ (UA refers to uncertainty avoidance)

$Ln(Odds)= k5 +[\beta_5(LOR)] \rightarrow (5)$ (LOR refers to long term orientation vs short term orientation)

$Ln(Odds)= k6 +[\beta_6(INDG)] \rightarrow (6)$ (INDG refers to indulgence vs restraint)

$Environmental\ disclosure = k7 + [\beta_7(PD)] + [\beta_8(INDV)] + [\beta_9(MAS)] + [\beta_{10}(UA)] + [\beta_{11}(LOR)] + [\beta_{12}(INDG)]$

$Social\ disclosure = k8 + [\beta_{13}(PD)] + [\beta_{14}(INDV)] + [\beta_{15}(MAS)] + [\beta_{16}(UA)] + [\beta_{17}(LOR)] + [\beta_{18}(INDG)]$

$Governance\ disclosure = k9 + [\beta_{19}(PD)] + [\beta_{20}(INDV)] + [\beta_{21}(MAS)] + [\beta_{22}(UA)] + [\beta_{23}(LOR)] + [\beta_{24}(INDG)]$

$Ln(Odds)= k10 +[\beta_{25}(Environmental\ disclosure)]$

$Ln(Odds)= k11 +[\beta_{26}(Social\ disclosure)]$

Ln(Odds)= k3 +[β_{27}(Governance disclosure)]

The hypotheses tested and results of the hypotheses testing are provided in the attached document. Since IR adoption was a binary scale, logistic regression was used to test the relationships in the model and test the hypotheses. The hypotheses tested were developed based on prior work in found in the literature.

5.3 Descriptive

The analysed data begins with descriptives provided on the variables used for this research. These are given below.

5.3.1 National culture index

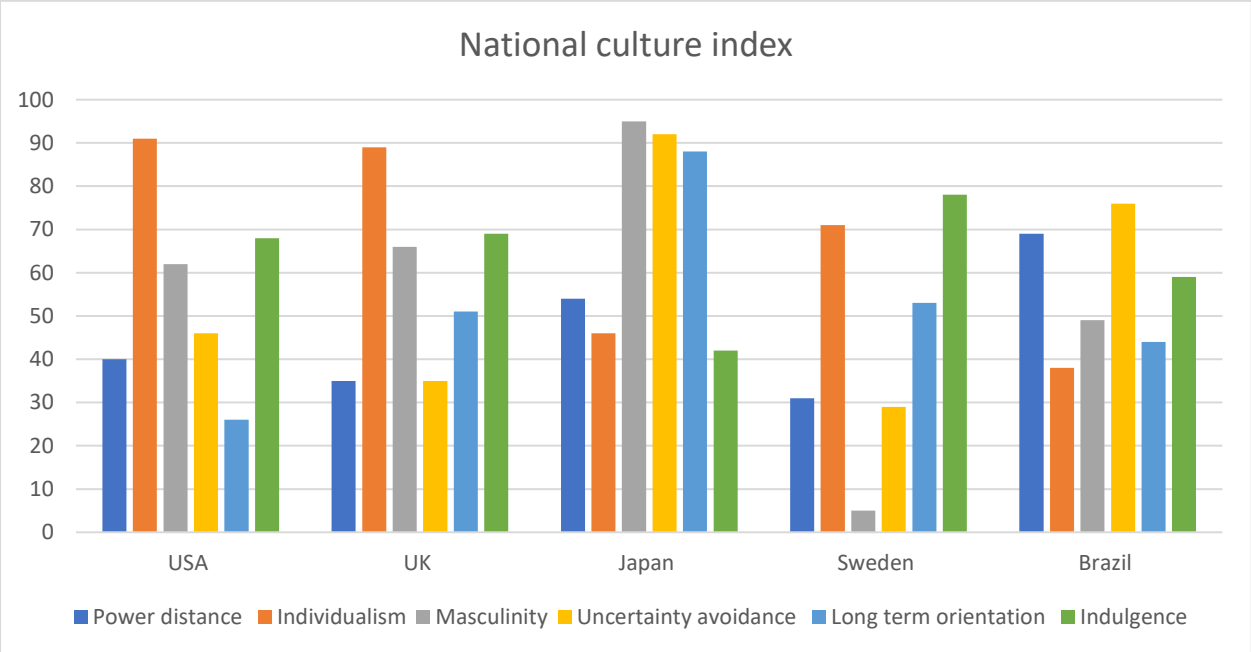
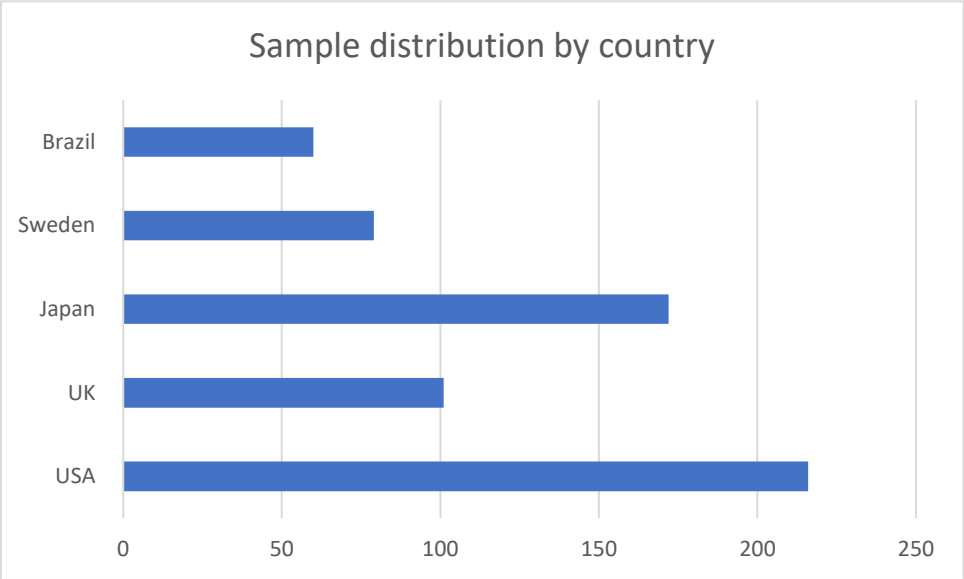


Figure 5. 1, National culture dimension index of Brazil , Japan , Sweden and UK and USA.



*F*igure 5. 2, Sample distribution by country

	Power distance	Individualism	Masculinity	Uncertainty avoidance	Long term orientation	Indulgence
USA	40	91	62	46	26	68
UK	35	89	66	35	51	69
Japan	54	46	95	92	88	42
Sweden	31	71	5	29	53	78
Brazil	69	38	49	76	44	59

Table 5. 1, National culture score for each country

Countries	Sample
USA	216
UK	101
Japan	172
Sweden	79
Brazil	60

Table 5. 2,Sample by countries

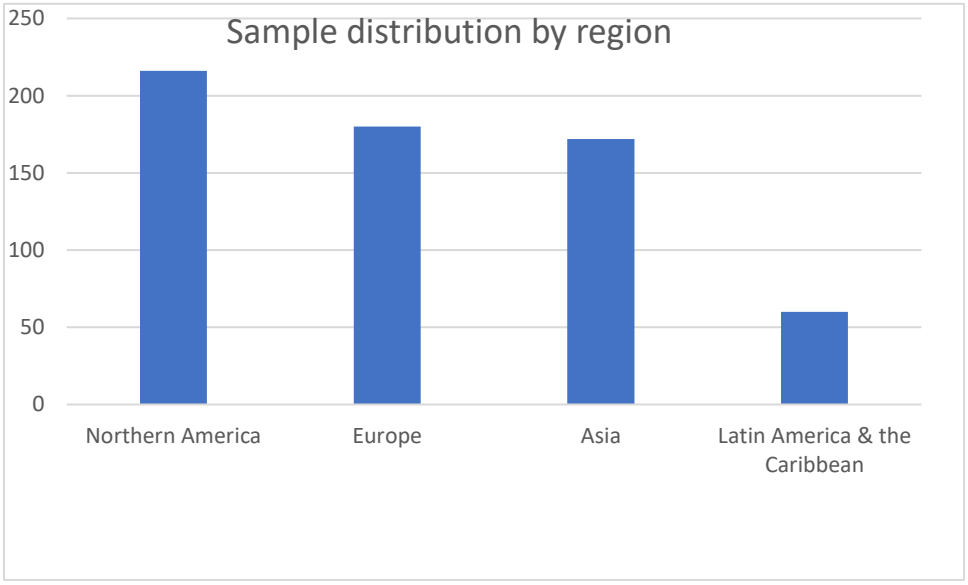


Figure 5. 3,Sample distribution by regions

Regions	Sample
Northern America	216
Europe	180
Asia	172
Latin America & the Caribbean	60

Table 5. 3, Sample by Regions

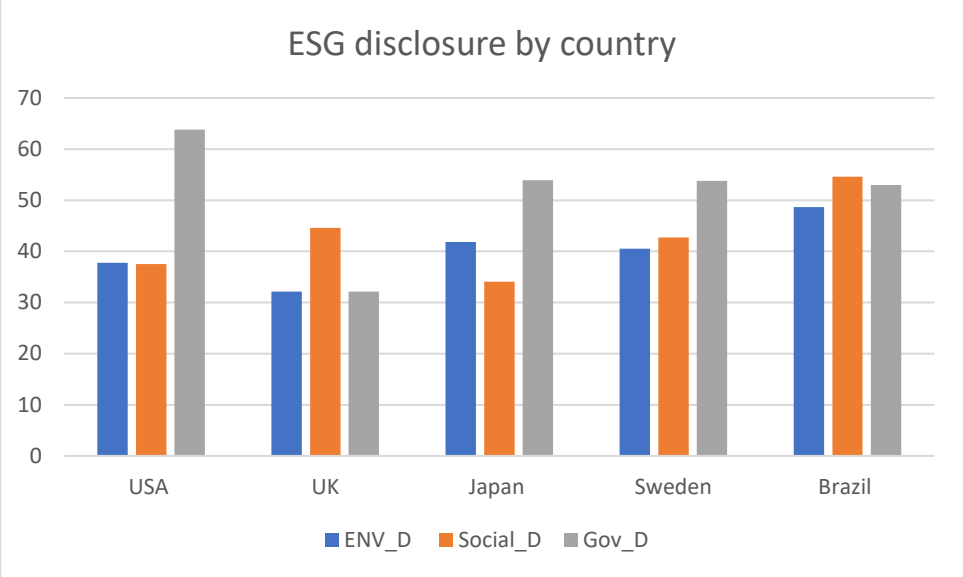


Figure 5. 4, average of ESG disclosure level by countries

	ENV_D	Social_D	Gov_D
USA	37.75	37.51	63.833
UK	32.14	44.62	32.14
Japan	41.83	34.09	53.907
Sweden	40.53	42.71	53.77
Brazil	48.69	54.6	52.97

Table 5. 4, Mean of ESG disclosure level for Brazil , Japan , Sweden , UK and USA.

5.4 Data analysis to test hypotheses H1a to H1f using logistic regression

5.4.1 Logistic Regression to verify hypothesis H1a

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 5. 5,Case Processing Summery of the construct power distance

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 5. 6, Dependent Variable (IR) Encoding

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
Power Distance	0	232	1.000
	1	396	.000

Table 5. 7, Categorical Variables codings of the construct power distance

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 5. 8, Classification table of Block 0 for the construct power distance

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 5. 9,Variables in the Equation of Block 0 for construct power distance

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	PD(1)	11.511	1	.001
	Overall Statistics		11.511	1	.001

Table 5. 10,Variables not in the Equation of Block 0 for construct power distance

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.126	1	.001
	Block	11.126	1	.001

	Model	11.126	1	.001

Table 5. 11, Omnibus Tests of Model Coefficients for the construct power distance

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	483.071[a]	.018	.032
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 5. 12, Model summery for the construct power distance

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 13, Classification table of Block 1 for power distance construct.

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	PD(1)	.790	.237	11.135	1	.001	2.203
	Constant	-2.214	.169	172.370	1	.000	.109
a. Variable(s) entered on step 1: PD.							

Table 5. 14, Variables in the equation of Block 1 for power distance construct

Note: B is corresponding to column C1 in Table (results) provided later in this document. Constant is denoted by k in Table (results) provided later in this document.

The regression equation related PD is:

Ln(Odds)= k +[β(PD)]

Ln(Odds)= -2.214+[0.790)](PD)

When PD = 0: Ln(Odds)= -2.214+[0.790)](0) = -2.214 (C3 in Table (results).

When PD = 1: Ln(Odds)= -2.214+[0.790)](1) = -1.424 (C3 in Table (results)).

ODDS = $e^{(k+[\beta(PD)]}$

When PD = 0

Then ODDS = $e^{(-2.214)}$ = 0.109 (C4 in Table (results)).

When PD = 1

Then ODDS = $e^{(-1.424)}$ = 0.241 (C4 in Table (results)).

Probability

IR adoption = [ODD/(1+ODD)]

Higher PD (0):

Probability of IR adoption = [(0.109)/1.109] = 0.098 (less than 0.5) = 9.8%

So according to the model the probability of IR adoption is low in companies located in countries with high power distance.
Probability of non-adoption of IR = 1-0.098 = 0.902

Accordingly, it can be concluded that hypothesis H1a is accepted.

Odds = 0.098/0.902 = 0.109 (C61 in Table (results)).
Lower PD (1):
Probability of IR adoption = [(0.241)/1.241] = 0.194 (less than 0.5) = 19.4% (C5 in Table (results)).
So according to the model the probability of IR adoption is still low in companies located in countries with lower power distance.
Probability of non-adoption of IR = 1-0.194 = 0.806
Odds = 0.194/0.806 = 0.241 (C62 in Table (results)).

Further analysis given above shows that even in companies located in lower power distance countries the probability of IR adoption is low.

5.4.2 Logistic Regression to verify hypothesis H1b

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 15, Classification table of block 1 for the construct individualism

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	INDV(1)	-.790	.237	11.135	1	.001	.454
	Constant	-1.424	.166	73.597	1	.000	.241
a. Variable(s) entered on step 1: INDV.							

Table 5. 16, variables in the equation of block 1 for the construct individualism

Note: B is corresponding to column C1 in Table (results) provided later in this document.
Constant is denoted by k in Table (results) provided later in this document.

Regression equation related to INDV:

$Ln(Odds)= k +[\beta_2(INDV)]$
Ln(Odds)= -1.424+[-0.790)](INDV)
When INDV = 0: Ln(Odds)= -1.424+[-0.790)](INDV) = - 1.424 (C3 in Table (results).
When INDV = 1: Ln(Odds)= -1.424+[-0.790)](INDV) = -2.214 (C3 in Table (results)).

ODDS = $e^{(k+[\beta_2(INDV)]}$
When INDV = 0
Then ODDS = $e^{(-1.424)}$ = 0.241 (C4 in Table (results)).

When INDV = 1
Then ODDS = $e^{(-2.214)}$ = 0.109 (C4 in Table (results)).

Probability
IR adoption = [ODD/(1+ODD)]
Higher INDV (0):
Probability of IR adoption = [(0.241)/1.241] = 0.194 (less than 0.5) = 19.4% (C5 in Table (results)).
So according to the model the probability of IR adoption is low in companies located in countries with high individualism.
Probability of non-adoption of IR = 1-0.194 = 0.806
Accordingly it can be concluded that hypotheses H1b is rejected.

Odds = 0.194/0.806 = 0.24 (C61 in Table (results)).
Lower INDV (1):
Probability of IR adoption = [(0.109)/1.109] = 0.098 (less than 0.5) =9.8% (C5 in Table (results)).
So according to the model the probability of IR adoption is still low in companies located in countries with lower individualism.
Probability of non-adoption of IR = 1-0.098 = 0.902.

Further analysis given above shows that even in companies located in lower individualism countries, the probability of IR adoption is low.

5.4.3 Logistic Regression to verify hypothesis H1c

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 17,Classification Table of block 1 for the construct masculinity vs. feminism

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	MAS(1)	-.400	.263	2.310	1	.129	.670	.400	1.123
	Constant	-1.567	.224	48.749	1	.000	.209		
a. Variable(s) entered on step 1: MAS.									

Table 5. 18, Variables in the equation of block 1 for the construct masculinity vs. feminism

Note: B is corresponding to column C1 in Table (results) provided later in this document. Constant is denoted by k in Table (results) provided later in this document.

Regression equation related to MAS:

Ln(Odds)= k +[β_2(MAS)]
Ln(Odds)= -1.567+[-0.400)](MAS)
When MAS = 0: Ln(Odds)= -1.567+[-0.400)](0) = - 1.567 (C3 in Table (results).
When MAS = 1: Ln(Odds)= -1.567+[-0.400)](1) = -1.967 (C3 in Table (results)).

ODDS = $e^{(k+[\beta_3(MAS)]}$
When MAS = 0
Then ODDS = $e^{(-1.567)}$ = 0.208 (C4 in Table (results)).

When MAS = 1
Then ODDS = $e^{(-1.967)}$ = 0.139 (C4 in Table (results)).

Probability
IR adoption = [ODD/(1+ODD)]
Higher MAS (0):
Probability of IR adoption = [(0.208)/1.208] = 0.172 (less than 0.5) = 17.2% (C5 in Table (results)).
So according to the model the probability of IR adoption is low in companies located in countries with high masculinity.
Probability of non-adoption of IR = 1-0.172 = 0.828
Odds = 0.172/0.868 = 0.207 (C61 in Table (results)).
Lower MAS (1):
Probability of IR adoption = [(0.139)/1.139] = 0.122 (less than 0.5) =12.2% (C5 in Table (results)).
So according to the model the probability of IR adoption is still low in companies located in countries with lower masculinity (feminism).
Probability of non-adoption of IR = 1-0.122 = 0.878.

Accordingly it can be concluded that hypotheses H1c is rejected but the finding is not significant as the p-value is 0.129 which is >0.05.

Further analysis given above shows that even in companies located in lower masculinity countries, the probability of IR adoption is low.

5.4.4 Logistic Regression to verify hypothesis H1d

Classification Table[a]

	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6

a. The cut value is .500

Table 5. 19, Classification Table of Block 1 for the construct Uncertainty Avoidance

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	UA(1)	-.790	.237	11.135	1	.001	.454
	Constant	-1.424	.166	73.597	1	.000	.241
a. Variable(s) entered on step 1: UA.							

Table 5. 20, Variables in the Equation of block 1 for construct Uncertainty Avoidance

Note: B is corresponding to column C1 in Table (results) provided later in this document. Constant is denoted by k in Table (results) provided later in this document.

Ln(Odds)= k +[β_3(UA)]
Ln(Odds)= -1.424+[-0.790)](UA)
When UA = 0: Ln(Odds)= -1.424+[-0.790)](UA) = - 1.424 (C3 in Table (results).
When UA = 1: Ln(Odds)= -1.424+[-0.790)](UA) = = -2.214 (C3 in Table (results)).
ODDS = $e^{(k+[\beta_4(UA)]}$

When UA = 0
Then ODDS = $e^{(-1.424)}$ = 0.241 (C4 in Table (results)).

When UA = 1
Then ODDS = $e^{(-2.214)}$ = 0.109 (C4 in Table (results)).

Probability
IR adoption = [ODD/(1+ODD)]

Higher UA (1):
Probability of IR adoption = [(0.109)/1.109] = 0.098 (less than 0.5) = 9.8% (C5 in Table (results)).
So according to the model the probability of IR adoption is still low in companies located in countries with higher uncertainty avoidance.
Probability of non-adoption of IR = 1-0.098 = 0.902
Odds = 0.098/0.902 = 0.108 (C62 in Table (results)).

Accordingly it can be concluded that hypotheses H1d is rejected.

Lower UA (0):
Probability of IR adoption = [(0.241)/1.241] = 0.194 (less than 0.5) = 19.4% (C5 in Table (results)).
So according to the model the probability of IR adoption is low in companies located in countries with low uncertainty avoidance.
Probability of non-adoption of IR = 1-0.194 = 0.806
Further analysis given above shows that even in companies located in higher uncertainty avoidance countries, the probability of IR adoption is low**.**

5.4.5 Logistic Regression to verify hypothesis H1e

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 21, Classification Table of block 1 **for** the long orientation construct

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	LOR	.194	.237	.671	1	.413	1.214	.763	1.930
	Constant	-1.949	.156	156.268	1	.000	.142		
a. Variable(s) entered on step 1: LOR.									

Table 5. 22, Variables in the Equation of block 1 for the long orientation construct

Note: B is corresponding to column C1 in Table (results) provided later in this document.
Constant is denoted by k in Table (results) provided later in this document.

Ln(Odds)= k +[β_5(LOR)]
Ln(Odds)= -1.949+[0.194)](LOR)
When LOR = 0: Ln(Odds)= -1.949+[0.194)](0) = -1.949 (C3 in Table (results).
When LOR = 1: Ln(Odds)= -1.949+[0.194)](1) = = -1.755 (C3 in Table (results)).

ODDS = $e^{(k +[\beta_5(LOR)]}$
When LOR = 0
Then ODDS = $e^{(-1.949)}$ = 0.142 (C4 in Table (results)).

When LOR = 1
Then ODDS = $e^{(-1.755)}$ = 0.172 (C4 in Table (results)).

Probability
IR adoption = [ODD/(1+ODD)]

Higher LOR (1):
Probability of IR adoption = [(0.172)/1.172] = 0.147 (less than 0.5) = 14.7% (C5 in Table (results)).
So according to the model the probability of IR adoption is still low in companies located in countries with long term orientation.
Probability of non-adoption of IR = 1-0.147 = 0.853
Odds = 0.147/0.853 = 0.172 (C62 in Table (results)).

Lower LOR (0):
Probability of IR adoption = [(0.142)/1.142] = 0.124 (less than 0.5) = 12.4% (C5 in Table (results)).
So according to the model the probability of IR adoption is low in companies located in countries with short term orientation.

Probability of non-adoption of IR = 1-0.124 = 0.876

Accordingly, it can be concluded that hypotheses H1e is accepted but the finding is not significant because p-value is 0.413 which is >0.05.

Further analysis given above shows that even in companies located in long term orientation countries, the probability of IR adoption is low.

5.4.6 Logistic Regression to verify hypothesis H1f

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 23,Classification Table of block 1 for the construct indulgence.

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	INDG(1)	.790	.237	11.135	1	.001	2.203	1.385	3.503
	Constant	-2.214	.169	172.370	1	.000	.109		
a. Variable(s) entered on step 1: INDG.									

Table 5. 24,Variables in the Equation for the construct indulgence

Note: B is corresponding to column C1 in Table (results) provided later in this document.
Constant is denoted by k in Table (results) provided later in this document.

Ln(Odds)= k +[β_6(INDG)]
Ln(Odds)= -2.214+[0.790](INDG)
When INDG = 0: Ln(Odds)= -2.214+[0.790](0) = -2.214 (C3 in Table (results).
When INDG = 1: Ln(Odds)= -2.214+[0.790](1) = = -1.424 (C3 in Table (results)).

ODDS = $e^{(k+[\beta_6(INDG)]}$
When INDG = 0
Then ODDS = $e^{(-2.214)}$ = 0.109 (C4 in Table (results)).

When INDG = 1
Then ODDS = $e^{(-1.424)}$ = 0.240 (C4 in Table (results)).

Probability

IR adoption = [ODD/(1+ODD)]

Higher INDG(1):

Probability of IR adoption = [(0.241)/1.241] = 0.194 (less than 0.5) = 19.4% (C5 in Table (results)).

So according to the model the probability of IR adoption is still low in companies located in countries with higher indulgence.

Probability of non-adoption of IR = 1-0.194 = 0.806

Lower INDG(0):

Probability of IR adoption = [(0.109)/1.109] = 0.098 (less than 0.5) = 9.8% (C5 in Table (results)).

So according to the model the probability of IR adoption is still low in companies located in countries with lower indulgence (restraint)

Probability of non-adoption of IR = 1-0.098 = 0.902
Odds = 0.098/0.902 = 0.108 (C62 in Table (results)).

Accordingly, it can be concluded that hypotheses H1f is rejected.

Final results of logistic regression

Dependent variable	Independent variable (IV)	Relationship/ Hypothesis	Statistical significance of the relationship	Coefficients (β) (C1)	Constant (k) (C2)	Log Odds Ln(Odds)= k +[β(IV*)] (C3)		ODDS = $e^{(k+[\beta(IV)])}$ (C4)		LOGIT = [ODD/(1+ODD)] (Probability of IR adoption; >0.5 indicates increase in IR adoption else decrease) (C5)		Hypothesis supported or rejected
						0	1	0	1	0	1	
IR adoption (IR)	Power Distance (PD)	PD→IR H1a	Significant (p<0.05)	0.790	-2.214	-2.214	-1.424	0.109	0.241	0.098	0.194	Supported
	Individualism (INDV)	INDV→IR H1b	Significant (p<0.05)	-0.790	-1.424	-1.424	-2.214	0.241	0.109	0.194	0.098	Rejected
	Masculinity (MAS)	MAS→IR H1c	Not significant (p=0.129; p> 0.05)	0.400	-1.567	-1.567	-1.967	0.208	0.139	0.172	0.122	Not significant
	Uncertainty Avoidance	AU→IR H1d	Significant (p<0.05)	-0.790	-1.424	-1.424	-2.214	0.241	0.109	0.194	0.098	Rejected
	Long Term Orientation (LOR)	LOR→IR H1e	Not significant (p=0.413; p> 0.05)	0.194	-1.949	-1.949	-1.755	0.142	0.172	0.124	0.147	Not significant
	Indulgence (INDG)	INDG→IR H1f	Significant (p<0.05) H1f	0.790	-2.214	-2.214	-1.424	0.109	0.240	0.098	0.194	Rejected

Table 5. 25, Final results of logistic regression.

Log [Prob (IR_{it} = 1)/ Prob (IR_{it} = 0)] = β_0 + β_1 Power Distance + β_2Individualism + β_3Uncertainty Avoidance + β_4Masculinity + β_5Long orientation + β_6Indulgence
IV = Indicates independent variable

5.5 Testing hypotheses H2a-H2f, H3a-H3f and H4a-H4f

5.5.1 Descriptive

5.5.1.1 Frequencies

Statistics										
		Environmental Disclosure	Social Disclosure	Governance Disclosure	Power Distance	Individualism	Masculinity	Uncertainty Avoidance	Long-Term Orientation	Indulgence
N	Valid	628	628	628	628	628	628	628	628	628
	Missing	0	0	0	0	0	0	0	0	0
Mean		37.9177	40.0074	58.5178	44.67	70.77	63.27	57.56	52.12	61.44
Median		39.5349	38.5965	57.1429	40.00	89.00	62.00	46.00	51.00	68.00
Std. Deviation		15.88303	13.65301	9.69372	11.254	21.578	26.930	24.263	24.389	12.760
Skewness		-.172	.345	.197	.773	-.371	-.844	.456	.448	-.616
Kurtosis		-.621	.264	1.809	-.397	-1.668	.315	-1.474	-1.258	-1.118
Minimum		.78	3.51	19.30	31	38	5	29	26	42
Maximum		77.52	85.96	90.55	69	91	95	92	88	78

Table 5. 26, Minimum conditions required to be met for the data to be used for testing secondary data.

Standard deviation figures for all variables is shown to be within ±2. It can be concluded that data is normally distributed as according to the literature standard deviations within ±2 measurement points are considered to be normally distributed. Skewness figures are found to be within ±1 which indicates that data is normally distributed as literature shows that for normally distributed data acceptable values of skewness should be within ±1.5.

Kurtosis figures are found to be within ±2 which indicates that data is normally distributed as literature shows that for normally distributed data acceptable values of kurtosis should be within ±3. Multicollinearity was tested using SPSS version 21 and found to be within limits indicated by VIF value which is reported later in this section.

5.5.2 Test of reliability

Cronbach's alpha used to test the reliability of the data. Literature (Ehsan et al. 2018) shows that reliability of quantitative secondary data could be measured by Cronbach's with acceptable figures exceeding 0.7. Using SPSS it was found that the Cronbach's was reported as 0.724 but with the exclusion of two variables namely individualism and indulgence. These two variables were identified as causing problems to the achievement of reliability figures above 0.7. Thus in this research these two variables were not used in testing the relationship between cultural factors and IR adoption through level of ESG disclosure. Thus at this stage it was concluded that the hypotheses that described the relationship between individualism on the one hand and E,S and G variables on the other namely (H2b, H3b and H4b) and indulgence on the one hand and E, S and G variables on the other namely (H2f, H3f and H4f) were rejected. Validity was established by testing the correlation between the variables as given below.

Correlations

		Enviromntal Disclosure	Social Disclosure	Governance Disclosure	Long-Term Orientation	Power Distance	Masculinity	Uncertainty Avoidance
Enviromntal Disclosure	Pearson Correlation	1	.428**	.254**	.093*	.234**	.144**	.227**
	Sig. (2-tailed)		.000	.000	.020	.000	.000	.000
	N	628	628	628	628	628	628	628
Social Disclosure	Pearson Correlation	.428**	1	.196**	-.143**	.072	-.240**	-.141**
	Sig. (2-tailed)	.000		.000	.000	.073	.000	.000
	N	628	628	628	628	628	628	628
Governance Disclosure	Pearson Correlation	.254**	.196**	1	-.381**	-.280**	.006	-.298**
	Sig. (2-tailed)	.000	.000		.000	.000	.886	.000
	N	628	628	628	628	628	628	628
Long-Term Orientation	Pearson Correlation	.093*	-.143**	-.381**	1	.420**	.499**	.726**
	Sig. (2-tailed)	.020	.000	.000		.000	.000	.000
	N	628	628	628	628	628	628	628
Power Distance	Pearson Correlation	.234**	.072	-.280**	.420**	1	.482**	.857**
	Sig. (2-tailed)	.000	.073	.000	.000		.000	.000

	N	628	628	628	628	628	628	628
Masculinity	Pearson Correlation	.144**	-.240**	.006	.499**	.482**	1	.734**
	Sig. (2-tailed)	.000	.000	.886	.000	.000		.000
	N	628	628	628	628	628	628	628
Uncertainty Avoidance	Pearson Correlation	.227**	-.141**	-.298**	.726**	.857**	.734**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	628	628	628	628	628	628	628
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Table 5. 27, Correlation between ESG and Culture constructs power distance, Masculinity, uncertainty avoidance and long term orientation.

It can be seen that the correlation between four of the Hofstede cultural factors namely PD, MAS, UA and LOR is established with the sole exception of MAS-Governance Disclosure where the correlation is statistically insignificant ($p > 0.05$). It was decided that MAS will not be used to test the validity of the relationship between MAS-Governance Disclosure but will be used to test its relationship with Environmental Disclosure and Social Disclosure.

Further to correlational analysis, regression analysis was conducted to test the nature of relationship between the four Hofstede factors and the three ESG variables individually which yielded the following results.

	Relationship	VIF (Multicollinearity test <10)	p-value of significance	Regression coefficient	Hypothesis number	Hypothesis accepted/rejected	Remarks
1	PD → Env_D	1	0.000	0.33	H2a	Supported	PD is positively and statistically significantly related to Env_D.
2	PD → Social_D	1	0.073	0.087	H3a	Rejected	PD is not statistically significantly related to Social_D.
3	PD → GOV_D	1	0.000	-0.241	H4a	Supported	PD is negatively and statistically significantly related to GOV_D.
4	MAS → Env_D	1	0.000	0.085	H2c	Supported	MAS is positively and statistically significantly related to Env_D.
5	MAS → Social_D	1	0.000	-0.122	H3c	Supported	MAS is negatively and statistically significantly related to Social_D.
6	MAS → GOV_D	1	0.886	0.002	H4c	Rejected	MAS is not statistically significantly related to GOV_D.

7	UA → Env_D	1	0.000	0.149	H2d	Supported	UA is positively and statistically significantly related to Env_D.
8	UA→ Social_D	1	0.000	-0.079	H3d	Supported	UA is negatively and statistically significantly related to Social_D.
9	UA → GOV_D	1	0.000	-0.119	H4d	Supported	UA is negatively and statistically significantly related to GOV_D.
10	LOR → Env_D	1	0.02	0.06	H2e	Supported	LOR is positively and statistically significantly related to Env_D.
11	LOR → Social_D	1	0.000	-0.08	H3e	Supported	LOR is negatively and statistically significantly related to Social_D.
12	LOR → GOV_D	1	0.000	-0.151	H4e	Supported	LOR is negatively and statistically significantly related to GOV_D.

Table 5. 28,List of hypotheses supported and rejected

5.5.3 Logistic regression – Environmental Disclosure – IR adoption

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 29,, Classification Table of block 1 for the construct environmental disclosure

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	ENVSORT10(1)	-.824	.245	11.312	1	.001	.439	.271	.709
	Constant	-1.502	.149	101.490	1	.000	.223		
a. Variable(s) entered on step 1: ENVSORT10.									

Table 5. 30, Variables in the Equation of block 1 for construct environmental disclosure

Ln(Odds)= k +[β_7(ENVSORT10)]
Ln(Odds)= -1.502+[-0.824] (ENVSORT10)
When INDG = 0: Ln(Odds)= -1.502+[-0.824](0) = -1.502
When INDG = 1: Ln(Odds)= -1.502+[-0.824](1) = = -2.326
ODDS = $e^{(k+[\beta_7(ENVSORT10)]}$
When ENVSORT10= 0
Then ODDS = $e^{(-2.326)}$ = 0.098

When ENVSORT10 = 1
Then ODDS = $e^{(-1.502)}$ = 0.223
Probability
IR adoption = [ODD/(1+ODD)]

Higher ENVSORT10 (1):
Probability of IR adoption = [(0.223)/1.223] = 0.123 (less than 0.5) = 12.3%
So according to the model the probability of IR adoption is still low in companies having high level of environmental disclosure.
Probability of non-adoption of IR = 1-0.123 = 0.877
Odds = 0.877/0.123 = 7.13

Lower ENVSORT10 (0):
Probability of IR adoption = [(0.098)/1.098] = 0.089 (less than 0.5) = 8.9%
So according to the model the probability of IR adoption is still low in companies having low level of environmental disclosure.
Probability of non-adoption of IR = 1-0.089 = 0.911
Odds = 0.911/0.089 = 10.24

Accordingly, it can be concluded that hypotheses H5 is accepted as there is a clear association between level of environmental disclosure and IR adoption.

5.5.4 Logistic regression – Social Disclosure – IR adoption

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 31,Classification Table of block 1 for construct social disclosure

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	SOCIALSORT10(1)	-.818	.242	11.401	1	.001	.442	.275	.710
	Constant	-1.485	.152	95.297	1	.000	.226		
a. Variable(s) entered on step 1: SOCIALSORT10.									

Table 5. 32, Variables in the Equation for construct social disclosure

Ln(Odds)= k +[β_8(SOCIALSORT10)]
Ln(Odds)= [-1.485+[-0.818] (SOCIALSORT10)]
When INDG = 0: Ln(Odds)= [-1.485+[-0.818] (0)] = -1.485
When INDG = 1: Ln(Odds)= [-1.485+[-0.818] (1)]= = -2.303

ODDS = $e^{(k +[\beta_8(SOCIALSORT10)]}$
When SOCIALSORT10= 0
Then ODDS = $e^{(-1.485)}$ = 0.227
When SOCIALSORT10 = 1
Then ODDS = $e^{(-2.303)}$ = 0.1

Probability
IR adoption = [ODD/(1+ODD)]

Higher SOCIALSORT10 (1):
Probability of IR adoption = [(0.1)/1.1] = 0.091 (less than 0.5) = 9.1%
So according to the model the probability of IR adoption is still low in companies having high level of social disclosure.
Probability of non-adoption of IR = 1-0.091 = 0.909
Odds = 0.909/0.091 = 9.99

Lower SOCIALSORT10 (0):
Probability of IR adoption = [(0.227)/1.227] = 0.185 (less than 0.5) = 18.5%
So according to the model the probability of IR adoption is still low in companies having low level of social disclosure.
Probability of non-adoption of IR = 1-0.185 = 0.815
Odds = 0.815/0.185 = 4.405

Accordingly, it can ***be concluded that hypotheses H6 is accepted as there is a clear association between level of social disclosure and IR adoption.***

5.5.5 Logistic regression – Governance Disclosure – IR adoption

Classification Table[a]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 1	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. The cut value is .500					

Table 5. 33, Classification Table of Block 1 for the construct Governance disclosure

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	GOVSORT10(1)	-.342	.235	2.113	1	.146	.711	.448	1.126
	Constant	-1.683	.168	100.305	1	.000	.186		
a. Variable(s) entered on step 1: GOVSORT10.									

Table 5. 34,Variables in the Equation for the construct Governance disclosure

Ln(Odds)= k +[β_9(GOVSORT10)]
Ln(Odds)= [-1.683+[-.342] (GOVSORT10)]
When INDG = 0: Ln(Odds)= [-1.683+[-.342] (0)] = -1.683
When INDG = 1: Ln(Odds)= [-1.683+[-.342] (1)]= = -2.025

ODDS = $e^{(k+[\beta_8(GOVSORT10)]}$
When GOVSORT10= 0
Then ODDS = $e^{(-1.683)}$ = 0.186

When GOVSORT10 = 1
Then ODDS = $e^{(-2.025)}$ = 0.132

Probability
IR adoption = [ODD/(1+ODD)]

Higher GOVSORT10 (1):
Probability of IR adoption = [(0.132)/1.132] = 0.117 (less than 0.5) = 11.7%
So according to the model the probability of IR adoption is still low in companies having high level of governance disclosure but there is a no statistically significant relationship between Governance Disclosure and IR adoption (p=0.146).
Probability of non-adoption of IR = 1-0.117 = 0.883
Odds = 0.883/0.117 = 7.55

Lower GOVSORT10 (0):
Probability of IR adoption = [(0.186)/1.186] = 0.157 (less than 0.5) = 15.7%
So according to the model the probability of IR adoption is still low in companies having low level of governance disclosure but there is a no statistically significant relationship between Governance Disclosure and IR adoption (p=0.146).
Probability of non-adoption of IR = 1-0.157 = 0.843
Odds = 0.843/0.157 = 5.369
Accordingly, it can be concluded that hypotheses H7 is rejected as there is no statistically significant relationship between level of governance disclosure and IR adoption.

5.6 Mediator analysis

The table (5.35) provides the details concerning the results of the analysis involving the mediators and inferences derived thereof.

Culture variables	Mediating variable	Dependent variable	Table number	Direct relationship	P-value	Direct effect (Regression coefficient)	Indirect relationship	Indirect effect	Total effect = (Direct + Indirect effect)	Inference
PD	ENV_D	IR	5.25	PD→IR	0.001	0.79	PD→ENV_D→IR	(0.33)(-0.824) = -(0.272)	0.79-0.272 =-(0.518)	There is mediation by Environment in the relationship between Power distance and IR adoption
			5.28	PD→ENV_D	0.00	0.33				
			5.30	ENV_D→IR	0.001	-0.824				
PD	SOCIAL_D	IR	5.25	PD→IR	0.001	0.79	PD→SOCIAL_D→IR	None	No total effect.	The relationship PD→SOCIAL_D is not statistically significant. Hence there is no mediation effect of SOCIAL_D in the relationship between PD and IR
			5.28	PD→SOCIAL_D	0.073	Not significant				
			5.30	SOCIAL_D→IR	0.001	-0.818				
PD	GOV_D	IR	5.25	PD→IR	0.001	0.79		None		

			5.28	PD→ GOV_D	0.000	-0.241	PD→ GOV_D→IR		No total effect	The relationship GOV_D→IR is not statistically significant. Hence there is no mediation effect of GOV_D in the relationship between PD and IR
			5.30	GOV_D →IR	0.146	Not significant				
INDV	ENV_D	IR	5.25	INDV→I R	0.001	-0.790	INDV→ENV _D→IR	none	No total effect	Individualism/collectivisim as a variable caused concerns to the reliability issue of the group of six cultural factors. The reliability was measured using Cronbach's alpha. The minimum value of alpha set was 0.7. However, individualism/collectivism caused alpha value to be less than 0.7 when measured with the remaining 5 cultural factors. Hence was deleted based on the report from SPSS. This factor does not therefore affect IR adoption through ESG factors
			5.28	INDV→ ENV_D	-	This relationship is not part of the analysis. See Inference column				
			5.30	ENV_D →IR	0.001	-0.824				
INDV	SOCIAL_ D	IR	5.25	INDV→I R	0.001	-0.790	INDV→SOC IAL_D→IR	None	No total effect	
				INDV→ SOCIAL_ D	-	This relationship is not part of the analysis. See Inference column				
			5.30	SOCIL_ D→IR	0.001	-0.818				
INDV	GOV_D	IR	5.25	INDV→I R	0.001	-0.790	INDV→GO V_D→IR	None	No total effect	
				INDV→ GOV_D	-	This relationship is not part of the analysis. See Inference column				
			5.30	GOV_D →IR	0.146	Not significant				
MAS	ENV_D	IR	5.25	MAS→ IR	0.129	Not significant	MAS→ENV _D→IR	none	No total effect	The relationship MAS→IR is not statistically significant. Hence there is no mediation effect of ENV_D in the
			5.28	MAS→E NV_D	0.000	0.085				
			5.30	ENV_D →IR	0.001	-0.824				

										relationship between MAS and IR
MAS	SOCIAL_D	IR	5.25	MAS→IR	0.129	Not significant	MAS→SOCIAL_D→IR	None	No total effect	The relationship MAS→IR is not statistically significant. Hence there is no mediation effect of SOCAIL_D in the relationship between MAS and IR
			5.28	MAS→SOCIAL_D	0.000	-0.122				
			5.30	SOCIL_D→IR	0.001	-0.818				
MAS	GOV_D	IR	5.25	MAS→IR	0.129	Not significant	MAS→GOV_D→IR	None	No total effect	The relationships MAS→IR, MAS→ GOV_D and GOV_D→IR are not statistically significant. Hence there is no mediation effect of GOV_D in the relationship between MAS and IR
			5.28	MAS→ GOV_D	0.886	Not significant				
			5.30	GOV_D →IR	0.146	Not significant				
UA	ENV_D	IR	5.25	UA →IR	0.000	-0.790	UA→ENV_D→IR	(0.149)(-0.824) = -0.123	-0.913	There is mediation by Env_D in the relationship between Uncertainty avoidance and IR adoption
			5.28	UA→SOCIAL_D	0.000	0.149				
			5.30	ENV_D →IR	0.001	-0.824				
UA	SOCIAL_D	IR	5.25	UA →IR	0.000	-0.790	UA→SOCIAL_D→IR	(-0.079) (-0.818) = 0.065	-0.725	There is mediation by SOCIAL_D in the relationship between Uncertainty avoidance and IR adoption
			5.28	UA→SOCIAL_D	0.00	-0.079				
			5.30	SOCIL_D→IR	0.001	-0.818				
UA	GOV_D	IR	5.25	UA →IR	0.000	-0.790	UA→GOV_D→IR	None	No total effect	The relationship GOV_D→IR is not statistically significant. Hence there is no mediation effect of GOV_D in the relationship between UA and IR
			5.28	UA→GOV_D	0.000	-0.119				
			5.30	GOV_D →IR	0.146	Not significant				
LOR	ENV_D	IR	5.25	LOR→IR	0.413	Not significant	LOR→ENV_D→IR	none	No total effect	The relationship LOR→IR is not statistically significant. Hence
			5.28	LOR→ENV_D	0.02	0.06				

			5.30	ENV_D →IR	0.001	-0.824				there is no mediation effect of ENV_D in the relationship between MAS and IR
LOR	SOCIAL_D	IR	5.25	LOR→IR	0.413	Not significant	LOR→SOCIAL_D→IR	none	No total effect	The relationship LOR→IR is not statistically significant. Hence there is no mediation effect of SOCAIL_D in the relationship between MAS and IR
			5.28	LOR→SOCIL_D	0.000	-0.08				
			5.30	SOCIL_D→IR	0.001	-0.818				
LOR	GOV_D	IR	5.25	LOR→ IR	0.000	Not significant	LOR→GOV_D→IR	None	No total effect	The relationship LOR→IR and GOV_D→IR are not statistically significant. Hence there is no mediation effect of GOV_D in the relationship between MAS and IR
			5.28	LOR → GOV_D	0.000	-0.151				
			5.30	GOV_D →IR	0.146	Not significant				
INDG	ENV_D	IR	5.25	INDG→IR	0.001	0.790	IND→ENV_D→IR			Indulgence as a variable caused concerns to the reliability issue of the group of six cultural factors. The reliability was measured using Cronbach's alpha. The minimum value of alpha set was 0.7. However, Indulgence caused alpha value to be less than 0.7 when measured with the remaining 5 cultural factors. Hence was deleted based on the report from SPSS. This factor does not therefore affect IR adoption
			5.28	INDG →ENV_D	-	This relationship is not part of the analysis. See remarks column				
			5.30	ENV_D →IR	0.001	-0.824				
INDG	SOCIAL_D	IR	5.25	IND→ IR	0.001	0.790	IND→SOCIAL_D→IR			
				INDG→ SOCIAL_D	-	This relationship is not part of the analysis. See remarks column				
			5.30	SOCIL_D→IR	0.001	-0.818				

INDG	GOV_D	IR	5.25	INDG→ IR	0.001	0.790	IND→GOV _D→IR			through ESG factors
				INDG→ GOV_D	-	This relationship is not part of the analysis. See remarks column				
			5.30	GOV_D →IR	0.146	Not significant				

Table 5. 35 mediator analysis

5.7 Chapter Summer

This chapter has analysed the data and brought out the findings. Out of the 27 hypotheses that were developed for this research, 14 were accepted. The remaining 13 were rejected reasons for which have been explained in the subsequent chapter.

Chapter 6: Discussions

6.1 Introduction

This chapter discusses in detail the findings derived from the data analysis carried out in Chapter 5. The core concept on which the analyses were conducted was the IR adoption. The various regressed results need to be understood by comparing them with the current literature and distinct points that have been discovered need to be explained. In addition, the meaning of the various hypotheses that have been supported or rejected need to be discussed and interpret the significance of those findings. This chapter is organized as follows. It discusses the answers for the research questions RQ1 and RQ2 in sections 6.2 and 6.3 The discussion on the various relationships namely the independent, mediating and dependent variables is provided in sections 6.5 In the above sections the findings are compared with current knowledge in the literature. Finally, section 6.6 provides a summary of the chapter.

6.2 Discussion on Research question RQ1

The research question is reproduced here for the sake of convenience. *RQ1: Do cultural factors determine IR adoption?*

Literature review shows that national culture is an important aspect that influences disclosures by companies including IR. There are a few authors who have attempted to establish significant relationships between national culture and IR (Fuhrmann, 2019; Vaz et al., 2018; Garcı´a-Sa´nchez et al., 2013). The results of this research also confirm existing research outcomes and argues that national culture in Hofstede sense influences IR. The significant findings are discussed one by one next.

Foremost it can be seen that the some of the cultural factors identified in Hofstede's model (1980, 2001) have been found to affect IR. The results of the logistic regression of the six cultural factors namely power distance, individualism vs collectivism, masculinity vs feminism, uncertainty avoidance, long term orientation vs short term and indulgence against IR adoption show the following results (table 6.1). Results pertaining to each one of the relationships is analysed further.

Dependent variable	Independent variable	Relationship	Hypothesis	Hypothesis accepted or rejected
IR adoption (IR)	Power Distance (PD)	PD→IR	H1a	Accepted
	Individualism (INDV)	INDV→IR	H1b	Rejected
	Masculinity (MAS)	MAS→IR	H1c	Not significant
	Uncertainty Avoidance	AU→IR	H1d	Rejected
	Long Term Orientation (LOR)	LOR→IR	H1e	Not significant
	Indulgence (INDG)	INDG→IR	H1f	Rejected

Table 6. 1 Results of the logistic regression of Hofstede national cultural factors on IR adoption

From the results presented in table 6.1, it can be seen that IR adoption is significantly influenced by power distance. The results obtained in the statistical analysis show that companies located in countries having lower power distance have a higher probability of adopting IR when compared to those located in higher power distance countries. This conclusion is derived from the following regression equations derived in chapter 5.

The regression equation related PD is:

$Ln(Odds)= k +[\beta(PD)]$

$Ln(Odds)= -2.214+[0.790)](PD)$

When PD = 0: $Ln(Odds)= -2.214+[0.790)](0) = -2.214$

When PD = 1: $Ln(Odds)= -2.214+[0.790)](1) = -1.424$

The above equations clearly demonstrate that the odds ratio of adopting IR is higher in lower power distance countries and lower in higher power distance countries. This implies that where power distance is lower the possibility of adopting IR increases. Thus power distance is found to be a cultural factor that determines IR adoption, an argument that finds support from Vitolla et al. (2019) although their research was concerning the dependent construct IR quality. However, this finding is contradicting the findings of García-Sánchez et al. (2013) who did not find any statistically significant relationship between power distance and IR. One of the reasons why the findings of this research could be valid is explained by the definition of power distance given by Hofstede (2010; p.10) which says that "power distance is the extent to which the less powerful member of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede, 2010; p. 10). Using this definition, it can be argued that in nations with lower power distance there is a possibility that less powerful members of an organization can influence adoption of IR. Lower power distance indicates lower level of hierarchy and a more equitable distribution of power (Vitolla et al., 2019). The countries that have been chosen for study in this research included Brazil, Japan, Sweden, UK and USA which have varying power distance scores in Hofstede's sense namely 69, 54, 31, 35 and 40 respectively. Thus, based on the findings of this research it can be argued that higher or lower power distance scores in Hofstede sense of various countries, the odds ratio of adopting IR can be predicted using the regression equations provided above. This is a new finding as categorial predication of IR adoption based on power distance as a cultural factor has not been examined in the extant literature using the odds ratio and probability of adoption of IR with the exception of García-Sánchez et al. (2013). This result also confirms that hypothesis H1a is supported which says that the probability of IR adoption will be lower in companies located in countries with higher power distance in Hofstede

sense than the those located in countries with lower power distance. In practical terms it can be argued that companies located in lower power distance countries are likely to adopt IR than those with higher power distance because the employees in the lower level hierarchy will have a say in making disclosures in the annual report. This finding has the potential to be applied to predict the probability of IR adoption in many countries and industry sectors.

With regard to the relationship between individualism vs collectivism, the results of this research shows that individualism is not statistically significantly related to IR adoption. The results derived from the logistic regression show that:

Ln(Odds)= k +[β2(INDV)]

Ln(Odds)= -1.424+[-0.790)](INDV)

When INDV = 0: Ln(Odds)= -1.424+[-0.790)](INDV) = - 1.424.

When Collectivism = 1: Ln(Odds)= -1.424+[-0.790)](INDV) = -2.214.

That is to say that companies in countries where collectivism is dominant, then probability of IR adoption is lower than those in countries where individualism is dominant. This result is contrary to the findings of Vaz et al. (2018) and García-Sánchez et al.(2013) who found that companies in countries where collectivism is dominant, the probability of IR adoption is higher than those located in countries where individualism is dominant. In order to explain this it is necessary to use the definition of individualism vs collectivism by Hofstede (2010) which says ‘‘societies in which the ties between individuals are loose: everyone is expected to look after her/ himself and her/his immediate family’’; its opposite, collectivism, refers to ‘‘societies in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty’’ (Hofstede et al ,2010, p. 92). If one looks at this definition and explain the results of this research then it is possible to argue that

probability of adoption of IR is likely to be higher in cultures where individualism is predominant for such individuals can take adoption decision without the involvement of other people thus negating the definition of collectivism. Applying this argument to the five countries selected for this research then it can be seen that with regard to the individualism score in Hofstede sense Sweden ranks third in the list of five countries (score of 71 in Hofstede sense) that have been studied in this research with USA ranking the highest with an individualism score of 91 in Hofstede sense followed by UK with 89. Brazil was found to have lowest individualism score of 38 in Hofstede sense with Japan just ahead of it with a score of 46. Thus, it can be argued that in companies located in Brazil probability of IR adoption should be lower and in companies located in USA the probability of IR adoption should be higher. The reason for this outcome could be that that individuals controlling the company can determine if those individuals want whether to adopt IR or not. Although this result shows that the hypothesis H1b is not supported, the interpretation could be that individualism plays an important role in adoption of IR. It appears that there are individuals who are decision makers interested in adoption IR in the industry who would like to control the disclosures and favour adoption of IR. This result shows that individualism vs collectivism has no clear influence with regard to adoption of IR. This is a new finding.

As far as the relationship between masculinity vs feminism and probability of IR adoption is concerned, it can be seen from the statistical analysis that the p-value of significance of the logistic regression is higher than 0.05 (0.129) thus making the relationship statistically insignificant. One reason for this could be that in the five countries that are under study, probability of IR adoption is not a function of this cultural factor. While the research outcomes published by other researchers (Vitolla et al., 2019; García-Sánchez et al., 2013; Luo & Tang, 2013; Orij, 2010) is in contradiction

with the result of this research while Vaz et al. (2016) found the same result as that of this research. The interpretation could be that masculinity or feminism may not really matter with regard to IR adoption and across cultures. The findings of this research clearly contradicts the definitions of masculinity and feminism by Hofstede (1980). A lack of a significant relationship between masculinity vs feminism and IR adoption in the five countries chosen for investigation clearly shows that in those countries there is a clear equality of gender and people are not concerned about gender difference. The statement of Hofstede (1980) that "A ''masculine'' society tends to emphasize achievement and material success, whereas a ''feminine'' culture is supposed to confer greater weight to the quality of life rather than ego boosting, wealth, and recognition (Hofstede 1980, 298)" is completely negated. This is a significant discovery and shows the progress made in the countries under investigation with regard to gender difference in corporates and decision making related to IR adoption. Explaining this kind of a phenomenon Scholtens and Dam (2007) highlight assertiveness as the central issue of masculinity vs feminism. Where a society is masculine, it is possible that material success is praised and leisure time is ignored in favour of higher pay leading to a type of behavior bordering a capitalism mindset leaving behind concerns on social justice and environmental stewardship that are more fundamental to a society. On the contrary women in such societies are found to be better in inter-personal matters, rendering service, attaching more importance to physical environment than advancement, independence, responsibility and earnings (Hofstede, 1980; pp. 269–271). The results of this research show that these arguments are not valid anymore. Women appear to have overcome barriers and caught up with men in many aspects including progressing in jobs and earnings alongside integrating such aspects as inter-personal matters, rendering service and attaching more importance to physical environment with their corporate life. This is a kind of integrated thinking which is a prime concept

of IR adoption. This indicates that in many instances in the corporate culture women could play a leading role in the adoption or non-adoption of IR than men due to the concept of integrated thinking. Thus, it is possible to justify the results of this research and conclude that the corresponding hypothesis H1c is not supported. In practical terms this result points to a new discovery which shows that variations in masculinity vs feminism are not significant with regard to corporate disclosures and stakeholders and investors ought not to worry about this aspect of masculinity vs feminism when they try to understand the disclosures.

Further to discussing the relationship between individualism and collectivism on the one hand and IR adoption on the other, the following section discusses the relationship between uncertainty avoidance and IR adoption. The results of this research are as follows:

Ln(Odds)= -1.424+[-0.790)](UA)

When UA = 0: Ln(Odds)= -1.424+[-0.790)](UA) = - 1.424.

When UA = 1: Ln(Odds)= -1.424+[-0.790)](UA) = = -2.214.

The results can be interpreted taking into account the coding that indicates '0' when uncertainty avoidance (UA) is below the mean value of the national cultural scores in Hofstede sense. Scores below the mean value of the five national cultural scores in Hofstede sense that is 55.6 related to UA indicates lower uncertainty avoidance. Above the mean value of the national cultural scores in Hofstede sense is indicated by the code '1' when UA is considered high in those nations under investigation. Thus, results of this research show that the probability of adoption of IR in companies located in countries having a higher uncertainty avoidance score in Hofstede sense will be lower when compared to companies located in countries assigned with a lower uncertainty avoidance score in Hofstede sense. The results of this research can be interpreted in a way that shows that uncertainty avoidance as a culture has an opposite effect on human beings with regard

to disclosures made by a firm or IR adoption when the definition by Hofstede (1980) is applied. The definition of uncertainty avoidance is ‘‘the extent to which the members of a culture feel threatened by ambiguous or unknown situations’’ (Hofstede et al, 2010, p.191). When this definition is applied to the results of this research it can be seen that as the situation or environment prevailing in and around an organisation is uncertain in regard to IR adoption, then the probability of avoiding IR adoption also increases. The results of this research are similar to the one produced by Vachon (2010) who found a negative relationship between uncertainty avoidance and environment disclosure but contradict the ones produced by Onel and Mukherjee (2014) who found a positive relationship uncertainty avoidance and environment disclosure. Thanetsunthorn (2015) did not find any significant relationship between uncertainty avoidance and corporate disclosure.

The results of this research can be justified by practical examples. For instance, companies located in countries like Japan whose uncertainty avoidance score (92) in Hofstede sense is high when compared to those located in Brazil (76), USA (46), UK (35) and Sweden (29), the culture of uncertainty avoidance could lead to adoption or non-adoption of IR because of the possible ambiguity or lack of it that may be surrounding disclosures. A practical example of uncertainty avoidance can be witnessed in the Japanese culture which according to Nakabayashi (2021) is highly ritualistic and not easily amenable to changes. Nakabayashi (2021) adds further that in firms managers take decision based on facts and figures only and would avoid surprises and avoid uncertainties. On the other extreme is Swedish companies. The uncertainty avoidance score in Hofstede sense for Sweden is 29. This implies that people will be more practical oriented and less tied to the principles. For instance, people in Sweden believe in flexible schedules, work hard when

necessary and innovations and do see any threats in changes occurring in the workplace and do not see any threats occurring in work place as concern. This indicates that the businesses do not worry about taking risks and uncertainty avoidance is found to be low (Ewa Matuska, 2013). These examples imply that higher the uncertainty avoidance lower the decision-making including IR adoption. Thus, the results of this research while supporting the real situation, but at the same time does not support the hypotheses H1d.

In regard to the relationship between long term orientation vs short term and IR adoption the results of this research showed that there is no statistical significance in this relationship. The p-value of significance of the logistic regression was found to be 0.413 which is > 0.05 and hence the relationship is not statistically valid. The reason for this could be understood by applying the definition of long-term orientation vs short term provided by (Hofstede, 2010; p.239) which says: 'The fostering of virtue oriented toward future rewards—in particular, perseverance and thrift'. This implies that long term orientation in firms in different countries having varied national cultural scores related to long term orientation vs short term does not influence disclosures or adoption. Perseverance with publishing performance based on IR or expecting any reward for disclosing information as prescribed by IR may not be attractions at all because the following reasons. If IR is adopted, then the company may or may not disclose all information transparently due to the option it can exercise and the long term or short-term effect of such reporting may or may not be predictable. Similarly, if IR is not adopted, adopting a long-term orientation or short term to disclose information as a culture may be meaningless as the firm does not gain by reporting annual performance or non-performance. This argument is supported by Albetairi et al. (2018) who showed in their study on five listed firms in Bahrain about the influence of IR adoption aspects

on return on assets that there was no compliance to IR standards in the disclosures over a period of four years that is from 2012 to 2015. Taking the example of one of the factors concerning IR namely organizational overview and external environment Albetairi et al. (2018) argued that there should be 20 entries in the disclosures made by those companies each year. Thus, over four years the five companies together must have posted 20*5*4 = 400 entries related to organizational overview and external environment in their report. However, the research results of Albetairi et al. (2018) showed that together the five firms had posted only 296 entries which is a shortfall of 104 entries indicating lack of compliance with IR standard. This example clearly indicates that long term orientation vs short term has no meaning with regard to IR or its adoption. These results are in line with the findings of García-Sánchez et al. (2013) and Orji (2010) who did not find statistical significance with regard to the relationship between long term orientation vs short term and IR adoption. Thus, it can be concluded that hypothesis H1e is not supported.

Finally, the results of the logistic regression related to the relationship between indulgence and IR adoption show that the relationship is characterized by the probability of IR adoption being lower when the indulgence is low and higher when indulgence is higher. The results are provided below:

Ln(Odds)= -2.214+[0.790)](INDG)

When INDG = 0: Ln(Odds)= -2.214+[0.790](0) = -2.214.

When INDG = 1: Ln(Odds)= -2.214+[0.790](1) = = -1.424.

The code ‘0’ indicates a score below the mean level of 63.2 in Hofstede sense (called restraint) computed by taking into account the Hofstede national culture scores of five countries Brazil, Japan, Sweden, UK and USA and ‘1’ indicates a score above the mean score called indulgence. The corresponding Hofstede sense scores for those countries are 59, 42, 78, 69 and 68 respectively. This indicates that the cultural score for Sweden, UK and USA are seen to be above the mean score

and hence are considered indulgent countries while the cultural scores for Brazil and Japan are found to be below the mean score and hence are considered as restraining countries (Hofstede, 2010). The results can be interpreted by applying the definition of indulgence vs restraint given by (Hofstede ,2010; p. 15) which says that it is a "Society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. Restraint stands for a society that controls gratification of needs and regulates it by means of strict social norms". When this definition is applied, it can be seen that with regard to companies located in countries having higher indulgence score in Hofstede sense then the probability of adoption of IR in those companies is expected to be higher. Similarly, with regard to companies located in countries whose indulgence score in Hofstede sense are lower than the probability of adoption of IR is lower. Thus, it is expected in companies located in countries like Sweden where the score for indulgence in Hofstede sense is higher, there could be higher indulgence and hence higher probability of adoption of IR and in companies located in countries like Japan where the indulgence score in Hofstede sense is lower, then there could be restraint in adopting IR. While literature shows that research that has investigated indulgence or restraint as a cultural factor that acts as the determinant of IR adoption is rare with the exception of Vitolla et al. (2019), at the same time the results achieved by Vitolla et al. (2019) are contradicting the results of this research. The outcome of this research shows that indulgence leads to higher probability of adoption while restraint indicates lower probability of adoption while the results Vitolla et al. (2019) shows that the probability of adoption of IR is higher when the national cultural score in Hofstede sense (2010) indicates restraint and the probability of IR adoption is lower when the national cultural score in Hofstede sense (2010) indicates indulgence. These results could be considered new as similar results are not found in the extant literature concerning indulgence-IR adoption. This result could be unique

because indulgence could lead to a decision leading to adoption of IR while restraint could lead to non-adoption of IR. This result negates the hypothesis H1f which says that the probability of IR adoption will be lower in companies located in countries with indulgence in Hofstede sense than the those located in countries with restraint in Hofstede sense. Thus, H1f is not supported. However, results can actually be seen in operation in many real situations. For instance,

For instance, indulgence in companies could mean that more attention is paid to personal issues and satisfying individual interests while plurality of interests that go beyond the individual interests takes a back seat. An interpretation that can be made in this situation is that plurality could mean multi-stakeholder involvement in decision making and less indulgence meaning more restraint withing the firm and better chance of IR adoption. This argument is similar to the findings of (Vitello et al. ,2019). However, in companies where personal issues are considered more important and within those companies' people in positions of power are satisfying individual interests, then in those firms it is unlikely that multi-stakeholder involvement in decision making is found. In such situations high indulgence could be seen leading to lower probability of adoption of IR. While hardly any evidence is found in the literature to show that variation in indulgence and restraint impact IR adoption, the results of this research point out that indulgence points towards higher probability of IR adoption while restraint could lead to lower probability of IR adoption. The discovery here is the contradiction found between the outcomes of this research and the research conducted by Vitolla et al. (2019). However, the results of the study by Halkos and Skouloudis (2016) showed that indulgence is positively related to disclosure and argument which is in line with this study. Thus, this finding supports the fact that lower indulgence which is called restraint could lead to IR adoption when compared to indulgence.

At this stage, the foregoing discussions clearly show that except for power distance none of the other hypotheses are supported. Alternately it can be stated that the outcomes of the research have produced some interesting results that can contributes to knowledge. Companies in countries where the culture of high-power distance is dominant, there the probability of adoption of IR is high and where the low power distance is dominant, in those countries the probability of adoption of IR is low. Further, two relationships namely MAS→IR and LOR→IR were not found to be related. This implies that in none of the countries masculinity or feminism or long term orientation or short term orientation matter. The outcome of the analysis of data on the relationship INDV→IR shows that in countries where individualism is dominant, the probability of adoption of IR is high and where the culture of collectivism is dominant then the probability of adoption of IR is low. Similarly, the analysis of the relationship AU→IR has brought out a result which indicates that companies located in countries where there is a culture of high uncertainty avoidance, there the probability of adoption of IR is low and companies located in countries where the culture of uncertainty avoidance is low the probability of adoption of IR is high. Finally, the results of the analysis of the relationship INDG→IR shows that companies located in countries where the culture is dominated by indulgence then in those companies the probability of adoption of IR is high and in companies located in countries where the culture is dominated by restraint, the probability of adoption of IR is lower. When taken holistically the following inference emerges:

Dependent variable	**Independent variable (IV)**	**Relationship/ Hypothesis**	**Statistical significance of the relationship**	**Coefficients (β)**	**Hypothesis accepted or rejected**	**Results**	
						Probability of IR adoption high	**Probability of IR adoption low**
IR adoption (IR)	Power Distance (PD)	PD→IR H1a	Significant ($p<0.05$)	0.790	Accepted	PD low	PD high
	Individualism (INDV)	INDV→IR H1b	Significant ($p<0.05$)	-0.790	Rejected	Individualism	Collectivism

	Masculinity (MAS)	MAS→IR H1c	Not significant (p=0.129; p> 0.05)	0.400	Not significant	No effect of masculinity	No effect of feminism
	Uncertainty Avoidance	AU→IR H1d	Significant (p<0.05)	-0.790	Rejected	Lower uncertainty avoidance	Higher uncertainty avoidance
	Long Term Orientation (LOR)	LOR→IR H1e	Not significant (p=0.413; p> 0.05)	0.194	Not significant	No effect of long-term orientation	No effect of short-term orientation
	Indulgence (INDG)	INDG→IR H1f	Significant (p<0.05) H1f	0.790	Rejected	Indulgence	Restraint

Table 6. 2, The result of relationship between probability of IR adoption and national culture

From the above it can be seen that out of the six cultural factors taken up for investigation to understand whether those cultural factors affect IR adoption or not, the results of the investigation show that four factors namely power distance, individualism vs collectivism, uncertainty avoidance and indulgence determine the IR adoption while masculinity vs feminism and long-term orientation vs short term orientation do not determine IR adoption. Thus, it can be concluded that research question RQ1 has been answered. The final results are tabulated as follows in table 6.3:

Independent variables / Dependent variable	Power distance		Individualism vs Collectivism		Masculinity vs Feminism		Uncertainty avoidance		Long term vs Short term orientation		Indulgence vs Restraint	
	Low	High	Individualism	Collectivism	Masculinity	Feminism	Low	High	Long term	Short term	Indulgence	Restraint
Probability of IR adoption (high)	x	-	x	-	-	-	x	-	-	-	x	-
Probability of IR adoption (Low)	-	x	-	x	-	-		x	-	-	-	x

Table 6. 3,Matrix indicating the influence of cultural factors on probability of IR adoption.

Note: ‘x’ indicates the results derived through logistic regression while ‘-‘either no result or insignificant relationship.

In a nutshell it can be seen that in a company that is located in a country where power distance in Hofstede sense of that country is low, individualism is dominant, uncertainty avoidance is low and indulgence is dominant then in that country probability of IR adoption will be high. This result could be explained somewhat. For instance, in companies where the management is characterized by individualism, indulgence, high power distance but low uncertainty avoidance, in such companies it is possible collectivism cannot restrain the adoption of IR because individuals are likely having their way in decision making due to the power those individuals have in the hierarchy. It is also logical to interpret that in such companies' individualistic persons cannot easily face uncertain situation due to lack of collectivism to support the individuals in decision making. As a corollary it can be added that the compliments of high-power distance, collectivism, high uncertainty avoidance and restraint work in combination leading to lower probability of IR adoption. Thus, the results appear to provide the basis to explain which of the cultural elements can lead to a high probability of IR adoption and which do not. This is new knowledge that shows that only four of the six cultural factors in Hofstede sense influence the probability of adoption of IR. Similar research outcomes have not been found in the extant literature and an easily explainable matrix as provided in table is for easy understanding of the cultural effects perhaps has not been thought of by researchers. An important inference that could be made at this stage is that while acknowledging the fact that cultural aspects cannot be changed in countries, it is necessary for IIRC to adapt to the cultural aspects of individual countries and suggest what aspects of IR can be made mandatory and what aspects can be considered as voluntary. Another important finding is that the high probability of adoption of IR when a company is characterized by individualistic and indulgent culture which implies that integrated thinking prevails even when collectivism and restraint are not dominant. This is not the widely accepted view in the literature. Thus, this research

has led to the inference that it is not necessary that power distance in Hofstede sense need to be low and uncertainty avoidance be high to have integrated thinking in the companies that want to adopt IR although most of the research findings have indicated to the contrary (Fuhrmann,2019; Vaz et al.,2016 and Garcı´a-Sa´nchez et al.,2013). This knowledge could be useful to IIRC when it is insisting on mandatory implementation of IR in companies located in varying cultures uniformly as such a policy is unlikely to be accepted by the industries in countries with varying cultures. This is an important knowledge that has been derived in this research.

6.3 Discussion on Research question RQ2

RQ2: What are the interventions that affect the relationship between the cultural factors and IR adoption?

In this research some components of the IR adoption pertaining to the sustainability items namely environmental (Env_D), social (Social_D) and governance (GOV_D) have been conceived as mediators of the relationship between six Hofstede cultural factors and IR adoption. Those sustainability items in the IR are posited to be determined by national culture of a country using the arguments of (Halkos and Skouloudis ,2016). Based on these arguments the following relationships listed in table 6.4 were drawn and explained in the theoretical framework in chapter 3 as well as analysed using linear regression. The result of the regression analysis of the various relationships are provided in table 6.4.

	Relationship/ Hypothesis	p-value of significance	Regression coefficient	Hypothesis supported/ rejected	Remarks	Comparison with research outcomes in the literature
1	PD → Env_D H2a	0.000	0.33	Supported	PD is positively and statistically significantly related to Env_D.	Results show that there is a relationship between power distance and environment disclosure. This is in line with the findings of Miska et al., (2018) and Ho et al., (2012) but differ with those of Pucheta-Martínez and Gallego-Álvarez (2019) who found no relationship between power distance and

						environmental disclosure. Findings of Ho et al., (2012) show that a positive relationship exists between power distance and environment disclosure which is in line with the results of this research while Peng et al., (2014) found a negative relationship.
2	PD → Social_D H3a	0.073	0.087	Rejected	PD is not statistically significantly related to Social_D.	The results show that there is no statistical relationship between power distance and social disclosure. This result is contradicting the findings of Halkos and Skouloudis (2017) and Peng et al. (2015) who showed that there is an inverse relationship between power distance and social disclosure. However, Gallego-Álvarez and Ortas (2017) found a negative relationship between power distance and governance disclosure. The results of this research align with the results of Gallego-Álvarez and Ortas (2017).
3	PD → GOV_D H4a	0.000	-0.241	Supported	PD is negatively and statistically significantly related to GOV_D.	The results of this research show that power distance is negatively related to governance disclosure. This result is in contradiction with the research outcomes produced by Ho et al. (2012) who found a positive relationship.
4	MAS → Env_D H2c	0.000	0.085	Supported	MAS is positively and statistically significantly related to Env_D.	As far as relationship between masculinity vs feminism and environment disclosure is concerned, the results of this research are in line with the findings of Pucheta-Martínez and Gallego-Álvarez (2020). However while the relationship is found to be positive in this research Pucheta-Martínez and Gallego-Álvarez (2020) found a negative relationship.
5	MAS → Social_D H3c	0.000	-0.122	Supported	MAS is negatively and statistically significantly related to Social_D.	The results of this research found resonance in the findings of the research conducted by Halkos and Skouloudis (2017) and Disli et al. (2016) who found negative relationship between masculinity and social disclosure. Most researchers widely accept this phenomenon.
6	MAS → GOV_D H4c	0.886	0.002	Rejected	MAS is not statistically significantly related to GOV_D.	While the results of this research did not find any relationship between masculinity vs feminism and governance, the results obtained by Gallén and Peraita (2018) found a negative relationship between masculinity and governance disclosure. This result has produced contradictory results when compared to the outcomes the research conducted by Gallén and Carlos Peraita (2018).
7	UA → Env_D H2d	0.000	0.149	Supported	UA is positively and statistically significantly related to Env_D.	This research showed that there is a relationship between uncertainty avoidance and environmental disclosure which is similar to the findings of Vachon (2010). However while in this research the

						relationship was found to be positive Vachon (2010) found a negative relationship between uncertainty avoidance and environment disclosures.
8	UA → Social_D H3d	0.000	-0.079	Supported	UA is negatively and statistically significantly related to Social_D.	The results of this research although find resonance in the extant literature, the nature of the relationship when compared with the current results available in the literature show mixed conclusions. While Halkos and Skouloudis (2017) and Garcia-Sanchez et al., (2016) found negative relationship between uncertainty avoidance and social disclosure, Disli et al., (2016) and Thanetsunthorn (2015) found a positive relationship between the two variables. Thus this research outcomes are seen to align with the results obtained by Halkos and Skouloudis (2017) and Garcia-Sanchez et al., (2016).
And 9	UA → GOV_D H4d	0.000	-0.119	Supported	UA is negatively and statistically significantly related to GOV_D.	The results of the research show that uncertainty avoidance is negatively linked to governance disclosure a finding that is in agreement with the findings of Halkos and Skouloudis (2017) but differing with the findings of Barile et al. (2019) who found a positive relationship. This shows that the influence of uncertainty avoidance on governance disclosure is ambiguous.
10	LOR → Env_D H2e	0.02	0.06	Supported	LOR is positively and statistically significantly related to Env_D.	The result of this research showed that there is a relationship between long term orientation vs short term orientation and environmental disclosure which is positive. However, Pucheta-Martínez and Gallego-Álvarez (2020) found a negative relationship. This implies that long term orientation is statistically significantly related to environment disclosure in this research, in the research outcomes generated by Pucheta-Martínez and Gallego-Álvarez (2020) shows that short term orientation is statistically significantly related to environment disclosure.
11	LOR → Social_D H3e	0.000	-0.08	Supported	LOR is negatively and statistically significantly related to Social_D.	While the results of this research point out that the long term orientation is negatively related to social disclosures, literature is indicating mixed results. For instance, Garcia-Sanchez et al. (2016) found positive relationship between long term orientation while Gallén and Peraita (2018) reported negative relationship. Thus this research aligns with the arguments of María et al. (2018).
12	LOR → GOV_D H4e	0.000	-0.151	Supported	LOR is negatively and statistically significantly related to GOV_D.	The results of the research show that

Table 6. 4, Results of the analysis of relationships subjected to linear regression

The results can be presented in the form of a matrix for easy understanding on how the cultural factors described in Hofstede sense influence the sustainability factors namely environmental, social and governance disclosures.

Independent variables / Dependent variable	Power distance		Individualism vs Collectivism		Masculinity vs Feminism		Uncertainty avoidance		Long term vs Short term orientation		Indulgence vs Restraint	
	Low	High	Individualism	Collectivism	Masculinity	Feminism	Low	High	Long term	Short term	Indulgence	Restraint
Environment disclosure level (low)	X	-	-	-	-	X	X	-	-	X	-	-
Environment disclosure level (high)	-	X	-	-	X	-	-	X	X	-	-	-
Social disclosure level (low)	-	-	-	-	X	-	-	X	X	-	-	-
Social disclosure level (high)	-	-	-	-	-	X	X	-	-	X	-	-
Governance disclosure (low)	-	X	-	-	X	-	-	X	X	-	-	-
Governance disclosure (high)	X	-	-	-	-	X	X	-	-	X	-	-

Table 6. 5,Matrix indicating the combination of cultural factors that influence environment, social and governance disclosures. 'X' indicates influence of cultural factors on sustainability factors while '-' indicates no result or no influence.

From table 6.5 the following inferences can be made. Individualism vs collectivism and indulgence vs restraint as cultural factors do not affect environmental, social and governance disclosures. The reason could be that in all nations ESG disclosures may or may not be made regardless of the cultural score assigned to individualism vs collectivism and indulgence vs restraint in Hofstede sense. Whether the other cultural aspects namely power distance, masculinity vs feminism, uncertainty avoidance and indulgence vs restraint had any effect on the relationship between individualism vs collectivism and indulgence vs restraint is not easy to say. However scrutinizing it can be seen that while power distance does not affect social disclosure, the other factors namely masculinity, feminism, uncertainty avoidance (low and high) and long term and short term orientation are seen to affect ESG disclosures one way or the other. This implies that only masculinity vs feminism, uncertainty avoidance (low and high) and long term vs short term

orientation matter with regard to the ESG disclosures. Three inferences could be made at this point. One is that cultural factors randomly affect the ESG disclosures without having any bearing on each other. For example, Pucheta-Martínez and Gallego-Álvarez (2020) through their research found that power distance does not affect ESG disclosure while other cultural factors affect ESG disclosure randomly. Pucheta-Martínez and Gallego-Álvarez (2020) further conclude that cultural factors as independent variables do not impact the way the ESG disclosure is measured and claim that their research outcomes prove that claims made in the past research regarding the specific behaviour of the relationships between cultural factors and ESG disclosure are disproved. However, this is contradicted by Hawn and Burbano (2018) who argued that national culture impacts the degree of ESG around the globe and this relationship between the national culture and ESG disclosure is moderated by a number of factors including extent of globalization of a country, industry sector in which an organization operates, type of the organization and the nationality of the board of directors. These contradictions lead to conclusions that could not be generalized. Pérez-Cornejo et al. (2021) found that power distance, individualism vs collectivism, masculinity vs feminism and uncertainty avoidance influence on environmental, social and governance disclosures but did not consider it necessary to include long term vs short term orientation and indulgence as important.

Another inference could be that there possibly are control variables that could be acting on the relationship between the Hofstede cultural factors and ESG disclosures that may need to be investigated. For instance, the research outcomes produced by Dangelico et al. (2020) showed that social economic factors including education, per capita income and population could act as mediating variables in understanding the relationship between national culture and environmental performance. Hur and Kim (2017) found that motivational attributions act as mediators in the

relationship between culture and CSR initiatives which could include ESG disclosures. Adedeji et al. (2017) tested the mediating role of intellectual capital in the relationship between national cultural factors defined by Hofstede and sustainability disclosure These arguments again point out the variations found in the literature with regard to the interventions that could affect the conceptualization of the relationship between national culture and ESG disclosure.

A third reason could be that the cultural factors may not act as independent variables influencing ESG but could act as moderators of relationships where ESG disclosures are dependent variables and are driven by different determinants. For instance, Khlif et al. (2015) tested the national culture as a moderator of the relationship between corporate profitability and corporate social and environmental disclosure. Thus, it can be seen that the influence of national culture on ESG disclosure has been conceptualized in different ways in the literature and it is possible to conclusively conceptualize the influence of national cultural factors in Hofstede sense on ESG disclosure. In this situation the results of this research are aligned with those of Pérez-Cornejo et al. (2021) and argues that the impact of the national culture on ESG disclosure needs to be predicted specific to context and results need to be interpreted with caution. Accordingly, the results of this research could be interpreted in a way that the relationship between national culture and ESG disclosure may not be homogenous across countries and may depend on the different components of the culture. In addition, it can be argued that national culture could be more important at the organizational level rather than country level in which case the demands of the business sector, stakeholders, the environment (example legal environment), social fabric and governance aspects may need to be investigated to gain a better understanding of the impact of the national culture or organizational culture on the disclosure. From the foregoing discussions and

the tabulated results, it is possible to conclude on the validity of the hypotheses which are tabulated in table 6.6, Further to this discussion, the next section dwells on the relationship between ESG disclosures and IR adoption.

Hypothesis	Statement of hypotheses	Hypothesis supported/rejected
H2a	There is a statistically significant relationship between power distance in Hofstede sense of companies located in different countries and environmental disclosure	Supported
H3a	There is a statistically significant relationship between Power distance in Hofstede sense of companies located in different countries and social disclosure	Rejected
H4a	There is a statistically significant relationship between Power distance in Hofstede sense of companies located in different countries and governance disclosure	Supported
H2b	There is a statistically significant relationship between individualism in Hofstede sense of companies located in different countries and environmental disclosure	Rejected
H3b	There is a statistically significant relationship between individualism in Hofstede sense of companies located in different countries and social disclosure	Rejected
H4b	There is a statistically significant relationship between individualism in Hofstede sense of companies located in different countries and governance disclosure.	Rejected
H2c	There is a statistically significant relationship between masculinity in Hofstede sense of companies located in different countries and environmental disclosure	Supported
H3c	There is a statistically significant relationship between masculinity in Hofstede sense of companies located in different countries and social disclosure.	Supported
H4c	There is a statistically significant relationship between masculinity in Hofstede sense of companies located in different countries and governance disclosure.	Rejected
H2d	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and environmental disclosure	Supported
H3d	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and social disclosure	Supported
H4d	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and governance disclosure.	Supported

H2e	There is a statistically significant relationship between long term orientation in Hofstede sense of companies located in different countries and environmental disclosure.	Supported
H3e	There is a statistically significant relationship between uncertainty avoidance in Hofstede sense of companies located in different countries and governance disclosure.	Supported
H4e	There is a statistically significant relationship between long term orientation in Hofstede sense of companies located in different countries and governance disclosure	Supported
H2f	There is a statistically significant relationship between indulgence in Hofstede sense of companies located in different countries and environmental disclosure.	Rejected
H3f	There is a statistically significant relationship between indulgence in Hofstede sense of companies located in different countries and governance disclosure	Rejected
H4f	There is a statistically significant relationship between indulgence in Hofstede sense of companies located in different countries and governance disclosure	Rejected

Table 6. 6, List of hypotheses supported and rejected concerning the relationship between national culture and ESG disclosure.

Discussion on the relationship between ESG disclosures and IR adoption

The results of the logistic regression and the association between the variables ESG and IR adoption have been tabulated in a simple form in table 6.7

Independent variables / Dependent variable	Environment		Social		Governance	
	Low	High	Low	High	Low	High
Probability of IR adoption (high)		x	x		-	-
Probability of IR adoption (Low)	x			x	-	-

Table 6. 7,Association between ESG variables and IR adoption (based on the results derived in section 6.2)

The results show that there is a statistically significant and positive association between level of environment disclosure and probability of IR adoption and indicates that when environment disclosure is high, IR adoption is likely to be high and vice-versa. As far as social disclosures are

concerned it is seen that there is a negative association between level social disclosures and probability of IR adoption indicating that when social disclosures are high, IR adoption could be low and vice versa. There is no significant relationship between level of governance disclosure and probability of IR adoption. These aspects are discussed in detail next.

6.3.1 The relationship between environmental disclosure (coded as ENVSORT10) and IR adoption

The results of the logistic regression in terms of the probability of the companies falling into the group of IR adoption (coded 1) are reproduced below (table 6.8)

ODDS = $e^{(k+[\beta_7(ENVSORT10)]}$
When ENVSORT10= 0 (indicates firms below the mean level of environment disclosure)
Then ODDS = $e^{(-2.326)}$ = 0.098.

When ENVSORT10 = 1 (indicates firms above the mean level of environment disclosure)
Then ODDS = $e^{(-1.502)}$ = 0.223.

Probability of IR adoption = [ODD/(1+ODD)]

When ENVSORT10 =1 (indicates firms above the mean level of environment disclosure):

Probability of IR adoption = [(0.223)/1.223] = 0.123 (less than 0.5) = 12.3%.
So according to the model the probability of IR adoption is still low in companies having high level of environmental disclosure.
Probability of non-adoption of IR = 1-0.123 = 0.877
Odds = 0.877/0.123 = 7.13

When ENVSORT10 =0 (indicates firms below the mean level of environment disclosure):
Probability of IR adoption = [(0.098)/1.098] = 0.089 (less than 0.5) = 8.9%.
So according to the model the probability of IR adoption is still low in companies having low level of environmental disclosure.
Probability of non-adoption of IR = 1-0.089 = 0.911
Odds = 0.911/0.089 = 10.24.

Table 6. 8, Logistic regression results of the relationship between environmental disclosure and IR adoption

From table 6.8 it can be seen that the probability of IR adoption is low when the environmental disclosure is low and high when the environmental disclosure is high. The interpretation is that where a firm deicide to disclose its environment performance, in that firm the influence of

environmental disclosure on IR adoption will be high. Such firms would like to show transparency. However, where a firm decides to limit the environment disclosure, in that firm there could be a lower probability of IR adoption. For instance, a firm that is involved in manufacturing automobiles can cause environment pollution and the lack of attention paid to environmental aspects may discourage the firm to decide against adopting IR (IIRC, 2021). However, a firm like the ones involved in electronics sector may not only pollute the environment but also report their contribution to sustainability and hence IR adoption (IIRC, 2021). This result is perhaps straightforward. Considering the fact that investors and stakeholders these days are particularly concerned about climate change and green environment, higher the environment disclosure more likely is the encouragement a firm derives and adopts IR. Similar results are echoed by other researchers (Raimo et al., 2021; Gerged, 2021; Trireksani & Djajadikerta, 2016) who found a positive relationship between board related aspects (e.g. board size) and IR. However, Oprean-Stan et al. (2020) found a negative relationship between sustainability disclosure and financial performance and reporting. These arguments show that there is no consensus on the influence of environmental disclosures on reporting decisions of firms. The outcomes of this research are in line with the ones attained by researchers like Raimo et al. (2021) and Gerged (2021). Thus, the hypothesis H5 has been supported which says that there is a positive association between the level of environmental disclosure of companies located countries with varying culture in Hofstede sense and IR adoption.

Although this research has contributed in confirming the earlier results achieved by Raimo et al. (2021) and others, alongside an important concept has been tested and confirmed which is the mediating role played by the level environment disclosures made by a company between the

independent variables pertaining to national culture and probability of IR adoption. This is demonstrated next.

It can be seen from the foregoing discussions that while environmental disclosure influences the probability of IR adoption, at the same time, when the influence of cultural factors on environmental disclosure is taken into account alongside, then it is possible that a linkage namely cultural factors → environmental disclosure → probability of IR adoption can be thought of. This brings in to focus the mediating role played by environmental disclosure in predicting the probability of IR adoption using the cultural factors, an idea that has been neglected by the researcher. In facilitating such a discussion, the results that have been derived from the data analysis provided in chapter 5 and tables 6.5 and 6.7 have been used.

Mediating role of environment disclosure in the relationship between national culture and IR adoption

It is seen from tables 6.5 that individualism vs collectivism and indulgence vs restraint do not have any statistically significant relationship with environment disclosure. This implies that only power distance, masculinity vs feminism, the long-term vs short term orientation and uncertainty avoidance are expected to have any relationship with IR adoption that is mediated by environment disclosure.

Power distance-environment disclosure-IR adoption

From table 6.5 it is seen that low power distance leads to high environment disclosures [PD (low) → ENVSORT10 (low)] and from table 6.7 it can be seen that high-level environmental disclosure leads to high probability of IR adoption [ENVSORT10 (high) → IR adoption (high probability)].

Thus, it is possible to combine the two arguments to derive the relationship PD (low) → ENVSORT10 (low) → IR adoption (low probability). As a corollary it can be stated that PD (high) → ENVSORT10 (high) → IR adoption (high probability) (see tables 6.5 and 6.7). Thus, environment disclosure is seen to mediate between power distance and probability of IR adoption. That is to say power distance indirectly influences probability of IR adoption in the positive direction. It can be seen here that environmental disclosure interacts positively with both constructs namely power distance and probability of IR adoption. This result is contradictory to the one obtained by analysing the direct relationship between uncertainty avoidance and probability of IR adoption (table 6.2) which indicated inverse relationship between the two constructs. This is a new finding and similar findings have not been found in the extant literature. This result implies that while culture in a country cannot be changed, what can be done is to make the environment disclosures mandatory but leave the option to include or not include the environment disclosure in IR as voluntary. This would encourage companies to adopt IR. The axiom that could be derived is that if environment disclosure is made mandatory then regardless of power distance levels, environment performance would be disclosed by a firm and including the results in IR if made voluntary, regardless of whether IR is mandatory or not companies will not hesitate to report and adopt IR. Adhering to environment disclosure rules by companies in different countries is commonly found. Similar findings have not been reported by other researchers. Other researchers have not used any mediators in the relationship between power distance and IR adoption due perhaps to the complexity involved in analysing the relationships using multivariate and logistic regression. The results imply the following:

1. Cultural aspects with regard to power distance cannot be changed if Hofstede scores are taken into consideration and hence making IR adoption mandatory and implementation uniformly in different cultures could be difficult.
2. In such a situation it is advisable to keep power distance as constant and change the environmental disclosure or IR adoption in firms.
3. Further it is wiser to mandate the firms to disclose the environmental results in place of compelling the industry to adopt IR.
4. The possibilities of controlling environment disclosure and hence IR adoption become simpler by making IR adoption voluntary.

The results of this research have provided an alternative view of the influence of power distance on IR adoption through the mediation of environmental disclosure. This is an expansion of the research concepts used by García-Sánchez et al. (2013) and Vaz et al. (2016) and is a new discovery. The findings of this research provide knowledge on how to predict the probability of IR adoption depending on the cultural aspects concerning various nations measured using Hofstede scores.

Uncertainty avoidance-environment disclosure-IR adoption

From the results of the table 6.5 and 6.7 it can be seen that there is a direct and positive relationship between uncertainty avoidance and environment disclosure [UA (high) → ENVSORT10 (high)] on the one hand and between environment disclosure and IR adoption [ENVSORT10 (high) → IR adoption (high probability)] on the other. Thus, it is possible to combine the two arguments to derive the relationship UA (high) → ENVSORT10 (high) → IR adoption (high probability). As a

corollary it can be stated that UA (low) → ENVSORT10 (low) → IR adoption (low probability) (see tables 6.5 and 6.7). Thus, it can be seen that environment disclosure mediates between uncertainty avoidance and IR adoption. That is to say uncertainty avoidance indirectly influences probability of IR adoption in the positive direction. It can be seen here that environmental disclosure interacts positively with both constructs namely uncertain avoidance and probability of IR adoption. This result is contradictory to the results obtained through the analysis of the direct relationship between uncertain avoidance and probability of IR adoption which shows that there is an inverse relationship between the two constructs (table 6.2).

Whether this really happens can be explained by a hypothetical situation. For instance, a company in the paint industry in which the likelihood of polluting the environment through effluents is high, that company may have to adhere to stringent environment laws which the company may or may not find it easy to adhere. In such situation there could be uncertain situations the company may face that could even lead to closure of the company. In such a situation if a company takes actions to eliminate the uncertainty by working towards strict adherence to the laws, then the company could decide to disclose its environmental performance. Once this is aspect is clear then the next aspect of adoption of IR should be an easy choice. That is to say once the uncertainty is avoided, the company can be encouraged to look into the possibility of adopting IR through integrated thinking as investors and stakeholders will have a transparent view of the reporting intentions of the company. This could greatly benefit the company.

However, in a different situation, where the company has already decided to adopt IR but finds itself in difficulty due to poor environmental performance, in such a situation the company has to

make a decision to choose between voluntary disclosure or non-disclosure of the poor environmental performance. In this situation if the company reveals the actual situation through IR, then the company may suffer due to lack of competitive advantage and could directly help competitors to use the information against the company. This may also attract adverse reactions amongst stakeholders that could harm the company. The company will be faced with a difficult and uncertain situation. In this case if the culture of the company is characterized by high uncertainty avoidance, then the company will find ways to overcome the uncertain situation and adopt IR adoption through environment disclosure by promising the stakeholders that the situation will be rectified in future. On the other hand, where the company is characterized by low uncertainty avoidance, then most likely the company will decide against environment disclosure and non-adoption of IR. In such a difficult situation it may not be possible to enforce IR adoption as the very existence of the company will be in question. The findings of this research provide some answers to these tricky situations.

If the hypothetical company boldly adopts IR through environment disclosure, then the company could add value to its performance through integrated thinking by explaining its performance through the environment disclosure and IR. If the environment performance is high and uncertainty avoidance is high then it can provide its vision or strategy on how it will continue to maintain the performance. On the other hand, if the environment performance is high and uncertainty avoidance is low then it can lead the company to land into difficult situation. However, the results of this research do not show the occurrence of such an anomalous situation as a high environmental performance indicates a high uncertainty avoidance character. Then, whether there will be a situation where the environment performance of the hypothetical company is low and uncertainty

avoidance is high leading to IR adoption is difficult to say. The results of this research do not subscribe to this situation. But if it exists then there is a possibility of a negative relationship between uncertainty avoidance and IR adoption. This scenario is not explained by this research. Most of the researchers have found that uncertainty avoidance is directly and positively linked to both environment disclosure (Scholtens and Dam, 2007) and IR adoption. The current research outcomes published in the extant literature do not indicate the possibility of this anomalous situation. Nevertheless, such situation can lead to ambiguity in enforcing IR adoption.

Finally, in a situation where the uncertainty avoidance is low, the hypothetical company if it has difficulty in dealing with the problem of poor environment performance then the possibility of the environment disclosure and hence IR adoption will be low. There is a need to focus on these situations as if these situations are not addressed then the harm to environment could be higher and lack of integrated thinking could lead to overlooking the problem rather than addressing it. This research has brought out this important finding which according to the researcher is an area not addressed in the IR adoption literature until now. Thus, the mediating role of environment disclosure gives an opportunity to both the company and the stakeholders to support the company to adhere to avoid uncertainties and deliver better performance. This mediating role of environment disclosure thus offers the company one extra step to avoid uncertainties and report its performance using IR. Literature shows that companies adopting IR and environment disclosure have better stakeholder and investor recognition. Finally, the results of this research clearly show that it is possible to predict the a probability of IR adoption depending the cultural scores in Hofstede sense calculated for different countries.

Masculinity vs feminism - environment disclosure-IR adoption

From the results of the table 6.5 and 6.7 it can be seen that there is a direct and positive relationship between uncertainty avoidance and environment disclosure [Mas (0) (masculinity) → ENVSORT10 (high)] on the one hand and between environment disclosure and IR adoption [ENVSORT10 (high) → IR adoption (high probability)] on the other. Thus, it is possible to combine the two arguments to derive the relationship Mas (0) (masculinity) → ENVSORT10 (high) → IR adoption (high probability). As a corollary it can be stated that Mas (1) (feminism) → ENVSORT10 (low) → IR adoption (low probability) (see tables 6.5 and 6.7). Thus, environment disclosure is seen to mediate between masculinity, feminism and probability of IR adoption. That is to say masculinity indirectly influences probability of IR adoption in the positive direction whereas feminism influences probability of IR adoption indirectly but in the negative direction. It can be seen here that environmental disclosure interacts positively with both constructs namely masculinity and probability of IR adoption whereas it interacts negatively with feminism and probability of IR adoption.

An important revelation that can be made here is that this result of indirect influence of masculinity vs feminism on probability of IR adoption is contradictory to the results obtained in this research while analysing the direct relationship between masculinity vs feminism and probability of IR adoption reported in section 5.3.3 which shows insignificant relationship between the two constructs. A possible explanation for this contradiction could be that societies characterized masculinity vs feminism may have varying understanding and reporting of the individual components of IR in comparison to the wholistic concept of IR which could have been perceived to be complex. When the individual components of IR are considered then the impact of masculinity vs feminism on probability of IR adoption could provide a better picture of the way

people perceive what IR would be. This is only possible if integrated thinking is introduced in firms which will enable how different cultures respond to individual components of IR

The concept of integrated thinking could prevail because of better understanding of the benefits of disclosing performance in a detailed manner component wise. The example of environmental disclosure which is a component of IR adoption provides evidence of such a happening. In this example it can be seen that when masculinity vs feminism was considered as a cultural aspect affecting environmental disclosure, there is a possibility that the organization could adopt IR. Mediation by environment removes the insignificance found in the direct relationship between the specific cultural construct masculinity vs feminism and IR adoption. This is new knowledge not found in the extant literature.

This way it is possible to predict the influence of the cultural factor masculinity vs feminism in organisations located in different countries having different Hofstede scores and improve the number of firms adopting IR. This is a new finding and similar findings have not been found in the extant literature. This result implies that masculinity leads to higher probability of IR adoption while feminism could lead to lower probability of adoption of IR. That is to say that companies located in countries where masculinity culture is dominant, level of environment disclosure will be high and therefore probability of including environmental disclosure in the IR will be high. While the societal characteristic of masculinity or feminism cannot be changed, what can be inferred is that in societies where masculinity is dominant, IR environmental disclosures and IR adoption if mandated, then it is highly probable that IR is adopted at the corporate level. This finding is in line with the findings of Gray and Vint (1995) The reason for this could be that masculine societies are associated with competitive environments (Hofstede, 2011) and if one firm

adopts IR then others could also show similar tendencies. However, this finding is contrary to the findings of majority of the researchers (Sannino et al., 2020; Gallén & Peraita 2018; Gallego-Álvarez and Ortas 2017; Disli et al. 2016) who opine that masculinity is negatively related to environmental performance. This is echoed by Batistella et al., (2020) who argue that feministic societies are more involved in corporate social responsibility, transparency and upholding the strength of institutions, society and people. In such feministic societies people are appreciative of responsible actions (Hofstede, 2011). Although the outcome of this research has brought out contradictory findings, the results could be interpreted in a way that masculine societies could be showing some change in being competitive but at the same time responsible. In such situations mandating environmental disclosure could lead to an automatic inclusion of environmental performance in the IR opening up the possibility of mandating IR adoption. This also points towards the possibility of the cultural factor masculinity vs feminism not being significant in mandating IR adoption. This is a new revelation that has been brought out by this research. Similar outcomes of mediation of environmental disclosure successfully mediating between masculinity and high probability of adoption are not found in the literature.

Long term vs short term orientation - environment disclosure-IR adoption

From the results of the table 6.5 and 6.7 it can be seen that there is a direct and positive relationship between uncertainty avoidance and environment disclosure [LOR (1) → ENVSORT10 (high)] on the one hand and between environment disclosure and IR adoption [ENVSORT10 (high) → IR adoption (high probability)] on the other. Thus, it is possible to combine the two arguments to derive the relationship LOR (1) (long term orientation) → ENVSORT10 (high) → IR adoption (high probability). As a corollary it can be stated that LOR (0) (short term orientation →

ENVSORT10 (low) → IR adoption (low probability) (see tables 6.5 and 6.7). Results clearly indicate the environmental disclosure mediates between long term orientation and high probability of IR adoption. That is to say long term orientation influences probability of IR adoption indirectly but positively while short term orientation influences probability of IR adoption indirectly but negatively. It can be seen here that environmental disclosure interacts positively with both constructs namely long-term orientation and probability of IR adoption whereas it interacts negatively with short term orientation and probability of IR adoption.

An important revelation that can be made here is that this result of indirect influence of long term or short-term orientation on probability of IR adoption is contradictory to the results obtained while analysing the directly relationship between long term vs short term orientation and probability of IR adoption reported in section 2.4.4 which shows insignificant relationship between the two constructs. A possible explanation for this contradiction could be that long term orientation to report individual components of IR could provide a better understanding of IR caused by integrated thinking. The concept of integrated thinking could prevail because of better understanding of the benefits of disclosing performance in the long term rather than a short term caused by the possible pressure some stakeholders may bring on the firms based on the cultural attributes of a particular society. Using this finding it is possible to predict the influence of long-term orientation vs short term orientation on the probability of IR adoption and improve the number of firms adopting IR.

Literature shows that similar results are reported other researchers (Flammer & Bansal, 2017, Dal Maso et al., 2017; Once et al. 2014 and Orij, 2010). This implies that in societies where people, particularly stakeholders, are interested in long term accounting, short term accounting process

may not be accepted due to the possibility of future results getting impaired (Flammer & Bansal, 2017, Dal Maso et al., 2017 and Orij, 2010). However, the results of this research regarding the direct and positive relationship between long term orientation and environmental disclosure is contradicted by Pucheta-Martínez and Gallego-Álvarez (2020) who found a negative relationship between long term orientation and environmental disclosure. These contradictory results lead to difficulties in generalizing the outcomes. However, as far as the focus of this research is concerned, it can be seen that the mediating effect of environmental disclosure between long term orientation and high probability of IR adoption is a new finding and implies that this cultural factor is unlikely to hinder the mandating of IR adoption.

6.3.2 The relationship between social disclosure and IR adoption

The results of the logistic regression in terms of the probability of the companies falling into the group of IR adoption (coded 1) are reproduced below (table 6.9):

Ln(Odds)= k +[β_8(SOCIALSORT10)]
Ln(Odds)= [-1.485+[-0.818] (SOCIALSORT10)]
When INDG = 0: Ln(Odds)= [-1.485+[-0.818] (0)] = -1.485.
When INDG = 1: Ln(Odds)= [-1.485+[-0.818] (1)]= = -2.303.

ODDS = $e^{(k +[\beta_8(SOCIALSORT10)]}$
When SOCIALSORT10= 0
Then ODDS = $e^{(-1.485)}$ = 0.227.

When SOCIALSORT10 = 1
Then ODDS = $e^{(-2.303)}$ = 0.1.

Probability of IR adoption = [ODD/(1+ODD)]
Higher SOCIALSORT10 (1):
Probability of IR adoption = [(0.1)/1.1] = 0.091 (less than 0.5) = 9.1%.
So according to the model the probability of IR adoption is still low in companies having high level of social disclosure.
Probability of non-adoption of IR = 1-0.091 = 0.909
Odds = 0.909/0.091 = 9.99
Lower SOCIALSORT10 (0):
Probability of IR adoption = [(0.227)/1.227] = 0.185 (less than 0.5) = 18.5%.
So according to the model the probability of IR adoption is still low in companies having low level of social disclosure.
Probability of non-adoption of IR = 1-0.185 = 0.815
Odds = 0.815/0.185 = 4.405.

Table 6. 9, Logistic regression results of the relationship between social disclosure and IR adoption

From table 6.9 it can be seen that social disclosure is high (SOCIALSORT10 (1)) the probability of IR adoption is low (IR adoption low) and when the social disclosure is low (SOCIALSORT10 (0)) the probability of IR adoption is high. Similar results have been reported by Cho et al. (2012), Stocken (2000) and Leuz (1999) who found that low performance can lead to greater disclosure in various circumstances. Most of the findings reported in the literature shows that when social disclosure is high (SOCIALSORT10 (1)) the probability of IR adoption should be high (IR adoption high). For instance, results reported by Bernardi et al, (2018) showed that environmental, social and governance disclosures can determine the effectiveness of IR. Similarly, Gallardo-Vázquez et al., (2019) reported that relationship between social disclosure and IR reporting is not statistically significant. Nguyen (2019) claimed that the CSR performance may affect CSR disclosure positively or negatively. These arguments show that there is no consensus amongst researcher on the exact nature of the relationship between social disclosure and IR reporting. As far as the negative relationship obtained between social disclosure and IR reporting, it is possible to argue that organisations that achieve low social performance may tend to voluntarily disclose their performance in order to avoid a backlash from the social and political practice assuming that such disclosures could improve the perception about the company and its performance amongst the stakeholders (Nguyen, 2019). While the result achieved in this research that shows a negative relationship between social disclosure and IR reporting confirms the results of those researchers like Nguyen (2019), at the same time it is necessary to mention here that based on the results of this research it can be said that social disclosure needs to be made mandatory. This in turn will be reflected as part of the IR, be it mandatory or voluntary. Thus, it can be seen that the results of this research do not support hypothesis H6 which states that "there is a positive association between

the level of social disclosure of companies located countries with varying culture in Hofstede sense and IR adoption".

It can be seen from the foregoing discussions that while social disclosure influences the probability of IR adoption, at the same time, when the influence of cultural factors on social disclosure is taken in to account alongside, then it is possible that a linkage namely cultural factors → social disclosure → probability of IR adoption can thought. This brings in to focus the mediating role played by social disclosure in predicting the probability of IR adoption using the cultural factors, an idea that has been neglected by the researcher. In facilitating such a discussion, the results that have been derived from the data analysis provided in chapter 5 and tables 6.5 and 6.7 have been used.

Mediating role of social disclosure in the relationship between national culture and IR adoption

It can be seen that only three cultural factors in Hofstede sense were found to support this mediation namely masculinity vs feminism, uncertainty avoidance and long-term vs short term orientation. Power distance, individualism vs collectivism and indulgence were not found to be statistically significantly related to social disclosure (table 6.9). Thus, the mediating role of social disclosure with regard to the relationship between each one of those three cultural factors and probability of IR adoption are discussed next.

Masculinity vs feminism - social disclosure-IR adoption

From the results of the table 6.5 and 6.7 it can be seen that there is a direct and positive relationship between masculinity vs feminism and social disclosure [Mas (1) (masculinity) → SOCIALSORT10 (low)] on the one hand and between social disclosure and IR adoption

[SOCIALSORT10 (low) → IR adoption (high probability)] on the other. Thus it is possible to combine the two arguments to derive the relationship Mas (1) (masculinity) → SOCIALSORT10 (low) → IR adoption (high probability). As a corollary it can be stated that Mas (0) (feminism) → SOCIALSORT10 (high) → IR adoption (low probability) (see tables 6.5and 6.7). Results clearly indicate the social disclosure mediates between masculinity and high probability of IR adoption. That is to say masculinity influences probability of IR adoption indirectly but positively while feminism influences probability of IR adoption indirectly but negatively through social disclosure which interacts negatively with both masculinity vs feminism and probability of IR adoption. The results of the indirect influence of masculinity vs feminism when compared to the results achieved through the analysis of the direct relationship between masculinity vs feminism and probability of IR adoption in this research in section 6.1 shows contradictory results. That is to say that in section 6.2 it was found that the construct masculinity vs feminism did not have statistically significant relationship with probability of IR adoption while in this section it can be seen that there is an indirect but positive relationship with the probability IR adoption. This provides an opportunity for the practitioners to predict the influence of masculinity vs feminism on the probability of IR adoption. This is an important finding of this research and it appears that this aspect is not investigated by other researchers in the field IR adoption.

A possible explanation for this result could be that the influence of masculinity or feminism as a cultural construct pertaining to different nations and firms could be the fact that firms gain a better understanding of the need to report their performance if such a reporting is linked to the individual components of IR. This implies that gaining greater knowledge about the masculinity vs feminism and their influence on the reporting behaviour of people with regard to individual components of

IR in different firms located in different countries with varying cultural attributes in Hofstede sense can help inculcate integrated thinking. This in turn could clearly indicate the value created by such a thought process to the individual firms leading to adoption of IR voluntarily. Thus the findings of this research provide a basis to predict the influence of masculinity vs feminism on probability of IR adoption. As far as the findings of this research with regard to the relationship between masculinity and feminism are concerned, it can be seen that there are no research findings in the relevant literature that have identified a possible intervention by a component like social disclosure that is part of IR in the relationship between masculinity vs feminism and probability of IR adoption. Most of the findings in the literature (Halkos & Skouloudis, 2017; Disli et al, 2016) with the exception of Gray and Vint (1995) show a direct but negative relationship between masculinity vs femininity and social or environmental disclosure. However, introducing an intervention in the relationship between masculinity vs femininity and probability of IR has shown a reversing of the negative relationship between the two constructs. The reversal can be explained in a way that masculinity is usually characterized by masculine values, such as ambition, competition, power, materialism, personal career, and orientation toward achievement (Dangelico et al, 2020). Batistella et al. (2021) argue that masculinity may indicate responsible disclosures about social performance to stakeholders. This implies that masculinity could be characterized by lower level social disclosure. However, masculinity can some time also be characterized by transparency of business information and hence responsible disclosures about social performance. This implies while a direct relationship between masculinity and probability of adoption can show a negative relationship between masculine culture and probability of IR adoption, when an intervention is introduced then a two step disclosure takes place which could then reverse the negative influence of masculinity on social disclosures in IR. This is a new finding.

Uncertainty avoidance-social disclosure-IR adoption

From the results of the table 6.5 and 6.7 it can be seen that there is a direct and negative relationship between uncertainty avoidance and social disclosure [UA (1) (high) → SOCIALSORT10 (low)] on the one hand and between social disclosure and IR adoption [SOCIALSORT10 (low) → IR adoption (high probability)] on the other. Thus, it is possible to combine the two arguments to derive the relationship UA (1) (high) → SOCIALSORT10 (low) → IR adoption (high probability). As a corollary it can be stated that UA (0) (low) → SOCIALSORT10 (high) → IR adoption (low probability) (see tables 6.5 and 6.7).

Results clearly indicate the social disclosure mediates between high uncertainty avoidance and high probability of IR adoption. That is to say uncertainty avoidance influences probability of IR adoption indirectly but positively whereas social disclosure interacts negatively with both uncertainty avoidance and probability of IR adoption. The results of the indirect influence of uncertainty avoidance on probability of IR adoption when compared to the results achieved through the analysis of the direct relationship between uncertainty avoidance and probability of IR adoption in this research in section 6.1 shows contradictory results. That is to say that in section 6.1it was found that the construct uncertainty avoidance had a direct but inverse relationship with probability of IR adoption while in this section it can be seen that there is an indirect but positive relationship with the probability IR adoption. This provides an opportunity for the practitioners to predict the influence of uncertainty avoidance on the probability of IR adoption. This is an important finding of this research and it appears that this aspect is not investigated by other researchers in the field IR adoption.

The above result can be interpreted in a way that uncertainty avoidance as a cultural construct pertaining to different nations and firms could provide a better understanding of the need to report their performance if such reporting is linked to the individual components of IR like social disclosure. This implies that gaining greater knowledge about the uncertainty avoidance and its influence on the reporting behaviour of people in organisations with regard to individual components of IR located in different countries with varying cultural attributes in Hofstede sense can help inculcate integrated thinking. The mediating effect of social disclosure provides an opportunity to buffer the impact of high or low uncertainty avoidance on probability of IR adoption. While the mediating role of social disclosure appears to have been seldom discussed in the literature, the relationship between uncertainty avoidance and social disclosure on the one hand and social disclosure and probability of IR adoption find resonance in the literature. There are conflicting results that have been found in the literature with regard to the two relationships. The results of this research with regard to the relationship between uncertainty avoidance and social disclosure is supported by the research outcomes achieved by Thanetsunthorn (2015), Peng et al. (2014), Ho et al. (2012) and Scholtens and Dam (2007) who present evidence of a positive but direct impact of uncertainty avoidance on CSR disclosure. However, Halkos and Skouloudis (2017), García-Sánchez et al. (2016) and Vachon (2010) found evidence of a negative but direct effect of uncertainty avoidance on CSR disclosure. Although there is lack of consensus on the nature of relationship between uncertainty avoidance and social disclosure, it is found that this research aligns with the findings of Thanetsunthorn (2015), Peng et al. (2014), Ho et al. (2012) and Scholtens and Dam (2007) and confirms the positive but direct relationship between uncertainty avoidance and social disclosure.

Similarly, with regard to the relationship between social disclosure and probability of IR adoption mixed results are found in the literature. For instance, Lubis et al. (2019), Bernardi et al. (2018) and Lai et al. (2010) found a positive but direct relationship between social disclosure and IR adoption. These findings are in line with the findings of this research. However, Gallardo-Vázquez et al. (2019); Cho et al.(2012); Stocken (2000) and Leuz (1999) found a direct but negative relationship between social disclosure and IR adoption. Thus, it can be seen that introduction of an intervention (social disclosure) in the relationship between uncertainty avoidance and probability of IR adoption has the potential to reverse the nature of direct relationship between uncertainty avoidance and probability of IR adoption. This a new finding and similar findings in the literature do not seem to be reported in the literature.

A practical example of how social disclosure can mediate can be described hypothetically. For instance, one of the examples of social disclosure by Japanese companies could be the compliance with the relevant laws and regulations (Islam et al., 2014). If a company in Japan is found to violate some rule or regulation, it may be difficult for that company to disclose its lack commitment to social disclosure. In such a situation Japanese companies might resort to non-disclosure of the results or lower the level disclosure. This could be due to the very high uncertainty avoidance culture prevailing in Japan as Japan is characterized by high uncertainty avoidance (92 on Hofstede scale) characteristic. Any uncertainty in complying with the rules and regulations may therefore be reflected in lower level or non-disclosure of non-compliance. Similarly, with regard to probability of IR adoption it can seen that a non-compliance may be reported as part of integrated thinking in the IR because the company may worry about its image. This example reveals the

indirect but positive effect of uncertainty avoidance on probability of IR adoption mediated by social disclosure. Such behaviour could be aimed to satisfy the needs of stakeholders and investors.

Long term vs short term orientation-social disclosure-IR adoption

From the results of the table 6.5 and 6.7 it can be seen that there is a direct and negative relationship between long term or short term orientation and social disclosure [LOR (1) (long term orientation) → SOCIALSORT10 (low)] on the one hand and between social disclosure and IR adoption [SOCIALSORT10 (low) → IR adoption (high probability)] on the other. Thus, it is possible to combine the two arguments to derive the relationship LOR (1) (long term orientation) → SOCIALSORT10 (low) → IR adoption (high probability). As a corollary it can be stated that LOR (0) (short term orientation) → SOCIALSORT10 (high) → IR adoption (low probability) (see tables 6.5and 6.7).

Results clearly indicate the social disclosure mediates between long term orientation (short term orientation) and high (low) probability of IR adoption. That is to say long term orientation (short term orientation) influences probability of IR adoption indirectly but positively whereas social disclosure interacts negatively with both long-term orientation (short term orientation) and probability of IR adoption. The results of the indirect influence of long-term orientation (short term orientation) on probability of IR adoption when compared to the results achieved through the analysis of the direct relationship between long term orientation (short term orientation) and probability of IR adoption in this research in section 6.2 shows contradictory results. That is to say that in section 6.2 it was found that the construct long term orientation (short term orientation) had no statistically significant relationship with probability of IR adoption while in this section it can

be seen that there is an indirect but positive relationship between long term orientation (short term orientation) and the probability IR adoption. This provides an opportunity for the practitioners to predict the influence of long term orientation (short term orientation) on the probability of IR adoption. This is an important finding of this research and it appears that this aspect is not investigated by other researchers in the field IR adoption.

The above result can be interpreted in a way that long term orientation (short term orientation) as a cultural construct could provide a better understanding of its usefulness in making IR mandatory or voluntary and encourage voluntary disclosure of performance results as part of IR. This implies that gaining greater knowledge about the long-term orientation (short term orientation) and its influence on the reporting behaviour of people in organisations located in different countries with varying cultural attributes in Hofstede sense can help inculcate integrated thinking. This is possible if components of IR are made to mediate between long term orientation (short term orientation) and probability of IR adoption. Thus, the mediating effect of social disclosure as a component of IR provides an opportunity to buffer the impact of long term orientation (short term orientation) on probability of IR adoption. While the mediating role of social disclosure appears to have been seldom discussed in the literature, the relationship between long term orientation (short term orientation) and social disclosure on the one hand and social disclosure and probability of IR adoption find resonance in the literature. There are conflicting results that have been found in the literature with regard to the two relationships.

As far as the published literature concerned with the relationship between long term orientation (short term orientation) and social disclosure, it can be seen that majority of the researchers found

a positive but direct relationship between the two constructs (Halkos & Skouloudis, 2017; Garcia-Sanchez et al, 2016; Disli et al, 2016). However Gallén and Peraita (2018) found a negative relationship between long term orientation (short term orientation) and social disclosure while Orij (2010) did not provide any conclusive evidence on the nature of the relationship between the two constructs. With regard to the relationship between social disclosure and probability of IR adoption, the arguments provided in the previous section holds good which shows mixed results.

In practical terms it can be seen that long-term orientation is prevalent in Japanese society (Hofstede score of 88). This indicates that Japanese are oriented to plan over a long period of time unlike other societies for instance USA where the society is identified to be short term oriented (Hofstede score of 26). If the result of this research is applied then long term should lead to greater probability of adoption of IR which implies that probability of IR adoption is higher in Japan when compared to the other four countries being investigated in this research. Example of long-term orientation in Japan is the constantly high rate of investment in research and development even when there is recession (Hostede Insight, 2021). In contrast in the American society businessmen are seen to believe in short term orientation, for example issuance of quarterly performance reports. This contradiction makes it difficult to generalize findings of this research which shows that long term orientation (short term orientation) indirectly but positively influences IR adoption. Thus, it is possible to construe that long term orientation (short term orientation) may be difficult mandate the adoption of IR uniformly across the world. Thus, it is reasonable to infer that cultural aspects act as strong impediments to implement IR and integrated thinking uniformly across the world. IR is perhaps best left to be voluntary rather than mandatory.

Finally, from table 6.7 it can be seen that governance disclosure is not found to statistically significantly influence the probability of IR adoption. This implies that governance disclosure does mediate between the cultural factors and probability of IR adoption.

From the discussions given above, it can be seen that two interventions affect the relationship between cultural factors and probability of IR adoption. They are environmental disclosure and social disclosure. The results imply that environmental and social disclosures which are part of the IR can be used to mediate between the cultural factors and probability of IR adoption and used as a tool to encourage the firms in different countries characterized by varying cultures to adopt IR. Environmental and social disclosure are examples of contents found in IR and act as examples of such contents that form part of IR to be used as mediators. For instance, business model, strategy and risks could be used as mediators as those components are part of IR. Thus, it can be concluded that research question RQ2 has been answered.

6.4 Discussion on Question Q3

RQ3: What is the nature of the relationship between the cultural antecedents that determine IR adoption and IR adoption and the interventions that affect this relationship?

6.4.1 Nature of the relationship between antecedents of probability of IR adoption and IR adoption

Dependent variable	Independent variable (IV)	Relationship/ Hypothesis	Statistical significance of the relationship	Coefficients (β)	Results		Nature of relationship
					Probability of IR adoption high	Probability of IR adoption low	
Probability of	Power Distance (PD)	PD→IR H1a	Significant ($p<0.05$)	0.790	PD low	PD high	Direct but inverse
	Individualism (INDV)	INDV→IR H1b	Significant ($p<0.05$)	-0.790	Individualism	Collectivism	Direct and positive

IR adoption (IR)	Masculinity (MAS)	MAS→IR H1c	Not significant (p=0.129; p> 0.05)	0.400	No effect of masculinity	No effect of feminism	No relationship
	Uncertainty Avoidance	AU→IR H1d	Significant (p<0.05)	-0.790	Lower uncertainty avoidance	Higher uncertainty avoidance	Direct but inverse
	Long Term Orientation (LOR)	LOR→IR H1e	Not significant (p=0.413; p> 0.05)	0.194	No effect of long term orientation	No effect of short term orientation	No relationship
	Indulgence (INDG)	INDG→IR H1f	Significant (p<0.05) H1f	0.790	Indulgence	Restraint	Direct and positive

Table 6. 10,Nature of the relationship between antecedents of probability of IR adoption and IR adoption

From table 6.10 it can be seen that the relationships PD→IR and AU→IR are direct, inverse and statistically significant. That is to say that when there is a change in the cultural values in the positive direction, there will be change in the probability of adoption in the negative direction implying decrease in probability of adoption of IR. In contrast it can be seen that the relationships INDV→IR and INDG→IR are direct, positive and statistically significant. That is to say that when there is a change in the cultural values in the positive direction, there will be change in the probability of adoption in the positive direction implying increase in probability of adoption of IR.

6.4.2 Nature of the role of mediators in the relationship between antecedents of probability of IR adoption and IR adoption

From tables 6.5 and 6.7 the following inferences could be drawn

No.	Independent variable	Mediating variable	Dependent variable	The mediated relationship	Nature of the role of mediators
1.	PD	ENVSORT10	IR	PD→ENVSORT10→IR	The mediator has a positive relationship with both PD and IR. The result is that PD influences IR indirectly but positively through ENVSORT10.
2.	INDV	ENVSORT10	IR	INDV→ENVSORT10→IR	No mediating effect.
3.	MAS	ENVSORT10	IR	MAS→ENVSORT10→IR	The mediator has a positive relationship with both MAS and IR.

					The result is that MAS influences IR indirectly but positively through ENVSORT10.
4.	UA	ENVSORT10	IR	UA→ENVSORT10→IR	The mediator has a positive relationship with both UA and IR. The result is that UA influences IR indirectly but positively through ENVSORT10.
5.	LOR	ENVSORT10	IR	LOR→ENVSORT10→IR	The mediator has a positive relationship with both LOR and IR. The result is that LOR influences IR indirectly but positively through ENVSORT10.
6.	INDG	ENVSORT10	IR	INDG→ENVSORT10→IR	No mediating effect.
7.	PD	SOCIALSORT10	IR	PD→SOCIALSORT10→IR	No mediating effect.
8.	INDV	SOCIALSORT10	IR	INDV→SOCIALSORT10→IR	No mediating effect.
9.	MAS	SOCIALSORT10	IR	MAS→SOCIALSORT10→IR	The mediator has a negative relationship with both MAS and IR. The result is that MAS influences IR indirectly but positively through SOCIALSORT10.
10.	UA	SOCIALSORT10	IR	UA→SOCIALSORT10→IR	The mediator has a negative relationship with both UA and IR. The result is that UA influences IR indirectly but positively through SOCIALSORT10.
11.	LOR	SOCIALSORT10	IR	LOR→SOCIALSORT10→IR	The mediator has a negative relationship with both LOR and IR. The result is that LOR influences IR indirectly but positively through SOCIALSORT10.
12.	INDG	SOCIALSORT10	IR	INDG→SOCIALSORT10→IR	No mediating effect.

Table 6. 11,Nature of mediating effect of the mediators

No.	Independent variable	Mediating variable	Dependent variable	The direct relationship between independent and dependent variables	Nature of the direct relationship between independent and dependent variables	The mediated relationship	Nature of the role of mediators	Recommendations
1.	PD	ENVSORT10	IR	PD→IR	Direct but inverse	PD→ENVSORT10→IR	The mediator has a positive relationship with both PD and IR. The result is that PD influences IR indirectly but positively through ENVSORT10.	In countries where PD is high, using mediator will be useful as without a mediator higher PD will lead to lower probability of IR adoption.
2.	INDV	ENVSORT10	IR	INDV→IR	Direct and positive	INDV→ENVSORT10→IR	No mediating effect.	With regard to individualism vs collectivism, direct implementation of IR is suggested in all countries without mediators.
3.	MAS	ENVSORT10	IR	MAS→IR	No relationship	MAS→ENVSORT10→IR	The mediator has a positive relationship with both MAS and IR. The result is that MAS influences IR indirectly but positively through ENVSORT10.	With regard to masculinity vs femininity, mediators need to be used in all countries.
4.	UA	ENVSORT10	IR	AU→IR	Direct but inverse	UA→ENVSORT10→IR	The mediator has a positive relationship with both UA and IR. The result is that UA influences IR indirectly but positively through ENVSORT10.	In countries where UA is high, using mediator will be useful as without a mediator higher UA will lead to lower probability of IR adoption.
5.	LOR	ENVSORT10	IR	LOR→IR	No relationship	LOR→ENVSORT10→IR	The mediator has a positive relationship with both LOR and IR. The result is that LOR influences IR indirectly but positively through ENVSORT10.	With regard to long term vs short term orientation, mediators are suggested to be used in all countries.
6.	INDG	ENVSORT10	IR	INDG→IR	Direct and positive	INDG→ENVSORT10→IR	No mediating effect.	With regard to indulgence vs restraint, direct implementation of IR is suggested in all countries without mediators
7.	PD	SOCIALSORT10	IR	PD→IR	Direct but inverse	PD→SOCIALSORT10→IR	No mediating effect.	With regard to PD, social disclosure does not mediate. Thus there is a contradiction between the use of environmental and social disclosures as mediators. This implies that some components of IR may operate as mediators between PD and IR and some others may not. There is a need to adopt a two way approach. One approach is to identify all countries with low PD and implement IR directly. The second one is that in countries where PD is high, IR

								adoption needs to be mediated by appropriate components of IR like environmental disclosure. Where certain performance related components cannot be used as mediators, it is necessary to isolate those mediators and a separate decision needs to be taken on how to implement IR adoption by tackling high PD.
8.	INDV	SOCIALSORT10	IR	INDV→IR	Direct and positive	INDV→SOCIALSORT10→IR	No mediating effect.	With regard to individualism vs collectivism, direct implementation of IR is suggested in all countries without mediators.
9.	MAS	SOCIALSORT10	IR	MAS→IR	No relationship	MAS→SOCIALSORT10→IR	The mediator has a negative relationship with both MAS and IR. The result is that MAS influences IR indirectly but positively through SOCIALSORT10.	With regard to masculinity vs femininity, mediators are suggested to be used in all countries.
10.	UA	SOCIALSORT10	IR	AU→IR	Direct but inverse	UA→SOCIALSORT10→IR	The mediator has a negative relationship with both UA and IR. The result is that UA influences IR indirectly but positively through SOCIALSORT10.	In countries where UA is high, using mediator will be useful as without a mediator higher UA will lead to lower probability of IR adoption.
11.	LOR	SOCIALSORT10	IR	LOR→IR	No relationship	LOR→SOCIALSORT10→IR	The mediator has a negative relationship with both LOR and IR. The result is that LOR influences IR indirectly but positively through SOCIALSORT10.	With regard to long term vs short term orientation, mediators are suggested to be used in all countries.
12.	INDG	SOCIALSORT10	IR	INDG→IR	Direct and positive	INDG→SOCIALSORT10→IR	No mediating effect.	With regard to indulgence vs restraint, direct implementation of IR is suggested in all countries without mediators.

Table 6. 12,Comparison of the results of the analysis of the direct and mediated relationships between cultural antecedents of probability of IR adoption and IR adoption

Table 6.12 offers a clear picture on how the antecedents of probability of IR adoption are performing in comparison to the one where the antecedents of the probability of IR adoption are linked to IR adoption through mediators. The table provides three approaches given as recommendations while implementing IR in various countries where cultural aspects could be barriers. The first approach is to implement IR where mediators are needed and direct relationships between the antecedents of probability of IR adoption and probability of IR adoption are not possible. Example is the relationship MAS→ENVSORT10→IR. The second approach is that where mediators are not found to be valid solutions, then there must be direct and positive relationship between the antecedents of probability of IR adoption and probability of IR adoption. Example is the relationship INDV→SOCIALSORT10→IR which is not valid statistically and hence the direct and positive relationship between INDV→IR could be used to implement IR. The third approach is recommended in a situation where both the direct and mediating relationships are not valid. In such a situation it is necessary to isolate those mediating variables that are found to be valid and treat those invalid mediators on a case to basis. In such a situation, it is necessary to treat the mediators based on the contexts and IR adoption decisions need to be taken. This is an important finding that can be used to determine how to encourage the firms to adopt IR even if some of the cultural factors may have no significant and direct relationship with probability of IR adoption or require mediators to operate. The operationalization of the mediators is unlikely to be difficult and hence it may be worthy enough to link cultural values to mediating factors that are essentially components that form IR. This way it may be possible to overcome the negative effect of culture on the probability of IR adoption in firms located in various countries with different cultural characteristics. The foregoing discussion lead to the conclusion that RQ3 has been answered.

6.5 Chapter summary

The foregoing discussions have covered many different aspects of the results derived in chapter 5 which led to providing appropriate answers to the research questions. The answers to the questions have brought out a number of new findings that have not been discussed in the IR literature and have been completely neglected by other researchers. The various findings derived in this chapter provide a strong basis to conclude the research which is provided in the next chapter which is the concluding chapter for this research.

Chapter 7: Conclusion

7.1 Introduction

This chapter discusses the various aspects that concern with the conclusions that can be drawn from the data analysis provided in chapter 5 and the discussions provided in the subsequent chapter based on the findings derived from the results of the data analysis. In particular the chapter begins with the contributions to methodology and practice followed by the limitation of the study. Further, the chapter proceeds with the conclusions derived on achieving the aim and objectives set for this research, contributions to knowledge and theory.This is followed further by recommendations for future research.

7.2 Contribution to methodology

Understanding the relationship between cultural factors, sustainability disclosures and probability of IR adoption, required the analysis of the secondary data pertaining to several hundred firms located in five different countries. The variables namely the cultural factors were measured using indices published on Hofstede Insight. These are continuous variables. However, probability of adoption of IR is binary and hence finding a relationship between cultural factors and probability of IR adoption in a straightforward manner was not possible. Logistic regression was used to determine the direct relationship between the two variables statistically. However, this aspect has already been discussed by many researchers (Fuhrmann, 2019; Vaz et al., 2016; García-Sánchez et al., 2013). The result of this logistic regression showed that four cultural factors namely power distance, individualism vs collectivism, uncertainty avoidance and indulgence vs restraint as determining the probability of IR adoption had a direct relationship with probability of IR adoption while masculinity vs femininity and long-term vs short term orientation did not have any relationship with probability of IR adoption. However further research conducted on probability

of IR adoption considering the influence of interventions like sustainability disclosures that affected the direct relationship between cultural factors and probability of IR adoption revealed many things that were not common to the two pathways. The study investigated the two pathways namely cultural factors → probability of IR adoption on the one hand and cultural factors → sustainability disclosures and sustainability disclosures→ probability of IR adoption on the other. The pathways cultural factors → sustainability disclosures and sustainability disclosures→ probability of IR adoption yielded results that were different from the direct relationship cultural factors → probability of IR adoption. For instance, the cultural factors that were related to sustainability disclosures and found statistically significant were power distance, masculinity vs femininity, uncertainty avoidance and long-term vs short term orientation. When this result was compared with that of the relationship between cultural factors and probability of IR adoption, it was found that masculinity vs femininity and long-term vs short term orientation that were found to be insignificant in the analysis where cultural factors were directly related to probability of IR, those two cultural factors in fact had significant relationship with sustainability disclosures. More interestingly, there were two other factors namely individualism vs collectivism and indulgence vs restraint were found to be insignificant in their relationship with sustainability factors.

Further those cultural factors that did not have significant direct relationship with probability of IR adoption but found to be statistically significant when linked to the sustainability disclosures, were found to have statistically significant relationship with probability of IR adoption when linked through the interventions ESG factors. That is to say that the indirect method has produced results that augment the results of the direct linkage between the cultural factors and probability of IR adoption. In the process the indirect relationship between the cultural factors and IR adoption has thrown up new opportunities. For instance, the result that probability of IR adoption is not

influenced by masculinity vs femininity directly if not investigated further through the indirect relationship would not have revealed that there could be a statistically significant relationship between the cultural factors and probability of IR adoption when an intervention is introduced in their path. That is to say that the method of investigating the relationship between the independent and dependent variables both directly and indirectly through interventions offers to reveal such knowledge that could in fact provide the hidden facts which would not otherwise be noticed by the researcher.

In addition, involving two different types of regression namely linear and logistic regressions, in one model and in one single path between the independent dependent variable is usually difficult to analyse and interpret the relationship between the independent and dependent variables. This difficulty was overcome in this research in novel way as follows. That is the result of the linear regression were linked to the results of the logistic regression conducted between sustainable disclosures and probability of IR adoption. The results were tabulated (table 6.3 ,6.5) and a matrix was developed. Tabulations revealed that sustainability disclosures which were the common factors in the two regression types enabled the development of a template where actual values of both the cultural factors in Hofstede sense and sustainability disclosures scores. This template can be used for testing the impact of culture on probability of IR adoption in real situations in various countries by actually feeding the cultural factor scores in Hofstede sense and ESG scores in the regression equations. The method of developing a matrix and template can be used in any other research involved in a similar topic and qualifies to be a methodological contribution of this research as it makes the verification of the relation. This is new knowledge

7.3 Contribution to practice

The results of this research provide a strong base for practically implementing the findings in the industry. Foremost the results provide a clear outcome that show that probability of IR adoption could increase in firms located in countries like Sweden, UK and USA. As shown in this research in section 7.5 out of the 216 companies that were taken up for investigation in USA, only 6.9 percentage adopted IR and the remaining percentage did not. The results of this research show that cultural factors if exploited and those companies that did not adopt IR in those countries encouraged, then because of the cultural similarities those companies could be willing and show interest in adopting IR. There appears to be no effort from the principal organization namely IIRC to look into the cultural aspects to encourage IR adoption. Although the research outcomes found in the literature including those produced by Fuhrmann (2019) García-Sánchez et al. (2013) and Vitolla et al. (2019) which showed evidence of cultural factors influencing probability of IR adoption, IIRC appears to have not used those results. Since this research also confirms that cultural factors can influence the probability of IR adoption, there is a need for IIRC to take this phenomenon into account before mandating the implementation of IR in different countries.

Next IR has both financial and non-financial information. The result of this research shows that if non-finance information is made mandatory, then companies will respond favourably in adopting IR. The reason for this argument is that if non-financial information like environmental and social disclosures are made mandatory as in the case of a few countries for instance UK, then companies regardless of the cultural aspect could adopt IR. The results of this research show that sustainability disclosures influence probability of IR adoption and higher the environmental disclosure, higher will be the probability of IR adoption. Here regardless of cultural aspects of when environmental disclosure is mandated, then firms located in different countries and cultures

are able to disclose the environmental information. Then as a corollary, based on the results of this research it can be argued that if environmental information is mandated then it signifies IR adoption. In one way the results of this research clearly point out that cultural factors need not always be a predictor when practical issues are considered. This is a contradiction and raises questions on the result outcomes produced by (Fuhrmann,2019) and (García-Sánchez et al, 2013). This conclusion can be arrived at based on the fact that this research practically showed that ES disclosures determine probability of IR adoption if the governments mandate those disclosures. Then IR adoption becomes culture independent.

An important result of this research that companies can now frame policies based on their cultural attributes and align themselves with those companies that have decided to adopt IR. The results of this research provide those firms who have not adopted IR, guidance on how to approach cultural problems. For instance, the outcome of this research shows that when power distance is low, probability of IR adoption is high. That is to say that when companies are informed that power distance is a factor that influences IR adoption decisions, then this knowledge could make those companies to revisit their policies on either adoption or non-adoption of IR. Organizations like IIRC can device methods to encourage adoption of IR by managing the power distance and other cultural factors. This is an important practical aspect not understood and addressed in organization which appears to be one important reason for non-adoption of IR.

7.4 Limitation

Some of the limitations that could be attributed to this research include the low number of countries, that is only five, that were investigated with regard understanding the influence of cultural aspects on probability of IR adoption. Increasing the number of countries might produce different results as the mean score of the cultural factors in Hofstede sense calculated could differ leading to a different number of countries above and below the mean of the cultural scores. This in turn could impact the logistic regression outcomes. Secondly, the research did not include control variables which could have provided some insight into maneuvering those control variables for instance performance factors like size of the company or profitability or financial leverage (as suggested by García-Sánchez et al, 2013), to influence cultural aspects and probability of IR adoption. Thirdly, the research if it had investigated probability of IR adoption by sector in which the companies are situated, then there could have been a more detailed knowledge available that could help in determining which sectors need to be tackled to overcome the influence of cultural aspects on probability of IR adoption. Fourthly, instead of Hofstede scores, it is worthwhile to conduct the investigation using Globe framework (Raimo et al, 2019b) which could provide a wider knowledge on more cultural factors than the one found in the Hofstede model. Fifthly, more interventions could have been used in this research like business model and strategy, that could have led to obtaining different results. Finally, a comparison of the results of this research could have been made with the companies in countries where sustainability disclosure is mandatory. This will provide knowledge on the validity of this research with regard to the interventions used in this research.

7.5 Conclusions on the achievement of the aim and objectives

The main aim of this research is to examine whether a research framework that addresses the gaps in the literature can provide a practical way to understand the concept of IR adoption, its cultural antecedents and interventions that affect the relationship between the antecedents of IR adoption and IR adoption. The discussions in chapter 6 show that the research framework was tested for the validation of the 27 hypotheses set for this research. The gaps were lack of knowledge about: whether cultural factors determine IR adoption or not? whether interventions that affect the relationship between the cultural factors and IR adoption?

the nature of the relationship between the cultural antecedents that determine IR adoption and IR adoption and the interventions that affect this relationship.

From sections 6.2 and 6.3 it can be seen that cultural factors identified by Hofstede model affect the adoption of IR by firms in various countries characterized by different cultural scores measured in Hofstede sense. Six cultural factors defined in Hofstede model namely power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint were examined for their influence on IR adoption. Both direct influence on IR adoption and indirect influence of IR adoption through ESG disclosures have been examined. The results of the examination showed varied outcomes with power distance, individualism vs collectivism, uncertainty avoidance and indulgence vs restraint showed a statistically significant direct relationship with IR adoption. The factors masculinity vs femininity and long-term vs short term orientation did not show a significant relationship with IR adoption. However, when interventions namely environmental, social and governance disclosures were introduced in the path between Hofstede cultural factors and IR adoption then the results

changed. The results showed that interventions contributed to linking some cultural factors power distance, masculinity vs femininity, uncertainty avoidance and long-term vs short term orientation indirectly to IR adoption. The nature of the relations was assessed based on the direction of interaction between the three phenomena namely national culture, ESG disclosures and IR adoption. The table 6.11 provides a complete idea on the nature of the relationship amongst the three variables. Thus, it can be concluded that the aim of this research has been achieved.

Conclusions on the achievement of objectives

The following objectives were set for this research and to what extent those objectives have been achieved is provided alongside.

• To critically review and determine the gaps pertaining to the concepts of IR adoption, cultural antecedents of IR adoption and interventions that affect the relationship between cultural antecedents of IR adoption and IR adoption

The literature review provided in chapter 2 enabled the researcher to study the concept of IR adoption and it was found that the concept of IR is not accepted widely across the world and the proponents of IR are not able to still conclude whether IR adoption can be made mandatory across nations or not (IIRC, 2021). It was found from the literature review that cultural factors namely power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint can affect IR adoption. Researchers (Vaz et al., 2016; García-Sánchez et al., 2013) argue that the current knowledge about IR adoption and the influence of cultural factors on IR adoption is not well understood. Finally, the role of interventions was examined by introducing some components that are integral part of integrated reports namely ESG disclosures. However, literature did not reveal any research that has employed

the concept of interventions in the relationship between national culture and IR adoption. There are research publications that have investigated the relationship between national culture and ESG disclosure Pucheta-Martínez and Gallego-Álvarez ,2019; Miska et al., 2018; Ho et al, 2012 and ESG disclosure and IR adoption (Raimo et al., 2021 and Gerged, 2021). But there appears to be no research publication in the literature that has examined a relationship like national culture → ESG disclosure → IR adoption. Lack of this knowledge makes our understanding of how IR adoption can be encouraged in firms located in countries assigned with different cultural scores, using those components that are part of IR incomplete. Thus, in this research an effort has been made to understand how cultural factors act as the antecedents of IR adoption and affect IR adoption in the presence of interventions. These aspects have been thoroughly explained in the literature review. Thus, it can be concluded that this objective has been achieved.

• To identify the specific cultural antecedents of IR adoption and interventions required for this research.

The research used Hofstede model to identify the cultural antecedents of IR adoption. This is supported by the literature for instance the research work of (Fuhrmann,2019; Vaz et al, 2016 and García-Sánchez et al. ,2013) concern with the prediction of probability of adoption of IR using cultural antecedents identified Hofstede. Thus, for this research the six cultural factors identified by Hofstede namely power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint based on a thorough literature review.

As far as the interventions were concerned, the interventions were identified as the sustainability factors namely environmental, social and governance disclosures (Pérez-Cornejo et al, 2021; Pucheta-Martínez and Gallego-Álvarez, 2020; Hawn and Burbano, 2018; Halkos and Skouloudis,

2016). These were chosen based on the literature review which showed that certain components of integrated reports including sustainable factors can affect the probability of IR adoption. The reason for choosing the sustainable factors is given in the theoretical framework. Thus, it can be concluded that this objective has been achieved.

• To identify the theories that could enable establishing theoretical relationship between the cultural antecedents, interventions and IR adoption.

Four theories were identified for explaining the basis on which the research model was established. Those theories were Hofstede model, the upper echelons theory and stakeholder theory. Hofstede's model (Hofstede and Hofstede, 2010) provided the basis to explain the linkage between national cultural aspect and IR adoption. IR adoption was explained by stakeholder theory (Garcı´a-Sa´nchez et al.,2013) whereas upper echelons theory was used to explain the use of ESG (Hawn et al., 2018) as interventions between the cultural antecedents and probability of IR adoption. The details about the theories supporting the theoretical model drawn for this research are provided in chapter 3 which has discussed the theoretical framework developed for this research. Thus, it can be concluded that this objective has been achieved.

• To determine the contribution of the research to practice and policy, knowledge and theory.

This aspect has been discussed in sections 7.3,7.6 and 7.7 in this chapter. Contribution to practice and policy have been provided under sections 7.3. Further, it can be seen that this research has made significant contributions to knowledge by filling the research gap namely identification of the cultural factors that influence the probability of IR adoption and the usefulness of sustainable factors as interventions in the relationship between cultural factors and probability of IR adoption. This aspect has not been well addressed in the literature and details of the contribution of this are provided in detail under section 7.5 in this chapter. Similarly, the research makes a significant

contribution to the theoretical aspects governing the probability of IR adoption and is discussed in section 7.6 that has been provided later in this chapter Thus, it can be concluded that this objective has also been achieved.

7.6 Contribution to knowledge

This research contributes to the body of integrated report adoption knowledge in a number of ways. Foremost this research contributes to a better understanding of the relationship between six national cultural factors identified by Hofstede theory namely power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint on the one hand and probability IR adoption on the other. The research was conducted in the context of firms located in different countries having different cultural scores calculated in Hofstede sense. There are only a few studies in the field of IR that linked the national culture as an independent construct to the probability of adoption of IR as the determined construct but suffered due to limitations. For instance, the study by (García-Sánchez et al.,2013) linked only five cultural factors in Hofstede sense to probability of IR adoption and left out indulgence vs restraint. The study by (García-Sánchez et al,2013) thus can be concluded to be incomplete as it did not provide a complete picture of the influence of all cultural factors on probability of IR adoption. Similarly, the study by (Vaz et al., 2016), a reinvestigation of the research outcomes produced by García-Sánchez et al.(2013), was restricted to the investigation of only two cultural constructs namely individualism vs collectivism and masculinity vs femininity and their influence on probability of IR adoption. Although research conducted by Vitolla et al. (2019) investigated all the six cultural factors defined by Hofstede and Hofstede (2010), the study was focused on the direct influence of those six factors on the quality of IR as the determined construct and not probability of IR adoption. Secondly this research examined the indirect relationship between

national cultural factors and probability of IR adoption mediated by ESG disclosures. Thirdly this research compared the results of the direct and indirect relationship and produced new findings. Fourthly the findings of this research showed that interventions introduced in this research as mediators have significance and the potential to alter the outcomes found through the direct relationship when manipulated. These are discussed next.

Direct influence of national cultural factors and probability of IR adoption

However, Fuhrmann (2019) investigated the direct relationship between the six cultural factors of Hofstede model (2010) and found only two of the relationships namely power distance → probability of IR adoption and Masculinity → probability of IR adoption are found to be statistically significant. This left a gap in the literature as the results obtained by Fuhrmann (2019) were not conclusive and not generalizable. Thus, the real picture about the direct relationship between the six national cultural factors and probability of probability of IR adoption was not clear. This led to a lack of complete knowledge on how to deal with the IR adoption behaviour of firms. This gap was filled up to some extent by this research. In this research the linkage between the six cultural factors namely power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term vs short term orientation and indulgence vs restraint on the one hand and probability of IR adoption on the other was investigated. The research outcomes showed that cultural factors determine probability of IR adoption directly a finding that is found to be in line with those of (Fuhrmann ,2019 and Vaz et al, 2016 and García-Sánchez et al., 2013). However, the uniqueness of this research can be found in the fact that out of the six cultural factors four factors namely power distance, individualism vs collectivism, uncertainty avoidance and indulgence vs restraint were found to directly influence the probability of adoption of IR in firms located in different countries with varying cultural scores. This contradicts the

findings of (Fuhrmann ,2019;Vaz et al., 2016 and García-Sánchez et al., 2013). From table 7.1 the difference between the findings of the three authors cited above and the findings of this research can be seen.

Cultural factor	Level/type of cultural factor	Fuhrmann (2019)	(Vaz et al,2016)	(García-Sánchez et al,2013)	The author of this research, AlThawadi (2021)
Power distance	Low	Positively influencing IR adoption	Did not study	No significant relationship	Positively influencing IR adoption
	High	Negatively influencing IR adoption	Did not study	No significant relationship	Negatively influencing IR adoption
Individualism vs collectivism	Individualism	No significant relationship	Negatively influencing IR adoption	Negatively influencing IR adoption	Positively influencing IR adoption
	Collectivism	No significant relationship	Positively influencing IR adoption	Positively influencing IR adoption	Negatively influencing IR adoption
Masculinity vs femininity	Masculinity	Negatively influencing IR adoption	No significant relationship	Negatively influencing IR adoption	No significant relationship
	Femininity	Positively influencing IR adoption	No significant relationship	Positively influencing IR adoption	No significant relationship
Uncertainty avoidance	Low	No significant relationship	Did not study	No significant relationship	Positively influencing IR adoption
	High	No significant relationship	Did not study	No significant relationship	Negatively influencing IR adoption
Long term vs short term orientation	Long term	No significant relationship	Did not study	No significant relationship	No significant relationship
	Short term	No significant relationship	Did not study	No significant relationship	No significant relationship
Indulgence vs restraint	Indulgence	No significant relationship	Did not study	Did not study	Positively influencing IR adoption
	Restraint	No significant relationship	Did not study	Did not study	Negatively influencing IR adoption

Table 7. 1, Comparison table on the findings of this research with other researchers.

From table 7.1 it can be seen that this research has found that four cultural factors out of six as having direct relationship with probability of IR adoption in firms located in different countries against a maximum of two found by both Fuhrmann (2019) and García-Sánchez et al. (2013). This is a new contribution to the body of knowledge concerning IR adoption. This contribution provides the basis to understand the influence of cultural factors on probability of IR adoption better when compared to the ones provided by the findings produced by the researchers (Fuhrmann,2019) and (García-Sánchez et al,2013). That is to say that this research has produced an outcome using which four cultural factors could be used to determine the probability of IR adoption in firms located in different countries and hence increases predictive power of the model whereas the ones developed by Fuhrmann (2019) and García-Sánchez et al.(2013) can only use two cultural factors apiece

which indicates lower predictive power of their models. The implication is that while cultural factors in general cannot be easily changed at the national level, it may be useful to consider recommending the adoption of IR based on the cultural aspects in each country by individually scrutinizing the effect of the four cultural factors found to affect probability of adoption of IR. Said in a simpler way it can be concluded from table 7.1that it may be necessary to consider the influence of four cultural factors found to be significant in this research namely power distance, individualism vs collectivism, uncertainty avoidance and indulgence vs restraint while predicting the probability of adoption of IR. Based on the predictions it will be worthwhile to determine whether it is necessary to impose the adoption of IR as mandatory on firms or make it voluntary. This is an important finding that enables the IIRC the modal body that is pioneering the adoption of IR uniformly across the world.

The findings of this research clearly provide a view to IIRC to determine what components of IR need to be mandated and those that should be left as voluntary. The classic examples are environmental and social factors that could be made mandatory and be reported as part of IR whereas governance factor could be left out of the IR and made voluntary an argument supported by the findings of this research (section 6.3). According to the findings (table 6.2) four cultural factors namely power distance, masculinity vs femininity, uncertain avoidance and long-term vs short term orientation determine environmental disclosure which in turn is shown to determine probability of IR adoption (table 6.11). However only three cultural factors namely masculinity vs femininity, uncertain avoidance and long-term vs short term orientation determine social disclosure (table 6.4) which in turn is shown to determine probability of IR adoption (table 6.11). That is to say that power distance, masculinity vs femininity, uncertain avoidance and long-term vs short term orientation can be analysed using Hofstede scores in different countries and it can be

determined whether IR adoption can be mandated or not. For instance, the power distance score in Hofstede sense for Japan is found to be 54 which indicates that power distance is high when compared to the mean of the power distance computed for the five countries that are under investigation. The from the results of this research it can be seen that in Japan the level of environmental disclosure will be high (table 6.5). In such countries like Japan where power distance score in Hofstede sense, it is worthwhile to mandate IR adoption. On the other hand, in countries like Sweden whose power distance score is 31 and is considered low when compared to the mean of the power distance computed for the five countries that are under investigation it can be seen that the environmental disclosure could be low and hence there is no need mandate the adoption of IR and could left to be voluntary which may produce better results in terms of adopting IR. This interpretation is supported by the results provided in Bloomberg related to the level of environmental disclosure in regard to companies located in Japan and Sweden where the score concerning the level of environmental disclosure made by firms located in Japan is high and low in Sweden in comparison. As far as governance is concerned, it can be concluded that it would be useful to be brought under the voluntary disclosure category. This is a new finding and contributes to knowledge. Similar discovery is not reported by other researchers in the extant literature.

Another important finding is that four cultural factors at a time act on probability of IR adoption. For instance, from table 7.2 it can be seen that low power distance, individualism, low uncertainty avoidance and indulgence predict high probability of adoption while high power distance, collectivism, high uncertainty avoidance and restraint point towards low probability of IR adoption.

Independent variables / Dependent variable	Power distance - Mean score in Hofstede sense =45.8		Individualism vs Collectivism - Mean score in Hofstede sense = 67		Masculinity vs femininity - Mean score in Hofstede sense = 55.4		Uncertainty avoidance - Mean score in Hofstede sense = 55.6		Long term vs short term orientation - Mean score in Hofstede sense = 52.4		Indulgence vs restraint - Mean score in Hofstede sense = 63.2	
	Low < 45.8	High > 45.8	Individualism >67	Collectivism <67	Masculinity: p-value >0.05	Femininity: p-value >0.05	Low < 55.6)	High >55.6)	Long term: p-value >0.05	Short term: p-value >0.05	Indulgence > 63.2	Restraint < 63.2

Probability of IR adoption (high)	USA UK Sweden		USA UK Sweden		-	-	USA UK Sweden		-	-	USA UK Sweden	
Probability of IR adoption (low)		Japan Brazil		Japan Brazil	-	-		Japan Brazil	-	-		Japan Brazil

Table 7. 2, Categorising countries based on the mean value of Hofstede scores and logistic regression – direct relationship between the national cultural scores in Hofstede sense and probability of IR adoption

So, with regard to firms located in different countries having different cultural scores in Hofstede sense as mentioned above, it is possible to predict probability of IR adoption. Thus, the table 7.2 provides a method to predict the probability of IR adoption based on the cultural scores of the four cultural factors namely power distance, masculinity vs femininity, uncertain avoidance and long-term vs short term orientation in Hofstede sense. An application of the above finding with regard to the level of scores mentioned above, it can be seen that firms located in Sweden, UK and USA provide the best opportunity to encourage firms to adopt IR as the probability of IR adoption is found to be high while Japan and Brazil indicate lower probability. If analysis of the probability of IR adoption is undertaken with regard to all the countries, then it is possible to determine which are the countries where IR adoption could be encouraged. This is an important discovery made by this research and contributes to knowledge.

Another important aspect that needs examination is the possibility of increasing the number of companies that have the potential to adopt IR. This can be derived by examining the 628 companies that have been studied in this research and within that number how many have adopted IR voluntarily. It can be seen from table 7.3 that 84 companies have adopted IR voluntarily across the five countries. Within this number the difference between the ones that have adopted IR and those that have not, is significant (table 7.3).

Country * Integrated report adoption Crosstabulation				
Count				
		Integrated report adoption		Total
		No	Yes	
Country	Japan	143	29	172
	United Kingdom of Great Britain and Northern Ireland	85	16	101
	Brazil	44	16	60
	Sweden	71	8	79

	United States of America	201	15	216
Total		544	84	628

Table 7. 3, The difference between IR adoption and non-adoption in firms' country wise

For instance, the number of companies studied in UK is 101. Out of this only 16 companies have adopted IR. That is to say around 16% of the companies only have adopted IR. However, if one applies the findings of this research as given in table 7.2, it can be seen that this percentage of companies standing at 16% could be significantly improved as the cultural characteristics of UK indicates such a possibility. That is to say that it is now possible to identify countries and group them as in table 7.3. Such grouping will help in finding out where IR adoption can be encouraged and mandated based on the cultural scores in Hofstede sense pertaining to the four factors namely power distance, individualism vs collectivism, uncertainty avoidance and long-term vs short term orientation. Thus, it is possible to increase the percentage of firms in those countries that can adopt IR either as a mandatory requirement or as a voluntary process. That is to say that this table 7.2 can now be used as a template to identify countries where it is possible to encourage IR adoption and increase the numbers using the new knowledge produced in this research.

Furthermore, there is one factor namely individualism vs collectivism that was found to be significantly related to probability of IR adoption and common in the studies of (Vaz et al.,2021), (García-Sánchez et al, 2013) and this research that directly affected the probability of adoption of IR. However, the results derived in the studies of (Vaz et al.,2021 and García-Sánchez et al.,2013) were found to be contradictory to the ones obtained in this research. While individualism was found to influence probability of IR adoption positively and collectivism was found to influence probability of IR adoption negatively, the results obtained by Vaz et al. (2021) and García-Sánchez et al. (2013) showed the opposite. That is to say that when individualism is dominant in societies probability of IR adoption was influenced by individualism negatively in the research outcomes

produced by (Vaz et al.,2021) and (García-Sánchez et al., 2013) whereas in this research it was found that it was predicted positively. As a corollary it can be seen that when collectivism is dominant Vaz et al.(2019) and García-Sánchez et al. (2013) found that probability of IR adoption is positively influenced whereas in this research it was to influence negatively. However, the research work of Fuhrmann (2019) did not find any significant relationship between individualism or collectivism and probability of IR adoption. This result shows that the influence of individualism vs collectivism on probability of IR adoption is not clear as differences exist in the findings of this research, the ones derived by (Fuhrmann ,2019; Vaz et al., 2021 and García-Sánchez et al.,2013) making the knowledge about the influence of the cultural factor on probability of IR adoption inconclusive. There is a need to conduct research in more countries with varying scores of individualism to come to a common conclusion and determine the extent of predictability of IR adoption before the relationship between individualism vs collectivism and probability of IR adoption could be predicted conclusively.

Applying similar arguments to the other cultural factors mentioned in table 7.2 the following conclusions can be made:

Cultural factor	Level/type of cultural factor	(Fuhrmann ,2019)	(Vaz et al, 2016)	(García-Sánchez et al,2013)	The author of this research, AlThawadi (2021)
Masculinity vs femininity	Masculinity	Negatively influencing IR adoption	No significant relationship	Negatively influencing IR adoption	No significant relationship
	Femininity	Positively influencing IR adoption	No significant relationship	Positively influencing IR adoption	No significant relationship

Table 7. 4, Result of the comparison of the results obtained in this research with others' (masculinity vs femininity)

The relationship between masculinity and probability of adoption of IR was not found to be significant in this research and that of Vaz et al. (2016) while both Fuhrmann (2019) and García-Sánchez et al. (2013) found a negative relationship between the two (table 7.4). It can be concluded that this research does not support the arguments of Fuhrmann (2019) and García-Sánchez et al. (2013) raising questions on the applicability of the results obtained by (Fuhrmann,2019) and (García-Sánchez et al.,2013). Since the results are contradictory there is need to conduct more

research before conclusive evidence can be generated on the nature of the relationship that exists between masculinity and probability of IR adoption. A similar result was found with regard to Femininity.

Cultural factor	Level/type of cultural factor	Fuhrmann (2019)	Vaz et al., (2016)	García-Sánchez et al., (2013)	The author of this research, AlThawadi (2021)
Uncertainty avoidance	Low	No significant relationship	Did not study	No significant relationship	Positively influencing IR adoption
	High	No significant relationship	Did not study	No significant relationship	Negatively influencing IR adoption

Table 7. 5,Result of the comparison of the results obtained in this research with others' (uncertainty avoidance)

Cultural factor	Level/type of cultural factor	Fuhrmann (2019)	Vaz et al., (2016)	García-Sánchez et al., (2013)	The author of this research, AlThawadi (2021)
Long term vs short term orientation	Long term	No significant relationship	Did not study	No significant relationship	No significant relationship
	Short term	No significant relationship	Did not study	No significant relationship	No significant relationship

Table 7. 6, Result of the comparison of the results obtained in this research with others' (long term vs short term orientation)

The relationship between uncertainty avoidance (low or high) and probability of IR adoption showed that this result found that low uncertainty avoidance positively influences probability of IR adoption and high uncertainty avoidance influences probability of IR adoption negatively (table 7.5). Both Fuhrmann (2019) and García-Sánchez et al. (2013) did not find any significant relationship between the two constructs. This research has produced a contradictory finding that is new knowledge and there is a need to investigate this relationship further to make any conclusions. The relationship between long term and short-term orientation on the one hand and probability of IR adoption on the other showed no significant relationship with IR adoption (table 7.6). Both Fuhrmann (2019) and García-Sánchez et al. (2013) did not find any significant relationship between the two constructs. This research has produced a finding that confirms those of (Fuhrmann ,2019) and (García-Sánchez et al., 2013).

Cultural factor	Level/type of cultural factor	Fuhrmann (2019)	Vaz et al., (2016)	García-Sánchez et al., (2013)	The author of this research, AlThawadi (2021)
Indulgence vs restraint	Indulgence	No significant relationship	Did not study	Did not study	Positively influencing IR adoption
	Restraint	No significant relationship	Did not study	Did not study	Negatively influencing IR adoption

Table 7. 7, Result of the comparison of the results obtained in this research with others' (indulgence vs restraint)

The relationship between indulgence and probability of adoption of IR was found to be positive in this research while both Fuhrmann (2019) and García-Sánchez et al., (2013) found no significance relationship between the two (table 7.7). It can be concluded that this research does not support the arguments of Fuhrmann (2019) and García-Sánchez et al. (2013). Since the results are contradictory there is need to conduct more research before conclusive evidence can be generated on the nature of the relationship that exists between indulgence and probability of IR adoption. However, with regard to the influence of restraint on probability of IR adoption it can be seen that it influences probability of IR adoption negatively. This is new knowledge and to the knowledge of the researcher no other researcher has reported a significant influence of femininity on probability of IR adoption.

Indirect influence of national cultural factors on probability of IR adoption mediated by ESG disclosure

From table 6.12 in section 6.4 it can be seen that the results of this research show two outcomes namely either the mediators are influencing the relationship between the national cultural factors and probability of adoption of IR or no mediation is observed. A comparison of the mediation effect of the interventions namely environmental, social and governance disclosures on the relationship between the national cultural factors and probability of adoption of IR with the direct effect provided knowledge on the wide variation with regard to dealing with the probability of IR adoption in various countries. This is new knowledge. The table provides a comprehensive view of the new findings that could use for the following purposes.

It is possible to determine in which countries direct relationship can be used to either mandate the IR or make it voluntary. For instance, in table 7.2 it can be seen that in Sweden, UK and USA, IR adoption can be mandated as PD is lower than the mean directly. Here indirect relationship

PD→ENVSORT10→IR or PD→SOCIALSORT10→IR does not have any significance even if valid. Thus, mandating or non-mandating IR adoption will yield results. In countries like Brazil and Japan where PD is high and probability of IR adoption is low, there mediators could be used. On the contrary it can be seen from table 7.4 that in all the five countries masculinity or femininity was not found to be significantly related to IR adoption. However, the indirect paths MAS→ENVSORT10→IR and MAS→SOCIALSORT10→IR were found to be significant and valid. In this situation mediators could be used in different countries to encourage IR adoption. Thus, it can be seen that one way or the other either directly or indirectly, there is a possibility to encourage IR adoption in various firms located in different nations having varying cultures. This finding makes the IR adoption independent of cultural factors and it is possible to study the cultural values of all countries in Hofstede sense and find out how IR adoption can be implemented based on the cultural values and the templates innovated in this research.

Where the cultural values are not congruent then there can be a combination of cultural factors determining the probability of IR adoption

There are situations where one cultural factor operates along expected lines while the other may not. In this situation it can be seen that one cultural factor could interact with another and enable the adoption of IR as a combined entity. For instance, in this research it can be seen from table 7.7 that low power distance, individualism, low uncertainty avoidance and indulgence work in tandem to predict probability of IR adoption in the positive direction. Here it is seen that masculinity vs femininity on the hand and long-term vs short term orientation on the other do not have any significant role in determining the probability of IR adoption. However, from table 6.12 it can be seen that the indirect relationships MAS→ENVSORT10→IR, MAS→SOCIALSORT10→IR, LOR→ENVSORT10→IR and LOR→SOCIALSORT10→IR can be used to enable the use of the

cultural identities namely masculinity, femininity, long term and short-term orientation can be used to predict the probability of IR adoption. Thus, it can be seen that the value congruence of the cultural aspects enables a wider use of the cultural factors without exception to deal with the relationship between the exogenous and endogenous variables. This is a new finding. To the knowledge of the researcher similar findings have not been reported by any other researcher. This is new knowledge.

The foregoing sections have brought out the significant contributions this research has made to the body of knowledge concerning three vital areas in corporate governance which include integrated reporting, sustainable reporting and cultural impact on integrated thinking. Further to this the following sections discuss the theoretical contributions made by this research in regard to the influence of national culture on IR adoption.

7.7 Contribution to theory

Theoretically the model developed by this research relied upon four theories namely the Hofstede model and the stakeholder, legitimacy and upper echelon theories. The main theoretical contribution this research makes to the literature is that it combines four theories in one plane containing different concepts. The result was that the combination of theories enabled the establishment of theoretical relationships between constructs. The combined power of the theories enabled the researcher to explain the relationships between the predictor, predicted and mediating variables.

While literature shows that stakeholder's theory emphasizes on the contract between the firm and the society, such a contract is expected produce wealth for all stakeholders and interest groups (Mathews, 1993) This implies that when IR is made mandatory then firms must be able to produce wealth and report for all stakeholders who are bracketed under different cultures making it culture independent. Whether this can really happen is something that needs to be verified. It can be seen that lower power distance implies higher performance and hence adoption of IR in some countries. This in turn could impact the probability of IR adoption which in turn either directly or indirectly provides knowledge to the various stakeholders about the wealth or value created due to the association with the company. In this situation it can be seen that stakeholders' theory is playing a role in explaining the importance of wealth creation that is influenced by cultural factors defined Hofstede model. This phenomenon of combining stakeholder's theory with Hofstede's national cultural factors to explain the wealth creation for the stakeholders and other interest groups is already verified by other researchers including (Vitolla et al.,2019) and (García-Sánchez et al. ,2013). Thus, the results this research confirm and strengthen the already existing theoretical knowledge of applying stakeholders' theory to explain the relationship between national culture and probability of IR adoption.

Secondly this research used stakeholders' theory to establish and explain the relationship between national culture and sustainability factors namely environmental, social and governance disclosures (Roy and Goll, 2014; Waldman et al, 2006). This is evident as stakeholders including investors would like to understand how firms perform in different countries having varying culture and what cultural factors are important that would support sustainability disclosures. Thus, application of stakeholders' theory for linking cultural factors defined by Hofstede model and probability of IR adoption as well as disclosure of sustainability factors provides a novel method

to explain the relationships that exist between the cultural aspects and disclosures. This finding is in line with the findings of Fuhrmann (2019) who argued that stakeholders' theory provides the basis for explaining the relationship between cultural factors and sustainability disclosures. The meaning of this is that the extent of any sustainability disclosure could be demanded by the stakeholders depending on the cultural aspects of a particular country. This is an important finding as managers in different countries could understand which aspect of the cultural model of Hofstede should be focused on leading to disclosures that are useful to stakeholders. Thus, this research confirms the current knowledge.

Thirdly the relationship between sustainability factors and probability of IR adoption was explained by legitimacy theory which is in line with the suggestions and findings of (Lai et al. ,2016). Thus, as suggested by Lai et al. (2016) legitimacy theory was used to explain the relationship between environmental, social disclosure on the one hand and probability of IR adoption on the other. With the exception of a few like Aluchna et al. (2019) who used legitimacy theory to explain the establishment of a socially responsible image and showing continuous improvement in transparency, no one has attempted to apply legitimacy theory to explain the phenomenon of the influence of sustainable disclosures on probability of IR adoption. These two aspects form the core principles of legitimacy theory. Legitimizing a certain act like IR adoption based on the relationship between cultural aspects and sustainability disclosures provides a stronger base for stakeholders to demand both IR adoption and sustainability disclosure. Hardly any research finding has been reported in the extant literature about the application of legitimacy theory to explain the relationship between sustainable disclosures and probability of IR adoption. Thus, the findings of this research contribute to the theoretical knowledge by expanding the application of the legitimacy theory to the disclosures both sustainable and IR.

7.8 Recommendation for future research

As can be seen from the limitations that affect this research, future research can address those limitations and come up with new knowledge. For instance, future research could include a greater number of countries in order to validate the relationships tested in this research. Secondly control variables could be used to find their usefulness in improving the predictability of IR adoption. Thirdly, in order to gain a more accurate knowledge on how to predict probability of IR adoption in firms situated in various countries with different cultures, it is worthwhile to determine the relationship between cultural factors and probability of IR adoption by sector. This could reveal new knowledge on how cultural factors vary at the sector level. Fourthly hardly any research has been conducted to determine the influence of cultural factors determined by models other Hofstede. It is worthwhile to use other frameworks like the Globe framework to determine the influence of cultural factors on probability IR adoption. Fifthly consistent with the arguments of this research more components of IR for instance business model and strategy, can be used as interventions in models in future research, to know which of those components could really intervene and whether disclosure about those interventions could be mandatory. Finally, comparative research can be undertaken in future to compare the performance of the model with regard to the sustainable disclosures of various firms located in countries with different cultures but where disclosure of sustainable information is mandatory.

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Appendix 1

1. Logistic Regression to verify hypothesis H1b

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 1 , Case processing summary for the construct individualism

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 2 , Dependent variable (IR) Encoding

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
Individualism	0	396	1.000
	1	232	.000

Table 3, Categorical variables codings for the construct individualism

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 4 ,Classification table of Block 0 for the construct individualism

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 5, Variables in the equation of Block 0 for the construct individualism

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	INDV(1)	11.511	1	.001
	Overall Statistics		11.511	1	.001

Table 6 , Variables not in the equation of Block 0 for the construct individualism

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.126	1	.001
	Block	11.126	1	.001
	Model	11.126	1	.001

Table 7, Omnibus Tests of Model Coefficients of block 1 for the construct individualism

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	483.071[a]	.018	.032
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 8 , Model summary for construct individualism

2. Logistic Regression to verify hypothesis H1c

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 9, Case processing summary for the construct masculinity vs. feminism

Dependent Variable Encoding	
Original Value	Internal Value
No	0

Yes	1

Table 10, Dependent Variable (IR) Encoding

Categorical Variables Codings			
		Frequency	Parameter coding (1)
Masculinity	High masculinity	489	1.000
	Low masculinity (feminism)	139	.000

Table 11 , Categorical Variables Codings for the construct masculinity vs. feminism

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 12 ,Classification table of block 0 for the construct masculinity vs. feminism

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 13 , Variables in the equation of block 0 for the construct masculinity vs. feminism

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	MAS(1)	2.332	1	.127
	Overall Statistics		2.332	1	.127

Table 14 , variables not in the equation of block 0 for the construct masculinity vs. feminism

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	2.215	1	.137
	Block	2.215	1	.137

	Model	2.215	1	.137

Table 15 , Omnibus Tests of Model Coefficients for the construct masculinity vs. feminism

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	491.982[a]	.004	.006
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 16 , Model summary for the construct masculinity vs. feminism

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	0	.

Table 17 ,Hosmer and Lemeshow Test for the construct masculinity vs. feminism

Contingency Table for Hosmer and Lemeshow Test						
		Integrated report adoption = No		Integrated report adoption = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	429	429.000	60	60.000	489
	2	115	115.000	24	24.000	139

Table 18 Contingency Table for Hosmer and Lemeshow Test of the construct masculinity

3. Logistic Regression to verify hypothesis H1d

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 19 Case Processing Summary for the construct Uncertainty Avoidance.

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 20 ,Dependent variable (IR) encoding.

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
Uncertainty Avoidance	0	396	1.000
	1	232	.000

Table 21 ,Categorical Variables Codings for construct Uncertainty Avoidance

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 22,Classification Table of Block 0 for construct Uncertainty Avoidance

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	UA(1)	11.511	1	.001
	Overall Statistics		11.511	1	.001

Table 23,Variables in the Equation of block 1 for construct Uncertainty Avoidance

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.126	1	.001
	Block	11.126	1	.001
	Model	11.126	1	.001

Table 24,Omnibus Tests of Model Coefficients for construct Uncertainty Avoidance

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	483.071[a]	.018	.032

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 25,Model summary for the construct Uncertainty Avoidance

4. Logistic Regression to verify hypothesis H1e

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 26 ,Case processing summary for the long orientation construct

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 27, dependent variable (IR) Encoding.

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 28 , Classification Table of block 0 for the long orientation construct

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 29, Variables in the Equation of block 0 for the long orientation construct

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	LOR	.673	1	.412
	Overall Statistics		.673	1	.412

Table 30,Variables not in the Equation for the long orientation construct

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	.667	1	.414
	Block	.667	1	.414
	Model	.667	1	.414

Table31 , Omnibus Tests of Model Coefficients for the long orientation construct

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	493.530[a]	.001	.002
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 32,Model Summary for the long orientation construct

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	0	.

Table 33 ,Hosmer and Lemeshow Test for the construct long orientation

Contingency Table for Hosmer and Lemeshow Test						
		Integrated report adoption = No		Integrated report adoption = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	330	330.000	47	47.000	377
	2	214	214.000	37	37.000	251

Table 32, Contingency table for Hosmer and Lemeshow test of the construct long orientation

5. Logistic Regression to verify hypothesis H1f

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 40 ,Case processing summary for the construct indulgence

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 41 , Dependent Variable (IR) Encoding

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
Indulgence	Low indulgence	232	1.000
	High indulgence	396	.000

Table 42 , Categorical Variables Codings for the construct indulgence

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 43 , Classification Table of block 0 for the construct indulgence

Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)

Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 44 , Variables in the Equation of block 0 for the construct indulgence

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	INDG(1)	11.511	1	.001
	Overall Statistics		11.511	1	.001

Table 45, Variables not in the Equation of block 0 for the construct indulgence

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.126	1	.001
	Block	11.126	1	.001
	Model	11.126	1	.001

Table 46 , Omnibus Tests of Model Coefficients for the construct indulgence

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	483.071[a]	.018	.032
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 47, Model summary for the construct indulgence

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	0	.

Table 48,Hosmer and Lemeshow Test for the construct indulgence

Contingency Table of Hosmer and Lemeshow Test						
		Integrated report adoption = No		Integrated report adoption = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	357	357.000	39	39.000	396
	2	187	187.000	45	45.000	232

Table 49 ,Contingency Table of Hosmer and Lemeshow Test for the construct indulgence.

6. Logistic regression – Environmental Disclosure – IR adoption

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0

	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 50,Case processing summary for the construct environmental disclosure

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 51 ,Dependent variable (IR) Encoding

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
ENVSORTBINARY	Lower ENVD below mean	326	1.000
	Higher ENVD above mean	302	.000

Table52 , Categorical variables coding for the construct environmental disclosure

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 53, Classification table of block 0 for the construct environmental disclosure

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 54,Variables in the equation for the construct environmental disclosure

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	ENVSORT10(1)	11.743	1	.001
	Overall Statistics		11.743	1	.001

Table 55 Variables not in the Equation for the construct environmental disclosure

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.866	1	.001
	Block	11.866	1	.001
	Model	11.866	1	.001

Table 56, Omnibus Tests of Model Coefficients for the construct environmental disclosure

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	482.330[a]	.019	.034
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 57,Model Summary for the construct environmental disclosure

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	0	.

Table 58, osmer and Lemeshow Test for the construct environmental disclosure

Contingency Table for Hosmer and Lemeshow Test						
		Integrated report adoption = No		Integrated report adoption = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	297	297.000	29	29.000	326
	2	247	247.000	55	55.000	302

Table 59 ,Contingency Table of Hosmer and Lemeshow Test for the construct environmental disclosure

7.Logistic regression – Social Disclosure – IR adoption

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 60, Case processing summary for construct social disclosure

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 61,Dependent Variable (IR) encoding

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
SOCIALSORT10	Lower SOCIALD below mean	341	1.000
	Higher SOCIALD above mean	287	.000

Table 62 ,Categorical Variables Coding for the construct social disclosure

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 63,Classification table of block 0 for the construct social disclosure

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 64 , Variables in the Equation for construct social disclosure

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	SOCIALSORT10(1)	11.824	1	.001
	Overall Statistics		11.824	1	.001

Table 65, Variables in the equation for construct social disclosure

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	11.833	1	.001
	Block	11.833	1	.001
	Model	11.833	1	.001

Table 66,Omnibus Tests of Model Coefficients for the construct social disclosure

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	482.363[a]	.019	.034
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 67 , Model Summary for construct social disclosure

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	0	.

Table 68 ,Hosmer and Lemeshow Test for construct Social disclosure

Contingency Table for Hosmer and Lemeshow Test						
		Integrated report adoption = No		Integrated report adoption = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	310	310.000	31	31.000	341
	2	234	234.000	53	53.000	287

Table 69 , Contingency Table of Hosmer and Lemeshow Test for construct social disclosure.

8. Logistic regression – Governance Disclosure – IR adoption

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	628	100.0
	Missing Cases	0	.0
	Total	628	100.0
Unselected Cases		0	.0
Total		628	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Table 70, Case processing summary for construct Governance disclosure

Dependent Variable Encoding	
Original Value	Internal Value
No	0
Yes	1

Table 71 , Dependent variable (IR) encoding

Categorical Variables Codings			
		Frequency	Parameter coding
			(1)
GOVSORT10	Lower GOVD below mean	360	1.000
	Higher GOVD above mean	268	.000

Table 72 , Categorical Variables Codings for the construct Governance disclosure

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			Integrated report adoption		Percentage Correct
			No	Yes	
Step 0	Integrated report adoption	No	544	0	100.0
		Yes	84	0	.0
	Overall Percentage				86.6
a. Constant is included in the model.					
b. The cut value is .500					

Table 73 , Classification table for the construct Governance disclosure

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.868	.117	253.942	1	.000	.154

Table 74, Variables in the Equation of block 0 for the construct Governance disclosure

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	GOVSORT10(1)	2.127	1	.145
	Overall Statistics		2.127	1	.145

Table 75, Variables not in the Equation for the construct Governance disclosure

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	2.108	1	.147
	Block	2.108	1	.147
	Model	2.108	1	.147

Table 76 , Omnibus Tests of Model Coefficients for the construct Governance disclosure

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	492.089[a]	.003	.006
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 77, Model Summary for the construct Governance disclosure

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	0	.

Table 78 , Hosmer and Lemeshow Test for the construct Governance disclosure

Contingency Table for Hosmer and Lemeshow Test						
		Integrated report adoption = No		Integrated report adoption = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	318	318.000	42	42.000	360
	2	226	226.000	42	42.000	268

Table 79 , Contingency Table of Hosmer and Lemeshow Test for the construct Governance disclosure.

Appendix 2

Name	Integrated	Coded
Advantest	No	0
Aeon	No	0
Aichi Steel	No	0
Aisin Seiki	No	0
Ajinomoto	No	0
All Nippon Airways Company Limited	No	0
Anritsu Corporation	No	0
Asahi Glass Company	No	0
Asahi Group Holdings	Yes	1
Asahi Kasei	Yes	1
Bridgestone	Yes	1
Brother	No	0
Casio	No	0
Citizen Holdings	No	0
Comsys Holdings Corporation	No	0
CTC	No	0
Daiichi Sankyo	No	0
Daikin Industries	No	0
Daiwa House	No	0
Denso	Yes	1
DIC Corporation	No	0
Duskin	Yes	1
East Japan Railway	No	0
Eizo	No	0
Epson (Seiko Epson)	No	0
Fast Retailing	No	0
FUJIFILM Holdings Corporation	No	0
Fujikura Ltd.	No	0
Fujitsu	No	0
Hino Motors	No	0
Hitachi	No	0
Hitachi Chemical	Yes	1
Hitachi High-Technologies Corp.	Yes	1

Hitachi Kokusai Electric	No	0
Honda Motor Co., Ltd	No	0
Hulic	Yes	1
IBIDEN	No	0
Idemitsu Kosan	Yes	1
IHI	Yes	1
Inpex	No	0
Iseki	No	0
Isuzu Motors	No	0
Itochu	No	0
Itoham	No	0
Japan Airlines	Yes	1
Japan Tobacco	No	0
Japex	Yes	1
JFE Holdings	No	0
J-oil Mills (Jay Oil Mills)	No	0
Joshin	No	0
JSR Corp.	No	0
JX Holdings	No	0
Kagome	No	0
Kaneka Corporation	No	0
Kansai Electric Power	Yes	1
Kao Corporation	Yes	1
Kawasaki Kisen (K Line)	Yes	1
Kddi Corp.	No	0
Keikyu	No	0
Kikkoman	No	0
Kirin Holdings	No	0
KOBE STEEL, LTD. (Kobelco)	No	0
Kokuyo	No	0
Komatsu	No	0
Konica Minolta Group	Yes	1
Kose	No	0
Kuraray	No	0
KYB Corporation	No	0
Kyocera	No	0
Kyodo Printing Group	No	0
Kyowa Hakko Kirin	No	0
Leopalace 21	No	0

LION Corporation	No	0
LIXIL Group	No	0
Mandom	No	0
Marubeni	No	0
Marui Group	Yes	1
Marui Group	Yes	1
Matsuda Sangyo	No	0
Mazda	No	0
Megmilk	No	0
Meidensha	No	0
Meiko	No	0
Mitsubishi Estate	No	0
Mitsubishi Gas Chemical Company	No	0
Mitsubishi Heavy Industries	Yes	1
Mitsubishi Logistics	No	0
Mitsubishi Materials	No	0
Mitsubishi Motors	No	0
Mitsui & Co.	No	0
Mitsui Chemicals	No	0
Mitsui O.S.K. Lines	No	0
NEC Corporation	No	0
NGK Insulators	No	0
Nikon	No	0
NIPPON EXPRESS (Nittsu)	No	0
Nippon Paper Group	No	0
Nissan	No	0
Nomura Holdings	Yes	1
NTN Corp.	No	0
NTT Data	No	0
NTT DoCoMo	Yes	1
Okinawa Electric Power (OKIDEN)	No	0
Olympus Corporation	No	0
Omron	Yes	1
Osaka Gas	No	0
Panasonic Corporation	No	0
Ricoh	Yes	1
Santen Pharmaceutical	Yes	1
Sapporo Holdings	No	0
SCREEN Holdings	Yes	1

Secom	Yes	1
Sekisui Chemical	No	0
Sekisui House	No	0
Seven & i Holdings	No	0
Shin-Etsu Chemical	No	0
Shinko	No	0
Shiseido	No	0
Showa Denko	No	0
Sojitz	No	0
Sumitomo	No	0
Sumitomo Bakelite	No	0
Sumitomo Chemical	No	0
Sumitomo Electric Industries	No	0
Sumitomo Forestry	No	0
Sumitomo Metal Mining	Yes	1
Sumitomo Realty & Development	No	0
Suntory	No	0
Suzuki Motor Corporation	No	0
Sysmex	No	0
T.RAD	No	0
Taiheiyo Cement	No	0
Takeda	No	0
Tobu Railway	No	0
Tohoku Electric Power	No	0
Tokio Marine Holdings	Yes	1
Tokyo Electron	No	0
Tokyo Gas	No	0
Toppan	No	0
Toray Industries Inc	No	0
Toshiba	Yes	1
TOTO	No	0
Toyota Tsusho	No	0
West Japan Railway	No	0
Yamaha	No	0
Yamaha Motor	No	0
Yamato Holdings	No	0
Yokogawa Group	No	0
Alps Electric	No	0
Amada Co	No	0

Anritsu Corporation	No	0
ASICS	No	0
Astellas Pharma Inc	No	0
Avex Group	No	0
DAI-DAN Co., Ltd.	No	0
Dowa Holdings	No	0
Dynic Corporation	No	0
Ebara	No	0
FANUC	No	0
Fuji Oil	No	0
FURUKAWA	No	0
Furukawa Electric	No	0
Futaba	No	0
GS Yuasa Corporation	No	0
Hokuetsu Kishu Paper	No	0
Japan Display Inc.	No	0
Japan Steel Works (JSW)	No	0
Mitsui Engineering & Shipbuilding	No	0
Nankai Electric Railway	No	0
Nissan Chemical	No	0
Oji Holding	No	0
Sharp	No	0
Amec Foster Wheeler	No	0
Anglo American	Yes	1
ARM Holdings	No	0
Associated British Foods	No	0
BAE Systems	No	0
Balfour Beatty	No	0
Bellway PLC	No	0
BP	Yes	1
British American Tobacco (Holdings)	No	0
British Land	No	0
British Sky	No	0
BT Group	No	0
Bunzl	No	0
Burberry Group	No	0
Cairn Energy	No	0
Capita	No	0
Carillion	No	0

Cineworld	No	0
CNH Industrial	No	0
Cobham plc	No	0
Compass Group	No	0
Computacenter	No	0
Countrywide	No	0
Croda	No	0
Dechra Pharmaceuticals	No	0
Derwent London	No	0
Diageo	No	0
Dignity	No	0
Dixons Carphone	No	0
Drax Group	No	0
DS Smith	No	0
Dunelm Group	No	0
Easyjet	No	0
Elementis plc	No	0
Essentra	No	0
Experian PLC	No	0
Fidessa Group	No	0
Foxtons	No	0
G4S plc	No	0
Gem Diamonds	No	0
GlaxoSmithKline (GSK)	Yes	1
Grainger PLC	No	0
Great Portland Estates	No	0
Halfords Group PLC	No	0
Hammerson	No	0
Hanson UK	No	0
Hays PLC	No	0
Hikma Pharmaceuticals PLC	No	0
Hochschild Mining	No	0
Imperial Brands (Imperial Tobacco)	No	0
InterContinental Hotels Group (IHG)	No	0
International Airlines Group	Yes	1
Interserve PLC	No	0
Intertek Group plc	No	0
J. Sainsbury	Yes	1
JD Sports	No	0

Johnson Matthey	Yes	1
Kier Group	No	0
Kingfisher	No	0
Marks & Spencer	Yes	1
Mediclinic International plc	No	0
Next PLC	No	0
Ocado Group	No	0
Persimmon	No	0
Polymetal International plc	Yes	1
Randgold Resources Limited	No	0
RELX Group	No	0
Renishaw	No	0
Rightmove PLC	Yes	1
Rio Tinto	No	0
Rolls-Royce	No	0
Sage	No	0
Segro	No	0
Shaftesbury PLC	No	0
Smiths Group	No	0
Synergy Health PLC	Yes	1
Synthomer plc	Yes	1
Tate&Lyle	No	0
Ted Baker	Yes	1
Tesco	No	0
CHR	Yes	1
The Unite Group plc	No	0
TUI Travel	No	0
Tullow Oil	No	0
Ultra Electronics Holdings	Yes	1
United Utilities	No	0
Vauxhall Motors	No	0
Vodafone Group	Yes	1
Workspace Group	No	0
WPP	No	0
Zoopla plc	No	0
AstraZeneca	No	0
Tate&Lyle	No	0
The Go-Ahead Group	No	0
JKX Oil & Gas plc	No	0

Mitie Group	No	0
Morgan Sindall Group	No	0
Morrisons	No	0
National Grid	Yes	1
William Hill	No	0
ITV	No	0
3M Brazil	No	0
AES Brasil	No	0
AES Eletropaulo	No	0
AES Sul	Yes	1
AMATA S.A	No	0
AmBev	Yes	1
ARTERIS	No	0
B2W - Companhia Digital	No	0
Braskem	No	0
BRF (Brasil Foods)	Yes	1
CCR Actua	Yes	1
Celulose Irani	No	0
CEMIG	No	0
Centrais Elétricas de Santa Catarina (Celesc)	No	0
CESP	No	0
Copel	Yes	1
CPFL Renováveis	No	0
CTEEP	No	0
Duratex	Yes	1
EcoRodovias	No	0
Elektro	No	0
Embasa	No	0
Embraer	No	0
ENGIE Brasil Energia (Tractebel Energia)	Yes	1
Eternit	No	0
Even Construtora e Incorporadora S.A.	No	0
Fibria	Yes	1
Gas Natural Fenosa Brasil	No	0
GPA (Grupo Pão de Açúcar)	No	0
Grupo CPFL Energia	No	0
Grupo Fleury	No	0
Grupo Marfrig	No	0
Hypermarcas	Yes	1

Itaúsa	No	0
JBS S.A.	No	0
Klabin	No	0
Kroton Educacional	No	0
Light	Yes	1
Lojas Americanas	Yes	1
Lojas Renner S.A.	Yes	1
Magazine Luiza	No	0
MRV ENGENHERIA	No	0
Multiplus	No	0
Mundial S.A	No	0
Natura	Yes	1
Neoenergia	No	0
Oi	No	0
Petrobras	No	0
QGEP	No	0
Sabesp	No	0
Santos Brasil	No	0
São Martinho	No	0
Tecnisa Construtora e Incorporadora	No	0
TIM Participações	No	0
Triunfo Participações e Investimentos (TPI)	No	0
USIMINAS	No	0
Vale	Yes	1
Via Varejo	No	0
WEG	Yes	1
Whirlpool Corporation Brasil	Yes	1
AAK	No	0
Addtech	No	0
ÅF AB	No	0
Alfa Laval	No	0
ASSA ABLOY - Sweden	No	0
Atlas Copco	Yes	1
Atrium Ljungberg	No	0
Autoliv	No	0
Axfood	No	0
Axis Communications	No	0
BillerudKorsnäs	Yes	1
Björn Borg	No	0

Boliden	Yes	1
Bulten	No	0
Byggmax	No	0
Camfil	No	0
Castellum	No	0
Clas Ohlson	No	0
Cloetta	No	0
Com Hem	No	0
Coop Sverige	No	0
Coor Service Management	No	0
DGC One AB	No	0
Electrolux	No	0
Ericsson	No	0
Fabege AB	Yes	1
Fagerhult Group	No	0
Fenix Outdoor	Yes	1
Filippa K	No	0
Getinge AB	No	0
H&M (Hennes & Mauritz)	No	0
Haglöfs	No	0
Haldex	No	0
HEXPOL	No	0
Holmen	No	0
Hufvudstaden AB	No	0
Husqvarna AB	No	0
ICA	No	0
Inwido	No	0
JM	No	0
Klövern	No	0
Kungsleden	No	0
Lindab	No	0
LKAB	No	0
Meda	No	0
Mekonomen	No	0
Modern Times Group	No	0
MQ	No	0
NCC	No	0
NIBE Industrier AB	No	0
Nobia	No	0

Nolato	No	0
Oriflame	No	0
Pandox	No	0
Peab	No	0
Platzer Fastigheter	No	0
Ratos	No	0
Rottneros AB	No	0
SAAB Group - Defence and Security	No	0
Sandvik	No	0
SAS Group AB (Sweden)	No	0
Scandic Hotels	No	0
Scania	No	0
Securitas AB	No	0
Skanska	No	0
SKF Group	No	0
Sobi	No	0
SSAB	No	0
Svenska Cellulosa Aktiebolaget - SCA	Yes	1
Svenska Spel	No	0
Swedish Match	No	0
Telia Company	No	0
Thule Group	No	0
Trelleborg Group	No	0
Vattenfall	No	0
Volvo Car Corporation	Yes	1
Volvo Group	Yes	1
Wallenstam	No	0
Wihlborgs Fastigheter	No	0
3M	No	0
ABM Industries Incorporated	No	0
Accenture	No	0
AECOM	No	0
Agilent Technologies	No	0
Air Products	No	0
Albemarle Corporation	No	0
Alcoa	No	0
Alliance Data	No	0
Altria Group	No	0
AMD (Advanced Micro Devices)	No	0

Ameren	No	0
American Airlines	No	0
American Electric Power (AEP)	No	0
Amgen Inc.	No	0
AMN Healthcare	No	0
Apache Corporation	No	0
Apartment Investment & Management Company (AIMCO)	No	0
Apple	No	0
AptarGroup	No	0
Archer Daniels Midland	No	0
Arrow Electronics	No	0
Ashland	No	0
AT&T	No	0
AvalonBay Communities	No	0
Avon Products	No	0
Axalta Coating Systems	No	0
Ball Corporation	No	0
Baxter International	No	0
Bed Bath & Beyond	No	0
Berry Global	No	0
Best Buy	No	0
Biogen Idec	No	0
Black & Decker	No	0
Boeing	No	0
Bristol-Myers Squibb Company	No	0
Broadcom Corp.	No	0
Bunge	No	0
Caesars Entertainment	No	0
California Water Service Group	No	0
Campbell Soup	No	0
Cardinal Health, Inc.	No	0
Carnival Corporation & plc	No	0
Caterpillar	No	0
CBRE	No	0
Celgene	No	0
Cigna	No	0
Cisco Systems, Inc.	No	0
Coca-Cola Enterprises	Yes	1
Cognizant	No	0

Colgate-Palmolive	Yes	1
ConAgra Foods	No	0
ConocoPhillips	No	0
Craft Brew Alliance	No	0
CSC (Computer Sciences Corporation)	No	0
CSX Corporation	No	0
CVS Health	No	0
DaVita	No	0
Dell	No	0
Delta Air Lines	Yes	1
Dominion Resources	No	0
DTE Energy Company	No	0
Duke Energy	No	0
DuPont	No	0
Ecolab	No	0
Edwards Lifesciences	No	0
Eli Lilly	Yes	1
EMC Corporation	No	0
EQT Corporation	No	0
Equinix	No	0
Eversource Energy	No	0
Exelon Corp	No	0
ExxonMobil	No	0
Fairmount Santrol	No	0
Farmer Brothers	No	0
FedEx Corporation	No	0
Flex	No	0
Fluor	No	0
FMC Corporation	No	0
Ford Motor Company	No	0
Forest City Enterprises Inc.	No	0
Freeport-McMoRan Copper & Gold	No	0
General Mills	No	0
General Motors Company	No	0
Halliburton	No	0
Harley-Davidson	No	0
HARMAN	No	0
Hawaiian Electric	No	0
Hershey's	No	0

Hess Corporation	No	0
Hewlett Packard Enterprise	Yes	1
Hilton	No	0
Home Depot	No	0
Hormel Foods	No	0
HP - Hewlett-Packard	No	0
Humana	No	0
Hypertherm	No	0
IBM	No	0
IHS	No	0
Illinois Tool Works Inc	No	0
Infinera	No	0
Ingersoll-Rand	No	0
Intel Corporation	Yes	1
International Flavors and Fragances (IFF)	No	0
International Paper	No	0
Interpublic Group Cos	No	0
Iron Mountain	No	0
Jacobs Engineering Group	No	0
jetBlue	No	0
JLL	No	0
Johnson & Johnson	No	0
Johnson Controls	No	0
Kansas City Southern	No	0
KB Home	No	0
KBR Inc.	No	0
Kellogg	No	0
Kilroy Realty Corporation	No	0
Kimberly-Clark	No	0
Kimco Realty	No	0
KLA-Tencor Corporation	No	0
Lam Research	No	0
Las Vegas Sands Corp.	No	0
Layne Christensen	No	0
Leidos	No	0
Lexmark	No	0
Lockheed Martin Corporation	No	0
Lowe's	No	0
Macerich	No	0

ManpowerGroup	No	0
Marathon Oil Corporation	No	0
Marriott Vacations Worldwide	No	0
Masco	No	0
McKesson Co. & Foundation	No	0
Medtronic	Yes	1
Merck & Co., Inc.	No	0
Microsoft Corporation	No	0
ModusLink	No	0
Monsanto	No	0
Nestle USA	Yes	1
Newmont Mining Corporation	No	0
NextEra Energy	No	0
Nielsen	No	0
Nike	No	0
Nisource	No	0
Noble Energy	No	0
Northrop Grumman	No	0
NRG Energy	No	0
NSK	No	0
NVIDIA	No	0
Omega Protein Corporation	No	0
Oshkosh	No	0
Pearson	No	0
PepsiCo	No	0
Perrigo	No	0
Pfizer	Yes	1
PG&E	No	0
PNM Resources	No	0
PPG Industries	No	0
PPL Corporation	No	0
Prologis	No	0
PVH Corp.	No	0
Qualcomm	No	0
Raytheon Company	No	0
Republic Services Inc	No	0
Reynolds American	Yes	1
Rockwell Automation	No	0
Rockwell Collins	No	0

Ross Stores	No	0
Royal Caribbean Cruises Ltd.	No	0
Schlumberger	Yes	1
Schnitzer Steel Industries, Inc.	No	0
Sealed Air Corporation	No	0
Sears Holdings	No	0
Sempra Energy	No	0
Sherwin-Williams	No	0
Simon	No	0
SL Green Realty	No	0
Smithfield	Yes	1
Sodexo US	No	0
Southern California Edison	No	0
Southwestern Energy	No	0
Spectra Energy	No	0
Stanley Black and Decker	No	0
Staples Inc.	No	0
Starwood Hotels and Resorts	No	0
Stillwater Mining Company	Yes	1
Symantec	No	0
Target	No	0
Tennant Company	No	0
Teradata	No	0
Texas Instruments	No	0
The Mosaic Company	Yes	1
Thermo Fisher Scientific	No	0
Tiffany & Co.	No	0
TJX	No	0
Tronox	No	0
UniFirst Corporation	No	0
United Rentals	No	0
Univision	No	0
Valero Energy Corp.	No	0
Varian Medical Services	No	0
Verizon Communications	No	0
VF Corporation	No	0
VMware	No	0
VWR	No	0
Walmart	No	0

Waste Management	No	0
Welltower (former Health Care REIT)	No	0
Weyerhaeuser	No	0
WGL Holdings	No	0
Whitewave Foods	No	0
Xcel Energy	No	0
Xerox	Yes	1
Xilinx Inc	No	0
Xylem	No	0
Yum Brands	No	0

Appendix 3

Name company	Env _ D	Social_D	GOV_D
Advantest	36.4341	47.3684	51.7857
Aeon	25	42.1053	57.1429
Aichi Steel	47.2868	31.5789	57.1429
Aisin Seiki	43.4109	28.0702	46.4286
Ajinomoto	61.2403	33.3333	46.4286
All Nippon Airways Company Limited	44.186	28.0702	51.7857
Anritsu Corporation	49.6124	42.1053	57.1429
Asahi Glass Company	57.3643	33.3333	57.1429
Asahi Group Holdings	37.9845	52.6316	57.1429
Asahi Kasei	46.5116	42.1053	57.1429
Bridgestone	51.1628	31.5789	57.1429
Brother	50.3876	28.0702	51.7857
Casio	56.5891	42.1053	57.1429
Citizen Holdings	41.8605	42.1053	51.7857
Comsys Holdings Corporation	47.2868	33.3333	51.7857
CTC	29.4574	33.3333	51.7857
Daiichi Sankyo	51.938	38.5965	57.1429
Daikin Industries	51.1628	31.5789	57.1429
Daiwa House	56.5891	31.5789	57.1429
Denso	28.6822	38.5965	57.1429
DIC Corporation	37.9845	28.0702	57.1429
Duskin	41.8605	38.5965	57.1429
East Japan Railway	39.5349	47.3684	57.1429
Eizo	44.186	28.0702	51.7857
Epson (Seiko Epson)	44.186	28.0702	51.7857
Fast Retailing	12.5	33.3333	51.7857
FUJIFILM Holdings Corporation	53.4884	31.5789	57.1429
Fujikura Ltd.	28.6822	38.5965	57.1429
Fujitsu	59.6899	42.1053	57.1429
Hino Motors	24.8062	28.0702	51.7857
Hitachi	55.0388	36.8421	62.5
Hitachi Chemical	55.0385	36.8424	62.5
Hitachi High-Technologies Corp.	34.1085	43.8596	57.1429
Hitachi Kokusai Electric	51.1628	22.807	51.7857
Honda Motor Co., Ltd	39.5349	33.3333	57.1429

Hulic	36.4341	43.8596	57.1429
IBIDEN	53.4884	26.3158	51.7857
Idemitsu Kosan	18.6047	9.6735	64.2083
IHI	29.4574	33.3333	51.7857
Inpex	58.6777	59.375	57.1429
Iseki	49.6124	31.5789	46.4286
Isuzu Motors	22.4806	26.3158	51.7857
Itochu	51.934	38.5969	57.1429
Itoham	34.8837	31.5789	57.1429
Japan Airlines	31.0078	40.3509	37.5
Japan Tobacco	45.7364	49.1228	57.1429
Japex	37.9845	47.3684	51.7857
JFE Holdings	54.5153	23.3676	67.1583
J-oil Mills (Jay Oil Mills)	53.4884	26.3158	51.7857
Joshin	23.9583	22.807	51.7857
JSR Corp.	43.4109	38.5965	51.7857
JX Holdings	45.7364	38.5965	62.5
Kagome	34.8837	33.3333	51.7857
Kaneka Corporation	46.5116	31.5789	57.1429
Kansai Electric Power	44.8276	23.4375	51.7857
Kao Corporation	57.3643	47.3684	57.1429
Kawasaki Kisen (K Line)	22.4806	31.5789	57.1429
Kddi Corp.	20.3252	32.8125	57.1429
Keikyu	15.5039	28.0702	46.4286
Kikkoman	43.4109	43.8596	51.7857
Kirin Holdings	58.9147	64.9123	57.1429
KOBE STEEL, LTD. (Kobelco)	36.4341	31.5789	51.7857
Kokuyo	48.8372	52.6316	57.1429
Komatsu	53.4884	38.5965	57.1429
Konica Minolta Group	52.7132	49.1228	57.1429
Kose	40.3101	33.3333	46.4286
Kuraray	40.3101	33.3333	51.7857
KYB Corporation	16.2791	28.0702	46.4286
Kyocera	33.3333	28.0702	51.7857
Kyodo Printing Group	37.9845	22.807	51.7857
Kyowa Hakko Kirin	54.2636	43.8596	51.7857
Leopalace 21	9.3023	33.3333	51.7857
LION Corporation	44.186	43.8596	51.7857
LIXIL Group	47.2868	38.5965	57.1429

Mandom	31.7829	38.5965	51.7857
Marubeni	20.155	31.5789	53.5714
Marui Group	67.7083	47.3684	51.7857
Marui Group	67.7073	47.3679	51.7857
Matsuda Sangyo	35.6589	28.0702	51.7857
Mazda	51.1628	31.5789	57.1429
Megmilk	34.1085	21.0526	51.7857
Meidensha	50.3876	43.8596	51.7857
Meiko	34.8837	28.0702	46.4286
Mitsubishi Estate	36.4341	33.3333	51.7857
Mitsubishi Gas Chemical Company	27.1318	28.0702	46.4286
Mitsubishi Heavy Industries	27.1318	36.8421	51.7857
Mitsubishi Logistics	29.4574	31.5789	51.7857
Mitsubishi Materials	38.7597	36.8421	57.1429
Mitsubishi Motors	39.5349	22.807	51.7857
Mitsui & Co.	44.9612	38.5965	51.7857
Mitsui Chemicals	45.7364	28.0702	57.1429
Mitsui O.S.K. Lines	45.7364	31.5789	51.7857
NEC Corporation	56.5891	38.5965	57.1429
NGK Insulators	46.5116	38.5965	57.1429
Nikon	48.062	42.1053	57.1429
NIPPON EXPRESS (Nittsu)	45.7364	31.5789	51.7857
Nippon Paper Group	53.4884	43.8596	51.7857
Nissan	64.4518	23.6094	59.9037
Nomura Holdings	45.5357	45	67.8571
NTN Corp.	46.5116	33.3333	46.4286
NTT Data	53.4884	36.8421	51.7857
NTT DoCoMo	50.4065	28.125	57.1429
Okinawa Electric Power (OKIDEN)	49.6552	15.625	51.7857
Olympus Corporation	51.1628	33.3333	57.1429
Omron	55.814	36.8421	57.1429
Osaka Gas	42.069	29.6875	57.1429
Panasonic Corporation	56.5891	43.8596	57.1429
Ricoh	68.2171	33.3333	62.5
Santen Pharmaceutical	43.5216	13.9964	70.6803
Sapporo Holdings	36.5146	15.0544	68.1818
SCREEN Holdings	35.6589	31.5789	51.7857
Secom	77.5194	33.3333	57.1429
Sekisui Chemical	39.5047	24.607	71.0415

Sekisui House	46.7834	17.4123	64.7803
Seven & i Holdings	26.0417	42.1053	57.1429
Shin-Etsu Chemical	59.6899	38.5965	48.2143
Shinko	60.4651	28.0702	51.7857
Shiseido	54.2636	54.386	57.1429
Showa Denko	31.7829	43.8596	57.1429
Sojitz	32.5581	31.5789	51.7857
Sumitomo	30.3571	35	57.1429
Sumitomo Bakelite	48.062	22.807	57.1429
Sumitomo Chemical	27.1318	47.3684	57.1429
Sumitomo Electric Industries	58.1395	42.1053	57.1429
Sumitomo Forestry	44.9612	38.5965	51.7857
Sumitomo Metal Mining	53.4884	52.6316	60.7143
Sumitomo Realty & Development	13.1783	22.807	37.5
Suntory	33.3333	47.3684	26.7857
Suzuki Motor Corporation	34.1085	22.807	46.4286
Sysmex	40.5618	16.0822	66.9175
T.RAD	40.5618	16.0822	66.9175
Taiheiyo Cement	24.031	42.1053	57.1429
Takeda	53.4884	38.5965	57.1429
Tobu Railway	40.3101	28.0702	51.7857
Tohoku Electric Power	51.0345	20.3125	46.4286
Tokio Marine Holdings	38.3929	30	62.5
Tokyo Electron	47.2868	43.8596	51.7857
Tokyo Gas	51.7241	28.125	57.1429
Toppan	49.6124	36.8421	57.1429
Toray Industries Inc	41.0853	47.3684	57.1429
Toshiba	67.4419	33.3333	57.1429
TOTO	55.814	36.8421	57.1429
Toyota Tsusho	20.155	31.5789	51.7857
West Japan Railway	39.5349	22.807	46.4286
Yamaha	31.0078	36.8421	46.4286
Yamaha Motor	46.5116	43.8596	51.7857
Yamato Holdings	31.0078	36.8421	46.4286
Yokogawa Group	46.5116	43.8596	51.7857
Alps Electric	34.1085	31.5789	46.4286
Amada Co	25.5814	12.2807	46.4286
Anritsu Corporation	49.6124	42.1053	57.1429
ASICS	31.7829	28.0702	57.1429

Astellas Pharma Inc	58.1395	64.9123	51.7857
Avex Group	0.7752	28.0702	46.4286
DAI-DAN Co., Ltd.	20.9302	33.3333	51.7857
Dowa Holdings	36.4341	47.3684	46.4286
Dynic Corporation	20.155	43.8597	66.0713
Ebara	50.3874	22.809	51.7857
FANUC	14.7287	12.2807	46.4286
Fuji Oil	34.1085	33.3333	51.7857
FURUKAWA	38.7597	47.3684	46.4286
Furukawa Electric	50.3876	22.807	51.7857
Futaba	41.0853	8.7719	46.4286
GS Yuasa Corporation	48.062	28.0702	46.4286
Hokuetsu Kishu Paper	38.7597	28.0702	46.4286
Japan Display Inc.	34.9743	6.3785	57.947
Japan Steel Works (JSW)	37.9845	19.2982	46.4286
Mitsui Engineering & Shipbuilding	31.0078	28.0702	46.4286
Nankai Electric Railway	17.8295	31.5789	51.7857
Nissan Chemical	18.6047	28.0702	46.4286
Oji Holding	50.3876	33.3333	46.4286
Sharp	58.1395	33.3333	51.7857
Amec Foster Wheeler	33.3333	64.9123	67.8571
Anglo American	47.2868	52.6316	76.7857
ARM Holdings	24.8062	43.8596	51.7857
Associated British Foods	55.814	43.8596	62.5
BAE Systems	20.155	38.5965	62.5
Balfour Beatty	26.3566	38.5965	60.7143
Bellway PLC	24.8062	38.5965	57.1429
BP	71.0744	68.75	71.4286
British American Tobacco (Holdings)	47.2868	47.3684	67.8571
British Land	41.8605	59.6491	67.8571
British Sky	31.0078	38.5965	58.9286
BT Group	36.5854	39.0625	67.8571
Bunzl	26.3566	38.5965	66.0714
Burberry Group	22.9167	43.8596	62.5
Cairn Energy	68.595	76.5625	71.4286
Capita	20.9302	52.6316	53.5714
Carillion	31.0078	33.3333	71.4286
Cineworld	15.5039	33.3333	57.1429
CNH Industrial	68.9922	61.4035	67.8571

Cobham plc	16.2791	52.6316	55.3571
Compass Group	16.2791	52.6316	55.3571
Computacenter	13.9535	36.8421	57.1429
Countrywide	6.9767	30.7437	78.7176
Croda	53.4884	38.5965	67.8571
Dechra Pharmaceuticals	10.299	39.4498	78.7176
Derwent London	42.6357	52.6316	57.1429
Diageo	55.0388	64.9123	62.5
Dignity	22.4806	33.3333	48.2143
Dixons Carphone	31.25	38.5965	53.5714
Drax Group	31.7829	43.8596	57.1429
DS Smith	56.5891	43.8596	64.2857
Dunelm Group	16.6667	38.5965	53.5714
Easyjet	11.6279	38.5965	53.5714
Elementis plc	36.4341	54.386	60.7143
Essentra	26.3566	38.5965	53.5714
Experian PLC	20.155	63.1579	62.5
Fidessa Group	4.6512	33.3333	57.1429
Foxtons	13.9535	33.3333	50
G4S plc	13.1783	50.8772	57.1429
Gem Diamonds	36.4341	54.386	66.0714
GlaxoSmithKline (GSK)	55.3005	40.1149	90.5479
Grainger PLC	37.9845	52.6316	58.9286
Great Portland Estates	37.9845	47.3684	57.1429
Halfords Group PLC	12.5	28.0702	53.5714
Hammerson	44.186	47.3684	62.5
Hanson UK	15.5039	33.3333	57.1429
Hays PLC	9.3023	57.8947	48.2143
Hikma Pharmaceuticals PLC	22.4806	43.8596	57.1429
Hochschild Mining	9.3023	57.8947	48.2143
Imperial Brands (Imperial Tobacco)	44.186	49.1228	64.2857
InterContinental Hotels Group (IHG)	32.5581	40.3509	53.5714
International Airlines Group	27.1318	33.3333	50
Interserve PLC	28.6822	38.5965	51.7857
Intertek Group plc	29.5983	28.5973	79.2896
J. Sainsbury	24.8062	33.3333	57.1429
JD Sports	32.2917	38.5965	51.7857
Johnson Matthey	39.5349	54.386	58.9286
Kier Group	24.8062	49.1228	71.4286

Kingfisher	45.8333	68.4211	64.2857
Marks & Spencer	43.75	64.9123	71.4286
Mediclinic International plc	41.0853	45.614	50
Next PLC	44.7917	33.3333	66.0714
Ocado Group	20.155	63.1579	62.5
Persimmon	28.662	23.3676	84.2866
Polymetal International plc	66.6868	54.0206	85.5509
Randgold Resources Limited	37.9845	42.1053	60.7143
RELX Group	47.2868	57.8947	73.2143
Renishaw	27.907	63.1579	53.5714
Rightmove PLC	11.6279	33.3333	53.5714
Rio Tinto	56.5891	54.386	76.7857
Rolls-Royce	36.6355	28.2346	85.5509
Sage	17.8295	33.3333	57.1429
Segro	19.4503	38.6941	89.9759
Shaftesbury PLC	45.7364	59.6491	57.1429
Smiths Group	23.2558	47.3684	53.5714
Synergy Health PLC	21.7054	33.3333	53.5714
Synthomer plc	35.6589	33.3333	60.7143
Tate&Lyle	20.155	43.8596	66.0714
Ted Baker	18.75	33.3333	51.7857
Tesco	26.3566	38.5965	66.0714
CHR	60.4651	64.9123	73.2143
The Unite Group plc	16.2791	24.5614	50
TUI Travel	24.031	36.8421	51.7857
Tullow Oil	44.6281	39.0625	60.7143
Ultra Electronics Holdings	67.4419	43.8596	76.7857
United Utilities	44.6429	41.6667	58.9286
Vauxhall Motors	21.7054	33.3333	57.1429
Vodafone Group	45.1827	44.9516	85.5509
Workspace Group	16.2791	31.5789	53.5714
WPP	41.8605	47.3684	71.4286
Zoopla plc	21.7054	33.3333	53.5714
AstraZeneca	44.9612	49.1228	62.5
Tate&Lyle	20.155	43.8596	66.0714
The Go-Ahead Group	29.4574	57.8947	58.9286
JKX Oil & Gas plc	57.1429	22.314	54.6875
Mitie Group	38.7597	43.8596	53.5714
Morgan Sindall Group	32.5581	50.8772	64.2857

Morrisons	32.5581	38.5965	58.9286
National Grid	31.0078	54.386	60.7143
William Hill	15.5039	50.8772	53.5714
ITV	23.2558	38.5965	48.2143
3M Brazil	65.1163	56.1404	42.8571
AES Brasil	69.6429	63.3333	69.6429
AES Eletropaulo	56.5891	68.4211	66.0714
AES Sul	58.1395	84.2105	57.1429
AMATA S.A	58.9286	53.3333	53.5714
AmBev	33.3333	47.3684	53.5714
ARTERIS	39.5349	59.6491	53.5714
B2W - Companhia Digital	2.3256	22.807	42.8571
Braskem	56.5891	47.3684	57.1429
BRF (Brasil Foods)	66.6667	68.4211	53.5714
CCR Actua	42.5551	62.9741	64.3591
Celulose Irani	41.0853	66.6667	53.5714
CEMIG	58.1395	84.2105	57.1429
Centrais Elétricas de Santa Catarina (Celesc)	53.4884	64.9123	53.5714
CESP	40.3101	77.193	64.2857
Copel	34.8837	33.3333	48.2143
CPFL Renováveis	44.9612	57.8947	53.5714
CTEEP	24.8062	52.6316	53.5714
Duratex	70.5426	52.6316	57.1429
EcoRodovias	54.2636	52.6316	53.5714
Elektro	33.3333	77.193	51.7857
Embasa	13.9535	42.1053	42.8571
Embraer	66.6667	57.8947	48.2143
ENGIE Brasil Energia (Tractebel Energia)	62.0155	68.4211	58.9286
Eternit	31.7829	52.6316	48.2143
Even Construtora e Incorporadora S.A.	45.9378	34.8851	54.2143
Fibria	65.8915	71.9298	58.9286
Gas Natural Fenosa Brasil	24.6149	26.6626	54.2143
GPA (Grupo Pão de Açúcar)	32.1429	38.3333	42.8571
Grupo CPFL Energia	44.9612	57.8947	53.5714
Grupo Fleury	61.2403	57.8947	58.9286
Grupo Marfrig	45.7364	49.1228	48.2143
Hypermarcas	57.1429	66.6667	71.4286
Itaúsa	12.4031	42.1053	53.5714
JBS S.A.	46.5116	33.3333	53.5714

Klabin	67.4419	49.1228	50
Kroton Educacional	15.5039	47.3684	48.2143
Light	41.0853	82.4561	48.2143
Lojas Americanas	41.6667	38.5965	53.5714
Lojas Renner S.A.	55.2083	49.1228	53.5714
Magazine Luiza	20.749	28.1137	54.2143
MRV ENGENHERIA	36.4341	42.1053	48.2143
Multiplus	6.9767	50.8772	37.5
Mundial S.A	22.4806	22.807	42.8571
Natura	56.5891	68.4211	66.0714
Neoenergia	62.7907	54.386	53.5714
Oi	50.4065	60.9375	51.7857
Petrobras	71.0744	78.125	53.5714
QGEP	62.5	73.3333	62.5
Sabesp	34.1085	85.9649	58.9286
Santos Brasil	28.6822	59.6491	48.2143
São Martinho	31.7829	28.0702	42.8571
Tecnisa Construtora e Incorporadora	13.9535	59.6491	46.4286
TIM Participações	53.579	52.5695	65.7435
Triunfo Participações e Investimentos (TPI)	41.8605	68.4211	58.9286
USIMINAS	15.5039	33.3333	42.8571
Vale	65.1163	61.4035	42.8571
Via Varejo	31.7829	31.5789	42.8571
WEG	31.7829	47.3684	48.2143
Whirlpool Corporation Brasil	52.7132	49.1228	48.2143
AAK	49.6124	49.1228	57.1429
Addtech	47.9339	47.9339	47.9339
ÅF AB	48.062	48.062	48.062
Alfa Laval	51.7857	51.7857	51.7857
ASSA ABLOY - Sweden	50.3876	43.8596	57.1429
Atlas Copco	30.2326	43.8596	62.5
Atrium Ljungberg	20.155	52.6316	48.2143
Autoliv	15.5039	33.3333	51.7857
Axfood	27.1318	43.8596	44.6429
Axis Communications	13.9535	63.1579	44.6429
BillerudKorsnäs	54.2636	52.6316	62.5
Björn Borg	22.4806	35.0877	51.7857
Boliden	55.0388	64.9123	71.4286
Bulten	26.3566	35.0877	51.7857

Byggmax	33.9286	51.6667	51.6667
Camfil	51.938	49.1228	51.7857
Castellum	31.7829	43.8596	62.5
Clas Ohlson	13.5417	45.614	57.1429
Cloetta	41.0853	38.5965	62.5
Com Hem	9.3023	28.0702	28.0702
Coop Sverige	41.9643	48.3333	48.3333
Coor Service Management	42.6357	42.1053	42.1053
DGC One AB	31.25	46.6667	60.7143
Electrolux	44.9612	59.6491	62.5
Ericsson	41.0853	42.1053	57.1429
Fabege AB	24.031	43.8596	62.5
Fagerhult Group	28.6822	43.8596	57.1429
Fenix Outdoor	54.2636	52.6316	37.5
Filippa K	4.6512	40.3509	53.5714
Getinge AB	37.2093	42.1053	51.7857
H&M (Hennes & Mauritz)	38.5417	33.3333	69.6429
Haglöfs	11.6279	24.5614	51.7857
Haldex	11.6279	24.5614	46.4286
HEXPOL	41.0853	33.3333	57.1429
Holmen	51.938	61.4035	58.9286
Hufvudstaden AB	11.6279	42.1053	53.5714
Husqvarna AB	46.5116	43.8596	57.1429
ICA	39.5349	54.386	62.5
Inwido	6.25	19.2982	19.2982
JM	34.8837	38.5965	62.5
Klövern	6.9767	45.614	53.5714
Kungsleden	20.9302	38.5965	62.5
Lindab	34.8837	49.1228	57.1429
LKAB	2.3256	19.2982	19.2982
Meda	41.0853	38.5965	62.5
Mekonomen	9.3023	33.3333	57.1429
Modern Times Group	24.031	57.8947	67.8571
MQ	39.5349	49.1228	62.5
NCC	27.1318	33.3333	53.5714
NIBE Industrier AB	59.0758	34.1898	54.3347
Nobia	35.6589	43.8596	57.1429
Nolato	40.3101	47.3684	53.5714
Oriflame	30.2326	42.1053	57.1429

Pandox	17.8295	19.2982	51.7857
Peab	23.2558	33.3333	57.1429
Platzer Fastigheter	2.6786	20	20
Ratos	15.1786	23.3333	62.5
Rottneros AB	26.3566	36.8421	46.4286
SAAB Group - Defence and Security	10.8527	33.3333	57.1429
Sandvik	55.0388	54.386	67.8571
SAS Group AB (Sweden)	6.9767	28.0702	42.8571
Scandic Hotels	40.3101	49.1228	62.5
Scania	41.8605	38.5965	28.5714
Securitas AB	13.9535	54.386	51.7857
Skanska	37.2093	43.8596	46.4286
SKF Group	49.6124	49.1228	62.5
Sobi	48.062	22.807	51.7857
SSAB	42.6357	54.386	66.0714
Svenska Cellulosa Aktiebolaget - SCA	52.7132	64.9123	62.5
Svenska Spel	49.6124	49.1228	49.1228
Swedish Match	43.4109	33.3333	51.7857
Telia Company	29.2683	50	48.2143
Thule Group	32.5581	40.3509	57.1429
Trelleborg Group	48.062	43.8596	62.5
Vattenfall	42.6357	52.6316	51.7857
Volvo Car Corporation	53.4884	64.9123	71.4286
Volvo Group	37.9845	43.8596	46.4286
Wallenstam	27.907	33.3333	57.1429
Wihlborgs Fastigheter	28.6822	45.614	58.9286
3M	48.062	49.1228	66.0714
ABM Industries Incorporated	54.2636	31.5789	71.4286
Accenture	41.8605	29.8246	60.7143
AECOM	22.4806	22.807	64.2857
Agilent Technologies	51.1628	43.8596	75
Air Products	56.5891	57.8947	80.3571
Albemarle Corporation	31.7241	50	55.3571
Alcoa	3.7149	6.3785	86.2131
Alliance Data	19.8429	25.6651	86.2131
Altria Group	39.5349	57.8947	69.6429
AMD (Advanced Micro Devices)	48.8372	49.1228	57.1429
Ameren	41.3793	31.25	58.9286
American Airlines	45.7364	49.1228	57.1429

American Electric Power (AEP)	55.1724	54.6875	73.2143
Amgen Inc.	12.5	17.5439	51.7857
AMN Healthcare	19.8429	29.5949	76.2191
Apache Corporation	35.6589	22.807	66.0714
Apartment Investment & Management Company (AIMCO)	4.6512	17.5439	51.7857
Apple	62.5	29.8246	60.7143
AptarGroup	38.7597	42.1053	67.8571
Archer Daniels Midland	38.7597	43.8596	71.4286
Arrow Electronics	10.0775	24.5614	51.7857
Ashland	41.0853	33.3333	58.9286
AT&T	58.5366	42.1875	66.0714
AvalonBay Communities	27.1318	43.8596	71.4286
Avon Products	27.1318	43.8596	71.4286
Axalta Coating Systems	49.6124	38.5965	62.5
Ball Corporation	51.1628	49.1228	73.2143
Baxter International	58.9147	43.8596	71.4286
Bed Bath & Beyond	51.1628	49.1228	73.2143
Berry Global	10.4167	17.5439	51.7857
Best Buy	55.2083	38.5965	66.0714
Biogen Idec	43.4109	28.0702	66.0714
Black & Decker	24.031	35.0877	62.5
Boeing	23.2558	24.5614	55.3571
Bristol-Myers Squibb Company	37.9845	33.3333	66.0714
Broadcom Corp.	4.6512	19.2982	55.3571
Bunge	40.3101	36.8421	60.7143
Caesars Entertainment	10.0775	14.0351	51.7857
California Water Service Group	20	20.3125	55.3571
Campbell Soup	54.2636	66.6667	69.6429
Cardinal Health, Inc.	21.7054	17.5439	60.7143
Carnival Corporation & plc	13.9535	14.0351	51.7857
Caterpillar	33.3333	33.3333	71.4286
CBRE	10.8527	24.5614	51.7857
Celgene	55.0388	38.5965	62.5
Cigna	43.4109	28.0702	57.1429
Cisco Systems, Inc.	57.3643	43.8596	66.0714
Coca-Cola Enterprises	44.186	33.3333	58.9286
Cognizant	48.9655	39.0625	58.9286
Colgate-Palmolive	50.3876	64.9123	71.4286
ConAgra Foods	64.4628	50	69.6429

ConocoPhillips	64.4628	50	69.6429
Craft Brew Alliance	6.2016	8.7719	55.3571
CSC (Computer Sciences Corporation)	36.4341	43.8596	60.7143
CSX Corporation	51.1628	57.8947	66.0714
CVS Health	40.3101	33.3333	66.0714
DaVita	10.8527	22.807	51.7857
Dell	10.8527	28.0702	55.3571
Delta Air Lines	58.1395	43.8596	71.4286
Dominion Resources	12.5	8.7719	48.2143
DTE Energy Company	55.8621	42.1875	64.2857
Duke Energy	55.1724	59.375	69.6429
DuPont	46.2069	32.8125	66.0714
Ecolab	62.0155	38.5965	76.7857
Edwards Lifesciences	33.7931	54.6875	71.4286
Eli Lilly	53.1034	46.875	75
EMC Corporation	49.6124	33.3333	57.1429
EQT Corporation	47.1074	67.1875	66.0714
Equinix	12.4031	15.7895	55.3571
Eversource Energy	53.1034	46.875	75
Exelon Corp	58.6207	64.0625	76.7857
ExxonMobil	48.062	49.1228	58.9286
Fairmount Santrol	38.7597	54.386	57.1429
Farmer Brothers	14.7287	19.2982	51.7857
FedEx Corporation	73.6434	49.1228	60.7143
Flex	40.441	25.6348	86.7851
Fluor	47.2868	28.0702	69.6429
FMC Corporation	46.5116	54.386	69.6429
Ford Motor Company	46.5116	47.3684	66.0714
Forest City Enterprises Inc.	39.5349	49.1228	62.5
Freeport-McMoRan Copper & Gold	37.2093	33.3333	66.0714
General Mills	44.9612	49.1228	66.0714
General Motors Company	51.938	57.8947	71.4286
Halliburton	46.5116	33.3333	75
Harley-Davidson	34.8837	19.2982	55.3571
HARMAN	35.6589	42.1053	60.7143
Hawaiian Electric	20	29.6875	55.3571
Hershey's	41.8605	43.8596	60.7143
Hess Corporation	76.0331	73.4375	69.6429
Hewlett Packard Enterprise	39.5349	33.3333	57.1429

Hilton	31.0078	38.5965	57.1429
Home Depot	9.7252	14.0266	86.2131
Hormel Foods	24.031	54.386	66.0714
HP - Hewlett-Packard	55.0388	47.3684	67.8571
Humana	36.4341	28.0702	62.5
Hypertherm	30.2326	38.5965	57.1429
IBM	58.1395	42.1053	62.5
IHS	30.2326	38.5965	57.1429
Illinois Tool Works Inc	34.1085	33.3333	55.3571
Infinera	31.0078	31.5789	62.5
Ingersoll-Rand	2.3256	3.5088	30.3571
Intel Corporation	57.3643	43.8596	75
International Flavors and Fragances (IFF)	19.3798	38.5965	62.5
International Paper	28.6822	38.5965	64.2857
Interpublic Group Cos	15.5039	38.5965	60.7143
Iron Mountain	32.5581	54.386	55.3571
Jacobs Engineering Group	17.8295	33.3333	57.1429
jetBlue	23.2558	22.807	51.7857
JLL	37.9845	56.1404	57.1429
Johnson & Johnson	61.2403	43.8596	66.0714
Johnson Controls	51.938	54.386	71.4286
Kansas City Southern	37.2093	28.0702	60.7143
KB Home	8.5271	28.0702	62.5
KBR Inc.	13.1783	28.0702	60.7143
Kellogg	28.6822	38.5965	75
Kilroy Realty Corporation	35.6589	38.5965	62.5
Kimberly-Clark	13.9535	28.0702	60.7143
Kimco Realty	46.875	33.3333	51.7857
KLA-Tencor Corporation	28.6822	38.5965	60.7143
Lam Research	41.0853	22.807	60.7143
Las Vegas Sands Corp.	59.6899	43.8596	62.5
Layne Christensen	10.8527	42.1053	66.0714
Leidos	33.3333	28.0702	60.7143
Lexmark	59.6899	49.1228	62.5
Lockheed Martin Corporation	47.2868	49.1228	71.4286
Lowe's	39.5833	28.0702	66.0714
Macerich	41.8605	28.0702	60.7143
ManpowerGroup	48.062	35.0877	60.7143
Marathon Oil Corporation	39.6694	59.375	71.4286

Marriott Vacations Worldwide	5.1344	21.584	83.7146
Masco	41.0853	38.5965	67.8571
McKesson Co. & Foundation	37.2093	54.386	66.0714
Medtronic	5.1344	18.4401	83.7146
Merck & Co., Inc.	55.814	59.6491	69.6429
Microsoft Corporation	59.6899	43.8596	60.7143
ModusLink	28.6822	22.807	66.0714
Monsanto	61.2403	38.5965	69.6429
Nestle USA	66.6667	49.1228	73.2143
Newmont Mining Corporation	63.5659	68.4211	80.3571
NextEra Energy	40	32.8125	73.2143
Nielsen	24.6451	21.7956	90.5479
Nike	66.6667	59.6491	60.7143
Nisource	42.7586	50	71.4286
Noble Energy	45.4545	54.6875	60.7143
Northrop Grumman	16.6667	52.6316	51.7857
NRG Energy	53.4884	38.5965	69.6429
NSK	53.4884	59.6491	69.6429
NVIDIA	50.3876	49.1228	62.5
Omega Protein Corporation	8.5271	8.7719	51.7857
Oshkosh	35.6589	38.5965	76.7857
Pearson	44.9612	52.6316	66.0714
PepsiCo	41.8605	38.5965	80.3571
Perrigo	51.7241	29.6875	66.0714
Pfizer	44.186	33.3333	55.3571
PG&E	38.7597	28.0702	57.1429
PNM Resources	26.2069	43.75	51.7857
PPG Industries	51.7241	29.6875	66.0714
PPL Corporation	38.7597	28.0702	57.1429
Prologis	34.8837	38.5965	62.5
PVH Corp.	26.3566	43.8596	60.7143
Qualcomm	51.1628	43.8596	62.5
Raytheon Company	21.7054	33.3333	58.9286
Republic Services Inc	22.4806	38.5965	55.3571
Reynolds American	62.0155	49.1228	60.7143
Rockwell Automation	39.5349	38.5965	51.7857
Rockwell Collins	31.0078	38.5965	51.7857
Ross Stores	15.625	28.0702	51.7857
Royal Caribbean Cruises Ltd.	35.6589	33.3333	66.0714

Schlumberger	52.7132	61.4035	69.6429
Schnitzer Steel Industries, Inc.	29.4574	24.5614	60.7143
Sealed Air Corporation	25.5814	36.8421	57.1429
Sears Holdings	34.375	28.0702	57.1429
Sempra Energy	47.5862	48.4375	80.3571
Sherwin-Williams	43.4109	33.3333	60.7143
Simon	11.7241	12.5	58.9286
SL Green Realty	44.186	19.2982	57.1429
Smithfield	23.2558	28.0702	66.0714
Sodexo US	25.6198	35.9375	64.2857
Southern California Edison	4.1379	21.875	51.7857
Southwestern Energy	47.2868	36.8421	67.8571
Spectra Energy	48.0519	30.8343	54.3347
Stanley Black and Decker	54.2636	59.6491	51.7857
Staples Inc.	20.8333	22.807	51.7857
Starwood Hotels and Resorts	35.6589	28.0702	55.3571
Stillwater Mining Company	43.4109	43.8596	71.4286
Symantec	48.062	54.386	62.5
Target	48.9583	49.1228	69.6429
Tennant Company	26.3566	35.0877	66.0714
Teradata	44.186	31.5789	62.5
Texas Instruments	55.0388	33.3333	60.7143
The Mosaic Company	68.2171	59.6491	83.9286
Thermo Fisher Scientific	26.3566	28.0702	69.6429
Tiffany & Co.	39.5833	43.8596	71.4286
TJX	22.9167	28.0702	60.7143
Tronox	40.3101	38.5965	66.0714
UniFirst Corporation	22.4806	19.2982	51.7857
United Rentals	37.9845	19.2982	46.4286
Univision	29.2683	46.875	80.3571
Valero Energy Corp.	13.1783	17.5439	55.3571
Varian Medical Services	24.8062	14.0351	60.7143
Verizon Communications	29.2683	46.875	80.3571
VF Corporation	25.5814	19.2982	55.3571
VMware	42.6357	38.5965	67.8571
VWR	28.125	28.0702	60.7143
Walmart	44.186	43.8596	66.0714
Waste Management	30.2326	36.8421	60.7143
Welltower (former Health Care REIT)	37.9845	38.5965	62.5

Weyerhaeuser	35.1724	46.875	64.2857
WGL Holdings	55.814	52.6316	62.5
Whitewave Foods	41.8605	24.5614	66.0714
Xcel Energy	55.1724	59.375	59.375
Xerox	58.1395	33.3333	67.8571
Xilinx Inc	20.155	33.3333	57.1429
Xylem	53.4884	43.8596	62.5
Yum Brands	37.5	28.0702	57.1429