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Accountants' Engagement in Sustainability Accounting

by

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Declaration

I, the author, confirm that the Thesis is my work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously presented for an award at this or any other university.

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List of abbreviations and acronyms

1	AC	Actual Control
2	ACCA	Association of Chartered Certified Accountants
3	A4S	Accounting for Sustainability Project
4	ATT	Attitude toward the Behaviour
5	AVE	Average Variance Extracted
6	BB	Behavioural Beliefs
7	CB	Control Beliefs
8	CB-SEM	Covariance-based-Structural Equation Modelling
9	CEO	Chief Executive Officer
10	CFO	Chief Financial Officer
11	CGMA	Chartered Global Management Accountant
12	CIMA	Chartered Institute of Management Accountants
13	CPD	Continuing Professional Development
14	CTA	Confirmatory Tetrad Analysis
15	ESG	Environmental, Social, and Governance
16	FAME	Financial Analysis Made Easy
17	HTMT	Heterotrait-monotrait Ratio
18	HSE	Health, Safety, and Environment
19	ICAEW	Institute of Chartered Accountants in England and Wales
20	IIRC	International Integrated Reporting Council
21	MN	Moral Norm
22	MP	Member of Parliament
23	NB	Normative Beliefs
24	OLS	Ordinary Least Squares
25	PBC	Perceived Behavioural Control
26	PLS-SEM	Partial Least Squares-Structural Equation Modelling
27	PwC	PricewaterhouseCoopers
28	SDGs	Sustainable Development Goals
29	SEM	Structural Equation Modelling
30	SMEs	Small and Medium-Sized Enterprises
31	SN	Subjective Norm
32	SSE	Sum of the Squared Observations
33	SSO	Sum of Squared Prediction Errors
34	TPB	Theory of Planned Behaviour
35	TRA	Theory of Reasoned Action
36	URL	Uniform Resource Locator
37	VIF	Variance Inflation Factor

Abstract

Background: Since the Brundtland Report calling for achieving a sustainable development world was officially released in 1987, companies have become more aware of sustainable development. Accountants who play an essential role in companies are also expected to contribute to sustainability through sustainability accounting. However, accountants either do not involve themselves or play only a very limited role in achieving sustainability accounting. Previous research tried to detect some factors inhibiting or facilitating accountants' involvement in sustainability. However, these studies are either descriptive or piecemeal. In addition, they rarely investigate in detail the accountants' role in sustainability accounting. Furthermore, the theories applied in this area are also not rich. Therefore, this is still an undeveloped area. There is a lack of comprehensive and in-depth studies concerning accountants' motivational factors and behaviour in sustainability accounting and suggestions for promoting accountants' future engagement in sustainability accounting.

Purpose: This research aims to provide a new, comprehensive, and in-depth perspective on accountants' motivational factors and behaviour in sustainability accounting in terms of the theory of planned behaviour (TPB) and explore constructive suggestions to facilitate accountants' engagement in sustainability accounting.

Research methods: This research adopts mixed methods, including the survey and the semi-structured interview, to achieve the research aims. The survey provides data to find the relationship between different determinants related to intention and behaviour in terms of the theory of planned behaviour. The semi-structured interview is applied to profoundly investigate the survey results and find out the accountants' suggestions and expectations about engaging in sustainability accounting.

Findings: The survey results show that the moral norm is the most significant factor related to accountants' intention to engage in sustainability accounting, followed by the perceived behavioural control and attitude toward the behaviour. The subjective norm is not significant to the intention. Furthermore, behavioural beliefs, normative beliefs, and control beliefs significantly and positively influence their corresponding attitude toward the behaviour, subjective norm, and perceived behavioural control. The intention and behaviour are also

significantly and positively related to each other. However, their relationship is moderated by actual control.

The interview results show that accountants are very concerned about costs. In addition, people who are internal and external companies, including customers and suppliers, employees and board and owners, can influence their engagement in sustainability accounting. An interesting case is that an interviewee's daughter also greatly impacts the accountant's engagement in sustainability accounting. Standards, time, and resources are still the factors that inhibit accountants' involvement in sustainability accounting. There is still a basic consensus on the moral norm. Finally, accountants give suggestions in three aspects: guidance, changing mindsets, and education, and show the diverse future expectations of their engagement in sustainability accounting.

Contributions: One of the main contributions of this research is that it studies the accountants' motivational factors and behaviour in engaging in sustainability accounting with the theory of planned behaviour that very few researchers use. The other main contribution is that through this accountant-focused micro-perspective on accountants' engagement in sustainability accounting, this study can provide effective and targeted recommendations to encourage accountants to engage in sustainability accounting in the future. This can also help to bridge the gap between research and practice in the field of sustainability accounting. Additionally, this research also makes contributions to research methods. On the one hand, this study effectively explores how to apply email interviews for sustainability accounting research; on the other hand, it also tries to add the rarely-used actual control in TPB and tests its model type by the emerging CTA-PLS technique.

Contents

Chapter 1 Introduction

1.1 Chapter overview

The introductory chapter provides an overview of the whole thesis. It establishes the researcher's foundations by presenting the key information. This chapter begins with the research background and the context of the current research field. The research motivation is then discussed to identify the problems in the literature. Following this, the specific research objectives and questions to be solved by this research are proposed. Then the significance and contributions of this study to the current research context are illustrated to highlight the importance of this research. Finally, the structure and overview of each chapter are shown at the end of this chapter to provide a clear and logical way of presenting this thesis.

1.2 Research background

Since the formal introduction of the Brundtland Report in 1987, which advocated for a world of sustainable development, the notion of attaining sustainable development has not been an issue simply left to governments or policymakers (Wilson, 2003). In this increasingly globalised world, the influence of industrial and commercial activities has become more vivid and severe (Hoffman and Bazerman, 2007). Not only is profit important, but the wider environmental and social concerns are also significant to companies (Wilson, 2003). Therefore, companies should not be neglected to contribute to solving society's sustainability problems (Hoffman and Bazerman, 2007). They are expected to translate sustainability to the company level (Ashrafi et al., 2018; Ike et al., 2019). This also brings the recognition of the accounting area playing its role (Contrafatto and Burns, 2013; Huang and Watson, 2015). Accountants capable of calculating and reporting financial and non-financial data to assist decision-making are encouraged to contribute to sustainability (Collins et al., 2011). However, data from various empirical research in different contexts over different periods shows that accountants are still at a very low level of involvement in companies' sustainability and rarely respond to sustainability issues. For example, in developed countries, Bebbington et al. (1994) show that accountants' engagement level in the UK is not high in this area. Schaltegger and Zvezdov (2015) indicate that few accountants engage in sustainability accounting in the UK and Germany. Egan and Tweedie (2018) show that the commitment to sustainability in Australia is very unstable. Similarly, in developing countries, Chowdhury

and Nahar (2017) show that accountants are only involved in a very small part of sustainability accounting in Bangladesh.

1.3 Research context

This research focuses on the UK context. The UK government takes sustainability very seriously (Abdel-Maksoud et al., 2021). The UK government promotes environmental strategies via a variety of programmes and acts (Giannarakis et al., 2017), such as the Carbon Reduction Commitment Energy Efficiency Scheme and the UK Emissions Trading Scheme. From a societal standpoint, according to the global survey of PwC (PricewaterhouseCoopers) (2015), British residents had the second-highest consciousness rate of the importance of companies signing up for global SDGs (sustainable development goals). This survey also discovered that the UK had the highest number of residents who expected SDGs to be integrated into the companies' strategies and everyday operations. In the accounting area, to achieve companies' sustainable development, the UK attaches great significance to the role of accounting in sustainability. Prince Charles founded the Accounting for Sustainability Project (A4S) in 2004 and led the establishment of the IIRC (International Integrated Reporting Council) in 2010.

This research focuses on the manufacturing industry in the UK. The first reason is that British manufacturers account for a significant proportion of Europe's total manufacturing outputs and resource requirements (Esfahbodi et al., 2017). The second reason is that the manufacturing sector also faces challenges to sustainable development globally (Abdul-Rashid et al., 2017; Ike et al., 2019; Wang et al., 2018). This industry dramatically influences the environment and wider sustainability issues (Abdul-Rashid et al., 2017; Ike et al., 2019). The third reason is the changes and trends in the global manufacturing industry, which have strategic significance to the UK. Nowadays, the world is in the fourth industrial revolution. There is a tremendous desire for UK manufacturing to innovate to remain competitive internationally and achieve economic, social, and environmental sustainability (Foresight, 2013). To keep up with the development of this trend and promote the development of manufacturing in the UK, Government Office for Science published the report *The Future of Manufacturing-a new era of opportunity and challenge* in 2013 (Foresight, 2013). This report focuses on manufacturing in the United Kingdom in the year 2050 and discusses the changes that will occur in the manufacturing industry and the environment in which it operates

(Foresight, 2013). *The Future of Manufacturing-a new era of opportunity and challenge* also points out several sustainability challenges and trends to the manufacturing industry: the increasing demand for resources which forces companies to reduce their resource inputs; the climate change challenges to the supply chains; national and international solutions to climate change (that are anticipated to include increasingly stringent environmental requirements for goods and novel methods of pricing natural resources and ecosystem services in the future); consumer demand for sustainable products; and the emergency of a "circular economy" which shifts the manufacturing value creation. Therefore, to inform shifts to sustainable manufacturing in the UK, this report outlines three phases required for the profound changes necessary in production processes in sustainability for the next forty years (see Table 1).

Table 1: Three Phases in the Shift to Sustainable Manufacturing

Phase one: 2013-2025	Phase two: 2025-2050	Phase three: 2050 & beyond
Efficiency & resilience	Experimentation with new systems	A resource-constrained world
• Minimised material inputs • Waste management • Increased energy efficiency • Reduced water usage • Improved efficiency in land usage • UK leadership in areas including low-carbon technology	• New forms of value • associated with products including sustainability • Products reused, remanufactured, • recycled and redesigned with recovery in mind • More durable products designed for shared ownership • Spare capacity built into supply chains to ensure resilience	• Products use smaller amounts of materials and energy • Material is not landfilled but kept in a 'productive loop' • Cleaner and quieter factories close to consumers, suppliers and academic institutions • Supply chains with spare capacity at all stages

Source from: Foresight (2013, p. 28)

1.4 Research motivations

The existing research exposes the lack of research, theory, and practice in the behaviour of accountants' involvement in sustainability accounting. Thus, this research is motivated by research concerns, theoretical concerns, and practical concerns.

At the research level, the research concerning accountants' involvement in sustainability accounting has not yet received sufficient attention (Deegan, 2017). Little research has focused on the accountants' decision-making process and how it influences their behaviour in engaging in sustainability accounting. This research seeks to provide a deep understanding of accountants' intentions and behaviour in sustainability accounting by the theory of planned behaviour. Therefore, this research on accountants' considerations and behaviour regarding sustainability accounting makes it worth being studied. In this area, previous research is still narrow because of mainly focuses on the accountants' perceptions. Therefore, this research aims to broaden the understanding of accountants in sustainability accounting from a psychological perspective to help understand the accountants' motivation and their sustainability accounting behaviour. The theory of planned behaviour builds a coherent framework for expanding the understanding of social behaviour and designing behaviour change interventions based on factors that influence the intention and behaviour (Fishbein and Ajzen, 2010). Facilitators and inhibitors can be categorised to the structure of the theory of planned behaviour according to the definition of each determinant, which contributes to the empirical research of these factors by finding the significance and relationship of these different factors. Accounting research often borrows theories from other disciplines, such as economics, psychology, and sociology (Malsch et al., 2011). Therefore, accounting research is also interdisciplinary (Malsch et al., 2011).

At the theoretical level, studies concerning the accountants' behaviour in sustainability accounting are still undeveloped because of the lack of theory in most research (e.g., Kuasirikun, 2005). Most of them provide insights at the macro-level, such as legitimacy theory (Mistry et al., 2014); Bourdieu's theory to analyse accountants' role in organisational sustainability (Egan and Tweedie, 2018); and Laughlin's model of organisational change (Gray et al., 1995). Schaltegger and Zvezdov (2015) use the power theory, which considers the importance of accountants' power in the organisation. The promoter theory considers the

accountants as the innovation promoters in the organisation. However, the micro-level analysis is also significant because it allows for focusing on individual actors, their actions and interactions, and their effects to understand the complicated macro-level phenomena (Barney and Felin, 2013; Cooper et al., 2017; Passetti and Rinaldi, 2020). Therefore, the paucity of theories at the micro-level to study the accountants' behaviour in sustainability accounting motivates the researcher to enrich the theory application in this area.

At the practical level, sustainability challenges need accountants and accounting practice (Deegan, 2017). Regardless of the call for accountants' practice, their engagement is not in line with the expectations in the literature. Therefore, this research is motivated by a desire to comprehend accountants' current practice and to gain practical experiences and lessons from accountants' perspectives and their practice in implementing sustainability accounting, which may provide some practical insight into how to increase accountants' future engagement.

1.5 Research objectives and questions

The overarching objective of this research is to investigate accountants' motivational factors and behaviour in engaging in sustainability accounting to promote their future involvement by identifying different factors influencing their engagement in sustainability accounting and understanding the practice in reality to promote their engagement in sustainability accounting. Specifically, the aim is to capture the accountants' intentions, behaviours, and experiences in practice to facilitate accountants' future involvement in sustainability accounting.

To achieve the objective, this research addresses four main research questions:

The intention is the motivational factor that spurs individuals to engage in a particular behaviour (McEachan et a., 2011). The intention is the most immediate antecedent of behaviour (Ajzen, 1991; Ajzen, 2020; Fishbein and Ajzen, 2010; Sok et al., 2021). Therefore, to investigate accountants' involvement in sustainability accounting, the first step is to obtain insight into factors influencing accountants' intentions to involve in sustainability accounting.

1. What factors influence accountants' intentions to engage in sustainability accounting?

Although factors influencing accountants' intentions are investigated, it also needs to learn how these factors are determined. This is because these underlying factors can provide information about how factors influencing the intention are produced and can also show causal effects on their antecedents (Fishbein and Ajzen, 2010).

2. How are factors influencing intention decided?

After answering the first two questions, the further step is understanding the relationship between intention and behaviour to know how accountants can act on intentions.

3. What is the relationship between accountants' intentions and their behaviour in engaging in sustainability accounting?

Although answering the first three questions can establish a framework for understanding accountants' involvement in sustainability accounting in general, in answering the last question, much detailed and specific information from practical experience can deepen the understanding of inspiring accountants' involvement in sustainability accounting.

4. How can accountants' engagement in sustainability accounting be promoted?

1.6 The significance of this research

This research highlights and promotes the research significance of research, theory, and practice.

Hoffman and Bazerman (2007) argue that to achieve sustainable development, we must face individual barriers. Therefore, sustainability accounting issues should be addressed at the personal level (Gray, 2010). However, the literature is relatively scarce in the domain of accountants and sustainability accounting (Deegan, 2017). Hence, the previous research on accountants' behaviour in sustainability accounting is still undeveloped at an early stage. Furthermore, most research explores piecemeal information about accountants' behaviour in sustainability accounting, and there is little research into a deeper understanding. Therefore, this research provides a much more holistic and in-depth knowledge of accountants' behaviour in engaging in sustainability accounting.

Due to the importance of accountants' behaviour and the need to encourage their engagement in sustainability accounting to keep pace with the future requirement of corporates' sustainable development, this research is developed to deeply understand the accountants' behaviour in engaging in sustainability accounting. Gray et al. (2010) advocate the use of additional theories that focus on the person, primarily to explain why people do things, most notably why they may begin to adopt or oppose the growth of accounting that contributes to sustainable development. Due to the need for collaborative disciplines within sustainability research to be able to study and understand accountants' behaviour in great depth (Lodhia and Sharma, 2019), this research adopts a new psychological perspective to understand the behaviour. This is because accounting is a result of individual interactions in which their actions influence the subjectivity of others and their perceptions of activities, tasks, the organisation, and its aims (Baker and Schaltegger, 2015). This perspective seeks to elicit a potential explanation to recognise accountants' behaviour.

Notwithstanding, the theory of accountants' engagement with sustainability accounting is relatively scarce. Therefore, this research contributes to the under-researched area of the accountants' perspectives and enriches the theory applied in this area. As sustainability accounting is a complex and important area, it is beneficial to develop theories and promote the diversity of research in this area (Unerman and Chapman, 2014). Therefore, this research builds on the theory of planned behaviour insights and aims to contribute to research on accountants' involvement in sustainability accounting and how the intention drives the involvement of sustainability-oriented roles for accountants within the company. Although the theory of planned behaviour has been adopted in various contexts, little research employs this theory to explain the accountants' behaviour in sustainability accounting. Therefore, this theory is constructive in understanding the accountants' behaviour of involving in sustainability from a new perspective that the previous literature hardly achieves. This research considers whether the theory of planned behaviour provides an explanation of the accountants' behaviour in participating in sustainability accounting in the company. Therefore, this research extends the limited literature on accountants' behaviour in sustainability accounting and develops a theoretical framework that provides an integrated way to understand accountants' behaviour in sustainability accounting in UK companies through the theory of planned behaviour.

When the theory of planned behaviour is used in this research, the researcher examines the effect of an extra element, moral norms, on the intention. Furthermore, past research seldom included actual control due to the difficulty of measuring. This study attempts to quantify it.

Christ et al. (2018) call for researchers and practitioners to collaborate in pursuit of sustainability accounting and close the research-practice gap. However, in general, accountants in sustainability accounting still receive relatively little attention in the literature. Given the importance of accountants' engagement and the gap between the ideal and reality, it is necessary to conduct in-depth research to investigate and try to close the gap. This study explores the practice and summarises valuable experiences and lessons learned from reality to shed light on the accountants' future participation in sustainability accounting.

1.7 Thesis structure

The structure of this thesis is briefly summarised in this section. This thesis comprises eleven chapters. This thesis proceeds as follows after the introduction chapter:

Chapter 2 Literature Review

This chapter reviews the previous literature to extend the background of this research, followed by which the research gap is identified. Specifically, this chapter first puts sustainability in the current context via the discussion of sustainability, corporate sustainability, and sustainability accounting to establish the reasons and necessity for accountants to engage in this area. Then, the accountants are positioned in the discussion of their engagement situation from different literature. Various factors and theories are introduced to show the research situation in this area. After this, the discussion focuses on the importance of intention. The research gap in the current literature is identified in light of these concerns.

Chapter 3 Research Theory and Hypotheses Development

This chapter mainly develops hypotheses via the theory of planned behaviour. The theory of planned behaviour is first introduced to achieve this. The rationale for the application of this theory is also highlighted. To explain the theory and its application in detail, each construct in

this theory is also discussed separately, including the extra construct in this research. Finally, the hypotheses are developed from the theory of planned behaviour in the context of this research.

Chapter 4 Methodology

Building on the relevant literature and the theory applied in this research, this is followed by chapter four which mainly discusses the research methodology for this study. This chapter first shows the researcher's philosophical standpoint for this research. Then it focuses on the rationale for doing the mixed methods research, followed by the relationship between theory and research. Finally, research ethics is introduced.

Chapter 5 First Stage: Quantitative Research

This chapter aims to introduce the overall research design of the first research stage. It starts with the research question. From this, the quantitative research and the survey methods are introduced separately for the research methods. Then the questionnaire design is introduced in detail. After these processes, the questionnaire pretesting is presented, followed by the sampling method. The following sections mainly include the questionnaire data collection, data validity and reliability, data analysis preparation, and data analysis method for this research.

Chapter 6 Survey Results

This chapter presents the empirical results interpretation, analysis, and discussion of the survey research results. Descriptive data analysis and demographic information give a general introduction to the survey data. The following analysis focuses on the measurement models, structural models, and moderating effect of the actual control.

Chapter 7 Discussion

This chapter discusses the survey results presented by each component of the theory of planned behaviour.

Chapter 8 Second Stage: Qualitative Research

This chapter illustrates the second stage of this research. After identifying the research questions, qualitative research is introduced, followed by deciding to use the semi-structured. The interview design, including the interview guide, interview pilot, and interview sampling, is introduced. Following them is the interview conduction. The last three sections are the interview transcription, data analysis method, and data analysis procedure.

Chapter 9 Interview Results

This chapter presents the interview results based on the template developed based on the theory of planned behaviour.

Chapter 10 Discussion

This chapter discusses the interview results based on the structure in chapter 9.

Chapter 11 Conclusion

This chapter concludes the research and reports the main conclusions of this research based on the findings of the previous chapter. Then it illustrates the research contributions and implications of this research, followed by the revelation of the research limitations, suggestions, and expectations for future research.

Chapter 2 Literature Review

2.1 Chapter overview

The first chapter provides an introduction to this research. From this chapter onwards, the thesis is expanded in detail. This chapter aims to identify the research gap in this research by critically reviewing the previous literature. This chapter first puts the research into the sustainability context by discussing sustainable development. After this, the discussion focuses on the impact of sustainable development on corporate. The following two sections introduce sustainability accounting and the importance of accountants engaging in sustainability accounting. The following section presents the level of involvement of accountants in different literature. Then different literature related to accountants' involvement in sustainability accounting are categorised as attitude, people's influence, and factors influencing accountants' engagement in sustainability accounting. Following this, theories employed in various studies are briefly explored. The penultimate section discusses the importance of intention. Finally, the research gap is developed from the previous literature review.

2.2 Sustainable development

In the twenty-first century, sustainable development has become an increasingly unavoidable concept (Bebbington, 2001). The terms sustainable development and sustainability are also used diversely in different research. Some research uses two terms interchangeably (e.g., Dagiliene and Šutiene, 2019; Van der Waal and Thijssens, 2020). However, Bebbington (2001) considers that sustainability can also be seen as a derivation of sustainable development. Moreover, Diesendorf (2000) suggests that sustainable development is the process of achieving the final goal of sustainability. In this research, sustainability and sustainable development are not distinguished but used interchangeably because either sustainability or sustainable development are all to achieve the common aim of a better human future.

Sustainable development has many definitions (Benn and Martin, 2014; Hoffman and Bazerman, 2007). Sustainable development (or sustainability) can mean different things to different people, and there is no agreement on its meaning (De Silva and Forbes, 2016).

However, the widely adopted and accepted definition is in the 1987 Brundtland Report from the World Commission on Environment and Development, which defined that "Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 16). The Brundtland Report has profoundly influenced how sustainable development is understood (Lindow et al., 2018). This concept puts the human in the central place but does not mean it puts other lives in a lower position; it focuses on the needs but not wants (Bebbington and Gray, 2001). This definition requires realising the balance between inter-generation and intra-generation equity (Benn and Martin, 2014; Jones, 2010). "Without intra-generational equity, inter-generational equity is unlikely to be achieved" (Bebbington, 2001, p. 360). This definition also concerns the maintenance of natural ecology (Bebbington and Gray, 2001).

To respond to sustainable development, Elkington (1997) proposes that the triple bottom line contains explicitly three dimensions: economy, environment, and society (Elkington, 1997). The economic dimension of the triple bottom line refers to economic prosperity, profit-making, achieving competitive advantage, and sustaining the companies' overall economic value (Aras et al., 2018). Environmental sustainability includes factors affecting environmental quality, such as climate change, global warming, pollution, and depletion of the ozone layer (Aras et al., 2018). Social sustainability includes the issues relating to social progress, such as health and safety, community well-being, employment opportunities, charity, and organisational behaviour (Aras et al., 2018). These three facets are inextricably linked but not distinct (Dvořáková and Zborková, 2014). Without a healthy environment, human life will be jeopardised (Bansal, 2002). The disenfranchised will abuse natural resources to obtain an acceptable level of life if social fairness is not achieved (Bansal, 2002). Without economic progress, we shall not be able to assure the well-being of our own and future generations (Bansal, 2002). Therefore, they should be balanced inside (Dvořáková and Zborková, 2014).

However, sustainable development is also full of different opinions. It is criticised to be not specified (Bebbington and Gray, 2001). But the Brundtland Report definition encourages the consensus on the desirability and necessity of sustainable development (Lélé, 1991). Even though sustainable development is a contested concept (Gray, 2010), there is widespread agreement that whatever it is, it is a "good thing" that entails the preservation and

maintenance of the finite and vital environment; and entails some obligation of social justice-between and within generations (Gray, 2010).

2.3 Corporate sustainability

Under the background of sustainability development, the company's environment is fast-changing (Engert et al., 2016). Traditional profit maximisation has been challenged because companies should take a broader responsibility beyond this (Hahn and Figge, 2011). Sustainability has become a widely accepted concept, but it is a macro notion that should be translated at the corporate level by corporate sustainability (Ashrafi et al., 2018; Ike et al., 2019). As companies are the dominant institutions in society and use resources to produce goods and services consumed and disposed of by others (Reynolds and Mathews, 2000), sustainable development is impossible to be achieved without companies' support (Bansal, 2002). Companies should not only focus on adding value to the economy but also mitigate the environmental and social problems caused by their activities (Hahn and Scheermesser, 2006). As a result, their activities are also as justifiable as any others to assess sustainability (Burritt and Schaltegger, 2010). Apart from the companies' societal position, they also face environmental pressures (Medley, 1997). These pressures can originate from outside companies (Lozano, 2015), such as legislators, market forces, bankers, shareholders, acquirers, green groups, communities, and citizenship (Medley, 1997). These pressures can originate from inside companies, such as employees and directors (Lozano, 2015).

The company cannot ignore sustainable development also because it affects companies and their opportunities (Dvořáková and Zborková, 2014). Thus, the companies start to realise the importance of a balance between their economic, environmental, and social concerns (Dvořáková and Zborková, 2014). As companies integrate sustainable development into their operations, the needs and expectations of many stakeholders shift as well (Dvořáková and Zborková, 2014). Furthermore, legitimacy also requires the information to be provided to the broader society (Herath, 2005). Companies should internalise these externalities to achieve this (Herath, 2005). Their success and performance evaluation should include financial and non-financial aspects (Herath, 2005). In other words, companies should have the capacity to connect economic, environmental, and social profiles (Dvořáková and Zborková, 2014). To attain this aim, companies must preserve and increase their economic, social, and environmental capital (Dyllick and Hockerts, 2002). As the economic, environmental, and

social dimensions are interrelated (Elkington, 1997), to achieve long-term success, the companies should combine these different dimensions but not separate them (Dyllick and Hockerts, 2002). Thus, the primary problem for businesses is to resolve trade-offs between environmental, social, and economic dimensions of sustainability and, ultimately, to reconcile sustainability with successful economic growth (Hahn and Scheermesser, 2006). In addition, companies should also realise this is a "win-win-win" development (Elkington, 1994). As a result, to implement corporate sustainability, Lindow et al. (2018) suggest that sustainability should be integrated at all levels (normative, strategic, and operational) in the company.

Although corporate sustainability continuously becomes important (Herbohn et al., 2014), the definition and term of corporate sustainability are still diverse (Amini and Bienstock, 2014; Herbohn et al., 2014; Montiel and Delgado-Ceballos, 2014; Van Marrewijk, 2003; Van Marrewijk and Werre, 2003). Although the literature has several definitions for corporate sustainability, when it comes to translating sustainability to the company level (Dyllick and Hockerts, 2002), Dyllick and Hockerts's (2002, p. 131) definition is widely cited: "*meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of future stakeholders as well*". This definition echoes the Brundtland Report's definition of sustainable development and connects sustainable development at the corporate level (Ike et al., 2019).

2.4 Sustainability accounting

2.4.1 Importance of sustainability accounting

Accounting is a social practice whose purpose and emphasis have changed over time (Carmona and Ezzamel, 2007; Jones and Oldroyd, 2009; Lamberton, 2005). Management accounting and financial accounting activities, technologies, and concepts continuously evolve and redefine themselves (Taipaleenmäki and Ikäheimo, 2013). Changes should shift in line with the complex problems of business (Tingey-Holyoak and Burritt, 2012). In addition, society and the company are intersected but not isolated (Joseph, 2012). Therefore, accounting should play a role in facing the challenges in practice (Joseph, 2012).

Nowadays, companies cannot escape the economic, environmental, and social issues and the value creation with environmental and social considerations (Schaltegger and Burritt, 2010). Accounting is one of the disciplines particularly relevant to sustainability because it provides the language of business, and business activity has a considerable environmental, social, and economic impact (Burritt and Tingey-Holyoak, 2011; Lodhia, 2014). However, conventional accounting does not provide sufficient relevant information about sustainability that contributes to corporate sustainability (Deegan, 2013; Schaltegger and Burritt, 2010). Therefore, traditional accounting is gradually enlarged and innovated to deal with these sustainability issues (Bebbington, 2001; Schaltegger et al., 2017; Schaltegger and Burritt, 2006). Sustainability accounting focuses not only on the previous short-term economic-oriented accounting practice but also on the interactions and impacts between the society and the natural environment the organisations in (Unerman and Chapman, 2014). The social and environmental aspects also influence the economic aspect in the long term (Unerman and Chapman, 2014). Sustainability accounting focuses on two-way interactions and impact between the entity and its world beyond the boundary of the entity directly and indirectly (Unerman and Chapman, 2014). Therefore, the development of sustainability accounting corrects and improves conventional accounting (Burritt and Schaltegger, 2010). It can be seen as the extension of accounting and reporting (Joseph, 2012; Schaltegger and Burritt, 2010). It provides new voices, new visibilities, and new discourses, which can encourage possibilities for change (Gray et al., 1995).

The future of sustainability accounting is controversial (Burritt and Schaltegger, 2010). There is a point of view that accounting should get away from sustainability issues because it can hardly make contributions, and sustainability accounting will disappear (Burritt and Schaltegger, 2010). However, this research does not support this view. Sustainability accounting provides a pragmatic solution to help companies move to sustainability and achieve sustainability goals (Schaltegger and Burritt, 2006; Burritt and Schaltegger, 2010). Sustainability accounting can be an approach to support the management in improving corporate sustainability and handling different decisions (Burritt and Schaltegger, 2010). It should also be utilised to motivate companies to act in ways that contribute to minimising their unsustainability (Deegan, 2017).

2.4.2 Sustainability accounting definitions

However, sustainability accounting has different perspectives reflected in the diverse terms used in different research and the complexity of sustainability accounting (Lodhia and Sharma, 2019). It has been named such as accounting for sustainable development (e.g., Unerman and Chapman, 2014), social and environmental accounting (e.g., Bebbington and Larrinaga, 2014; Gray, 2010), sustainability accounting and reporting (Lodhia and Hess, 2014); accounting for sustainability (Bebbington et al., 2017). These can also be generic to each other (Schaltegger and Burritt, 2010). The chaos of the names also reflects that defining sustainability accounting is difficult, complex, and ambiguous. After reviewing and summarising the literature, the researcher found and categorised four main streams of defining sustainability accounting.

The first stream assumes sustainability accounting definition as default. This kind of research avoids the definition of sustainability accounting but goes straight to the research topic. For example, Jones (2010) aims to develop a theoretical model of environmental accounting and reporting, but this research does not provide a definition of environmental accounting.

The second stream defines sustainability accounting as very specific activities, for example, sustainability reporting (e.g., Miles and Ringham, 2020; O'Dwyer and Unerman, 2020); carbon accounting (e.g., Moore and McPhail, 2016; Gibassier et al., 2020; Schaltegger and Csutora, 2012); water accounting (e.g., Chalmers et al., 2012; Shao and Chen, 2016), biodiversity accounting (e.g., Atkins and Maroun, 2018; Atkins and Maroun, 2020; Weir, 2019); extinction accounting (Weir, 2018); and climate change accounting (Milne and Grubnic, 2011). Considering the complex and diverse fields of sustainability accounting, Thomson (2014) mapped the field of sustainability accounting by reviewing the literature. But they committed that this map had the critical limitation that they only included "3" and "4" rankings in the Academic Journal Guide between 2008-2012. This limitation supports the view of Lodhia and Sharma (2019) that sustainability accounting is dynamic.

Some research also applies the framework from different associations. For example, Bebbington et al. (2017) suggest that the United Nations Sustainable Development Goals (SDGs) have the potential as a framework for social and environmental accounting because of their pragmatic political process.

The third stream considers sustainability accounting as the social or environmental aspects. In this stream, it is usually called such as environmental accounting (e.g., Gray et al., 1995; Larrinaga-González et al., 2001), green accounting (e.g., Gray and Laughlin, 2012), accounting for the environment (e.g., Jones, 2010), social accounting (e.g., Gray, 2002a; Gray et al., 2014; Killian and O' Regan, 2016; Lodhia, 2014), and social and environmental accounting (e.g., Bebbington et al., 2017; Contrafatto and Burns, 2013; Deegan, 2017; Lehman, 2004; Lehman and Kuruppu, 2017; Mathews, 1997; Parker, 2005). Each name can have different definitions in this stream, and the various concepts can also be universal or interwoven. An example can be social and environmental accounting. Social and environmental accounting also has diverse definitions. But in general, it has either broad or narrower (more articulate) definitions. In addition, it can also be defined as the synonym of environment accounting, which can also have its definition.

One of the broad definitions is:
Broadly speaking, SEA can be thought to relate to the preparation and capture of information to inform stakeholders (within and outside the organisation) about an organisation's impact on the societies and environments in which it operates (including, past, present, and future societies and environments). **Deegan (2017, p. 66)**.

However, Deegan (2017) criticises this definition as too wide to operate. Contrary to this broad definition, there are more articulate definitions, such as:
Social accounting is concerned with exploring how the social and environmental activities undertaken (or not, as the case may be) by different elements of a society can be - and are - expressed. **Gray and Laughlin (2012, p. 240)**

Although it is called social accounting, the definition includes both social and environmental aspects:
'Social accounting' is used here as a generic term for convenience to cover all forms of 'accounts which go beyond the economic' and for all the different labels under which it appears -social responsibility accounting, social audits, corporate social reporting, employee and employment reporting, stakeholder dialogue reporting as well as environmental accounting and reporting. **Gray (2002a, p. 687)**

In keeping with much of the prior literature the term "social accounting" is used generically to include all forms of social, environmental and sustainability reporting, accounting, and audit. **Gray et al. (2014, p. 259)**

Apart from the interwoven between social and environmental accounting (SEA) and social accounting, environmental accounting also has a variety of definitions. However, these definitions are more focused on the environmental facet, for example:

Environment accounting as accounting is a subset of accounting that deals with: Activities, methods and systems; Recording, analysis and reporting; Environmentally induced financial impacts and ecological impacts of a defined economic system (e.g., a firm, plant, region, nation, etc.). **Schaltegger and Burritt (2000, p. 63)**

In addition to environmental accounting, a commonly used concept in the literature is environmental management accounting which is also defined differently (Burritt, 2005). For example,

The generation, analysis and use of financial and non-financial information in order to optimise corporate performance and to achieve sustainable business. **Bennett et al. (2003, p. 1)**

A much narrower definition can be:
Environmental management accounting is defined in a narrower sense to include only the environmentally induced financial aspects of accounting that help managers to make decisions and be accountable for the outcome of their decisions. **Schaltegger and Burritt (2000, p. 89)**

The above examples show that definitions have ambiguous boundaries and overlap, such as social accounting can be a synonym of social and environmental accounting, and environmental accounting can also be part of social accounting or social and environmental accounting. However, the boundary is much clearer when it refers to environmental accounting.

The fourth stream shows comprehensive and holistic definitions. Sustainability accounting derives from management accounting and focuses on internal practice to assist internal management, and financial accounting involves external reporting and accountability (Burritt and Schaltegger, 2010; Burritt and Schaltegger, 2014). This indicates sustainability accounting focuses on both internal and external perspectives to support the managers and stakeholders (Burritt and Schaltegger, 2010). As Songini and Pistoni (2012, p. 202) indicate that "Sustainability accounting can be considered as an umbrella term for internal and external accounting practices, embracing the environmental, social and economic aspects. It is considered to play a central role in supporting the implementation of an organisation's sustainability strategy, embedding sustainability into day-to-day operations and decision making, and developing relationships with stakeholders based on trust and legitimacy". Sustainability accounting seeks to improve internal management accounting methods and processes and contribute to sustainability decision-making, activities and projects, and corporate sustainability performance (Burritt and Schaltegger, 2010; Baker and Schaltegger, 2015). Externally, sustainability accounting reports and communicates sustainability information to external parties and stakeholders. Externally, it supports the decision-making to implement corporate sustainability (Burritt and Schaltegger, 2010).

Sustainability accounting provides quantification information to identify the costs and benefits of environmental and social matters (Burritt et al., 2002; Burritt and Schaltegger, 2010) and qualitative data (Burritt and Schaltegger, 2010). Because economic transactions and events have both monetary and nonmonetary characteristics (Unerman and Chapman, 2014), through the reliable and credible information provided by sustainability accounting, managers can react and deal with sustainability issues (Burritt and Schaltegger, 2010). Monetary and physical aspects of the companies' activities information promote the standards for calculation (Burritt and Schaltegger, 2010). Qualitative data can enhance understanding those are not easy to quantify (Aras and Crowther, 2009). Besides, the data is relevant to both the past and future, which combines both short-term and long-term decision-making needing periodic data gathering and reporting (Burritt et al., 2002; Burritt and Schaltegger, 2010).

Sustainability accounting focuses on the integration of economics, environmental and social aspects in organisations' activities (Schaltegger and Burritt, 2010). Schaltegger and Burritt (2010, p. 377) suggest that "sustainability accounting describes a subset of accounting that

deals with activities, methods, and systems to record, analyse and report. First, environmentally and socially induced financial impacts; Second, ecological and social impacts of a defined economic system (e.g., the company, production site, nation); Third, and perhaps most important, the interactions and linkages between social, environmental, and economic issues constituting the three dimensions of sustainability".

The Forum for the Future, in the report *Accounting for Sustainability*, explains sustainability accounting definition more comprehensively, starting with financial accounting and calling it the sustainability accounting cube (see Figure 1).

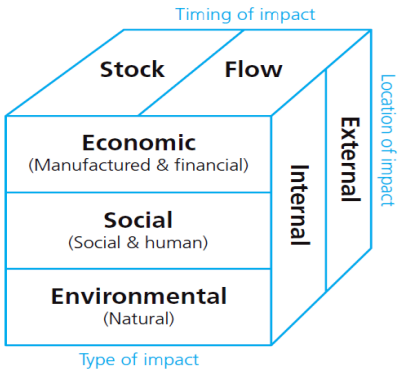

Figure 1: Sustainability Accounting Cube

Source from: Accounting for Sustainability

Because traditional financial accounting does not focus on sustainability aspects but mainly on shareholder wealth (Gray, 2013), the report starts from the financial accounting aspect. It firstly explains that this cube explains the differences between traditional financial accounting related to stocks and flows of the organisation in the form of profit and loss account and the balance sheet, respectively, and then expands it with three dimensions: timing of impact, location of impact, and type of impact. The timing dimension indicates that it can provide a snapshot in time of the state of the stock of goods and services or, over a period of time, the flow of goods and services arising from the stock (Taplin et al., 2006); the location of impact indicates "Does it (a) fall within an organisation's financial reporting boundaries, i.e., an internal impact, is it (b) a cost or benefit which is imposed externally of the organisation on wider society or is it (c) a cost or benefit to the organisation of avoiding or restoring the external impact" (Taplin et al., 2006, p. 349); the type of impact indicates "Is the impact economic, social or environmental?" (Taplin et al., 2006, p. 349).

From the above discussion about four streams, sustainability accounting is a diverse, complex, broad, and multidimensional concept with many branches in accounting research. There is still no very clear, universal, and widely accepted concept. This research defines sustainability accounting as "accountants' contribution to using existing or new accounting practices to deal with environmental and social impacts of an organisation's actions". Firstly, this definition emphasises accountants' role other than the contribution of others. Secondly, this definition does not digress from accounting but is also open to new development in accounting. Although it identifies the environment and social impact, it does not deny their link to the economic aspect. In addition, it also admits the diverse and abundant activities included in environmental and social aspects. Thirdly, this definition is also open to organisations' actions. Fourthly, the sustainability accounting term used in this research can avoid confusion about different terms used in the literature, highlights sustainability, and is consistent with sustainable development and corporate sustainability.

2.5 Importance of accountants

Social processes can shape accounting (Miller, 1994). Sustainability also has changed the practice of companies and accounting (Gray et al., 1995; Miller, 1994). Nowadays, accounting has extended beyond the narrow concept of accounting and the boundaries of a particular company (Lovell and MacKenzie, 2011). It plays a significant role in social processes (Lovell and MacKenzie, 2011). Thus, sustainability is not just analysing how accountants respond to social concerns about sustainability but also the role accountants can play in dealing with sustainability problems (Lovell and MacKenzie, 2011). Although a pessimistic view exists about accountants' engagement in sustainability accounting (Deegan, 2013), there are various reasons the researcher argues that accountants should engage in sustainability accounting.

The first reason is the role of accountants in the company. Both financial and management accountants have opportunities to engage in sustainability accounting (Lovell and MacKenzie, 2011; Medley, 1997). Accountants have long been known to have multiple roles (Emsley, 2005). The traditional bean-counter role entails accountants serving as objective and unbiased monitors of fiscal performance, with a focus on cost reduction (Hopper, 1980). This function is often associated with data collecting or scorekeeping, financial reporting, financial data analysis, and supervising or "policing" operational managers with respect to their primary

financial objectives (Burns and Baldvinsdottir, 2007; Emsley, 2005). Accountants are also seen as gatekeepers of sustainability accounting in the company (Schaltegger and Zvezdov, 2015) because they have the ability to pick information that is utilised by higher hierarchical levels (Schaltegger and Zvezdov, 2015). Furthermore, the more recent "business-oriented" approach is typically associated with integrative activities that integrate accounting and non-financial performance (Horton and Wanderley, 2018). As a consequence, accountants in this role are more strategic, focusing on value creation and promoting enhanced efficiency and business progress (Burns and Baldvinsdottir, 2007). On the one hand, accountants have to utilise technical skills to generate business information; on the other hand, they provide independent and objective information for the public interest (Evans et al., 2011). These two roles are critical for any company that wishes to adopt sustainability (Evans et al., 2011).

The company is the intersection of nature and society because it provides goods and services using resources (Reynolds and Mathews, 2000). Different constituents may have different interests in this complex intersection (Reynolds and Mathews, 2000). Hence, they need information gathering and reporting to help with their actions, resource allocation, and decision-making (Reynolds and Mathews, 2000). In this regard, accountants need to take this interaction into consideration (Reynolds and Mathews, 2000). Accountants focus on the information and provide the information to satisfy the diverse needs of stakeholders (Medley, 1997). Hence, the intersection of the social and the organisational creates the concerns that make it important for accounting to play a significant and challenging role (Joseph, 2012). Accountants should have a strong commitment to the public interest, and accounting should be modified to evaluate the company's non-financial performance (Kuasirikun, 2005).

Today, managers face a more complex world (Hales and Johnson, 2015). They are increasingly challenged to make decisions that take into account the social and environmental impacts of companies' operations (Milne, 1996; Schaltegger, 2017). Thus, the management recognises the need to increase awareness of sustainability issues (Schaltegger, 2017). Managers need this kind of information to make decisions because this is a part of being a good corporate citizen and business sense (Medley, 1997). Therefore, managers need relative information to solve sustainability problems and enhance the company's ability in the market (Burritt and Schaltegger, 2010). Accountants usually advise top and middle management, which significantly impacts whether and how a company considers sustainability (Schaltegger and Zvezdov, 2015). This reveals that accountants have a close relationship with

managers (Hoozée and Mitchell, 2018). Accountants' advice and information can impact how the management makes decisions (Pierce and O'Dea, 2003). Therefore, accountants can assist companies in their efforts to implement sustainable development (Burritt and Schaltegger, 2010).

Additionally, some empirical research also indicates that non-accountants need management accountants to assist them in attaining companies' sustainable development. Egan and Tweedie (2018) indicate that environmental managers often move from one firm to another and frequently transitioned to higher roles, suggesting they need to nurture management accountants to contribute to the company's sustainable development practice. Additionally, one respondent noted that it is exceedingly difficult to locate someone with a financial background who understood sustainability, despite the organisation requiring such a person (Egan and Tweedie, 2018). Egan and Tweedie (2018) also find that non-accountants want accountants' assistance in accomplishing the company's sustainable growth. George et al. (2016) find that accountants' recruiting policies remain focused on technical accounting abilities. The finance department is not engaged in teaching health, safety, and environmental knowledge professionals or sustainability personnel about financial knowledge necessary for sustainability-related calculations (George et al., 2016). As a result, the HSE (Health, Safety, and Environment) department considers hiring finance/accounting managers with expertise in sustainability (George et al., 2016).

Given that sustainable accounting is to give information to stakeholders and others for decision-making purposes, the values should be ethically sound (Herath, 2005). As ethical actors, accountants are towards the corporate entity's interactions with the natural environment in the context of society and can direct the focus on the public policymakers (Reynolds and Mathews, 2000). Therefore, they are essential to contribute to the ethical framework for sustainability accounting (Reynolds and Mathews, 2000).

Accountants are professional and are responsible for providing information (Reynolds and Mathews, 2000). They previously reported historical financial costs, which may be sufficient during the industrial period but insufficient for today's sophisticated global information demands (Reynolds and Mathews, 2000). As societal expectations change, professionals have to change in order to maintain their organisations' legitimacy in the eyes of society (Reynolds and Mathews, 2000). Accountants should be responsive to emerging social values and be

perceived to give information that meets emerging needs to maintain their professional status (Reynolds and Mathews, 2000). Otherwise, their status will be weakened, and other groups may take over their professional roles (Reynolds and Mathews, 2000; Schaltegger and Zvezdov, 2015). Thus, it is necessary for accountants to accept their dynamic roles and embrace the changing natural world in which they work in order to maintain their established status of providing reported information about corporate performance (Reynolds and Mathews, 2000). In summary, when accountants commence their future careers, they need to have a mindset of sustainability (Magarey, 2011).

2.6 Accountants' low engagement in sustainability accounting

From the above discussion, it is obvious that with changes in the business environment and the expansion of the accounting area led by sustainability, accountants should also keep up with the development (Gray et al., 1995). However, their engagement is still at a low level in various research.

Bebbington et al. (1994) analyse survey data from the top companies in the United Kingdom (listed by The Times 1,000). They conclude that accountants' involvement in sustainability accounting is low. Moreover, in New Zealand, Collins et al. (2011) also find that many accountants still play the role of conventional financial specialists but have not yet evolved into partners in achieving sustainable development. Similarly, in another research conducted in New Zealand by surveying thirty accountants from various industries, Mistry et al. (2014) find that accountants play limited roles in accounting for sustainable development. Furthermore, in Australia, accountants do not have overwhelmingly active involvement in companies' sustainable development as well (Wilmshurst and Frost, 2001). Also, in Australia, Egan and Tweedie (2018) find that accountants only assist in setting sustainability goals and advising regional managers on opportunities to increase resource efficiency. In Italy, by doing the Internet questionnaire and interview, Passetti et al. (2014) also support the above findings that accountants are involved in sustainability accounting at a very low level. They still play a conservative role in sustainability accounting (Passetti et al., 2014). Passetti et al. (2014) find that some accountants can only assist the sustainability department by contributing economic data to the results' control stage. Some accountants help analyse the environmental indicators by adding economic information. Even though some accountants contribute to the collection of environmental, health, and safety data, they can not analyse it

(Passetti et al., 2014). In both the UK and Germany, Adams (2002) find that accountants only collect environmental data relevant to trends in environmental capital and operating expenditure. In another research in the UK and Germany, Schaltegger and Zvezdov (2015) indicate that fewer accountants are involved in companies' sustainability compared to sustainability officers, quality managers, production managers, and production managers. In Spain, accountants are even less engaged (Albelda, 2011). Albelda (2011) show that in Spain, despite the use of environmental indicators being widespread, accountants remain mostly uninvolved, and nobody links these environmental measures to the accounting domain.

In several business cases given in the CIMA, although accountants engage in some activities, their contributions are still limited in each company. In the UK's second-largest supermarket ASDA, the finance team is involved in creating, testing, and deploying sustainability programmes. Accountants are responsible for reporting on energy and material input costs at Marshalls, since a product's carbon footprint ranges from raw materials through disposal at the end of its useful life. With the finance staff's support, Marshalls develops strong comparison data. In Punch Taverns, the finance team is able to provide crucial dashboard views to the management information portal, assisting the management team in identifying areas of concern and opportunity. Additionally, they assist the management team in identifying opportunities, implying that they might give valuable recommendations. In Jaguar Land Rover, the finance is a member of the project team that establishes the programme in collaboration with CO_2 offset experts Climate Care. Climate Care collaborates with project developers to produce emissions reduction certificates, resulting in significant greenhouse gas emissions reductions. The project's procedure is rigorously verified. The finance team devises financial control methods, including agreeing to hold consumers' cash payments in escrow. Additionally, they are Jaguar Land Rover's continuous liaisons for the use of funds in a large number of offset initiatives.

Apart from research and business cases conducted in developed nations, studies in developing countries also demonstrate a low degree of accountant engagement. Lodhia (2003) finds that management accountants are considerably absent from sustainability accounting in Fiji. Their roles are still number crunchers or bookkeepers who operated with a confined economic focus. Accountants' expertise is not used in the company's environmental management strategy. Accountants do not consider environmental risks and contingencies. Environmental costs are also not included in conventional practice (Lodhia, 2003). As a

result, accountants make minor contributions to their employers' environmental issues (Lodhia, 2003). Similarly, accountants in Thailand continue to focus more on traditional accounting, but they still emphasise accountants' critical roles in ensuring the companies' sustainability accounting in the future (Kuasirikun, 2005). Low levels of accountant participation in sustainable accounting are also shown in Bangladesh (Chowdhury and Nahar, 2017), Libya (Ahmad, 2014), Syrian (Kamla et al., 2012), and Malaysian (Mokhtar et al., 2016).

From the above examples and discussion, it is obvious to see accountants' lack of engagement in sustainability accounting is a regular occurrence in these two kinds of nations. Additionally, when the year of the study in this area is considered, the level of accountants' involvement remains low and shows no increase between 1990 and 2020. Contrary to these studies, only Zvezdov et al. (2010) find an increase in accountants' engagement in sustainable accounting.

Sustainability accounting is potentially important, but the evidence suggests that there is low engagement in this. Therefore, it is important to understand the factors influencing their engagement. By reading the literature, the research grouped different dimensions in sections 2.7, 2.8, and 2.9.

2.7 Attitude toward sustainability accounting

The attitude toward the accountants' behaviour in the engagement of sustainability accounting is also different in the literature. Bebbington et al. (1994) find that accountants have the essential attitude to act in sustainability accounting. Their attitudes also have apparent homogeneity (Bebbington et al., 1994). Accountants' attitudes toward sustainability accounting influence companies' practice and policy motivations (Bebbington et al., 1994). Gray et al. (1998) also find that the overall attitude of accountants to sustainability accounting is positive. Contrary to Gray et al. (1998), Deegan et al. (1995) find accountants' attitude toward sustainability accounting is not positive. Ahmad (2014) shows that there is a general but hidden positive attitude toward sustainability accounting.

2.8 Influence of people

Wilmshurst and Frost (2001) find that CEOs' and CFOs' views and perceptions are important to accountants in sustainability accounting. Sustainability managers play a significant role in the companies' sustainability (Bennett et al., 2013). Because they lack accounting knowledge, accountants are required to corporate with them to accomplish sustainability (Bennett et al., 2013). Sustainability managers also usually have very little or no responsibility in providing and presenting information to others (Bennett et al., 2013). Therefore, they need accountants to offer and give the information to others (Bennett et al., 2013). The operational manager also focuses on the sustainability impact on functions such as production and distribution (Bennett et al., 2013). Operating managers closely interact with accountants and influence the identification of the role played by accountants (Goretzki and Messner, 2019).

2.9 Inhibitors and facilitators of accountants' involvement in sustainability accounting

Different factors can influence the accountants' involvement in sustainability accounting. From the rule perspective, Lodhia (2003) and Setthasakko (2010) show that the lack of accounting standards and guidance for accountants to instruct the practice can inhibit accountants' involvement. From the accountants' professional knowledge aspect, having the knowledge and skill can promote their engagement (Davey and Coombes, 1996; Kamla et al., 2012; Lodhia, 2003; Rapacioli, 2014; Setthasakko, 2010; Williams, 2015). In contrast, they will not like to try if they do not clearly understand it (Egan and Tweedie, 2018; Medley, 1997; Passetti et al., 2014). From the accountants' work aspect, other colleagues in the company provide sustainability information (Ahmad, 2014; Egan, 2018; Rapacioli, 2014). Sustainability accounting is outside the accountants' job sphere, which can also be an inhibitor (Rapacioli, 2014). Apart from this, lacking time to engage in sustainability accounting (Egan and Tweedie, 2018; Rapacioli, 2014) and experience in sustainability accounting (Kuasirikun, 2005) are also factors hindering accountants' engagement in sustainability accounting. Standing on the organisation's point of view, if the current accounting system and processes do not support the inclusion of sustainability data (Adams, 2002; Mistry et al., 2014; Wilmshurst and Frost, 2001), accountants will also be impeded from sustainability accounting. In contrast, if the information is relevant to the company (Medley, 1997; Rapacioli, 2014), sustainability issues can influence financial performance and impact cost, risk, and value (Rapacioli, 2014). From the training perspective, the inhibitors can be that the company lacked training in sustainability accounting (Egan and

Tweedie, 2018; Rapacioli, 2014), and accountants lack training and education about sustainability accounting (Bebbington et al., 1994; Spence et al., 2012).

2.10 Theories

Up till now, the theories applied in the research related to the role of accountants in sustainability are still limited.

2.10.1 Legitimacy theory

Mistry et al. (2014) apply the legitimacy theory to explain accountants' perception of their role in sustainable accounting. This theory points out that the organisation tries to ensure its activities are perceived as "legitimate" by the outside parties (Deegan, 2014). This is because organisations have contracts with the society in which they operate (Deegan, 2014). Therefore, their performance should meet social expectations (Deegan, 2014). However, in different periods, the bounds and norms change (Deegan, 2014). As society's expectations change, organisations should also show their performance to keep up with these anticipation changes (Deegan, 2014). Thereby, organisations will take different actions to achieve legitimacy (Dowling and Pfeffer, 1975). Nowadays, society increasingly realises the importance of the company to "make outlays to repair or prevent damage to the physical environment, to ensure the health and safety of consumers, employees, and those who reside in the communities where products are manufactured and wastes are dumped" (Tinker and Neimark, 1987, p. 84). Therefore, legitimacy is crucial for organisations' survival (Deegan, 2014). However, legitimacy is a concept at the organisational level (Dowling and Pfeffer, 1975; O'Donovan, 2002). The legitimacy theory has been widely used in accounting reporting and corporate sustainability reporting disclosure (e.g., Archel et al., 2009; Mobus, 2005; Wilmshurst and Frost, 2000) because information disclosure is vital for companies to establish legitimacy (Deegan, 2014).

2.10.2 Power theory

Schaltegger and Zvezdoz (2015) use the power theory to explore the role of accountants in sustainability accounting in the company. They explained the accounting role from the power perspective. The research is inspired by Pfeffer's (1992) statements of power in the

organisation. “Accounting departments in particular have been identified as loci of enhanced control and power because of the potential ‘uncertainty-reducing’ information which they are able to define, possess or generate” (Bloomfield and Coombs, 1992, p. 462). Therefore, the authoritative role promotes accountants to play a significant role in sustainability accounting (Schaltegger and Zvezdoz, 2015).

2.10.3 Bourdieu’s framework

Egan and Tweedie (2018) adopt Bourdieu’s framework to conduct an empirical examination of how accountants can contribute to organisational sustainability. Pierre Bourdieu (1931-2001) is a French sociologist who built the general theory of social practice (Shenkin and Coulson, 2007). Pierre Bourdieu’s work on accounting research is also one of the symbols of the interdisciplinary movement of accounting research in sociology (Malsch et al., 2011). Pierre Bourdieu’s framework of social practice concerning habitus, capitals, and fields explores how accountants can contribute to sustainability (Dobbin, 2008; Egan and Tweedie, 2018; Malsch et al., 2011). The field “can be conceptualised as a configuration of relationships not between the concrete occupants themselves, but rather between the social positions the occupants happen to hold within the given configuration of social space” (Malsh et al., 2011, p. 198). For Bourdieu, the research process is the only method to establish a field (Bobbin, 2008). The capital exists and functions with the field (Bourdieu and Wacquant, 1992). The capital includes diverse resources, such as economic, cultural, social, and symbolic aspects (Bourdieu, 1986). Habitus is a “system of lasting, transposable dispositions” (Bourdieu, 1979, p. 82).

2.10.4 Laughlin’s model

Gray et al. (1995) adopt Laughlin’s model of organisational change to investigate the (non) role of accountants and accountings in developing sustainability agendas. Laughlin (1991) developed the organisational change model as follows (see Table 2):

Table 2: Type of Organisational Change

No change	Inertia
First-order change (Morphostatic)	Rebuttal
	Reorientation
Second-order change (Morphogenetic)	Colonisation
	Evolution

Source from: Gray et al. (1995)

Rebuttal has little influenced the life of the nature of the organisation (Laughlin, 1991). The organisation's interpretive frameworks and ethos remain unchanged because of an environmental disruption (Kuruppu and Lodhia, 2019). Design archetypes undergo brief transformations before reverting to their original condition (Contrafatto and Burns, 2013; Kuruppu and Lodhia, 2019). Reorientation shows that interpretative frameworks remain constant, but design archetypes and organisational subsystems may evolve, resulting in the internalisation of environmental disturbances (Kuruppu and Lodhia, 2019). Colonisation shows the design archetypes drive transformational change first, followed by interpretative schemes and organisational subsystems (Kuruppu and Lodhia, 2019). Evolution indicates a transformative shift occurs, but this time via interpretative schemes that cascade down to design archetypes and organisational subsystems more purposefully (Kuruppu and Lodhia, 2019). Both "rebuttal" and "reorientation" do alter the organisation's core, heart, or vital aims and operations (Gray et al., 1995). "Colonisation" and "evolution" alter the core of organisations (Gray et al., 1995). In these four levels, Gray et al. (1995) do not see noticeable changes in accountants, but at the third level, accountants considered sustainability accounting as a part of the new method to conceive and control the organisation.

2.10.5 Promoter model

Zvezdov (2011) conducts research on accountants' involvement in sustainability accounting from the promoter theory perspective. Eberhard Witte developed the promoter model in the 1970s (Rost et al., 2007). The quantity of kinetic energy available in the company to overcome the barriers determined the success of innovative decisions (Witte, 1977). The obstacles to innovation can be divided into will and capacity (Witte, 1977). Personal dedication of certain people in the organisation working as promoters is the most effective way to overcome these barriers (Witte, 1977). "The most favourable situation for overcoming barriers to innovation is a structure in which the roles of promotor by power and of promotor

by know-how are both fulfilled, and by two different persons' working 'in tandem'" (Witte, 1977, p. 47).

2.11 Intentions

The individual factor is important because it can influence individuals' actions and organisations' initiatives (Aguinis and Glavas, 2012; Thoradeniya et al., 2022). Accountants' ability to shape their roles is related to their attitude, personality, and initiative (Byrne and Pierce, 2007). Accountants are strong antecedents to their role (Byrne and Pierce, 2007). Different research gives examples of failing practices because accountants are resistant to engage. Schmidt et al. (2020) find that accountants resist going beyond Excel and embracing new data analytics technology, so they do not respond to these issues in practice. Because accountants are not willing to face the change as the environments and technologies changed, they do not embrace the current change quickly to broaden their role to face the sustainability issues in the company (Deegan, 2013). Birkin (1996) also points out that to successfully operate sustainability, accountants need personal change. Gray and Bebbington (2000) also note that management accountants are cajoled into responding to sustainability issues. They are not only slow but also reluctant to initiate the changes. Wilmshurst and Frost (2001) also indicate that intention can be essential in accountants' involvement in sustainability accounting.

2.12 Research gap

The second chapter offers a literature review of the previous research to reveal the research gap. This chapter conducts consecutive discussions to achieve this aim. The opening discussion introduces the concept and the importance of sustainable development in the current world, which puts this research into a general context. The following section discusses how sustainable development influences the companies, why they focus on sustainable development, the challenges they face under the sustainable development context, the actions they should take, and finally, the definitions of corporate sustainability. Because of the importance of sustainable development to the company, the following section then points out the importance of accounting to keep up with the sustainable development trend and assist with corporate sustainability, although sustainability accounting is also criticised. Then as sustainability accounting presents ambiguous and complex in the various literature,

the researcher summarises and categorises four streams of definitions from a wide range of literature in order to sort out a clear clue from the complicated definitions, which finally helps the researcher develops the definition of sustainability accounting for this research.

After the above discussion, the literature emphasises that accountants should act as implementors to take on the relevant responsibilities of sustainability. However, the results from different research in different countries and backgrounds appear to have a remarkably similar conclusion: accountants show a low level of involvement in sustainability accounting. The literature shows accountants hold different attitudes toward sustainability accounting. People with diverse roles can also affect accountants' behaviour in sustainability accounting. Various elements contribute to the facilitation and impediment of accountants' engagement in sustainability accounting.

Since previous research pays more attention to the level of involvement and the factors that may influence the adoption of the behaviour of accountants involved in sustainability accounting, most studies have been carried out without reference to any theoretical model. The legitimacy theory, power theory, Bourdieu's framework, Laughlin's model, and promoter theory are all from the organisation's perspective. These theories are used in the accountants' engagement area, but usually, there is only one corresponding research for one theory. This shows that accountants' engagement is still an undeveloped area that needs more theories in this research area. This also indicates that the development of sustainability accounting is complex and collaboration among different disciplines such as accounting, psychology, and management (Herath, 2005). Different theories can give a completely new perspective on the problem.

As the accountants' ability to shape their role and the influence of intention, it is crucial to have an understanding of the accountant's behaviour from a psychological perspective. The notion of psychology has not been introduced into the discussion in this area. In other words, psychology theory has limited application to studying accountants' behaviour in sustainability accounting. Thus, little is known about how accountants' intention drives the role engagement proceeds, especially how the intention supports the professional roles of accountants in sustainability accounting. In other words, previous literature does not indicate the patterns of motivation and the behaviour of accountants to fulfil engagement expectations and has given few hints regarding how the prescribed behaviour may be encouraged to be

conducted from an accountant-centric perspective. Very little is known concerning the decision-making process by which the behaviour is intended to do and how the intention can be translated to promote accountants' behaviour.

Previous literature often gives piecemeal factors about accountants' engagement in sustainability accounting. Therefore, little appears to take a comprehensive and systematic perspective. Different relationships can be identified and enhance the implementation by organising and summarising these factors. Furthermore, although some literature was published before 2022, there is often a time lag between the publication date and the actual data of research. Therefore, little is known about the current development of accountants as individuals in the sustainability accounting area. Therefore, it is necessary to research the current practice under the current background. In addition, accounting research has been criticised for being somewhat out of touch with reality (Inanga and Schneider, 2005). There have been few accountants' experiences in practice that could inform to enhance their role in promoting sustainability accounting. Very few lessons and experiences can be learned from the practice. Therefore, this research also aims to understand "what is going on" from the accountants' perspective to understand their efforts and the sustainability accounting practice.

In line with the research gap being identified, this research focuses on examining accountants' motivational factors and behaviour in engaging in sustainability accounting to understand the accountants' responses to sustainability accounting. This theoretical framework is developed that seeks to explain the mechanisms of accountants' decision-making to engage in sustainability and their practical engagement. This holistic perspective framework is developed by aggregating and analysing the factors that influence accountants' involvement in sustainability accounting into a network that reveals the factors' interrelationships. Finally, this research also aims to understand accountants' interpretation of important factors and their practical experiences in reality.

Chapter 3 Research Theory and Hypotheses Development

3.1 Chapter overview

After reviewing the previous relevant literature in this research area and identifying the research gap, this chapter establishes a theoretical framework for accountants' behaviour of engaging in sustainability accounting based on the theory of planned behaviour. This chapter first introduces the outline of TPB (theory of planned behaviour) and the rationale for using this theory. Then, each construct of the theory of planned behaviour is discussed in more detail, including behaviour, actual control, intention, attitude toward the behaviour and behavioural beliefs, subjective norm and normative beliefs, perceived behavioural control (PBC) and control beliefs, in order to offer a much deeper understanding about the theory of planned behaviour. Following these sections, the original theory is extended to better reflect the topic of this research with the moral norm. After this stage, hypotheses are developed in terms of the theory of planned behaviour and the expanded factor of the moral norm. Finally, the summary of this chapter is produced to review the fore-mentioned major points in this chapter.

3.2 Theory of planned behaviour overview

3.2.1 Assumption of the theory of planned behaviour

The theory of planned behaviour is a theoretical framework for studying the factors that influence conduct in a systematic way (Lin et al., 2016). Therefore, this theory shows a coherent framework for understanding social behaviour and designing behaviour change interventions (Fishbein and Ajzen, 2010).

The theory of planned behaviour is criticised for assuming that people are rational and neglecting the unconsciousness can also influence the behaviour (e.g., Sniehotta et al., 2014). However, Fishbein and Ajzen (2010) and Ajzen (2015a) clarify that the theory of planned behaviour does not assume that people are rational or they can act in a rational manner. Therefore, the theory of planned behaviour does not imply that people's behaviour is followed reasonably, consistently, and often automatically from their behaviour-relevant beliefs because people may base their decisions on incomplete and inaccurate information

(Fishbein and Ajzen, 2010; Ajzen, 2015a). Once these beliefs are formed, they supply the cogitative foundations from which attitude toward the behaviour, subjective norm, perceived behavioural control, intentions and behaviours are supposed to follow reasonably and consistently (Fishbein and Ajzen, 2010). Moreover, people are not assumed to carefully examine beliefs every time they perform a behaviour (Fishbein and Ajzen, 2010). The construction of attitude toward the behaviour, subjective norm, perceived behavioural control, and generated intention can occur spontaneously and automatically due to the underlying cognitive basis of beliefs (Fishbein and Ajzen, 2010). Although this assumption has been clarified, some studies still do not see this point (e.g., Chen and Tung, 2014; Han and Kim, 2010).

3.2.2 Brief introduction of the theory of planned behaviour

The theory of planned behaviour (TPB) is an extension of the theory of reasoned action (TRA) (Madden et al., 1992). According to TRA, the proximal determinant of whether a person performs a behaviour is the intention to do so (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). TRA suggests that the intention is determined by two determinants: attitude toward the behaviour and subjective norm (Madden et al., 1992). However, the limitation of TRA is that this theory can only predict and explain voluntary behaviour or the behaviour that an individual can control (volitional control). In other words, the behaviour is entirely within the person's control if the person can decide whether to perform or not perform the behaviour at will (Ajzen,1991). As a result, the application of the theory is restricted (Barbera and Ajzen, 2020). While certain behaviours may fit this condition relatively well, the majority of performance is contingent on non-volitional control (Ajzen,1991). Thus, when behaviour is not under complete volitional control, measuring control perceptions can make a contribution (Fishbein and Ajzen, 2010). As a consequence, perceived behavioural control and actual control are added to TRA to cope with situations in which individuals may lack complete volitional control over the behaviour of interest, and the theory is renamed the theory of planned behaviour (TPB) (Ajzen, 2002b; Ajzen, 2006; Barbera and Ajzen, 2020) (see Figure 2). In conclusion, TPB can deal with the behaviour of people who have incomplete volitional control (Kang et al. 2006).

Figure 2 shows that human action is guided by considering beliefs about the likely consequences of performing a certain behaviour (behavioural beliefs), beliefs about important

others' normative beliefs (normative beliefs), and beliefs about specific factors that facilitate or inhibit the performance of behaviour (control beliefs) (Hrubes et al., 2001). In their respective aggregates, behavioural beliefs produce a negative or positive attitude toward the behaviour, normative beliefs produce perceived social pressure, and control beliefs produce the ease or difficulty of performing the behaviour (Hrubes et al., 2001). The behavioural, normative, and control beliefs are the foundations of attitude toward the behaviour, subjective norm, and perceived behavioural control (Fishbein and Ajzen, 2010). Therefore, belief sets shape the attitude towards the behaviour, subjective norm, and perceived behavioural control (Fishbein and Ajzen, 2010). Beliefs assist in exploring what causes people to hold a certain attitude toward the behaviour, subjective norm, and perceived behavioural control (Fishbein and Ajzen, 2010). The beliefs level of analysis provides insight into the ways people think about behaviour (Fishbein and Ajzen, 2010). Regardless of how beliefs associated with a given behaviour are acquired, they serve to guide the choice to perform or not perform the behaviour in question (Fishbein and Ajzen, 2010). In combination, attitude toward the behaviour, subjective norm, and perceived behavioural control lead to intention (Ajzen, 2002b; Hrubes et al., 2001). As a general rule, the more favourable the attitude and subjective norm are, and the higher the perceived behavioural control, the more the individual intends to engage in the behaviour in question (Ajzen, 2012; Bosnjak et al., 2020). However, the relative importance or weight assigned to these three determinants of intention is expected to differ from one behaviour to another as well as from one population to another (Fishbein and Ajzen, 2010). Finally, individuals are expected to carry out their intentions when they have a sufficient degree of actual control (Bosnjak et al., 2020; Fishbein and Ajzen, 2010). Further discussion of factors in TPB is in 3.4 Explaining factors in the theory of planned behaviour.

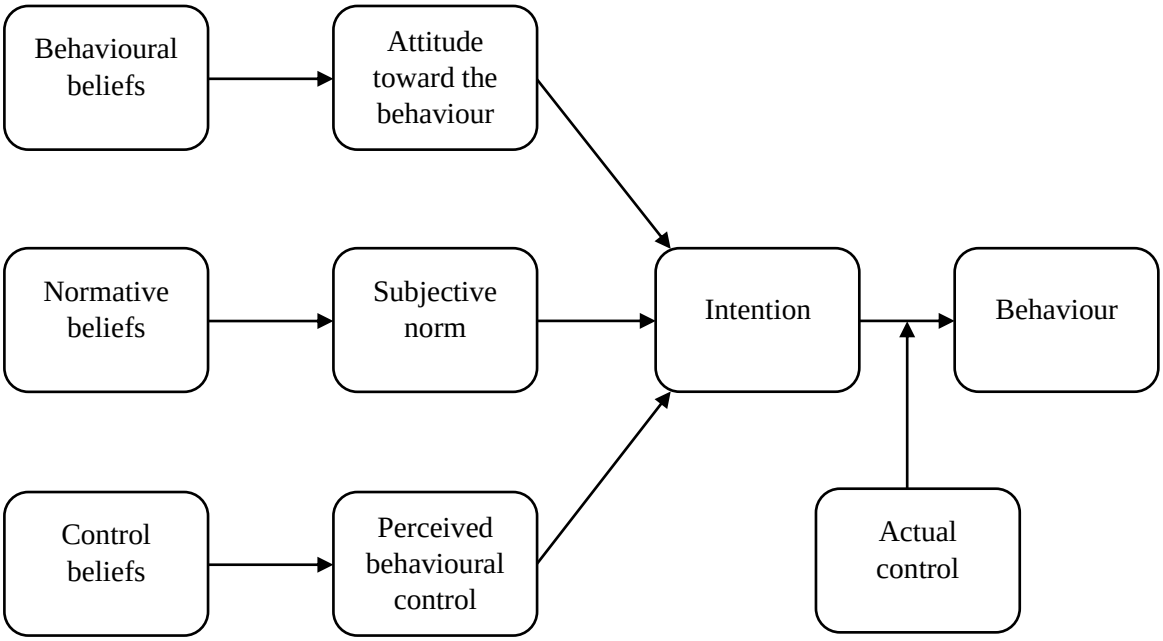

Figure 2: Presentation of the Theory of Planned Behaviour

Source from: Fishbein and Ajzen (2010)

3.3 Rationale for using the theory of planned behaviour

The theory of planned behaviour is in line with the research aim. Because the overarching objective of this research is to explore accountants' motivational factors and behaviour of engaging in sustainability accounting, TPB provides a theoretical framework to systematically understand the factors that affect behaviour (Lin et al., 2016). Specifically, the research considered that TPB offers a more holistic view of categorising and organising the multiple factors and provides a more straightforward approach to understanding the significance of the overall determinants and behaviour (Lin et al., 2016). The relationships among different constructs make it possible to shed light on the underlying processes (Morren and Grinstein, 2016). The theory of planned behaviour is one of the most popular theories applied in the behavioural areas (Bosnjak et al., 2020). TPB has been widely used in different research areas to study different behaviours (Bosnjak et al., 2020), for example, management (e.g., Alzubaidi et al., 2021; Maes et al., 2014) and marketing (e.g., Kalafatis et al., 1999; Shaw et al., 2000). Apart from them, TPB has also been used in the accounting area, for example, accountants' career choices (e.g., Bagley et al., 2012; Solikhah, 2014), managers' attitudes and sustainability reporting (Thoradeniya et al., 2015), whistleblowing behaviour

(e.g., Brown et al., 2016), environmental management accounting practices (e.g., Tashakor et al., 2019), public accountants' ethical decision-making (e.g., Buchan, 2005), and accountants and their information technology usage (e.g., Özer and Yilmaz, 2011). Different research has provided support for the theory of planned behaviour (Armitage and Conner, 2001). For example, Sheeran (2002) reports that the overall correlation between intention and behaviour is more than half. Therefore, from this point of view, the research aim fits the application of TPB.

TPB contributes to unpacking the key elements of this research. The constructs of TPB correspond with factors that emerged in the review of the literature. TPB focuses on explaining the behaviour and can be applied to deal with behaviour (Fishbein and Ajzen, 2010). The importance of accountants in the company allows them to play a helpful or repressive role in sustainability accounting (Schaltegger and Zvezdov, 2015). They considerably influence designing their roles (Byrne and Pierce, 2007). Bebbington et al. (1994) also indicate that it is not the organisation but the accountants themselves to respond to sustainability accounting. Therefore, the theory of planned behaviour sets out the determinants of individuals' decision to adopt a particular behaviour (Conner and Armitage, 1998). Different specific behaviours of accountants' engagement in sustainability accounting are discussed in different research (e.g., Bebbington, 2001; Gray and Bebbington, 2001), which correspond to the behaviour in the TPB. The intention is important for accountants to engage in sustainability accounting (Bebbington et al., 1994), which is consistent with the intention in TPB. Bebbington et al. (1994) also find the role of attitude toward accountants' engagement in sustainability accounting, which corresponds to the attitude toward the behaviour in TPB. Different research shows the positive and adverse outcomes of accountants' engagement in sustainability accounting (e.g., James, 2015; Mistry et al., 2014), they can be seen as the specific behavioural beliefs in TPB that provide detailed information on outcomes of engaging in sustainability accounting. O'Dwyer (2003) indicates that accountants have social pressures to engage in sustainability accounting, which indicates the subjective norm in TPB. Various people can influence their engagement in sustainability accounting (e.g., Passetti et al., 2014; Wilmshurst and Frost, 2001), which corresponds to normative beliefs in TPB that provide detailed information on specific people that impacts accountants' engagement in sustainability accounting. However, accountants' engagement in sustainability accounting is not easy (Christ et al., 2018), which corresponds to the perceived behavioural control in TPB that shows the ease and difficulty of performing the behaviour.

Factors promoting or preventing accountants' engagement in sustainability accounting are distributed in different research (e.g., Egan and Tweedie, 2018; Lodhia, 2003), they correspond to the control beliefs in TPB that provide detailed information on facilitators and inhibitors of performing the behaviour. Finally, as TPB is an open theory that allows adding extra factors to fit researchers' studies (Fishbein and Ajzen, 2010), the extra construct of the moral norm is added to this research considering that accountants have a moral obligation to sustainability (Gray, 2002b). The detailed discussions about adding the moral norm in this research are in section 3.5.

In summary, TPB is employed by this research to explore factors that influence accountants' behaviour of engaging in sustainability accounting. It focuses on accountants underlying behavioural beliefs, normative beliefs, and control beliefs in TPB that shape the corresponding attitude (attitude toward the behaviour in TPB), accountants' consideration of social pressures (subjective norm), accountants' ease or difficulties of engaging in sustainability accounting (perceived behavioural control) respectively, and with moral obligations together influence the intention (intention in TPB), and the intention can be acted as the accountants' engagement in sustainability accounting (behaviour in TPB) with the function of actual control in TPB.

Apart from 2.10 Theories showing the research's theoretical gap in accountants' engagement behaviour in sustainability accounting, the researcher also considered other theories applied in sustainability accounting which may have the potential to be used in this research. But the researcher finally found they did not fit this research. In the sustainability accounting research area, the most widely and commonly used theories are stakeholder theory, legitimacy theory, and institutional theory (Adams and Larrinaga, 2019). However, their application mainly focuses on sustainability reporting (see Table 3). Therefore, the differences in application areas forced the researcher to question their applicability to this research. To gain a deeper understanding of this problem, the researcher looked further into the theories themselves and found that these theories mainly focused on the organisational level, which is not the focus of this research. Stakeholder theory states that organisations must manage the stakeholder relationship strategically; those who do so will survive longer and outperform others who do not (Freeman, 1984). The stakeholder is defined as "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (Freeman, 1984, p. 46).

Stakeholder theory is mainly applied to study the relationship between companies' sustainability reporting and the needs of the stakeholders (e.g., Bradford et al., 2017; Elijido-Ten et al., 2010; Roberts, 1992). Legitimacy theory proposes that there is a clear social contract between the company and society, which requires the companies to cover social expectations to confirm their existence (Dowling and Pfeffer, 1975; O'Donovan, 2002). The presence of legitimacy enables organisational survival (Dowling and Pfeffer, 1975). The legitimacy theory is usually used to explain why companies disclose sustainability information (e.g., Adler et al., 2017; De Villiers and Van Staden, 2006; Nishitani et al., 2021). Institutional theory significantly contributes to studying institutions in social science (Powell and Dimaggio, 1991; Scott, 2001). This theory suggests that corporate behaviour is shaped by the institutional environment in which the company operates (DiMaggio and Powell, 1983). This theory is often used to detect the influence of institutional factors on sustainability reporting (e.g., Brown et al., 2009; Comyns, 2018; Jensen and Berg, 2012). Finally, although this research focuses on the individual level, this does not mean that this research neglects factors at organisational and institutional levels but rather looks at the problem from a different perspective. This research breaks away from the previous organisation-centred perspective. Instead, it looks at the issue from an accountant-centred standpoint because accountants are considered core practitioners. A greater focus on the practitioners and a clear understanding of the practitioners' needs will be more conducive to targeted interventions. In the TPB, social pressures can come from stakeholders but are not limited to stakeholders. Similarly, when evaluating the ease or difficulty of performing a behaviour, accountants can consider institutional factors such as universities (Aerts et al., 2006) and professional associations (Aerts et al., 2006), but any other factors other than institutional factors can also be evaluated, as long as they can influence the ease and difficulty of performing a behaviour. In addition, legitimacy may also be one of the consequences of accountants' engagement in sustainability accounting, but there can be other consequences of accountants' engagement in sustainability accounting. These demonstrate that TPB is a much more inclusive theory than these theories. Finally, TPB studies human social behaviour from a psychological perspective (Ajzen, 1991; Ajzen, 2011), which is different from these three theories.

Table 3: Widely Used Theory in Sustainability Reporting

Theory	**Examples of Research Paper**
Stakeholder theory	Bradford et al. (2017)
	Kaur and Lodhia (2018)
	Orij (2010)
Legitimacy theory	Adler et al. (2017)
	Mamun (2022)
	Archel et al. (2009)
Institutional theory	Bebbington et al. (2009)
	Jensen and Berg (2012)
	Kılıç et al. (2020)

3.4 Explaining factors in the theory of planned behaviour

3.4.1 From intention to behaviour via actual control

Intention captures the motivating variables that influence behaviour (Ajzen, 1991). It can reflect how much individuals are willing to try and how much effort they prepare to expend in order to conduct such action (Ajzen, 1991). In general, the individual with a much stronger intention to participate in the behaviour will be more likely to perform this behaviour (Ajzen, 1991). The connection between intention and behaviour reflects that individuals often tend to undertake actions they intend to accomplish (Conner and Armitage, 1998).

On Ajzen's website, actual control refers to the extent to which an individual has the skills, resources, and other prerequisites needed to conduct the behaviour in question. In the TPB, when given adequate control over their behaviour, individuals are expected to carry out their intentions when they have opportunities, relevant skills and abilities, and behavioural control (Ajzen, 2012; Fishbein and Ajzen, 2010). Both intention and actual control should be analysed to comprehend behaviour properly (Fishbein and Ajzen, 2010). The lack of actual control may prevent individuals from acting in accordance with their intentions (Fishbein and Ajzen, 2010). Thus, in the TPB, the influence of intentions on behaviour is moderated by actual control (Fishbein and Ajzen, 2010; Ajzen, 2020). The greater the actual control, the more intentions are likely to be followed by performing the behaviour (Ajzen, 2020). In order to measure actual control, it is necessary to understand the internal and external components required to conduct the behaviour or to be interfered with, as well as the degree to which the individual has or can gain the resources and overcome the barriers (Ajzen, 2020).

Measuring actual control is much more difficult than measuring perceived behavioural control (Fishbein and Ajzen, 2010; Ajzen, 2020). Therefore, perceived behavioural control is recommended as the proxy for actual control (Fishbein and Ajzen, 2010; Ajzen, 2020). However, there is still very little research separating PBC and actual control (Ajzen, 2011). Even the construction of the TPB questionnaire written by Ajzen (2006) does not provide any guidance. Fishbein and Ajzen (2010) only offer some thoughts to identify actual control. In addition, although the moderating effect of actual control has been grounded in theory (Ajzen, 2006), most of the research only stops at the intention when using the theory of planned behaviour (Barbera and Ajzen, 2020). This may be caused by the measurement difficulties for actual control (Fishbein and Ajzen, 2010; Sheeran, 2002). The author of this thesis can only find one study with actual control done by Renzi (2008). This research is also special because this is qualitative research using TPB. In this research, the actual control consists of the available resources and conditions facilitating the behaviour. Actual control is investigated by asking questions about the teachers' degree of autonomy and flexibility in designing the course, organisational factors associated with the learning management system, the type of support available at the university, and other support services that could be beneficial in assisting online teaching activities. Thus, it is necessary not only to develop methods to identify the resources, skills, and abilities required to perform a given behaviour and to assess the extent to which individuals possess these resources, skills, and abilities but also to measure individuals' capacity to use facilitators and overcome or circumvent barriers (Fishbein and Ajzen, 2010).

3.4.2 From behavioural beliefs to attitude toward the behaviour

Attitude toward the behaviour refers to "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 1991, p. 188). Behavioural beliefs are the likely positive and negative consequences of performing the behaviour (Steinmetz et al., 2016). Therefore, attitude toward the behaviour is the function of the behavioural beliefs that are the readily accessible beliefs regarding the possible behaviour outcome (Ajzen, 2020; Armitage and Conner, 2001). Specifically, behavioural beliefs give the foundation for understanding the attitude toward the behaviour, acquiring insight into the factors producing the favourable or unfavourable attitude toward the behaviour, and deciding a positive or negative attitude toward the behaviour (Fishbein and Ajzen, 2010). When

performing the behaviour can yield more positive consequences than adverse outcomes, the attitude toward the behaviour will be favourable (Fishbein and Ajzen, 2010). Behavioural beliefs integrate to form a favourable or unfavourable attitude toward the behaviour (Bosnjak et al., 2020). Therefore, behavioural beliefs can be utilised to predict and explain the attitude toward the behaviour (Fishbein and Ajzen, 2010).

In different meta-analysis research, attitude toward the behaviour shows different importance to intentions. Attitude toward the behaviour is a very strong factor influencing the behaviour about intentions to attend screening programmes (Cooke and French, 2008). Purchase intention has the strongest correlation with attitude toward the behaviour (Han et al., 2014). However, attitude toward the behaviour can also be the least important factor for the intention to smoke (Topa and Moriano, 2010).

3.4.3 From normative beliefs to subjective norm

Subjective norm refers to "the perceived social pressure to perform or not to perform the behaviour" (Ajzen, 1991, p. 188). Therefore, subjective norm refers to the general social pressure, while normative beliefs concern the probability of particular persons or groups with whom they are driven to approve of the behaviour or not (Armitage and Conner, 2001). In this regard, the subjective norm is determined by a person's normative beliefs of salient referents that impact action or inaction and motivate compliance with these specific referents (Kim et al., 2013). Normative beliefs aggregate to produce the subjective norm (Bosnjak et al., 2020). Normative beliefs result in subjective norm (Hrubes et al., 2001). Therefore, normative beliefs can help explain the subjective norm (Fishbein and Ajzen, 2010). In other words, the formation of normative beliefs produces a general subjective norm (Fishbein and Ajzen, 2010). Normative belief can be used to predict and explain the subjective norm (Fishbein and Ajzen, 2010). If more important others are believed to approve than disapprove, individuals are likely to experience social pressure to participate in the behaviour (Fishbein and Ajzen, 2010). The greater the perceived social stress, the more probable the intention to engage in the behaviour will be developed when all variables are constant (Fishbein and Ajzen, 2010).

In various meta-analysis research, the subjective norm also performed various significance. Armitage and Conner (2001) find that the subjective norm is most weakly related to intention.

However, the subjective norm can also play an important role in smoking intention (Topa and Moriano, 2010). The same situation also takes place in the purchase intention (Han et al., 2014).

3.4.4 From control beliefs to perceived behavioural control

Perceived behavioural control refers to the ease or difficulty of carrying out the behaviour (Ajzen, 1991). The control beliefs lead to a sense of control over behaviour (Fishbein and Ajzen, 2010). In other words, the control beliefs are the antecedents of perceived behavioural control (Armitage and Conner, 2001). Control beliefs include specific factors facilitating and inhibiting the performance of the behaviour (Armitage and Conner, 2001). The widely held idea is that the whole set of control beliefs determines high or low perceived behavioural control (Kim et al., 2013). Therefore, control beliefs aggregate to produce perceived behavioural control (Bosnjak et al., 2020). They obtain substantive information about the determinants of perceived behavioural control (Fishbein and Ajzen, 2010). Therefore, examining the control beliefs can gain insight into the factors leading to a sense of control over performing the behaviour (Fishbein and Ajzen, 2010).

The theoretical framework is concerned only with the extent to which control factors are believed to be present and are perceived to promote or prevent the performance of the behaviour under consideration (Fishbein and Ajzen, 2010). Whether these resources and impediments are internal or external makes no difference to the individual (Ajzen, 2002b; Fishbein and Ajzen, 2010). When individuals believe that they possess the necessary resources and opportunities (e.g., skills, time, money, cooperation with others) and that the obstacles they are likely to encounter are few and manageable, they should have confidence in their ability to perform the behaviour and thus exhibit a high degree of perceived behavioural control (Fishbein and Ajzen, 2010). In contrast, when people think they lack requisite resources or are likely to meet significant inhibitors, they should judge the performance of the behaviour to be relatively difficult and hold a low level of perceived behavioural control (Fishbein and Ajzen, 2010). Therefore, if control beliefs recognise a greater number of facilitating than inhibiting elements, perceived behavioural control should be strong (Armitage and Conner, 2001; Fishbein and Ajzen, 2010). Thus, the control beliefs lead to an understanding of perceived behavioural control and are used to predict and explain perceived behavioural control (Fishbein and Ajzen, 2010).

Armitage and Conner (2001) find that perceived behavioural control is important to predicting intention in meta-analysis research. Another meta-analysis research by Cooke and French (2008) also supports this. However, perceived behavioural control is the least strong variation of the purchase intention (Han et al., 2014).

3.5 Extension theory of planned behaviour with the moral norm

Although attitude toward the behaviour, subjective norm, and perceived behavioural control all contribute to the determination of intention, it is an open theory to add additional factors according to different behavioural contexts (Ajzen, 2011; Fishbein and Ajzen, 2010). Adding additional constructs within the TPB model can increase the theory of planned behaviour's explanatory power (Kaiser and Scheuthle, 2003). Moral norm is a distinct construct of TPB (Manstead, 2000). Moral norm has been added to different behaviours in the theory of planned behaviour, such as pro-environmental behaviour (De Leeuw et al., 2015); purchasing local food products (Shin and Hancer, 2016); waste separation at source behaviour (Razali et al., 2020); and adopting hybrid electric vehicles (Wang et al., 2014).

Moral norm correlates with the moral dimension (Rivis et al., 2009). The moral norm implies an individual's sense of duty or responsibility to perform or not perform a specific behaviour (Ajzen, 1991; Beck and Ajzen, 1991; Leonard et al., 2004). Nowadays, sustainability has become a morally significant issue for the company (Schaltegger and Burritt, 2010). Everyone, including accountants, has a moral duty to achieve sustainability (Gray, 2002b). Furthermore, moral norm works in conjunction with attitude toward the behaviour, subjective norm, and perceived behavioural control (Conner and Armitage, 1998). It has also been found to enhance the variation explained by intention beyond the TPB variables (Rivis et al., 2009). This finding is supported by the meta-analysis of Conner and Armitage (1998) and Manstead (2000), which show the moral norm is a significant determinant of intention when other variables are controlled. In various empirical studies, the moral norm has also been found to increase the power of explanation and understanding of the variation of intention and behaviour (Manstead, 2000). Kaiser (2006) points out a favourable correlation between the moral norm and customers' conservation behavioural intention. Furthermore, Kurland (1995) extends the TPB model by including the moral norm and finds that the model with the perceived moral obligation may account for greater variation in the agents' intention than the

model without the moral norm. Therefore, the moral norm can be a factor that influences the intention and increase the power of the theory of planned behaviour. In addition to the three determinants of intention in the TPB model, the moral norm can also be incorporated into this research.

3.6 Hypotheses development

In order to test the entire model in Figure 2 and the additional variable of the moral norm, nine hypotheses are developed in this thesis. Some studies test the relationship between beliefs and their antecedents and have a similar number of hypotheses as this research (e.g., Leeuw et al., 2015; Moon et al., 2021).

The intention captures the motivational factors that influence the behaviour (Ajzen, 1991). The individual with a greater intention is more likely to carry out the behaviour (Ajzen, 1991). In this research, the intention grasps the accountants' motivation to engage in sustainability accounting, and the behaviour is the accountants' engagement in sustainability accounting. The relationship between intention and behaviour has been found in different empirical studies. For example, Hrubes et al. (2001) find that intention correlates positively and strongly with hunting behaviour. Cunningham and Kwon (2003) conclude that the behaviour significantly contributes to the intention to attend a sport event. Menozzi et al. (2017) show that the intention positively and significantly influences the behaviour of eating food containing insect flour. Du and Pan (2021) find that intention has a positive and significant relationship with energy-saving behaviour. In different meta-analysis research, this relationship has also been verified (Li et al., 2019; McEachan et al., 2011; McDermott et al., 2015). Therefore, it is reasonable to assume that accountants who have a greater intention to engage in sustainability accounting are more likely to perform the behaviour of engaging in sustainability accounting. The first hypothesis is as follows:

H1: There is a positive relationship between accountants' intentions to engage in sustainability accounting and the behaviour of engaging in sustainability accounting.

Attitude toward the behaviour is a determinant of intention in the theory of planned behaviour (Ajzen, 1991). Attitude toward the behaviour shows the overall evaluation of performing the behaviour (Ajzen, 1991; Fishbein and Ajzen, 2010). In this study, attitude toward the

behaviour refers to whether accountants have an overall favourable or unfavourable evaluation toward the behaviour of engaging in sustainability accounting. In different empirical research, attitude toward the behaviour has been examined. For example, Cheon et al. (2012) find that attitude toward the behaviour positively influences college students' intentions to adopt m-learning. Ahmmadi et al. (2021) show a positive and significant correlation between the attitude toward the behaviour and consumers' intentions toward consuming products irrigated with purified wastewater. Yew et al. (2022) indicate attitude toward the residential energy management information system is positively associated with the intention to adopt the residential energy management information system. Different meta-analysis research confirms this relationship between attitude toward the behaviour and intention (e.g., Cooke et al., 2016; Rise et al., 2010). Therefore, it is reasonable to hypothesise that if accountants hold a more positive attitude toward the behaviour, they are more likely to have intentions to engage in sustainability accounting. The second hypothesis is as follows:

H2: There is a positive relationship between accountants' attitudes toward engaging in sustainability accounting and their intentions to engage in sustainability accounting.

The overall attitude toward the behaviour is determined by the readily accessible beliefs regarding the likely consequences of behaviour (i.e., behavioural beliefs) (Ajzen, 2020). Behavioural beliefs show an individual's subjective probability that performing a behaviour will result in a certain outcome (Ajzen, 2020). In this research, behavioural beliefs include specific outcomes of accountants' engagement in sustainability accounting. For example, the involvement of accountants in sustainability accounting (the behaviour) can drive the achievement of the company's sustainability goals (CIMA, 2010) or will increase their workload (Mistry et al., 2014). In different studies, the relationship between behavioural beliefs and the attitude toward the behaviour has also been confirmed. For example, Kim et al. (2013) show that consumers' behavioural beliefs positively and significantly influence their attitude toward reading menu labels. Moon (2021) indicates that behavioural beliefs positively influence the attitude toward green restaurant patronage. De Leeuw et al. (2015) conclude that behavioural beliefs significantly affect the attitude toward adopting eco-friendly convenience food. Therefore, it is reasonable to assume that if accountants' involvement in sustainability accounting can yield more positive consequences, they are more favourable to engage in sustainability accounting. The third hypothesis is as follows:

H3: Accountants' behavioural beliefs positively influence accountants' attitudes toward engaging in sustainability accounting.

Subjective norm is the second determinant of intention in the theory of planned behaviour (Ajzen, 1991). In this study, the subjective norm shows whether accountants consider the general social pressure to engage in sustainability accounting. In various research, the subjective norm has been tested and found to have a significant and positive relationship with intention. For example, Quintal et al. (2010) indicate that subjective norm is a significant and positive predictor of intentions to visit Australia. Amit Kumar (2021) shows the subjective norm positively and significantly influences green buying behaviour in Indian demography. Dong and Ge (2022) show that the subjective norm positively and significantly impacts battery recycling intention. Different meta-analysis studies also show this relationship between subjective norm and intention (e.g., Albarracin et al., 2001; Rich et al., 2015). Thus, if accountants feel more social pressure, they may be more likely to have the intention to engage in sustainability accounting. The fourth hypothesis is as follows:

H4: There is a positive relationship between the subjective norm of engaging in sustainability accounting and accountants' intentions to engage in sustainability accounting.

Normative beliefs are assumed to determine the overall level of the subjective norm (Fishbein and Ajzen, 2010). In this research, behavioural beliefs include specific referents important for accountants to engage in sustainability accounting, such as CEOs (Wilmshurst and Frost, 2001). Diverse research has shown that normative beliefs have a positive and significant relationship with subjective norm. For instance, Thoradeniya et al. (2015) show a positive and significant relationship between managers' normative beliefs regarding sustainability reporting and the subjective norm. Han and Kim (2010) show that normative beliefs positively and significantly influence the subjective norm toward revisiting a green hotel. Wu and Chen (2014) also conclude that the normative beliefs of the consumer regarding green consumption are positively and significantly related to the subjective norm. Therefore, it is reasonable to assume that if more important others are believed to approve of accountants' involvement in sustainability accounting, accountants are more likely to have the social pressure to participate in sustainability accounting. The fifth hypothesis is as follows:

H5: Accountants' normative beliefs positively influence the subjective norm of engaging in sustainability accounting.

Perceived behavioural control is the third determinant of intention in the theory of planned behaviour (Ajzen, 1991). In this research, perceived behavioural control indicates the ease or difficulty of carrying out sustainability accounting. Some previous research has shown the association between perceived behavioural control and intention. For example, Yoon (2011) shows that perceived behavioural control positively affects an individual's intention to commit digital piracy. Yadav and Pathak (2017) conclude that perceived behavioural control significantly and positively influences consumers' intention to buy green products. Li et al. (2021) indicate that perceived behavioural control positively and significantly affects the ecological compensation intention of the transboundary river basin. Various meta-analysis research also shows this relationship (e.g., Fischer and Karl, 2022; Lin and Roberts, 2020). Therefore, it is reasonable to hypothesise that if accountants believe that it is easier for them to engage in sustainability accounting, they are more likely to have the intention to engage in sustainability accounting. The sixth hypothesis is as follows:

H6: There is a positive relationship between perceived behavioural control and accountants' intentions to engage in sustainability accounting.

Control beliefs are assumed to determine the overall level of perceived behavioural control (Fishbein and Ajzen, 2010). In other words, the aggregated control beliefs result in the perception of a high or low ability to carry out the behaviour (i.e., perceived behavioural control) (Bandura, 1986; Bandura, 1997; Fishbein and Ajzen, 2010). Because control beliefs include specific facilitators and inhibitors of performing the behaviour (Armitage and Conner, 2001), in this research, control beliefs include specific factors that enable or prevent accountants from engaging in sustainability accounting. For example, accountants have knowledge and skills related to sustainability accounting (Lodhia, 2003). Numerous studies suggest a positive and significant relationship between control beliefs and perceived behavioural control. For example, Han and Kim (2010) indicate that control beliefs positively and significantly influence perceived behavioural control. Moon (2021) finds that control beliefs positively and significantly influence perceived behavioural control. Therefore, it is reasonable to assume that if there are more facilitating factors for accountants to engage in

sustainability, accountants will be easier to engage in sustainability accounting. The seventh hypothesis is as follows:

H7: Accountants' control beliefs positively influence the perceived behavioural control of engaging in sustainability accounting.

In this new era of sustainability consciousness, accountants need to consider their roles as ethical actors because accountants are now much more influenced by societal views of sustainability issues (Reynolds and Mathews, 2000). In this research, the moral norm is the accountant's sense of duty or responsibility to engage in sustainability accounting. As discussed in section 3.5, different meta-analysis research shows that adding the moral norm can increase the power of explanation and understanding of the variation of intention, and it is also significantly related to the intention with different behaviour. Therefore, it is reasonable to hypothesise that if accountants perceive it is their duty or responsibility to engage in sustainability accounting, they are more likely to have the intention of engaging in sustainability accounting. The eighth hypothesis is as follows:

H8: Moral norm positively influences accountants' intentions to engage in sustainability accounting.

The intention can be used to determine the behaviour's performance (Fishbein and Ajzen, 2010). The stronger the intention, the more likely the behaviour will be performed (Fishbein and Ajzen, 2010). However, it is well acknowledged that a lack of necessary skills and capabilities, or the existence of contextual restrictions, might hinder individuals from acting on the behaviour (Fishbein and Ajzen, 2010). That is, people may lack actual control over the performance of the behaviour (Fishbein and Ajzen, 2010). The intention is assumed to be a good predictor of behaviour only when individuals have control over their behavioural performance (Fishbein and Ajzen, 2010). Thus, actual control can moderate the effect of the intention on behaviour (Fishbein and Ajzen, 2010). To fully understand the behaviour, this study examines the moderating effect of actual control. The ninth hypothesis is as follows:

H9: Actual control moderates the effect of the intention on the behaviour of engaging in sustainability accounting.

After developing the hypotheses in this research, different hypotheses are organised and presented in Figure 3.

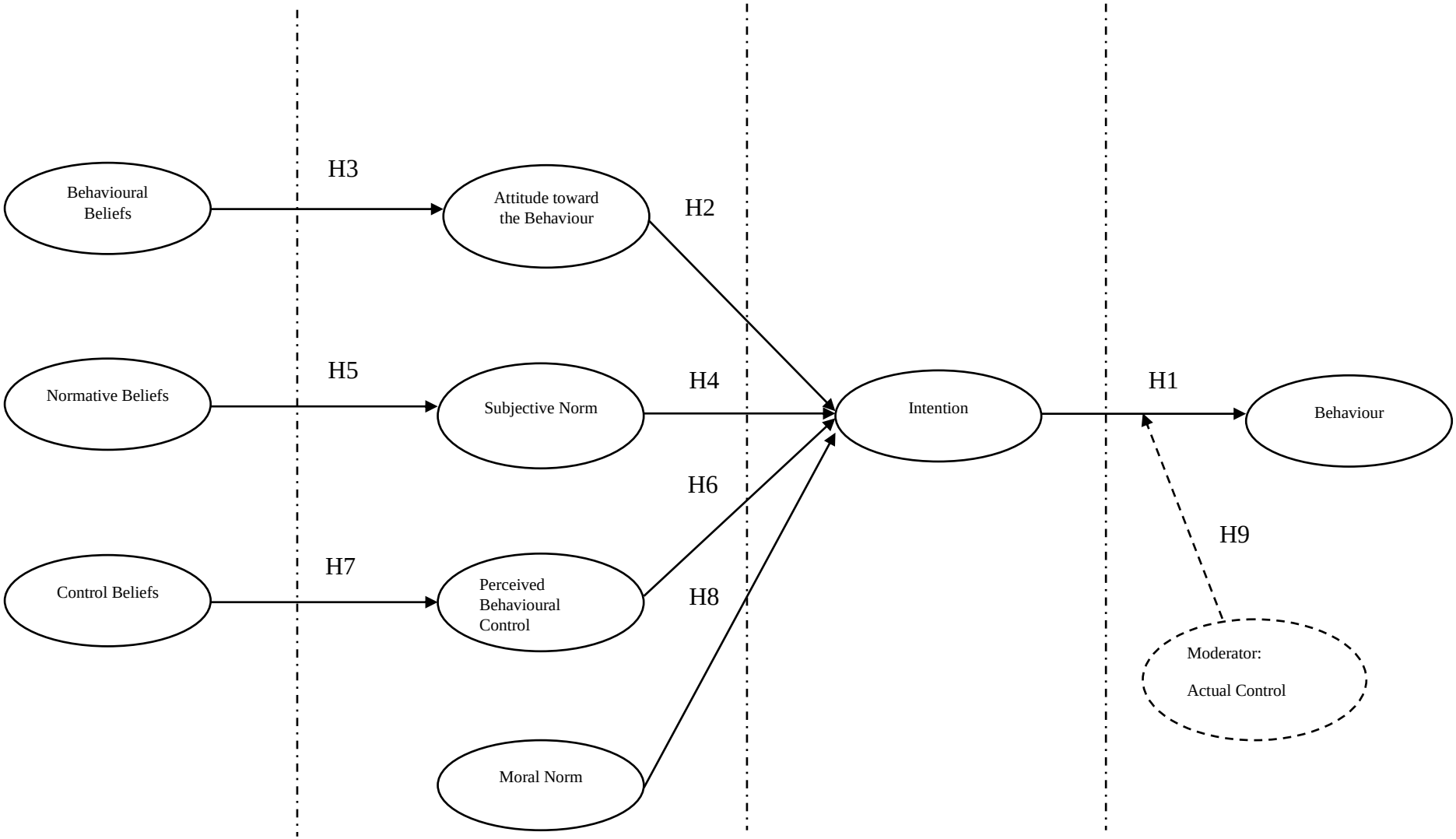

Figure 3: Hypotheses Development

3.7 Chapter summary

This chapter mainly develops different hypotheses according to the existing literature about the theory of planned behaviour. The theory of planned behaviour builds a better understanding of the relationship among behaviour, actual control, intention, attitude toward the behaviour, behavioural beliefs, subjective norm, normative beliefs, perceived behaviour control, and control beliefs. The moral norm as an additional factor expands the original theory of planned behaviour to explain the accountants' behaviour of engaging in sustainability accounting in this research context. Finally, these hypotheses are summarised in this research context. These developed hypotheses will be tested in the later chapters.

Chapter 4 Methodology

4.1 Chapter overview

After discussing the research framework and the hypotheses developed from the theory, this chapter focuses on the methodology adopted in this research. This chapter firstly locates the philosophical standpoint that shows the researcher's beliefs in conducting this research. Based on the philosophical stance of this research, the following contents focus on the research design, which gives the rationale for the two stages of this research. Finally, research ethics issues are discussed.

4.2 Research philosophy

4.2.1 Ontology and epistemology

Philosophy assumptions provide a foundation for undertaking research (Creswell and Plano Clark, 2018). The philosophical point of view is a generalised worldview system that forms beliefs that can guide action (Spirkin, 1983). Research methodology is the philosophical position that guides us to generate knowledge and perform the behaviour, and it relates to epistemology and ontology (Byrne, 2017). It shows the strategy or design that underpins the selection and application of particular methods and links the selection and use of methods to desired research outcomes (Byrne, 2017). The researcher's ontology and epistemology assumptions will impact the approach to addressing the subsequent research questions (Gill and Johnson, 2010). "Research methods are practical activities of research" (Carter and Little, 2007, p. 4). The methods choices made by researchers reflect a dedication to the world's perspective and the means by which researchers might come to know this world (Moon and Blackman, 2014).

"Ontology concerns the nature of 'reality'" (Hopper and Powell, 1985, p. 431). It focuses on whether the phenomena are real and objective (Corbetta, 2003). Epistemology concerns "what constitutes knowledge of that reality" (Blaikie, 2004, p. 2). It "focuses on the relationship between the observer and the reality observed" (Corbetta, 2003, p. 6). Epistemology shows how we know what we know (Crotty, 1998; Lewis-Beck et al., 2004). In other words, it is about how we gain knowledge about what we know (Creswell and Plano

Clark, 2018). Ontology implies epistemology (Crotty, 1998). Epistemology depends on ontology (Corbetta, 2003). It helps to decide the favourable types of methods and techniques (Mills et al., 2010). Therefore, epistemology indicates the relationship between reality and the researcher (Carson et al., 2001).

4.2.2 Pragmatism

Every research has a philosophical underpinning (Creswell and Plano Clark, 2018). The philosophical foundation shapes the research process and the conduction of inquiry (Creswell and Plano Clark, 2018). However, there are various labels and philosophical viewpoints (Saunders et al., 2019). Therefore, philosophical disagreements are an inherent problem in the research (Saunders et a., 2019). For this research, the philosophical position is pragmatism. Choosing this philosophical position is not to neglect the differences between different philosophical perspectives for the sake of convenience but is formed on the basis of an understanding of the various philosophical views in the research process. The study's philosophy is examined in terms of the meaning of philosophical viewpoints and the relationship between methodology and philosophy. The general philosophical basis is shown in Table 4, and the philosophical views in detail are in Table 5.

Table 4: The Comparison of the Different Philosophical Basis

Paradigm	Ontology	Epistemology	Methods
Positivist/ Postpositivist	External, objective, and independent of social actors	Only observable phenomena can provide credible data and facts. Focus on causality and law-like generalisations, reducing phenomena to simplest elements.	Quantitative
Interpretivist/ Constructivist	Socially constructed, subjective, may change, multiple	Subjective meanings and social phenomena. Focus on the details of the situation, the reality behind these details, subjective meanings, and motivating actions.	Qualitative methods predominate
Pragmatic	External and internal, multiple, views chosen to best achieve an answer to the research question	Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data.	Quantitative and qualitative (mixed or multimethod design). Methods are matched to the specific questions and purpose of the research.
Based on Mackenzie and Knipe (2006); Wahyuni (2012); Johnson and Onwuegbuzie (2004)			

Table 5: Philosophical Views in Detail

Paradigm	Philosophical Views in Detail
Positivist	• Positivist research focuses on description and explanation, with specific ideas and hypotheses guiding cognition (Carson et al., 2001). • Rather than producing the actual item of study, a research subject is discovered via the discovery of an external object of study (Carson et al., 2001). • Researchers preserve their objectivity by establishing a buffer zone between themselves and the subject of their study; they strive to be emotionally neutral and to draw a clear line between reason and emotion, science and human experience (Carson et al., 2001). • Positivists aim to establish a clear difference between facts and value judgments, pursue objectivity, and approach their subject of inquiry consistently rationally, verbally, and logically (Carson et al., 2001).
Postpositivist	• The knower and the known are inextricably linked (as positivism claims). While humans can never fully comprehend reality, academics may approach it rigorously via data collecting and analysis (Eriksson and Kovalainen, 2008).
Interpretivist	• The objective of interpretivist is to provide new, more nuanced understandings and interpretations of social environments and settings (Saunders et al., 2019). • Interpretivism emphasises the distinction between people and physical objects due to the fact that they generate meaning (Saunders et al., 2019).
Constructivist	• The researcher's objective is to make sense of (or interpret) the worldviews of others. Rather than beginning with a theory (as is the case with postpositivism), enquiries produce or construct a theory or pattern of meaning inductively (Creswell and Creswell, 2018). • People aspire to comprehend the environment in which they live and work (Creswell and Creswell, 2018). • People construct subjective meanings for their experiences-meanings focused on certain objects or things. These meanings are diverse and many, prompting the researcher to examine various perspectives rather than pigeonholing them into a few categories or concepts (Creswell and Creswell, 2018).

Pragmatism "generally prefers more moderate and commonsense versions of philosophical dualisms based on how well they work in solving problems (e.g., what works, what solves problems, and what helps us to survive)" (Johnson and Onwuegbuzie, 2004, p. 18). Thus, a pragmatist views research as beginning with a problem and concluding with practical solutions that may be used in future practice (Saunders et al., 2019). For pragmatists, reality

is significant as a measure of an idea's practical influence, and knowledge is valued for enabling effective and successful actions (Saunders et al., 2019). "Pragmatists are more interested in practical outcomes than abstract distinctions" (Saunders et al., 2019, p. 151). As a result, they prefer to gather data in a credible, well-founded, reliable, and relevant manner in order to develop the study (Kelemen and Rumens, 2008).

Pragmatism acknowledges the natural or physical world's presence and significance, as well as the emerging social and psychological world that includes language, culture, human institutions, and subjective thought (Johnson and Onwuegbuzie, 2004). Additionally, pragmatism places a premium on the effect of reality and the human inner world experience on the action (Johnson and Onwuegbuzie, 2004). Pragmatism holds the belief that knowledge is both produced and based on the reality of the world in which individuals live and experience (Johnson and Onwuegbuzie, 2004).

The starting point of this study is to provide new ideas to address the current low level of engagement of accountants in sustainability accounting, although this research uses the theory from psychology. By exploring a deep understanding of the accountants' engagement by asking "what" and "how" questions, the researcher can explore the problems within the current practice to inspire suggestions to promote future development. Using different theories and research methods serves to shed light on contributing to practical problems. Using the psychology theory does not mean pragmatism cannot fit this research area. The researcher believes that no matter what theories the studies use, they should contribute to solving problems in practice. Therefore, applying different theories is only a means to solve real problems and to inform the solution of real-life problems from different perspectives. Just like Saunders et al. (2019, p. 151) note, "Pragmatists recognise that there are many different ways of interpreting the world and undertaking research, that no single point of view can ever give the entire picture and that there may be multiple realities". Therefore, the psychology area can also take pragmatism as the philosophical base (e.g., Giacobbi et al., 2005). Additionally, sustainability accounting research also has a practical and pragmatic nature, and sustainability problems are, in fact, pragmatic problems (Baker and Schaltegger, 2015).

From a matching philosophy and methods perspective, positivists or postpositivists tend to predominantly apply quantitative methods to data collection and analysis. In contrast,

interpretivists or constructivists generally tend to predominantly use qualitative methods (Mackenzie and Knipe, 2006). Therefore, they do not match the mixed methods research. However, pragmatism may be used to illustrate how to combine research methodologies efficiently (Hoshmand, 2003). Moreover, mixed methods research attempts to legitimise the use of several approaches in order to answer research issues rather than restrict the study (Johnson and Onwuegbuzie, 2004). Thus, pragmatism is consistent with mixed methods research (Johnson and Onwuegbuzie, 2004).

4.3 Mixed methods research

4.3.1 Rationale for doing the mixed methods research

Following a discussion of the philosophical underpinnings of mixed methods, this section explores the justification for utilising mixed methods in this study.

"Mixed methods research is the type of research in which a researcher or a team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (Johnson et al., 2007, p. 123). According to Firestone (1987), quantitative research may convince individuals by de-stressing individual judgment, emphasising the application of established techniques, and finally generalising the findings to the population. On the contrary, qualitative research may persuade individuals via detailed explanations and strategic comparisons of many cases (Firestone, 1987). When researchers study a few individuals qualitatively, they lose the ability to generalise the results to many people (Firestone, 1987). When researchers quantitatively examine many individuals, the understanding of any one individual is diminished (Firestone, 1987). Thus, the shortcomings of one technique may be compensated for by the advantages of the other, and the combination of quantitative and qualitative data offers a far more thorough knowledge of the research problem than either strategy alone (Creswell and Plano Clark, 2018).

Using mixed methods can investigate the information from different angles (Creswell and Plano Clark, 2018). Mixed methods incorporate elements of both quantitative and qualitative approaches, which can gain additional insights beyond using them alone (Creswell and Plano

Creswell, 2018, Sekaran and Bougie, 2020). Mixed methods research enables the analysis of a research subject using a range of methods to solve the issues at hand but is not limited to the quantitative or qualitative methods traditionally connected with research (Creswell and Plano Clark, 2018). Mixed methods research enables the resolution of issues that cannot be addressed only by quantitative or qualitative techniques (Creswell and Plano Clark, 2018). "Mixed methods research focuses on collecting, analysing, and mixing both quantitative and qualitative data in a single study or series of studies" (Sekaran and Bougie, 2020, p. 106). Thus, mixed methods research iteratively or concurrently mixes quantitative and qualitative approaches, allowing the researcher to get much stronger study findings than if just the quantitative or qualitative method is used (Malina et al., 2011). Thus, mixed methods research serves as a bridge across the often-adversarial divide between quantitative and qualitative researchers (Creswell and Plano Clark, 2018). We are social, behavioural, and human sciences researchers first and foremost, and distinctions between quantitative and qualitative research serve only to limit our methods and collaboration opportunities (Creswell and Plano Clark, 2018).

Mixed methods are not confined to a specific study field or topic but appear appropriate to a broad discipline (Creswell and Plano Clark, 2018). Mixed methods have gained popularity in a variety of social science research, including accounting (e.g., Md Zaini et al., 2020; Killian et al., 2022; Verdier and Lapeyre, 2021). This research also studies the field of accounting using mixed methods. Because of the interdisciplinarity and complexity of the research challenges in this study, it is vital to find solutions beyond simply conducting quantitative or qualitative research. The knowledge gained from different perspectives can lead to a breadth of coverage, create opportunities to probe for an in-depth understanding of the current status of accountants' engagement in sustainability accounting, and shed light on future development and practice.

4.3.2 Process of mixed methods research

Following the decision to do mixed methods research, the following stage is to establish how quantitative and qualitative methods will be integrated to process the whole study. Mixed methods research combines quantitative and qualitative techniques in a variety of ways (Saunders et al., 2019). As a result, there are several varieties of mixed approaches design (Bryman, 2016). In general, three core mixed methods designs can provide useful

frameworks to plan the study: convergent design (concurrent design or parallel design), exploratory sequential design, and explanatory sequential design (Creswell and Plano Clark, 2018).

This research is not suitable for the convergent design because this brings together both quantitative and qualitative results for comparison and combination. However, the core of this design is to compare two results to obtain a complete understanding of the problems (Creswell and Plano Clark, 2018). Additionally, this approach isolates the employment of quantitative and qualitative techniques in a single phase of data collection and analysis, allowing for the interpretation of both sets of findings (Saunders et al., 2019). The result of one data collection method does not depend on the results of the other (Creswell and Plano Clark, 2018). These two pieces of research have equal importance in addressing the research questions (Creswell and Plano Clark, 2018). Therefore, this design does not match this research's aims. Both sequential exploratory and sequential explanatory belong to sequential mixed methods that include more than one phase of data collection and analysis (Saunders et al., 2019). The sequential exploratory design does not match this research because it begins with qualitative data collection and analysis (Creswell and Plano Clark, 2018). Building on these results, quantitative research is conducted based on qualitative research results (Creswell and Plano Clark, 2018). The exploratory sequential design process is largely concerned with developing and implementing a quantitative measure, survey, intervention, digital tool, or new variable based on qualitative data (Creswell and Plano Clark, 2018).

Therefore, in a double phase of sequential mixed methods research, a sequential explanatory design is suitable for this research because the quantitative data collection and analysis are followed by qualitative research to explain and expand the quantitative findings from the first phase (Creswell and Plano Clark, 2018). The quantitative results inform the follow-up quantitative research (Creswell and Plano Clark, 2018). These features match the research questions that focus on relationships of variables first, and then the qualitative research discusses the results and promotes the future development of practice. The structure simplifies implementation since the researcher separates the quantitative and qualitative stages and collects just one kind of data at a time (Creswell and Plano Clark, 2018). Therefore, the researcher can manage the research design alone. Furthermore, the writing is also straightforward and clear for readers because the qualitative section follows the quantitative section in this research.

4.4 Theory and research

Theory development approaches contain induction, deduction, and abduction (Saunders et al., 2019). Deductive research starts with general theory to specific hypotheses (Sekaran and Bougie, 2020). In contrast, inductive research starts from specific phenomena to general conclusions (Sekaran and Bougie, 2020). The deductive method shapes the research process and many areas of data analysis by drawing on existing theories (Saunders et al., 2019). In inductive research, building the theory is the objective of collecting the data (Bell et al., 2019). Rather than proceeding from theory to data (as in deduction) or from data to theory (as in induction), abductive research alternates between the two, thereby merging deduction and induction (Suddaby, 2006).

The researcher in postpositivist research works from the "top" down, from a theory through hypotheses to data to support or refute the theory (Creswell and Plano Clark, 2018). Constructivist techniques begin at the "bottom" and work their way up, using the viewpoints of participants to build bigger themes and generate a theory that unites themes (Creswell and Plano Clark, 2018). In pragmatism, the researcher may use both deductive and inductive reasoning while combining qualitative and quantitative data throughout the investigation (Creswell and Plano Clark, 2018). Therefore, the abductive approach can be underpinned by pragmatism (Saunders et al., 2019).

4.5 Ethics

Ethics is one of the crucial aspects of the success of the research (Saunders et al., 2019). Ethics issues are "directly to the integrity of a piece of research and of the disciplines that are involved" (Bryman, 2016, p. 120). Conducting this research raises ethical issues because the questionnaire and interview methods involve human participants' access. Therefore, before data collection, the ethics application for this research was submitted and then approved by the Ethics Committee at the University of Sheffield.

The consent form and the information sheet have been prepared for research participants to follow the research ethics. Participants can not only voluntarily participate in this research but can also withdraw at any time without harm and without giving any reason throughout the

data collection process. “Anonymity refers to collecting data without obtaining any personal, identifying information” (Coffelt, 2017, p. 2). “Confidentiality refers to separating or modifying any personal, identifying information provided by participants from the data” (Coffelt, 2017, p. 2). This research collects and shows the demographic information of survey respondents and interviewees. However, there are no privacy issues to be concerned with because the demographic information does not reveal the personal identity and who participates in this research but is used to describe the characteristics of the survey respondents and interviewees for readers to obtain a general recognition of them (Coffelt, 2017). The researcher collects the information to trace the data to individual participants, especially to identify interviewees in the second stage of research. Therefore, confidentiality is assured that participants’ personal data, such as names, email addresses, telephone numbers, and companies, will not be disclosed. Furthermore, this kind of data will be stored appropriately and securely.

4.6 Chapter summary

This study is based on the pragmatism philosophical perspective. The study develops mixed methods research on this basis, combining quantitative and qualitative research methods. The first stage is quantitative research, followed by qualitative research, which is a sequential explanatory design. Due to the pragmatism and integration of quantitative and qualitative research, abduction is suitable to show how the theory is developed. Finally, the ethics have been approved to conduct this research.

Chapter 5 First Stage: Quantitative Research

5.1 Chapter overview

This chapter shows the first stage of quantitative research design. This chapter first identifies the research aim. Based on this, the rationale for the research method is explained. Then more specific preparation before data collection is introduced, including questionnaire design, questionnaire pretesting, and sampling. After these stages, the section comes to the introduction of the formal questionnaire data collection. Following the data collection is the evaluation of the validity and reliability of this research stage. The final two sections in this chapter discuss the data analysis method and the preparation for data analysis separately.

5.2 Aims of the first stage of research

To investigate accountants' behaviour of engaging in sustainability accounting to promote their future involvement by identifying different factors influencing their engagement in sustainability accounting, this research stage answers the first three questions by testing the hypotheses developed in chapter 3 under the framework of the theory of planned behaviour (see Table 6).

Table 6: Hypotheses to be Tested in the First-Stage Research

No.	Hypotheses
H1	There is a positive relationship between accountants' intentions to engage in sustainability accounting and the behaviour of engaging in sustainability accounting.
H2	There is a positive relationship between accountants' attitudes toward engaging in sustainability accounting and their intentions to engage in sustainability accounting.
H3	Accountants' behavioural beliefs positively influence accountants' attitudes toward engaging in sustainability accounting.
H4	There is a positive relationship between the subjective norm of engaging in sustainability accounting and accountants' intentions to engage in sustainability accounting.
H5	Accountants' normative beliefs positively influence the subjective norm of engaging in sustainability accounting.
H6	There is a positive relationship between perceived behavioural control and accountants' intentions to engage in sustainability accounting.
H7	Accountants' control beliefs positively influence the perceived behavioural control of engaging in sustainability accounting.
H8	Moral norm positively influences accountants' intentions to engage in sustainability accounting.
H9	Actual control moderates the effect of the intention on the behaviour of engaging in sustainability accounting.

5.3 Quantitative research

Quantitative research is employed to achieve the research aims and objectives in the first stage. This research method fits the first stage of research that builds a framework to understand the accountants' behaviour towards engaging in sustainability accounting based on the theory of planned behaviour. Because quantitative research contributes to examining the relationships between variables (Bell et al., 2019; Creswell and Creswell, 2018; Leung and Shek, 2018). To achieve this, different variables should be quantified, and relationships among constructs in the theory of planned behaviour need to be tested. In quantitative research, the data can be quantified to measure, such as attitudes, opinions, and behaviours, to generalise the results to a larger population (Byrne, 2017). By doing this, hypotheses can be tested (Byrne, 2017), and the data can be analysed with a statistical procedure (Creswell and Creswell. 2018). Furthermore, as the theory of planned behaviour provides a framework for studying the factors influencing behaviour (Lin et al., 2016), using the quantitative method to

study the behaviour is not only widely used when using the TPB but also almost the dominant method (e.g., Cunningham and Kwon, 2003; Du and Pan, 2021; Hrubes et al., 2001, Menozzi et al., 2017; Thoradeniya et al., 2015). Moreover, this method is also recommended by Ajzen (2002a; 2006).

5.4 Survey

5.4.1 Rationale for using the survey

Quantitative research provides a variety of methods to use (Saunders et al., 2019). The researcher chooses the survey method from these different methods. Firstly, this method is consistent with the research aim because the primary aim of survey research in the social sciences is to collect data on people's demographics, behaviours, personal characteristics, attitudes, beliefs, and opinions (Ruel et al., 2016). In addition, survey research can test a theory, expand upon theories, or predict a result for a population or subpopulation (Ruel et al., 2016). In this social science research, demographic information and different variables in TPB, including intention, determinants of intention, beliefs, actual control, and behaviour, are collected to test the hypotheses to understand their relationships. Secondly, the survey is widely used in TPB research recommended by Ajzen (2006), and it is also the mainstream method used in TPB (e.g., Chen and Tung, 2014; Norman et al., 1998; Savari and Gharechaee, 2020). The research done by Renzi (2008) is scarce research using the qualitative research method with TPB. The reason for conducting qualitative research is the limitation of the data available and the number of cases available, which does not allow statistical techniques to be used. Thirdly, the survey enables the collection of standardised data from a large number of respondents at a lower cost (Saunders et al., 2019).

5.4.2 Self-administered survey

Survey modes differ in terms of whether it is completed by the respondents or researchers and how questionnaires are delivered, returned, or collected (Saunders et al., 2019). The survey also contains a self-administered questionnaire and structured interview (Saunders et al., 2019). Self-administered survey (also called self-completion survey) is conducted in this research. Thus, the respondents can complete the survey themselves without the intervention of the researcher (Ruel et al., 2016; Wolf, 2008). Moreover, the self-administered

questionnaire has a lower cost than other methods (Wolf, 2008). Furthermore, the self-administered questionnaire is easier to implement because fewer persons are needed to collect, process, and analyse the data (Bourque, 2004). Another advantage is that the self-administered questionnaire respondents are less likely to reply in order to satisfy the researcher, resulting in fewer socially desirable results (Dillman et al., 2014; Saunders et al., 2019).

5.4.3 Cross-sectional survey

The cross-sectional survey collects data at one point in time (Hall, 2008). Therefore, time is not considered a survey variable in a cross-sectional survey study (Liu, 2008). When conducting the cross-sectional survey, it should be clarified that data collected at one time does not mean all participants provide the data at one exact time but within a relatively short period (Liu 2008). This fits the researcher's situation with tight time. However, in the longitudinal survey, data is collected over the course of time on an individual respondent (Liu, 2008). The longitudinal survey can investigate change and development (Saunders et al., 2019). However, this is not the aim of this research. From a realistic point of view, the longitudinal survey causes additional expenditures, including time and money for the academic researcher with limited budgets and time (Rindfleisch et al., 2008). From the participants' perspective, respondents are more likely to engage in a one-time survey than a multiple-time survey at different time points (Liu, 2008). Thus, the researcher does not need to worry about the problem that the sample size is often reduced in the subsequent survey (Rindfleisch et al., 2008). The cross-sectional survey is also suitable for the self-administered questionnaire measuring opinions, attitudes, and beliefs (Liu, 2008), which is consistent with the content of this questionnaire. Finally, cross-sectional data can help the researcher obtain data from a wide range, including people, organisations, nations, and other entities (Liu, 2008). Therefore, this type of survey fits the researcher's situation.

5.4.4 Multimode survey

The self-administered questionnaire can be distributed to respondents through diverse modes, such as mail, web, mobile, and the Internet (Bryman, 2016; Ruel et al., 2016; Saunders et al., 2019). The researcher planned to conduct the multimode survey, including email and online surveys, during the research design period. The multi-mode survey (sometimes called the

mixed-mode survey) collects data from survey respondents through two or more modes and then combines the replies for analysis (Christian and Foster, 2008). By using diverse methods, the researcher aims to reach more respondents and increase the number of questionnaires returned. The decision to choose these types of survey distribution is made in terms of three considerations: the advantages and disadvantages of different survey approaches and the feasibility in practice.

Mail surveys are surveys that are printed on paper, copied, and sent to the addresses of participants along with a self-addressed stamped envelope for a simple return to the researcher (Ruel et al., 2016). Mail survey has three sample-related benefits: broader geographic coverage, bigger samples, and wider coverage within a sample population (Bourque, 2011). These advantages meet the research needs of a larger sample size of accountants from different manufacturing companies in the UK. From the practical perspective, the researcher can send the questionnaire by mail without the name of respondents when the accountants' contact information is difficult to obtain, but the addresses of companies are easy to find.

However, the response rates for the mail survey can be low because respondents are less likely to complete and return them (Ruel et al., 2016). The online survey was also the other method the researcher planned to carry out, except for the mail survey, to overcome these difficulties and increase the response rate. The online survey is criticised as only useful for those who can access the Internet (Byrne, 2017). However, as technology develops, more people have access to the Internet (Ruel et al., 2016). The online survey has become a popular data collection method used in quantitative research (Toepoel, 2017). The targeted respondents are accountants working in the company. They can get access to computers, laptops, or mobile phones and have computer skills to complete the online questionnaire. Thus, it is not necessary to worry that so many accountants cannot get on the Internet or cannot receive the online questionnaire. In addition, the mail survey can compensate for this kind of disadvantage and reduce coverage bias. Finally, the researcher can send unlimited questionnaires via software with low costs, and the digital version of questionnaires is also easy to convert to data analysis versions.

Different methods can conduct the online survey, such as e-mails as messages or attachments, the link to URL (Uniform Resource Locator), or visiting the survey website (Ruel et al.,

2016). This research adopts sending the questionnaire through the emailed hyperlink. This is because using email at work is very popular in the UK. Moreover, the response rate can be reduced when an email contains a document or attachment that the respondent is required to open, which causes a more complicated endeavour for the respondents (Ruel et al., 2016). In addition, the researcher does not have the professional knowledge to establish a website to publish the questionnaire.

5.5 Questionnaire design

5.5.1 Questionnaire design overview

The questionnaire is a kind of survey tool (Ruel et al., 2016). The developers of questionnaires are obligated to identify the most critical construct dimensions and operationalise them appropriately (Dew, 2008). To collect information and test the hypotheses to achieve the research aims, both mail and online questionnaire consist of three common components: Part A Demographic Information, Part B Accountants and Sustainability, and Part C Further Information. On the one hand, the design of this questionnaire refers to the common survey design principles and Ajzen (2002a; 2006)'s instructions and makes adjustments to fit this research; on the other hand, items are designed based on the literature. The following three sections (5.5.2; 5.5.3; 5.5.4) separately introduce these three parts in detail.

5.5.2 Part A Demographic information

This section contains six questions (question 1 to question 6) about the demographic information of respondents and companies (see Table 7 in the Appendix). This part is designed to learn about the respondents' backgrounds (Thomas, 2004). These questions contextualise the survey data obtained, helping researchers better identify their participants and analyse their findings (Dobosh, 2017). Furthermore, this part also helps identify the information of potential participants in the second research stage. Moreover, this information also contributes to developing the targeted interview strategy for the second research stage.

In this part, all questions are close-ended questions, providing several alternative answers for respondents to choose from because this kind of question is easy and quick to answer (Ruel et

al., 2016; Saunders et al., 2019). Moreover, the results are easier to summarise and present (Ruel et al., 2016). When designing the options, the choices should be exhaustive so that participants have access to every possible option (Dobosh, 2017). However, "other" options are also added when necessary to avoid potential omissions (Dobosh, 2017).

The demographic information can be arranged at the questionnaire's beginning or end (Dobosh, 2017). The flow of different parts of the questionnaire also follows Thomas's (2004) suggestion that the question should be logical, and it often starts from general questions to specific or detailed questions. The demographic information is at the beginning of the questionnaire because this arrangement can warm up respondents with easy questions to give them motivation and confidence to continue (Dobosh, 2017). Furthermore, the demographic questions are sensitive or uncomfortable for respondents to answer, which should be at the end of the questionnaire (Dobosh, 2017). However, demographic questions in this questionnaire are general questions frequently asked.

The rationale for designing each question is below:

- Current job title

Asking for current job titles is to identify respondents' positions in the company. It is very common to ask respondents' job titles as the first question in the questionnaire. This can not only reflect the role of accountants in the company but also reduce the problem that different companies have different job titles for accountants.

- Year of work

Similar to asking for the job tile, this question is also to learn about the respondent's work status. By logic and common sense, accountants working for a longer period in the current company know the practice better than those working for a shorter period.

- Education background

This is to find out the level of education of accountants.

- Accounting certificate

This question is to learn about the professional education background of accountants. Professional accounting associations are important in facilitating the change in accounting education and knowledge (Lungu et al., 2012).

- Firm size

This question aims to learn basic information about companies. The definition of small and medium-sized enterprises (SMEs) varies according to industry (Nicholas et al., 2011), geographical location (Nicholas et al., 2011), researcher (Nicholas et al., 2011), economic activity sector (Salimzadeh et al., 2013), and country (Salimzadeh et al., 2013). Although the annual turnover and the number of employees are both commonly used to define SME (Williams and O'Donovan, 2015), this research only uses the number of employees to evaluate the company's size. The number of 250 employees is a dividing line to separate SMEs and large companies. This standard has been used to inform UK national decision-making by different authorities. For example, this standard is adopted by the *Report of Business Statistics* of the House of Commons Library, an independent research and information unit providing impartial information for Members of Parliament (MPs) of all parties and their staff in the UK. This service assists MPs in scrutinising the government, proposing legislation, and supporting constituents. In addition, this standard is also adopted by the Office for National Statistics to report the UK conditions of UK business, firms, and industry, for example, *Additional Analysis of the Distribution of Productivity by Firm Size and Industry*.

5.5.3 Part B Accountants and sustainability

This section is the main body of the questionnaire, with nine questions (question 7 to question 15) covering TPB variables. This part of the questionnaire is designed with reference to the literature on questionnaire design and Ajzen's TPB questionnaire instructions. Questions 7-14 are all close-ended questions because they are quantified to measure TPB variables and test hypotheses. Question 15 is an open-ended question that can let respondents tell the issues

not covered in the previous questions but raise in the process of answering questions (Toepoel, 2017). In addition to this, respondents can give in-depth responses to earlier questions or problems (Toepoel, 2017). SmartSurvey software is used to design and send out the questionnaire because it is user-friendly and economical for the researcher.

5.5.3.1 Behaviour

The starting point for the design of the TPB questionnaire is identifying the operationalised behaviour of interest (Fishbein and Ajzen, 2010). As the discussion in the literature review section 2.4.2 Sustainability accounting definitions, the definition "accountants' contribution to using existing or new accounting practices to deal with environmental and social impacts of an organisation's actions" is presented at the beginning of this part. The behaviour can be defined as a single behaviour or a behavioural category (Fishbein and Ajzen, 2010). As sustainability accounting includes different behaviours, the latter is applied to contain twelve specific behaviours (see Table 8 in the Appendix). The aggregated score of activities measures the engagement of accountants in sustainability accounting.

Fishbein and Ajzen (2010) introduce three behaviour criteria to quantify the behaviour: dichotomous, magnitude, and frequency. This research adopts the magnitude criterion. The magnitude indicates how much each action has been performed, including the yes and no questions. This criterion can assess whether the behaviour is performed or not and to what extent people perform it.

Time is also an important element to consider when defining the behaviour of interest (Fishbein and Ajzen, 2010). In this question, time is limited to the respondents' current employment with the company in order to prevent incomparability and ambiguity caused by previous job changes because different companies may have different strategies for sustainability accounting. Although respondents' working period in their current company is different, which might impact the comparison, this is closer to reality. Putting another point of view, although there may be differences in terms of specific numbers, overall, they have the same period, that is, in the current company.

The performer can either directly observe or report the behaviour (Fishbein and Ajzen, 2010). This research lets the survey respondents report their behaviours because this method is

realistic. Specifically, observing different behaviours defined by different activities with a lot of respondents is complex and costs too much time and money within a limited time.

To detect behaviours in this research, participants should respond to question 7, “In your current company, please indicate the extent to which you are engaging in the following sustainability accounting behaviours in your current position”. Twelve behaviours in question 7 are included in the behaviour category (see Table 8 in the Appendix).

5.5.3.2 Intention

Because different activities are aggregated as the behavioural category, the intention is to measure the motivations to perform the behavioural category because this research does not focus on which particular behaviour within the category is performed or not but on the total sustainability accounting engagement of accountants.

Because of the rare research in accounting and sustainability using TPB, the intention items in this research are previously developed items that fit the logic in this research context in different TPB literature from different fields, but activities are revised. Since the fundamental underlying factor that constitutes an intention is the individual’s judgement of the possibility or perceived likelihood of doing a particular behaviour, it is anticipated that the greater this subjective probability, the more likely the behaviour will be carried out (Fishbein and Ajzen, 2010). Apart from subjective probability, Warshaw and Davis (1985) argue that intention should be a distinct construct of expectation. However, the meta-analyses studies do not support the behavioural expectation over the intention (Fishbein and Ajzen, 2010). Gibbons et al. (1998) find that including a measure of willingness in the prediction of behaviour adds a significant amount of distinctive variance. They also suggest that willingness to engage in a behaviour is substantively different from behavioural expectation or intention. Although there are different measures, many issues are not clear. Therefore, Fishbein and Ajzen (2010) indicate that intention refers to the readiness to engage in behaviour that can incorporate concepts such as willingness and behavioural expectations. This research includes intention, willingness, and expectations suggested by Gibbons et al. (2004).

To detect the intention, participants should respond to question 8, “Please indicate the extent to which you agree or disagree with each of the following statements about engaging in the

sustainability accounting behaviours in question 7". Six items in question 8 measure intention (see Table 9 in the Appendix).

5.5.3.3 Attitude toward the behaviour

In general, attitude toward the behaviour has two views: one is the unidimensional view of evaluation; the other is the dimensional view of evaluation, including instrumental and experiential aspects (Fishbein and Ajzen, 2010). Experiential (affective; feelings) attitude is an individual's affective feelings toward behaviour (e.g., recycling is good behaviour); while instrumental (knowledge; function) attitude refers to an individual's assessment of the results of behaviour (e.g., recycling could reduce landfill burden) (Wan et al., 2017). However, a semantic differential measure of attitude need not always include both instrumental and experiential items (Fishbein and Ajzen, 2010). In order to construct a valid attitude measure, it is important to identify adjective pairs that serve as good indicators of the underlying evaluative dimension (Fishbein and Ajzen, 2010). Considering all these different discussions, the measurement of attitude toward the behaviour in this research includes both dimensions with the adjective pairs.

To detect the attitude toward the behaviour in this research, participants respond to question 9, "Please indicate the extent to which you agree or disagree with each of the following statements about the sustainability accounting behaviours in question 7. Choosing '1' means you strongly agree with the far left-hand side statement. Choosing '7' means you strongly agree with the far right-hand side statement. Other numbers are for in-between positions". Five items in question 9 measure the attitude toward the behaviour (see Table 10 in the Appendix).

5.5.3.4 Behavioural beliefs

A behavioural belief is the person's subjective likelihood that engaging in the behaviour will result in a particular outcome or experience (Ajzen, 2020). If the consequence of the behaviour is judged to be more favourable than adverse, the attitude toward the behaviour will be favourable (Ajzen, 2020). In other words, in their aggregate, behavioural beliefs produce an overall favourable (positive) or unfavourable (negative) attitude toward the behaviour (Ajzen, 2002). In this research, behavioural beliefs are the likely consequence of

accountants' engagement in sustainability accounting. To detect the behavioural beliefs in this research, participants respond to question 10, "Please indicate the extent to which you agree or disagree with each of the following statements". Eighteen items in question 10 measure behavioural beliefs (see Table 11 in the Appendix).

5.5.3.5 Subjective norm

Subjective norm measures the individuals' general perceptions of social pressure (Fishbein and Ajzen, 2010). In this research, the subjective norm is the perceived social pressure for accountants to engage in sustainability accounting. Participants respond to question 11: "Please indicate the extent to which you agree or disagree with each of the following statements about engaging in sustainability accounting". Four items in question 11 measure the subjective norm in the matrix (see Table 12 in the Appendix).

5.5.3.6 Normative beliefs

The normative beliefs involve particular referent individuals or groups (Fishbein and Ajzen, 2010). Thus, in this research, the normative beliefs are measured by referents that can influence accountants' engagement in sustainability accounting. Participants respond to question 12, "Please indicate how likely it is that the following people think you should engage in sustainability accounting in the company". Five items in question 12 measure normative beliefs (see Table 13 in the Appendix).

5.5.3.7 Perceived behavioural control

Perceived behavioural control shows the ease or difficulties of performing the behaviour (Ajzen, 1991). Perceived behavioural control can be measured by directly asking about an individual's competence to conduct a behaviour, as Fishbein and Ajzen (2010) suggest. In this research, participants respond to question 11, "Please indicate the extent to which you agree or disagree with each of the following statements about engaging in sustainability accounting". Four items in question 11 measure perceived behavioural control (see Table 14 in the Appendix).

5.5.3.8 Control beliefs

Control beliefs are individuals' perceptions of personal and environmental circumstances that may aid or obstruct their efforts to perform the behaviour (Ajzen, 2002). Control beliefs can raise or lower a person's sense of perceived behavioural control (Fishbein and Ajzen, 2010). In this research, control beliefs are specific factors that facilitate or impede accountants' engagement in sustainability accounting.

Participants respond to question 13, "Please indicate the extent to which you agree or disagree with each of the following statements". The factors that may interfere with or facilitate the engagement of accountants in sustainability accounting (control beliefs) are measured by sixteen items. Items 1 to 3 are facilitators, and items 4 to 16 are inhibitors of accountants' engagement in sustainability accounting (see Table 15 in the Appendix).

5.5.3.9 Moral norm

The moral norm implies that an individual feels morally obligated to engage in a certain behaviour when confronted with an ethical situation (Beck and Ajzen, 1991; Leonard et al., 2004). In this research, participants respond to question 11: "Please indicate the extent to which you agree or disagree with each of the following statements about engaging in sustainability accounting" to reflect their feelings of responsibility to engage in sustainability accounting. Four items in question 11 measure the moral norm (see Table 16 in the Appendix).

5.5.3.10 Actual control

To assess the actual control, Fishbein and Ajzen (2010) indicate that no standard procedures are available for assessing the actual control, and it is, in fact, quite difficult to know what internal and external control factors have to be considered. But they also suggest ways to identify the actual control: the control belief can be used as a proxy for actual control, but it is necessary to check whether these factors constitute actual (real) barriers or facilitating factors. To do this, Fishbein and Ajzen (2010) also suggest that the questionnaire can be used to ask participants whether they can obtain sources. Although it is hard to measure the actual control, this research tries to measure the actual control with items transformed from behavioural beliefs. Participants respond to question 14, "Please indicate your opinion about the following

statements according to the situation in your current company". Thirteen items in question 14 measure actual control (see Table 17 in the Appendix).

5.5.3.11 Scales for all constructs in the theory of planned behaviour

After discussing items for each construct, this section discusses and summarises the scales for each construct in the theory of planned behaviour.

"Scales provide a set of response options representing ordered points on a continuum of possible answers" (Ruel et al., 2016, p. 15). There are diverse types of scales, such as rating scales and rank order scales (Ruel et al., 2016). The rating scales are used to measure the constructs in the theory of planned behaviour. This is because rating scales can be presented as either a verbal description (e.g., strongly agree, strongly disagree), numbers (e.g., 1 to 5), or a mix of both (Holyk, 2008). The summary of the constructs' scales is in Table 18 (see Appendix). The following contents discuss this table in detail.

- Types of scale

The attitude toward the behaviour is assessed on the semantic differential scale. The respondents are asked to assess a stimulus word using a succession of bipolar rating scales (Mclver, 2004; Saunders et al., 2019). A bipolar scale is a particular rating scale defined by a continuum between two diametrically opposed endpoints (Kennedy, 2008). The semantic differential scale can be developed to understand attitudes (Mclver, 2004). As Thomas (2004) notes, the semantic differential scale allows the respondent to report feelings. Ajzen (2006) points out that the semantic differential scale is the most widely used to measure attitude toward the behaviour. Therefore, he also recommends using it as the measurement for attitude toward the behaviour in the theory of planned behaviour. In various research applying the theory of planned behaviour, the semantic differential scale is widely used to measure the attitude toward the behaviour (e.g., Dumitrescu et al., 2011; Lehberger et al., 2021; Liao and Fang, 2019). Table 18 (see Appendix) shows that all the constructs are measured by the Likert scale except the intention and actual control.

The actual control is measured by the nominal scale. A nominal scale is a measurement scale applied to assign events or objects into discrete categories (Carr, 2010). Categories on the

nominal scale are incompatible with one another since the same label cannot be allocated to several categories, and multiple labels cannot be assigned to the same events or objects (Carr, 2010). Therefore, using the nominal scale for actual control can acquire the facts in reality without ambiguity.

The Likert scale measures the rest constructs because it can measure beliefs or opinions about objects or events (Gracyalny, 2018). In addition, a variety of research also uses the Likert scale to measure behaviour (e.g., Fila and Smith, 2006), intention (e.g., Cunningham and Kwon, 2003), behavioural beliefs (e.g., Swanson and Power, 2005), subjective norm (e.g., Lobb et al., 2007), normative beliefs (e.g., Blue et al., 2001), perceived behavioural control (e.g., Lobb et al., 2007), control beliefs (e.g., Blue et al., 2001), and moral norm (e.g., Bobek and Hatfield, 2003).

- Number of scale points

There are different response scale points, for instance, 5-point scale, 6-point scale,7-point scale, 10-point scale, 11-point scale, etc. The TPB research has applied different points on different topics: 5-point (e.g., Paul et al., 2016), 6-point (e.g., De Leeuw et al., 2015), 7-point (e.g., Garay et al., 2019), 9-point (e.g., Neuwirth and Frederick, 2004), 11-point (e.g., Hrubes et al., 2001).

In this research, the intention, attitude toward the behaviour, behavioural belief, subjective norm, normative belief, perceived behavioural control, control belief, and moral norm are all assessed with 7-point scales. This scale point is chosen for several reasons. First, 7-point scales tend to be optimal in terms of reliability (test-retest) and the percentage of indecisive responses (Kennedy, 2008). It provides an additional explication of the theme, thus appealing to the participants' "faculty of reason" (Joshi et al., 2015). Second, a seven-category response scale is straightforward and allows for more significant differentiation in responses (Willits et al., 2016). Third, Ajzen (2002a; 2006) also recommends the 7-point scale in the TPB questionnaire design. Ajzen also uses 7-point scales in his articles (e.g., Ajzen, 2015b; Ajzen et al., 2018). Fourth, using more than seven similarly named categories is awkward and confusing (Willits et al., 2016). The 5-point scale is not recommendable due to less differentiation and a higher level of inconsistent answering behaviour (Toepoel, 2017). The 11-point scale takes up too much space on the screen (Toepoel, 2017). Fifth, the long points

also create difficulties for layout. Sixth, the 7-point scale is an odd-point scale that includes the neutral option. The benefit is that people are frequently neither negative nor positive toward a person or object (Rosenberg and Navarro, 2018). Selecting neutral can also mean that people are undecided or do not have enough information to make a judgment (Rosenberg and Navarro, 2018). A 6-point scale assesses behaviour according to the adjectives, research context, and logic.

- Label

There are fully labelled or verbally labelled at the polar points (Toepoel, 2017). But only labelling the endpoints without any numbering can lead to higher levels of measurement error (Toepoel, 2017). Response quality tends to be better in fully labelled scales (Toepoel, 2017). Therefore, scales are both numerical and verbal to clarify the label to respondents and benefit the data analysis. The attitude toward the behaviour is labelled only with numbers because of the semantical scale.

The Likert scale is scored by allocating numeric values to the response categories, beginning with 1 at one end of the scale and increasing sequentially higher numbers to the categories (2, 3, etc.) toward the other end of the scale (Gracyalny, 2018). Generally, higher numbers imply stronger agreement with the statement (or more positive ratings) (Gracyalny, 2018). The verbal description with negative words is on the left while the positive words are on the right because this arrangement helps respondents make more straightforward judgments and is less mentally taxing research (Rosenberg and Navarro, 2018). In summary, this survey consistently put the negative adjective on the left and positive adjectives on the right. In this research, the scale is low-to-high positive, numbering from 1 to 6 (or 7), which indicates the accountants' judgment.

- Multi-item measurement

In this questionnaire, all constructs in the theory of planned behaviour are measured by multi-item. The multiple-item measure collects more information than a single-item measure does (Bergkvist and Rossiter, 2007). In addition, multiple-item measures are inherently more "reliable" because they allow for the computation of correlations between items (Bergkvist

and Rossiter, 2007). Each construct is recommended to be measured by at least three perfectly four items (Hair et al., 2014). This is to minimise the coverage of the constructs' theoretical domain and to provide enough identification for the construct (Hair et al., 2014). Another reason for using the multi-item measure is that psychological constructs, such as attitude, cannot be reliably captured by a single rating scale (Thoradeniya et al., 2015).

5.5.3.12 Fatigue and habituation

In the questionnaire, items measuring the subjective norm, perceived behavioural control, and moral norm are integrated into the matrix in question 11. They are disordered in the matrix. This is designed because they are asked the same question "Please indicate the extent to which you agree or disagree with each of the following statements about engaging in sustainability accounting". They also employ the 7-point Likert scale. In addition, although these items show different aspects to measure their corresponding constructs, these items have similarities in some wording and structure. Therefore, this may cause the respondents' fatigue and habituation. When survey respondents feel bored answering, they may engage in "straight-line" responses that choose the answers in the same column (Ben-Nun, 2008; Thomas, 2004). Furthermore, some respondents may likely read the first few carefully with the long list of choices (Thomas, 2004). Therefore, the order of all items is randomised in the common matrix to address these problems. Furthermore, the important words that best distinguish each item are highlighted to get respondents' attention. This strategy is also used in other questions.

In question 13, on the one hand, different direction wording shows the facilitating and inhibiting aspect of the control beliefs; on the other hand, this is also out of concern for the survey respondents' fatigue. Therefore, it is important to use both positive and negative words when the response set appears to force their reading and encourage the respondent to read each statement carefully (Thomas, 2004).

5.5.3.13 Last question in Part B

The last question (question 15) is an open-ended question asking respondents' extra opinions about accountants engaging in sustainability accounting in the company. This design allows

the respondent to give any remarks or comments that are raised while completing the survey (Toepoel, 2017).

5.5.4 Part C Further information

The last section includes two questions (question 16 and question 17) to trace and further contact the respondents who would like to engage in the second stage of this research or acquire the results of this research. These questions are arranged at the end of the questionnaire to avoid the potential respondents quitting the survey because they may resent leaving contact information without knowing the questionnaire contents. In addition, they can also evaluate whether to leave the information or not when they know the value or interest of this questionnaire to them by completing the whole questionnaire, which may increase the chance they leave their contact information.

5.6 Pretesting the questionnaire

Pretesting is to validate the survey and its measurement, while the pilot is to test the entire survey procedure (Ruel et al., 2016). Pretesting aims to detect whether the words of questions are clear enough for respondents to understand (Saunders et al., 2019) and to assess the response latency to assess the time to complete individual times and the full survey (Ruel et al., 2016). The pilot research aims to ensure that the whole survey process goes smoothly and that the coding and analysis processes are carried out properly and effectively (Ruel et al., 2016). Adopting the pretesting but not the pilot study is mainly considered from two aspects: first, this research aims to get results from plenty of respondents, and it is not so convincing to drop or add the items based on the results, such as Cronbach's alpha from an only small amount of respondents; second, the time and cost limitations cannot afford the researcher to do the pilot study. Three accounting and two psychology academics are involved in the pretesting because this is an interdisciplinary study project, including accounting and psychology. They specialise in professional knowledge of the research area and survey. Furthermore, two writing advisory staff from the University also participate in this process to ensure that the language and grammar are clear and correct. The participant's responses to the questionnaire in the pretesting study are not included in the main study (Kim, 2017).

5.7 Survey sampling

Sampling is “the process of selection of sampling units from the population to estimate population parameters in such a way that the sample truly represents the population” (Singh, 2007, p. 2). This research does not collect data from the entire population because it is not practical and feasible regarding time and money. Fricker (2017) also indicates that compared to the census, administering the survey by sample has lower cost, less management effort, better response rates, and more accuracy. Therefore, the survey respondents are only a subset of the population.

The population is “the universe of units from which the sample is to be selected” (Bell et al., 2019, p. 188). This research aims to investigate accountants in the UK manufacturing industry. Therefore, the population should be all accountants in all manufacturing industry companies in the UK. However, it is hard to know this information for the researcher. Therefore, the researcher uses the FAME (Financial Analysis Made Easy) database as a close alternative to the population.

FAME is a database that includes data about companies in the United Kingdom and Ireland. Therefore, this database is consistent with the research country of this research. In addition, this database also includes plenty of company information. The database provides information on 3.8 million companies, of which 2.8 million are detailed. Additionally, the database provides information on four million dormant companies that may be used for historical research. FAME allows users to search using any combination of over three hundred criteria, such as geographic location, SIC (Standard Industrial Classification) code or activity description, employee count, statement items, ratios, credit score/rating, legal form, year of incorporation, holding company/subsidiary, and merger and acquisition deals.

The various industries can be classified in this database using the UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007). In 1948, the United Kingdom first introduced the Standard Industrial Classification (SIC) to categorise companies’ establishments and other statistical entities according to the type of economic activity in which they participated (Prosser, 2009). The classification provides a framework for collecting, tabulating, presenting, and analysing data, and its use encourages consistency (Prosser, 2009). In addition, it can be utilised administratively and by non-governmental organisations to facilitate the classification of economic activity into a common framework

(Prosser, 2009). The Office for National Statistics in the UK also adopt this standard. Therefore, this standard is widely used and authoritative in the UK and is appropriate to the UK context. Moreover, using this database also reduces classification ambiguity with different standards in different literature.

The manufacturing industry is diverse, comprising various subindustries (Warwick, 2010). The researcher first filtered any company that belonged to any subsectors in the manufacturing industry according to the SIC 2007 (see Table 19 in the Appendix). On the one hand, this was consistent with the focus on the manufacturing industry; on the other hand, the method assisted in filtering as many as samples with contact information to expand the final sample size when it was extremely tough to reach samples from other channels in the circumstance of Covid-19 pandemic. Then, the researcher planned to use multi-stage sampling. Multi-stage sampling is "any sampling design that occurs in two or more successive stages using either probability, non-probability, or both types of sample selection techniques" (Saunders et al., 2019, p. 325). The researcher further filtered all accountants having contact information in these companies, the researcher planned to use the online survey method for this group of potential respondents, which was very convenient for sending the questionnaire. After this step, the rest of the part was the companies without accountants' contact information in the UK manufacturing industry. Therefore, the researchers established two sample frames: one was the accountants with contact information, and the other was the company without accountants' contact information. In order to gain a more comprehensive understanding of the intentions and behaviours of accountants while avoiding a small sample size due to the difficulties caused by cold contact and the Covid-19 pandemic, the researcher planned not to restrict them to a particular title (e.g., financial manager) but include all filtered accountants in the list. The researcher intended to use random and snowball sampling for the first sample frame. This group of respondents was for the online survey. Random sampling is a sample method in probability sampling (Daniel, 2012). Probability sampling techniques use random chance to choose sample members from the population (Ruel et al., 2016). Random sampling was planned to be used in this study because every possible sample of a given size had an equal probability of being chosen (Daniel, 2012). Additionally, the researcher could easily access the sampling frame (Saunders et al., 2019). Furthermore, it was easier to operate than other probability sampling methods (Daniel, 2012). Finally, it was appropriate for geographically dispersed areas (Saunders et al., 2019).

However, apart from the random sampling, the researcher also planned to use snowball sampling for the online survey to increase the number of respondents. Snowball sampling is one of the non-probability sampling techniques (Sue and Ritter, 2007). Non-probability sampling is "an umbrella term to capture all forms of sampling that are not conducted according to the principles of probability sampling" (Bryman, 2016, p. 187). The snowball sampling has already been designed as one of the filter questions and the reminder before the "Thank you" page for those who complete the questionnaire in the online questionnaire design.

The mail survey was planned to be applied to respondents whose contact information was unavailable, but whose companies' information was in the database. The researcher planned to send paper questionnaires by mail directly to the companies. The sampling method was also random sampling. The reasons were similar to the abovementioned random sampling in the online survey.

In summary, the researcher planned to use mixed methods sampling, combining different sampling methods into a single design (Daniel, 2012). On the one hand, the researcher planned to send the questionnaire via email to those whose email addresses were in the FAME database, using both random and snowball sampling. On the other hand, the researcher planned to use only random sampling for those whose contact information was unknown in the FAME database. Although the plan was to use multi-stage sampling, there was no need to worry about the overlap of respondents. The reason was that once respondents filled out the questionnaire, they had little probability of doing the same questionnaire again through different survey methods.

5.8 Questionnaire data collection

The mail and email surveys were planned to start in March 2021**.** Unfortunately, Covid-19 spread in the UK, and the UK government announced several strict lockdowns in the UK. Because of the Covid-19 pandemic, the mail survey had to be abandoned for the following reasons:

Firstly, staff was working from home because of the lockdown, which meant no one could deal with these mails with questionnaires in the company. The researcher had no way of contacting the respondents other than the companies' addresses.

Secondly, due to the restriction during the Covid-19, the researcher was unable to find an opening printing shop.

Thirdly, people can become infected by aerosols or droplets containing the virus and touch their eyes, nose, or mouth without washing their hands after touching a surface contaminated with the virus. To complete the mail survey, the researcher and the respondents had to have close contact with different people, and they both had a high risk of touching a surface contaminated with the virus. As a result, the mail survey had to be abandoned to ensure the researcher's and respondents' health and safety.

Finally, only the online survey sent by email was kept. In the beginning, the online questionnaire applied random sampling. The researcher randomly selected respondents in the sampling frame established for the online survey. However, the number of responses was not optimistic because the researcher had to send cold emails to potential respondents. To get more replies to the questionnaire, the researcher had to send email questionnaires to all respondents listed in the sampling frame for the email questionnaire. The SmartSurvey assisted with sending the unlimited questionnaire with much lower costs and much easier operation than the mail survey. Furthermore, three reminders were sent to respondents who did not fill out the online questionnaire. Ultimately, the survey data collection stage finally ended in June 2021.

The response rate, defined as the ratio of survey respondents to sample size, is often used to determine the generalisability of survey findings (Fricker, 2017). However, the response rate should not be simply calculated while questionnaires were sent by email. Because there were unsuccessfully delivered emails, this part should be subtracted from the denominator. During this process, 6694 questionnaires were sent out. However, 1517 questionnaires were unsuccessfully delivered. Therefore, the number of final successfully delivered emails is 5177. Ninety-six respondents finally returned the questionnaire. Therefore, the response rate is around 1.85%. But there is no rational way to prove or know the representation of the population in the non-probability samples (Singh, 2007). In the data collection process,

although the snowball sample was designed, finally, no questionnaire was returned through this channel. The following reasons may cause this response rate: first, the questionnaires were sent by cold emails. Therefore, respondents may unopen or neglect these questionnaires. Second, even though the questionnaires were sent successfully via email, some companies may not allow employees to participate in the research. Third, potential respondents may not want to open links sent by strangers for the reason of computer information security. Fourth, potential respondents may not be interested in this research. Fifth, they may be too busy to fill out the questionnaire.

5.9 Validity and reliability

5.9.1 Reliability

Reliability refers to the measurement's consistency; that is, the question is interpreted and responded to consistently across trials (Holyk, 2008). There are also different methods to test reliability, including test re-test, internal consistency, and alternative form (Saunders et al., 2019).

The test re-test and the alternative form are not feasible and realistic for this research. "Test re-test estimates of reliability are obtained by correlating data collected with those from the same questionnaire collected under as near equivalent conditions as possible" (Saunders et al., 2019, p. 518). However, to achieve the test re-test, respondents need to complete the same questionnaire twice, which means the researcher should send out the questionnaire twice. Therefore, this process is very time-consuming for the researcher, whose time is very tight. Moreover, the longer the time interval is, the less likely respondents are to reply to the questionnaire in the same way (Saunders et al., 2019). Moreover, it is very difficult to convince the same respondents to complete the same questionnaire repeatedly because they do not have enough time, especially when the researcher does not have a network with respondents (Saunders et al., 2019).

The next approach is the alternative form that provides insight into the questionnaire's reliability by comparing answers to other versions with the same questions or set of questions (Saunders et al., 2019). However, when each question is presented in different forms, the questionnaire will be much longer than the original one, which will make the respondents

lose the patience to complete all the questions and drop out midway. Therefore, the researcher cannot receive the completed questionnaire, so the testing aim cannot be achieved as a whole. In addition, it is also difficult to ensure questions are often substantially equivalent (Saunders et al., 2019).

Based on the above discussion, internal consistency is more suitable and realistic to test reliability. Internal consistency is a measure of reliability applied to assess the extent to which different items probing the same construct give similar results (Ruel et al., 2016). This form of reliability is useful for instruments with several items since it shows the instrument's capacity to measure a single construct accurately (Muijs, 2004). Unreliable instruments will also result in lesser associations with other variables than if they are more reliable, making it more difficult to arrive at unambiguous study conclusions (Muijis, 2004). Therefore, internal consistency reliability is essential when researchers wish to guarantee that they have included enough items to capture the concept adequately (Barchard, 2010). Compared to the test re-test, the internal consistency reliability test only needs to be conducted once (Barchard, 2010). As a result, internal consistency is the most often used type of reliability (Barchard, 2010). The internal consistency test is in section 6.6.

Questionnaires should contain reliable and valid items (Holyk, 2008). Reliability and validity provide accuracy (Dick, 2014; Jordan and Hoefer, 2001). Without measurement validity, the findings are meaningless, and without reliability, the responses are inconsistent and unreliable (Ruel et al., 2016). In other words, the questionnaire must be reliable in order to be valid, but reliability alone does not guarantee validity (Thomas, 2004; Saunders et al., 2019). In other words, a measurement instrument may be reliable without being valid (Jordan and Hoefer, 2001). Therefore, the next part discusses the validity**.**

5.9.2 Validity

Validity is an important component of quantitative measurement (Jordan and Hoefer, 2001). Validity refers to "the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study" (Collis and Hussey, 2021). There are numerous sorts of validity evidence, the most common is content validity (Thomas, 2004). Content validity refers to "the extent to which the measurement device, in our case the questions in the questionnaire, provides adequate coverage of the investigative questions"

(Saunders et al., 2019, p. 517). When a test is deemed to have a high level of content validity, its content is considered consistent with the test's goal and with commonly held beliefs about the subject matter being tested (Sireci, 2007). Therefore, the greater the extent to which the scale items reflect the domain or universe of the idea being assessed, the more content validity there is (Sekaran and Bougie, 2020). Thus, in order to ensure that the measurements adequately gauge a concept, the researcher typically consults experts and conducts a thorough review of the existing literature covering the various properties and qualities of the concept under study, as suggested by Martinez (2018) during the pretesting process. The primary considerations are the degree to which each question relates to the objectives and, more broadly, whether the questions associated with an objective adequately cover that objective to give relevant information (Thomas, 2004). The pretesting process is important to establish content validity (Creswell and Creswell, 2018). The details are in 5.6 Pretesting the questionnaire.

However, content validity relies on subjective judgement to determine validity (Martinez, 2018). This reliance on subjective judgments creates difficulties and challenges because experts may have different opinions on the measure's content validity and whether it captures all aspects of a particular concept (Martinez, 2018). But other stronger forms of validity based on empirical observations do not encounter the subjective challenges (Martinez, 2018). Therefore, the convergent validity and discriminant validity are all tested for the measurement models in structural equational model analysis in section 6.6.

5.10 Data analysis method

5.10.1 SEM

The structural equation model (SEM) is a collection of statistical models to analyse multivariate data (Cudeck and Toit, 2012). Many popular statistical methods-multiple regression, classical path analysis, classical test theory models for psychometric problems, and factor analysis in all its versions-are special cases of SEM (Cudeck and Toit, 2012). In contrast to regression analysis or other dependent approaches, which can work with multiple relationships and explain the relationship in a single equation, the structural equation model can test a collection of relationships representing several equations simultaneously (Hair et al., 2019, Kline, 2016). Specifically, SEM estimates a sequence of distinct but interrelated

multiple regression equations concurrently by specifying the statistical program's structural model (Hair et al., 2019). "A construct that acts as an independent variable in one relationship can be the dependent variable in another relationship" (Hair et al., 2019, p. 613). Numerous phases of independent and dependent variables can be included in a single model (Gefen et al., 2011). Thus, this technique enables the assessment of complicated relationships (Hair et al., 2019). Some constructs are more than single dependent and independent variables in this research because of the hypotheses to be tested. Moreover, SEM expands linear models by allowing for the examination of connections between latent components quantified by numerous items (Lei and Wu, 2007). Furthermore, SEM can be used with experimental and non-experimental data and cross-sectional and longitudinal data (Lei and Wu, 2007). Moreover, the SEM has also been used to analyse the data in the theory of planned behaviour (e.g., Dunn et al., 2011; Sok et al., 2021). Therefore, this research adopts SEM to analyse data.

5.10.2 CB-SEM vs PLS-SEM

Although SEM is preferable to linear regression when multiple valid indicators are available (Gefen et al., 2011), SEM is classified into two types: covariance-based SEM (CB-SEM) and partial least squares SEM (PLS-SEM; also known as PLS path modelling) (Hair et al., 2017a; Lowry and Gaskin, 2014). CB-SEM is a statistical technique used to estimate model parameters that minimise disparities between the observed sample covariance matrix (prepared before analysis) and the covariance matrix evaluated after the revised theoretical model is confirmed (Hair et al., 2017b). PLS-SEM is a variance-based SEM approach distinct from covariance-based SEM (CB-SEM) (Hair et al., 2011; Reinartz et al., 2009). The statistical objective of the PLS-SEM is to maximise the variance explained by the dependent variables (Hair et al., 2017b). The PLS-SEM path modelling algorithm is based on ordinary least squares regression for each path model subset to minimise error terms (Hair et al., 2017a). Therefore, the complexity of the overall model has minimal influence on the required sample size (Hair et al., 2017a).

This research applied the SEM-PLS as the data analysis method for several reasons:

First, unlike the CB-SEM, the PLS-SEM does not need normally distributed data (Hair et al., 2017a). Nonetheless, it is critical to ensure that the data is not abnormally out of range since

highly non-normal data complicate the evaluation of the parameters' significance (Hair et al., 2017a). Especially, extremely non-normal data inflate standard errors obtained from bootstrapping and thus reduce the possibility that some relationships will be assessed as significant (Hair et al., 2017a). Although there are several distribution types, the SEM simply needs to distinguish between normal and nonnormal distributions (Hair et al., 2017a). Contrary to PLS-SEM, CB-SEM requires typically normal distribution (Chin and Newsted, 1999). PLS-SEM's statistical features enable it to estimate models using data that are both normal and severely non-normal (i.e., skewness and/or kurtosis) in nature (Hair et al., 2017a).

Second, the minimum sample size should be ten times the maximum number of structural paths pointing to a latent variable anywhere in the PLS path model (Hair et al., 2017a; Thompson et al., 1995). In this model, the maximum number of structural paths directing to a construct is four. Hence, the minimum sample size should be forty. The sample size of ninety-six has far exceeded this number, indicating that the sample size is sufficient for this study. However, CB-SEM requires an adequate sample size, and CB-SEM fails to correctly estimate a small sample size (Jannoo et al., 2014).

Third, the PLS-SEM has also been used to analyse the data in the theory of planned behaviour (Lizin et al., 2017; Moon, 2021; Tashakor et al., 2019; Thoradeniya et al., 2015).

5.11 Chapter summary

This chapter presents a comprehensive and systematic research design through the detailed discussion above. This research applies quantitative research with the self-administered and cross-sectional survey to achieve the research aim. The survey is planned to be distributed by both mail and email. Therefore, both paper questionnaires and online questionnaires were designed for sending. After preparing the questionnaires, they are pretested, after which questionnaires are distributed to potential respondents only by email because of the difficult and changing situations caused by Covid-19. Before deciding on the data analysis methods, the questionnaire's validity and reliability are all discussed and evaluated. Finally, after combining the distribution results and the differences between PLS-SEM and CB-SEM, this research applies the PLS-SEM for data analysis.

Chapter 6 Survey Results

6.1 Chapter overview

After discussing and determining the survey data analysis methods before the formal data analysis in chapter 5, this chapter shows the survey data results. Firstly, a simple overview of the data is presented, and demographic information shows the summary of the background of different respondents in this survey. Secondly, in order to lay the groundwork for the following analyses, the next section introduces and discusses the importance of defining the types of constructs. Then the section defines the type of each construct in the theory of planned behaviour. After deciding the types of constructs, it is also necessary to identify the measurement models' validity and reliability. Finally, the structural model is tested to show the results of each hypothesis.

6.2 Descriptive statistics

The overall mean and standard deviation (see Table 20) is calculated by IBM SPSS Statistics 26. The behaviour has a low mean with a value of around 2.4. The mean of intention is approximately 4.64. Among the determinants of intention, the moral norm has the highest mean at roughly 5.11. Attitude toward the behaviour and subjective norm are both with mean values close to 4.5, whereas perceived behavioural control is near 5. Of the three beliefs variables, normative beliefs have the greatest mean value, followed by behavioural beliefs (around 4.72) and control beliefs (approximately 4.02). The average of actual control is slightly greater than 1. The normative beliefs have the highest standard deviation (around 1.43), followed by the intention, which has a standard deviation value of about 1.43. Therefore, they spread out the mean. The behaviour and moral norm have standard deviations of approximately 1.15 and 1.14, separately. Behavioural beliefs and subjective norm have standard deviation values of around 1.27. Attitude toward the behaviour, perceived behavioural control, control beliefs, and actual control all show standard deviation values below 1. Thus, they do not deviate as much from the mean compared to behavioural beliefs and subjective norms. Among them, the actual control has the lowest value, around 0.38, which shows that the data is clustered around the mean.

Table 20: Mean and Standard Deviation

Constructs	Mean	Std. Deviation
behaviour	2.408	1.152
intention	4.641	1.428
attitude toward the behaviour	4.539	0.955
behavioural beliefs	4.723	1.276
subjective norm	4.557	1.273
normative beliefs	4.821	1.579
perceived behavioural control	4.820	0.968
control beliefs	4.015	0.888
moral norm	5.107	1.144
actual control	1.248	0.384

6.3 Demographic information

Table 21 provides the ninety-six respondents' demographic information, including six aspects: job title, length of work, education level, accounting certificate, company size, and sustainability training experience. Of ninety-six respondents, the financial director takes up most respondents (43.75%), followed by the financial controller (16.67%) and finance manager (13.54%), respectively. Accountants and management accountants have the same percentage of 5.21%. Other job titles are at the percentage of 13.40. 46.88% of respondents have worked in the current company for ten or more years. Respondents working within 1-3 years (15.63%) and 4-6 (29.17%) together account for approximately 45% of the respondents' working period in the current company. Respondents working for less than 1 year and 7-9 years have the lowest percentages, with 2.08% and 6.25%, respectively. The majority of respondents acquire bachelor's degrees (40.63%). Likewise, 36.46% of respondents held other degrees. With regard to the percentages of respondents with diplomas and master's degrees, there are 8.33% and 14.58%, respectively. CIMA is composed of 32.29% of the accounting certificate, followed by 20.83% of ACCA. CGMA and ICAEW account for nearly 15% and 18%, respectively. In contrast, around 18% of respondents do not have any accounting certificates. There are still about 9% of respondents who have other certificates.

Respondents working in the small and medium-sized company stands out with 83.33% in terms of company size. Only 16.67% of respondents come from large companies. More than 70% of respondents do not have any sustainability training experience, while 16.67% have sustainability training experience in their current companies. Having trained in the accounting

institution comes next with 6.25%. Respondents trained in their previous companies or other ways have the lowest values, with 2.08%.

Table 21: Demographic Information (Sample size: 96)

No.			Frequency	%
1	**Job Title**			
		Accountant	5	5.21%
		Finance Manager	13	13.54%
		Financial Accountant	3	3.13%
		Financial Controller	16	16.67%
		Financial Director	42	43.75%
		Management Accountant	5	5.21%
		Other	12	12.50%
2	**Length of Working**			
		Less than 1 year	2	2.08%
		1-3 years	15	15.63%
		4-6 years	28	29.17%
		7-9 years	6	6.25%
		Ten years or more	45	46.88%
3	**Education Level**			
		Diploma	8	8.33%
		Bachelor's Degree	39	40.63%
		Master's Degree	14	14.58%
		Other	35	36.46%
4	**Accounting Certificate**			
		Association of Chartered Certified Accountants (ACCA)	20	20.83%
		Chartered Global Management Accountant (CGMA)	14	14.58%
		Chartered Institute of Management Accountants (CIMA)	31	32.29%
		Institute of Chartered Accountants in England and Wales (ICAEW)	17	18.56%
		None	17	17.71%
		Other organisations	9	9.38%
5	**Company Size**			
		0-250 employees	80	83.33%
		More than 250 employees	16	16.67%
6	**Sustainability Training Experience**			
		Accounting Institution	6	6.25%
		Current Company	16	16.67%
		Previous Company	2	2.08%
		I do not have sustainability training experience.	70	72.92%
		Other	2	2.08%

6.4 Type of variables

The PLS-SEM data analysis uses the software SmartPLS because it is a widely used software for PLS-SEM analysis, while the popular CB-SEM software is AMOS, Mplus, and LISRAL (Jannoo et al., 2014).

When using the SEM, it is also important to distinguish between independent and dependent variables (Hair et al., 2019). However, different terminology is used (Hair et al., 2019). Rather than independent variables, SEM identifies and utilises exogenous variables that are mostly equivalent to the independent variables in multiple regression since they are unaffected by the model's other latent variables (Lei and Wu, 2007; Mancha and Leung, 2010). Within the SEM structural model, endogenous latent variables are dependent on other latent variables (Lei and Wu, 2007; Mancha and Leung, 2010). In this research, different variables are in Table 22.

Table 22: Variables in SEM

Hypotheses	Independent Variables/ Exogenous Variables	Dependent Variables/ Endogenous Variables
H1: There is a positive relationship between accountants' intentions to engage in sustainability accounting and the behaviour of engaging in sustainability accounting.	accountants' intentions to engage in sustainability accounting	engaging in sustainability accounting
H2: There is a positive relationship between accountants' attitudes toward engaging in sustainability accounting and their intentions to engage in sustainability accounting.	accountants' attitudes toward engaging in sustainability accounting	accountants' intentions to engage in sustainability accounting
H3: Accountants' behavioural beliefs positively influence accountants' attitudes toward engaging in sustainability accounting.	behavioural beliefs	accountants' attitudes toward engaging in sustainability accounting
H4: There is a positive relationship between the subjective norm of engaging in sustainability accounting and accountants' intentions to engage in sustainability accounting.	subjective norm	accountants' intentions to engage in sustainability accounting
H5: Accountants' normative beliefs positively influence the subjective norm of engaging in sustainability accounting.	normative beliefs	subjective norm
H6: There is a positive relationship between perceived behavioural control and accountants' intentions to engage in sustainability accounting.	perceived behavioural control	accountants' intentions to engage in sustainability accounting
H7: Accountants' control beliefs positively influence the perceived behavioural control of engaging in sustainability accounting.	control beliefs	perceived behavioural control
H8: Moral norm positively influences accountants' intentions to engage in sustainability accounting.	moral norm	accountants' intentions to engage in sustainability accounting

6.5 Reflective model vs formative model

6.5.1 Distinguishes of reflective model and formative model

After developing multiple variables, the next step is to decide the relationships between indicators and constructs (MacKenzie et al., 2005). A measure's connection to a construct shows the relationship between a measure and the phenomenon named by the construct (Edwards and Bagozzi, 2000). The construct is an abstract term used to describe the phenomenon observed or unobserved of theoretical interest (Edwards and Bagozzi, 2000). Constructs can also be viewed as being formed by their indicators (Bollen and Lennox, 1991; Roberts and Thatcher, 2009). Thus, the variation in a construct results in the variation in the construct's indicators (Roberts and Thatcher, 2009). Reflective and formative constructs are two types of constructs (Wong, 2013). Measures, also known as indicators or items, are used to examine constructs (Petter et al., 2007).

However, whether the constructs should be formative or reflective is still an elusive problem (Petter et al., 2007). There is no complete list of criteria to assist researchers in selecting whether to use a reflective or formative model (Jarvis et al., 2003). However, Jarvis et al. (2003) provide four possible criteria that researchers might use to differentiate between formative and reflective measurement models (see Table 23). Jarvis et al. (2003) further assert that some issues under this framework may be difficult to answer or may provide contradicting results. As a result, additional modification of the construct's conceptualisation may be necessary (Jarvis et al., 2003). This may include researchers defining the domains of constructs, determining if all indicators are within that domain, and examining indicators' links to other constructs (Jarvis et al., 2003).

Table 23: Decision Rules to Identify Construct as Formative or Reflective

Decision Rule	Formative Model	Reflective Model
1. Direction of causality from construct to measure implied by the conceptual definition	Direction of causality is from items to construct	Direction of causality is from construct to items
Are the indicators (items) (a) defining characteristics or (b) manifestations of the construct?	Indicators are defining characteristics of the construct	Indicators are manifestations of the construct
Would changes in the indicators/items cause changes in the construct or not?	Changes in the indicators should cause changes in the construct	Changes in the indicator should not cause changes in the construct
Would changes in the construct cause changes in the indicators?	Changes in the construct do not cause changes in the indicators	Changes in the construct do cause changes in the indicators
2. Interchangeability of the indicators/items	Indicators need not be interchangeable	Indicators should be interchangeable
Should the indicators have the same or similar content?	Indicators need not have the same or similar content/indicators need not	Indicators should have the same or similar content/indicators should
Do the indicators share a common theme?	Share a common theme	Share a common theme
Would dropping one of the indicators alter the conceptual domain of the construct?	Dropping an indicator may alter the conceptual domain of the construct	Dropping an indicator should not alter the conceptual domain of the construct
3. Covariation among the indicators	Not necessary for indicators to covary with each other	Indicators are expected to covary with each other
Should a change in one of the indicators be associated with changes in the other indicators?	Not necessarily	Yes
4. Nomological net of the construct indicators	Nomological net for the indicators may differ	Nomological net for the indicators should not differ
Are the indicators/items expected to have the same antecedents and consequences?	Indicators are not required to have the same antecedents and consequences	Indicators are required to have the same antecedents and consequences

Source from: Jarvis et al., (2003, p. 203)

Apart from the above differences, the errors and the meaning of surplus are also different.

- Errors in the reflective model and formative model

The error is connected with the individual measurements rather than the construct as a whole in the reflective measurement model (though an overall calculation of the reliability of a group of measures can be made based on the individual measure reliabilities) (MacKenzie et al., 2005). This has the benefit of allowing researchers to assess the differential reliability of the various items on their scales (MacKenzie et al., 2005). This is also advantageous when developing scales since it enables the identification of weaker items and identifies opportunities for scale improvement (MacKenzie et al., 2005). "Because the measures are all imperfect reflections of the underlying construct, a summed scale score will not adequately represent a construct with reflective indicators, and using a scale score in place of the latent construct will result in inconsistent structural estimates of the relationships between the construct and other latent constructs" (MacKenzie et al., 2005, p. 712).

Like the reflective model, the formative model also includes an error term (MacKenzie et al., 2005). Diamantopoulos (2006) criticises that prior research either ignores the error or misleads the nature of errors in the formative model. However, understanding the error in the formative model is very important because the error is not only the main source of identification problems and resulting estimation difficulties but also the linkage with the "surplus" meaning possessed by the construct (Diamantopoulos, 2006). When relevant variables are left out of formative measurements, it leads to estimation problems and a significantly different index (Dickinger and Stangl, 2013). The error in the formative model is represented at the construct level rather than at the individual item level (Jarvis et al., 2003; MacKenzie et al., 2005). Rather than the amount of error attributable to each individual measure, the error estimate for this model captures the invalidity of the set of measures caused by measurement error, interactions among the measures, and/or aspects of the construct domain not represented by the measures (MacKenzie et al., 2005). However, Diamantopoulos (2006) argues that the type of error involved is not a random measurement error; the scale's reliability cannot be enhanced by estimating the error term. The error is not related to either individual items or the set of items as a whole (Diamantopoulos, 2006). He also points out that the error term in the formative model tells hardly about items already applied as indicators in the model but may be formative to excluded or unmeasured indicators. He claims that the error is not the overall error contained in the indicators. The variance of

error represents the residual variance in the construct after the indicators' influence has been taken into account (Diamantopoulos, 2006). As a result, the information offered by the error word cannot be used to increase the reliability of the (multi-item) formative measure (Diamantopoulos, 2006). When the formative measurement is involved, reliability becomes an irrelevant criterion for assessing measurement quality (Diamantopoulos, 2006). Thus, Diamantopoulos (2006) concludes that the error component in a model of formative measurement captures the influence of all remaining causes not captured by the model's indicators. When all alternative sources of the construct are considered, the error is equal to zero (Diamantopoulos, 2006). When not all probable causes are explicitly included as indicators, the error term must be included as a model parameter and estimated in conjunction with the other model parameters (Diamantopoulos, 2006).

To consider the use of error terms in the formative model, Diamantopoulos (2006) suggests that indicators should be carefully considered before data collection to see if they are capable of completely exhausting the construct's realm. If eliminating the error term is not possible in practice, errors would be integrated into the formative model specification. Additionally, if the excluded indicators are linked with those included in the formative measure, there is a very significant risk of model misspecification during the indicator specification stage (Bollen and Lennox, 1991; Diamantopoulos, 2006). Simultaneously, multicollinearity issues should be considered since when the measured variables are highly correlated, the formative specification makes it extremely difficult to evaluate the individual contributions of these variables (Fornell et al., 1991).

- Surplus meaning in reflective model and formative model

The reflective and formative models have another similarity: they possess surplus meaning beyond that captured by the specific items used to measure them (Jarvis et al., 2003). The reflective model has surplus meaning because the surplus of the construct arises from its independent existence in relation to the specific items employed to measure the construct (Diamantopoulos, 2006). Therefore, dropping some indicators should have no effect on the conceptual scope of the construct (Jarvis et al., 2003). In contrast, in the formative model, the construct is not independent existence related to specific items, so indicators are tied to the construct (Diamantopoulos, 2006). The surplus meaning of the formative constructs is directly related to the error term in the formative model (Diamantopoulos, 2006). The

formative constructs' surplus meaning is related to the impact of the unmeasured causes (i.e., indicators not included in the model) (Diamantopoulos, 2006).

6.5.2 Measurement model specification for this research

6.5.2.1 Overview of measurement models in TPB

Constructs are not naturally formative or reflective (Cenfetelli and Bassellier, 2009; Howell et al., 2007; MacKenzie et al., 2011). The majority of constructs can be modelled with either formative or reflective indicators, depending on the researcher's theoretical expectations about how they should be related based on the conceptual definition of the construct (MacKenzie et al., 2011; Roberts and Thatcher, 2009). For each construct, researchers can choose between a reflective or formative measurement model (Hair et al., 2017a). The overreaching criterion for building, testing, changing, and interpreting structural models is the theory, not statistical outcomes (Hampton, 2015).

TPB studies vary considerably in assessing the theory's constructs (Sok et al., 2021). In TPB studies with SEM, it is very common to find that some do not present which construct they select, but the validity and reliability tests hint that they use the reflective constructs (e.g., Chu and Chen, 2016). Some studies only mention that they choose reflective constructs but do not explain any reasons (e.g., Khalifa and Shen, 2008; Macovei, 2015). Some studies give some very brief reasons based on several different features between the reflective and the formative models (e.g., Khalifa and Shen, 2008). But in this kind of research, they usually do not put the reasons into the research context or based on the TPB itself. There are also special studies that adopt mixed constructs. For example, Macovei (2015) suggests that attitude toward the behaviour is the reflective construct while intention, subjective norm, and PBC are formative constructs. However, they do not explain any further. Therefore, the following paragraphs will conduct a detailed discussion about determining the type of measurement model in the theory of planned behaviour.

6.5.2.2 Model specification for constructs in TPB (excluding actual control)

All the measurement models are reflective models in this research. Up till now, in terms of hundreds of articles the researcher has read, the reflective model is the dominant

measurement model for TPB constructs. In Table 24, the examples are listed. They are one of the important reasons for this research to specify these models as reflective models. Apart from the application of reflective models in different research, Ajzen (2020) also suggests that sets of items designed to provide measures of attitude toward the behaviour, subjective norm, perceived behavioural control, and intention are reflective items chosen at the investigator's discretion. These items can be interchanged as long as they are good indicators of the underlying latent construct (Ajzen, 2020). In addition, Ajzen (2006) also suggests that these constructs are suitable for the reflective model. All structures are not the formative model also because Hair et al. (2017a) point out that the formative measurement approach aims to completely cover the domain of the construct with the various formative indicators. This is not realistic for the researcher.

Table 24: Model Specification

Construct	**Model Specification**	**Example of Previous Research**
Behaviour	Reflective Model	Lucarelli et al. (2020) Mak et al. (2018)
Intention	Reflective Model	Chu and Chen (2016) Mak et al. (2018) Tashakor et al. (2019) Thoradeniya et al. (2015)
Attitude toward the behaviour	Reflective Model	Chu and Chen (2016) Mak et al. (2018) Tashakor et al. (2019) Thoradeniya et al. (2015)
Behavioural beliefs	Reflective Model	De Leeuw et al. (2015) Yusop et al. (2021)
Subjective norm	Reflective Model	Chu and Chen (2016) Mak et al. (2018) Tashakor et al. (2019) Thoradeniya et al. (2015)
Normative beliefs	Reflective Model	De Leeuw et al. (2015) Yusop et al. (2021)
Perceived behavioural control	Reflective Model	Chu and Chen (2016) Mak et al. (2018) Tashakor et al. (2019) Thoradeniya et al. (2015)
Control beliefs	Reflective Model	De Leeuw et al. (2015) Yusop et al. (2021)
Moral norm	Reflective Model	De Leeuw et al. (2015)

6.5.2.3 Actual control

Because the actual control has not been measured in the previous literature, there is no direct material for what type of this measurement model should be. However, the actual control items are converted from the control beliefs that are seen as reflective models. Therefore, it is reasonable to consider the actual control as the reflective model. However, to confirm the model type of the actual control, the confirmatory tetrad analysis in PLS-SEM (CTA-PLS) is applied to enable researchers to test whether the measurement model should be assessed reflectively or formatively (Hair et al., 2018). The CTA-PLS has been proposed by Gudergan et al. (2008). A key issue in conducting CTA-PLS is that the measurement model should have at least four indicators (Hair et al., 2018). The actual control has more than four indicators. Therefore, this analysis can be used. CTA-PLS is also an advanced technique in PLS-SEM that has been introduced only recently (Hair et al., 2011; Hair et al., 2018). Therefore, CTA-PLS is an emerging area that has not been included and applied widely in the literature (Hair et al., 2011; Sarstedt et al., 2022).

The CTA-PLS is based on the concept of tetrads, which are used to denote the difference between the products of two pairs of covariances (Bollen and Ting, 2000). If the confidence interval contains zero, the tetrad is not significantly different from zero, implying a vanishing tetrad, and the model is the reflective model (Hair et al., 2018; Hair et al., 2019). In Table 25, all the tetrad of the actual control construct contains zero. Therefore, the actual control is a reflective measurement model. In summary, no matter from the theoretical or the statistical aspect, the conclusions are all the same: the actual control should be the reflective model.

Table 25: CTA Results of Actual Control

Actual Control	CI Low adj.	CI Up adj.
1: ac_1, ac_10, ac_11, ac_12	-0.012	0.005
2: ac_1, ac_10, ac_12, ac_11	-0.036	0.003
4: ac_1, ac_10, ac_11, ac_13	-0.008	0.008
6: ac_1, ac_11, ac_13, ac_10	-0.022	0.009
10: ac_1, ac_10, ac_11, ac_3	-0.014	0.012
13: ac_1, ac_10, ac_11, ac_4	-0.01	0.011
17: ac_1, ac_10, ac_5, ac_11	-0.047	0.004
20: ac_1, ac_10, ac_6, ac_11	-0.055	0.004
24: ac_1, ac_11, ac_7, ac_10	-0.029	0.015
26: ac_1, ac_10, ac_8, ac_11	-0.047	0.007
27: ac_1, ac_11, ac_8, ac_10	-0.047	0.009
28: ac_1, ac_10, ac_11, ac_9	-0.011	0.01
31: ac_1, ac_10, ac_12, ac_13	-0.015	0.017
37: ac_1, ac_10, ac_12, ac_3	-0.037	0.024
43: ac_1, ac_10, ac_12, ac_5	-0.015	0.02
47: ac_1, ac_10, ac_6, ac_12	-0.026	0.016
59: ac_1, ac_10, ac_2, ac_13	-0.031	0.022
62: ac_1, ac_10, ac_3, ac_13	-0.018	0.015
66: ac_1, ac_13, ac_4, ac_10	-0.012	0.021
68: ac_1, ac_10, ac_5, ac_13	-0.018	0.02
76: ac_1, ac_10, ac_13, ac_8	-0.01	0.018
84: ac_1, ac_2, ac_3, ac_10	-0.018	0.063
86: ac_1, ac_10, ac_4, ac_2	-0.008	0.017
88: ac_1, ac_10, ac_2, ac_5	-0.032	0.013
92: ac_1, ac_10, ac_6, ac_2	-0.038	0.018
97: ac_1, ac_10, ac_2, ac_8	-0.035	0.021
102: ac_1, ac_2, ac_9, ac_10	-0.017	0.068
105: ac_1, ac_3, ac_4, ac_10	-0.021	0.023
110: ac_1, ac_10, ac_6, ac_3	-0.056	0.018
171: ac_1, ac_12, ac_2, ac_11	-0.012	0.025
214: ac_1, ac_11, ac_13, ac_9	-0.017	0.012
231: ac_1, ac_2, ac_7, ac_11	-0.011	0.025
247: ac_1, ac_11, ac_3, ac_7	-0.016	0.014
290: ac_1, ac_11, ac_9, ac_6	-0.007	0.013
308: ac_1, ac_12, ac_4, ac_13	-0.022	0.014
333: ac_1, ac_2, ac_5, ac_12	-0.017	0.044
337: ac_1, ac_12, ac_2, ac_7	-0.019	0.03
343: ac_1, ac_12, ac_2, ac_9	-0.053	0.015
350: ac_1, ac_12, ac_5, ac_3	-0.029	0.017
363: ac_1, ac_3, ac_9, ac_12	-0.024	0.026
376: ac_1, ac_12, ac_4, ac_9	-0.024	0.013

377: ac_1, ac_12, ac_9, ac_4	-0.008	0.018
410: ac_1, ac_13, ac_3, ac_2	-0.013	0.021
430: ac_1, ac_13, ac_3, ac_4	-0.012	0.02
454: ac_1, ac_13, ac_4, ac_7	-0.014	0.019
458: ac_1, ac_13, ac_8, ac_4	-0.015	0.018
479: ac_1, ac_13, ac_8, ac_6	-0.013	0.01
484: ac_1, ac_13, ac_7, ac_8	-0.015	0.018
504: ac_1, ac_3, ac_7, ac_2	-0.021	0.014
535: ac_1, ac_2, ac_5, ac_9	-0.029	0.037
565: ac_1, ac_3, ac_4, ac_8	-0.019	0.016
609: ac_1, ac_5, ac_8, ac_4	-0.013	0.018
626: ac_1, ac_4, ac_9, ac_7	-0.033	0.014
636: ac_1, ac_6, ac_8, ac_5	-0.032	0.045
640: ac_1, ac_5, ac_7, ac_8	-0.008	0.033
741: ac_10, ac_3, ac_6, ac_11	-0.014	0.01
775: ac_10, ac_11, ac_5, ac_9	-0.009	0.025
793: ac_10, ac_11, ac_8, ac_9	-0.004	0.033
1037: ac_10, ac_2, ac_8, ac_6	-0.022	0.021
1078: ac_10, ac_3, ac_6, ac_7	-0.016	0.035
1238: ac_11, ac_12, ac_7, ac_5	-0.025	0.011
1306: ac_11, ac_13, ac_4, ac_6	-0.015	0.006
1373: ac_11, ac_2, ac_7, ac_4	-0.011	0.015
1425: ac_11, ac_4, ac_9, ac_3	-0.012	0.024
1700: ac_12, ac_3, ac_8, ac_7	-0.021	0.043

6.6 Measurement model reliability and validity

6.6.1 Different criteria for measurement model reliability and validity

Prior to examining the structural model, the validity and reliability of measurement models should be established to demonstrate the quality of the measures (Hair et al., 2017a). Therefore, this section assesses the validity and reliability of the constructs. However, reflective measurement models and formative measurement models have different reliability and validity test methods (see Table 26). As all constructs are reflective models in this research, the following contents mainly test the convergent validity, discriminant validity, and internal consistency.

Table 26: Evaluation of the Measurement Models

Reflective Measurement Model	Formative Measurement Model
• Convergent validity (indicator reliability, average variance extracted) • Discriminant validity • Internal consistency (Cronbach's alpha, composite reliability)	• Convergent validity • Collinearity between indicators • Significance and relevance of outer weights

Source from: Hair et al., (2017a)

6.6.2 Convergent validity

Convergent validity is "the extent to which a measure correlates positively with alternative measures of the same construct" (Hair et al., 2017a, p. 112). This research analyses the convergent validity of the reflective construct by calculating both the outer loadings of indicators and the average variance extracted (AVE), as Hair et al. (2017a) suggest.

6.6.2.1 Outer loadings of indicators

Table 27 shows that behaviour, intention, attitude toward the behaviour, subjective norm, perceived behavioural control, normative beliefs, and moral norm all have outer loadings equal to or greater than 0.70, which satisfies the criterion that outer loadings greater than 0.70 indicate a sufficient level of reliability (Hair et al., 2017a; Sarstedt et al., 2017). However, eight items in actual control, four items in behavioural beliefs, and ten items in control beliefs all have outer loadings lower than 0.70. Following the instructions of Hair et al. (2017a), att_b_17, att_b_18, pbc_b_5, and pbc_b_13 are all eliminated from their corresponding constructs because their outer loadings are less than 0.40; pbc_b_15, pbc_b_2, ac_3, ac_4, ac_11, and ac_13 are deleted from their corresponding constructs because their original outer loadings are between 0.40 and 0.70, deleting them increases the composite reliability. The deleted items are shown in Table 28. The final outer loadings are presented in Table 29.

Table 27: Original Outer Loadings

	behaviour	intention	attitude toward the behaviour	behavioural beliefs	subjective norm	normative beliefs	perceived behavioural control	control beliefs	moral norm	actual control
beh_1	0.845									
beh_2	0.868									
beh_3	0.813									
beh_4	0.756									
beh_5	0.720									
beh_6	0.860									
beh_7	0.877									
beh_8	0.824									
beh_9	0.840									
beh_10	0.860									
beh_11	0.819									
beh_12	0.757									
int_1		0.928								
int_2		0.948								
int_3		0.815								
int_4		0.923								
int_5		0.920								
int_6		0.865								
att_1			0.841							
att_2			0.891							
att_3			0.857							
att_4			0.892							
att_5			0.826							

att_b_1	0.800			
att_b_2	0.858			
att_b_3	0.846			
att_b_4	0.878			
att_b_5	0.831			
att_b_6	0.869			
att_b_7	0.783			
att_b_8	0.840			
att_b_9	0.830			
att_b_10	0.796			
att_b_11	0.839			
att_b_12	0.882			
att_b_13	0.717			
att_b_14	0.776			
att_b_15	0.674			
att_b_16	0.606			
att_b_17	0.106			
att_b_18	0.079			
11_1(sn_1)		0.890		
11_5(sn_2)		0.925		
11_7(sn_3)		0.942		
11_11(sn_4)		0.879		
sn_b_1			0.921	
sn_b_2			0.922	
sn_b_3			0.792	
sn_b_4			0.898	
sn_b_5			0.905	
11_2(pbc_1)				0.700

11_4(pbc_2)	0.842			
11_9(pbc_3)	0.793			
11_12(pbc_4)	0.817			
pbc_b_1		0.801		
pbc_b_2		0.493		
pbc_b_3		0.765		
pbc_b_4		0.653		
pbc_b_5		0.197		
pbc_b_6		0.742		
pbc_b_7		0.860		
pbc_b_8		0.806		
pbc_b_9		0.747		
pbc_b_10		0.658		
pbc_b_11		0.649		
pbc_b_12		0.622		
pbc_b_13		0.206		
pbc_b_14		0.538		
pbc_b_15		0.443		
pbc_b_16		0.599		
11_3(mn_1)			0.917	
11_6(mn_2)			0.870	
11_8(mn_3)			0.947	
11_10(mn_4)			0.918	
ac_1				0.685
ac_10				0.596
ac_11				0.547
ac_12				0.649
ac_13				0.531

ac_2	0.723
ac_3	0.506
ac_4	0.514
ac_5	0.788
ac_6	0.771
ac_7	0.672
ac_8	0.786
ac_9	0.731

Table 28: Deleted Items

Constructs	No.	Code of Items	Meaning of Items for Measurement Model in the Questionnaire
Behavioural beliefs	1	att_b_17	Increase the burden of my workload
	2	att_b_18	Increase the cost to the company
Control beliefs	3	pbc_b_2	Sustainability issues can influence financial performance.
	4	pbc_b_5	Sustainability issues can influence cost, risk, and value.
	5	pbc_b_13	Other colleagues in the company provide sustainability information.
	6	pbc_b_15	There is a lack of sustainability accounting standards.
Actual control	7	ac_3	Does your company have a sustainability system?
	8	ac_4	Does your company have a dedicated department responsible for sustainability?
	9	ac_11	Does your current company train you in how to deal with sustainability?
	10	ac_13	Are there sustainability accounting rules you must follow in your company?

Table 29: Outer Loadings after Revision

	behaviour	intention	attitude toward the behaviour	behavioural beliefs	subjective norm	normative beliefs	perceived behavioural control	control beliefs	moral norm	actual control
beh_1	0.843									
beh_2	0.867									
beh_3	0.810									
beh_4	0.763									
beh_5	0.720									
beh_6	0.859									
beh_7	0.877									
beh_8	0.824									
beh_9	0.840									
beh_10	0.861									
beh_11	0.817									
beh_12	0.758									
int_1		0.928								
int_2		0.948								
int_3		0.815								
int_4		0.923								
int_5		0.920								
int_6		0.865								
att_1			0.842							
att_2			0.892							
att_3			0.857							
att_4			0.892							
att_5			0.825							

att_b_1	0.801			
att_b_2	0.858			
att_b_3	0.846			
att_b_4	0.878			
att_b_5	0.831			
att_b_6	0.867			
att_b_7	0.785			
att_b_8	0.843			
att_b_9	0.828			
att_b_10	0.793			
att_b_11	0.838			
att_b_12	0.882			
att_b_13	0.719			
att_b_14	0.778			
att_b_15	0.676			
att_b_16	0.611			
11_1(sn_1)		0.890		
11_5(sn_2)		0.925		
11_7(sn_3)		0.942		
11_11(sn_4)		0.879		
sn_b_1			0.921	
sn_b_2			0.922	
sn_b_3			0.792	
sn_b_4			0.898	
sn_b_5			0.905	
11_2(pbc_1)				0.700
11_4(pbc_2)				0.841
11_9(pbc_3)				0.793

11_12(pbc_4)	0.818			
pbc_b_1		0.811		
pbc_b_3		0.742		
pbc_b_4		0.657		
pbc_b_6		0.749		
pbc_b_7		0.880		
pbc_b_8		0.828		
pbc_b_9		0.760		
pbc_b_10		0.682		
pbc_b_11		0.641		
pbc_b_12		0.646		
pbc_b_14		0.531		
pbc_b_16		0.565		
11_3(mn_1)			0.917	
11_6(mn_2)			0.870	
11_8(mn_3)			0.947	
11_10(mn_4)			0.918	
ac_1				0.705
ac_2				0.718
ac_5				0.808
ac_6				0.798
ac_7				0.668
ac_8				0.797
ac_9				0.738
ac_10				0.574
ac_12				0.675

6.6.2.2 Average variance extracted (AVE)

Table 30 shows that after deleting items in section 6.6.2.1, all constructs' AVE values are above 0.50 and range from 0.511 to 0.834, indicating that the construct explains, on average more than half of the variance of its indicators (Fornell and Larcker, 1981; Hair et al., 2017a). In summary, both outer loadings and the AVE show that the constructs have convergent validity.

Table 30: AVE

Constructs	Average Variance Extracted (AVE)
behaviour	0.674
intention	0.812
attitude toward the behaviour	0.743
behavioural beliefs	0.668
subjective norm	0.827
normative beliefs	0.790
perceived behavioural control	0.624
control beliefs	0.511
moral norm	0.834
actual control	0.523

6.6.3 Discriminant validity

Discriminant validity refers to the extent to which a construct distinguishes from other constructs by empirical standards (Henseler et al., 2015; Hair et al., 2017a; Jordan and Hoefer, 2001). "Establishing discriminant validity implies that a construct is unique and captures phenomena not represented by other constructs in the model" (Hair et al., 2017a, p. 115). Traditionally, discriminant validity has been evaluated using either the Fornell-Lacker criterion or cross-loadings (Henseler et al., 2015). In this research, the recent technique Heterotrait-monotrait ratio (HTMT) proposed by Henseler et al. (2015) is used to evaluate the discriminant validity because it is more reliable compared to the traditional Fornell-Lacker criterion and cross-loadings (Henseler et al., 2015).

"The cross-loadings fail to indicate a lack of discriminant validity when two constructs are perfectly correlated, and Fornell-Larcker performs poorly when the indicator loadings of the

constructs under consideration differ only slightly" (Hair et al., 2017a, p. 118). "When indicators loadings vary more strongly, the Fornell-Larcker criterion's performance in detecting discriminant validity issues improves but is still rather poor overall" (Hair et al., 2017a, p. 118). In addition to the Heterotrait-monotrait ratio (HTMT), it is also necessary to test whether the HTMT statistic differs considerably from one (Hair et al., 2017a). Table 31 shows that all constructs have HTMT values less than 0.90. Table 32 reveals that one is outside all confidence intervals, suggesting each construct is unique and captures phenomena not captured by other constructs in the model (Franke and Sarstedt, 2019; Hair et al., 2017a).

Table 31: HTMT

	behaviour	intention	attitude toward the behaviour	behavioural beliefs	subjective norm	normative beliefs	perceived behavioural control	control beliefs	moral norm	actual control	Moderating Effect 1
behaviour		0.635	0.412	0.535	0.500	0.454	0.649	0.636	0.438	0.651	0.088
intention			0.505	0.684	0.689	0.627	0.777	0.671	0.740	0.479	0.135
attitude toward the behaviour				0.586	0.443	0.388	0.418	0.412	0.409	0.327	0.046
behavioural beliefs					0.773	0.644	0.659	0.617	0.710	0.365	0.068
subjective norm						0.619	0.760	0.637	0.822	0.428	0.031
normative beliefs							0.676	0.667	0.627	0.426	0.082
perceived behavioural control								0.887	0.726	0.641	0.076
control beliefs									0.583	0.612	0.148
moral norm										0.417	0.113
actual control											0.142

Table 32: HTMT Bootstrapping (Confidence Intervals Bias Corrected)

	Original Sample (O)	Sample Mean (M)	Bias	2.50%	97.50%
behaviour -> Moderating Effect 1	0.088	0.136	0.047	0.034	0.195
behaviour -> attitude toward the behaviour	0.412	0.417	0.005	0.210	0.602
behaviour -> actual control	0.651	0.655	0.004	0.525	0.749
intention -> Moderating Effect 1	0.135	0.175	0.041	0.035	0.384
intention -> behaviour	0.635	0.636	0.001	0.509	0.728
intention -> attitude toward the behaviour	0.505	0.510	0.005	0.271	0.696
intention -> behavioural beliefs	0.684	0.685	0.001	0.460	0.821
intention -> control beliefs	0.671	0.671	0.000	0.535	0.777
intention -> actual control	0.479	0.488	0.009	0.311	0.619
attitude toward the behaviour -> Moderating Effect 1	0.046	0.102	0.055	0.008	0.075
attitude toward the behaviour -> actual control	0.327	0.350	0.023	0.182	0.470
behavioural beliefs -> Moderating Effect 1	0.068	0.135	0.068	0.035	0.079
behavioural beliefs -> behaviour	0.535	0.540	0.005	0.399	0.652
behavioural beliefs -> attitude toward the behaviour	0.586	0.590	0.004	0.368	0.765
behavioural beliefs -> actual control	0.365	0.386	0.021	0.235	0.488
subjective norm -> Moderating Effect 1	0.031	0.105	0.074	0.006	0.043
subjective norm -> behaviour	0.500	0.502	0.003	0.341	0.640
subjective norm -> intention	0.689	0.689	0.000	0.534	0.799
subjective norm -> attitude toward the behaviour	0.443	0.448	0.005	0.184	0.678
subjective norm -> behavioural beliefs	0.773	0.768	-0.005	0.626	0.866
subjective norm -> normative beliefs	0.619	0.617	-0.002	0.441	0.755
subjective norm -> perceived behavioural control	0.760	0.762	0.001	0.608	0.871
subjective norm -> control beliefs	0.637	0.638	0.001	0.479	0.761
subjective norm -> moral norm	0.822	0.822	0.000	0.707	0.915
subjective norm -> actual control	0.428	0.437	0.009	0.275	0.567
normative beliefs -> Moderating Effect 1	0.082	0.132	0.050	0.015	0.168
normative beliefs -> behaviour	0.454	0.455	0.001	0.293	0.590
normative beliefs -> intention	0.627	0.627	0.000	0.432	0.761

normative beliefs -> attitude toward the behaviour	0.388	0.394	0.006	0.162	0.598
normative beliefs -> behavioural beliefs	0.644	0.641	-0.003	0.478	0.767
normative beliefs -> control beliefs	0.667	0.668	0.001	0.546	0.764
normative beliefs -> moral norm	0.627	0.627	-0.001	0.486	0.739
normative beliefs -> actual control	0.426	0.432	0.007	0.261	0.574
perceived behavioural control -> Moderating Effect 1	0.076	0.143	0.067	0.010	0.108
perceived behavioural control -> behaviour	0.649	0.653	0.005	0.428	0.811
perceived behavioural control -> intention	0.777	0.780	0.002	0.629	0.889
perceived behavioural control -> attitude toward the behaviour	0.418	0.435	0.017	0.200	0.646
perceived behavioural control -> behavioural beliefs	0.659	0.661	0.001	0.486	0.796
perceived behavioural control -> normative beliefs	0.676	0.680	0.004	0.489	0.830
perceived behavioural control -> control beliefs	0.887	0.888	0.001	0.769	0.970
perceived behavioural control -> moral norm	0.726	0.725	-0.001	0.562	0.848
perceived behavioural control -> actual control	0.641	0.650	0.009	0.482	0.771
control beliefs -> Moderating Effect 1	0.148	0.186	0.038	0.075	0.201
control beliefs -> behaviour	0.636	0.643	0.007	0.501	0.746
control beliefs -> attitude toward the behaviour	0.412	0.435	0.023	0.216	0.598
control beliefs -> behavioural beliefs	0.617	0.625	0.008	0.460	0.731
control beliefs -> actual control	0.612	0.630	0.018	0.458	0.744
moral norm -> Moderating Effect 1	0.113	0.142	0.029	0.028	0.285
moral norm -> behaviour	0.438	0.439	0.001	0.281	0.566
moral norm -> intention	0.740	0.740	-0.001	0.607	0.837
moral norm -> attitude toward the behaviour	0.409	0.416	0.007	0.169	0.626
moral norm -> behavioural beliefs	0.710	0.705	-0.005	0.493	0.854
moral norm -> control beliefs	0.583	0.583	0.000	0.423	0.714
moral norm -> actual control	0.417	0.426	0.009	0.272	0.538
actual control -> Moderating Effect 1	0.142	0.188	0.046	0.067	0.200

6.6.4 Internal consistency reliability

Cronbach's alpha is a traditional criterion for assessing internal consistency (Hair et al., 2017a). It has, however, been criticised for being too sensitive to the number of indicators and underestimating internal consistency (Hair et al., 2017a). Conversely, composite reliability, which is also a criterion for evaluating internal consistency, has a tendency to overestimate the value (Hair et al., 2017a). Therefore, Hair et al. (2017a) suggest presenting both outcomes. Table 33 shows that all Cronbach's alpha values are over 0.70, which is the acceptable bottom limit suggested by Hair et al. (2010). The composite reliability values are more than 0.70, as Hair et al. (2014) recommend. Thus, internal consistency reliability is proved by both parameters.

Table 33: Reflective Model Internal Consistency Reliability

Constructs	Cronbach's Alpha	Composite Reliability
behaviour	0.956	0.961
intention	0.953	0.963
attitude toward the behaviour	0.914	0.935
behavioural beliefs	0.948	0.957
subjective norm	0.930	0.950
normative beliefs	0.933	0.949
perceived behavioural control	0.798	0.869
moral norm	0.934	0.953
control beliefs	0.891	0.910
actual control	0.891	0.908

6.7 Structural model results

After establishing the validity and reliability of the measurement model in section 6.6, this section evaluates the hypothetical relationships of the structural model. They entail looking into the model's prediction abilities as well as the links between the constructs (Hair et al., 2017a).

6.7.1 Structural model assessment overview

Unlike CB-SEM, which estimates parameters to minimise differences between sample covariances and those predicted by the theoretical/conceptual model, PLS-SEM estimates

parameters to maximise the explained variance of the endogenous latent variable(s) (Hair et al., 2014; Hair et al., 2017a). Therefore, the goodness-of-fit measures or the various fit indices in CB-SEM cannot be fully transferred to PLS-SEM (Hair et al., 2017a). Instead, PLS-SEM evaluates the structural model on the basis of its ability to predict endogenous variables/constructs (Hair et al., 2017a). Therefore, the significant path coefficient and the level of the R^2 values, the f^2 effect size, the predictive relevance of Q^2, and the q^2 effect size are the primary criteria for evaluating the structural model in PLS-SEM (Hair et al., 2014; Hair et al., 2017a) (see Figure 4). The R^2, effect size $f^{2,}$ and path coefficient estimates are for inner model evaluation, whereas the Q^2 and q^2 are the criteria for predictive relevance (Hair et al., 2017a). While various criteria are introduced, the fundamental criteria for evaluating the structural model are the R^2 values and the level and significance of the path coefficient (Hair et al., 2011). Although f^2, Q^2, and q^2 are considerably less frequently reported, researchers are encouraged to report them to interpret the results more accurately (Ringle et al., 2012; Hair et al., 2017a).

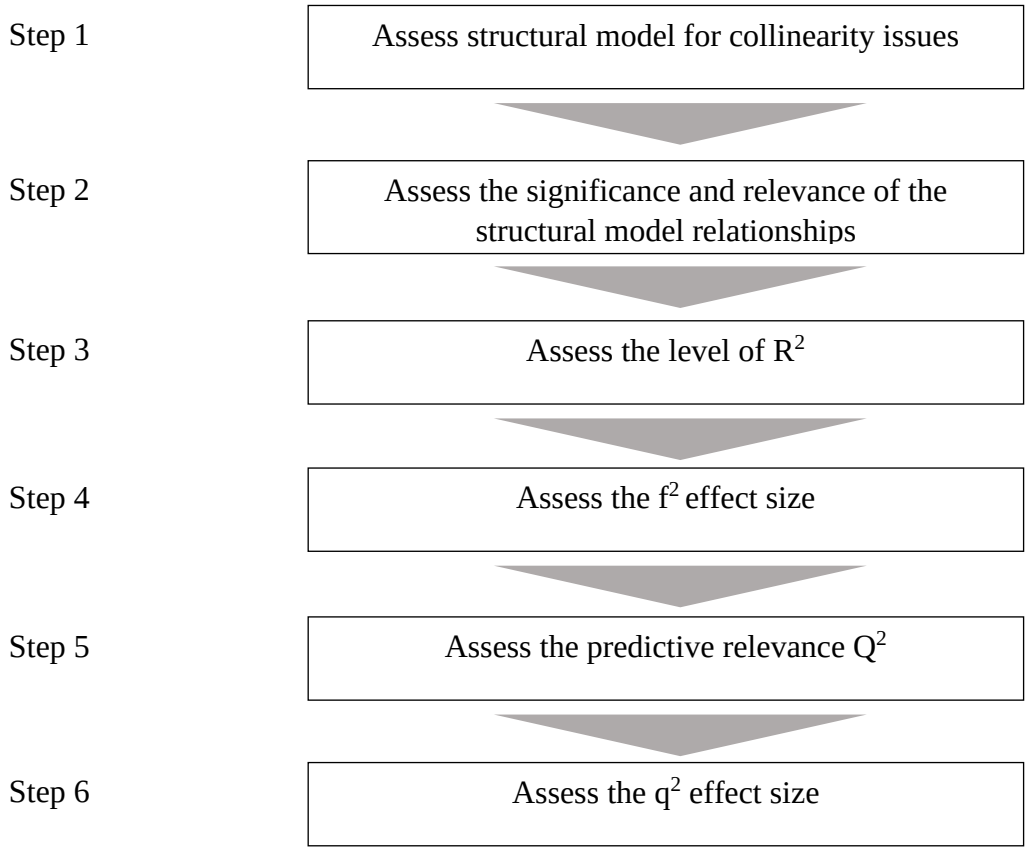

Figure 4: Structural Model Assessment Procedure

Source from: Hair et al. (2017a, p. 191)

6.7.2 Collinearity assessment

In order to assess the PLS-SEM structural model, the first step is to evaluate the collinearity of the structural model because “the estimation of path coefficients in the structural models is based on OLS regression of each endogenous latent variable on its corresponding predecessor constructs” (Hair et al., 2017a, p. 192). “The path coefficients might be biased if the estimation involves critical levels of collinearity among the predictor constructs” (Hair et al., 2017a, p. 192). Table 34 indicates that all VIF values are below 5, which suggests no collinearity problems so that the following analysis can proceed.

Table 34: Collinearity (VIF values)

	behaviour	intention	attitude toward the behaviour	behavioural beliefs	subjective norm	normative beliefs	perceived behavioural control	control beliefs	moral norm	actual control	Moderating Effect 1
behaviour											1.017
intention				1.270	2.848		1.901		2.624		
attitude toward the behaviour		1.241									
behavioural beliefs			1.000							1.251	
subjective norm						1.000					
normative beliefs											
perceived behavioural control								1.000			
control beliefs											
moral norm											
actual control	1.251										
Moderating Effect 1	1.017										

6.7.3 Path coefficients and hypotheses testing (excluding H9)

The path model is the diagram used to visually display the hypotheses and variable relationships explored in the application of SEM (Hair et al., 2017a). “Simply, it examines the relationship between constructs” (Collier, 2020, p. 128). The results of hypothesis 1 to hypothesis 8 (see Table 35) are integrated and reported in this section. Hypothesis 9 is not in Table 35 because the moderating effect testing method is different from theirs. The result of hypothesis 9 on the moderation relationship is in section 6.8.

The first hypothesis (H1) evaluates a positive relationship between accountants’ intentions to engage in sustainability accounting and the behaviour of engaging in sustainability accounting. Table 35 suggests that this hypothesis is supported because the association between intention and behaviour is significant (path coefficient = 0.620, p-value = 0.000<0.05).

The second hypothesis (H2) tests the positive relationship between accountants’ attitudes toward engaging in sustainability accounting and their intentions to engage in sustainability accounting. The relationship is positive and significant (path coefficient = 0.182, p-value = 0.009<0.05). However, compared to the moral norm and perceived behavioural control, the importance is much less than those two because it has the lowest path coefficient.

The third hypothesis (H3) assesses a positive relationship between accountants’ behavioural beliefs and accountants’ attitudes toward engaging in sustainability accounting. Behavioural beliefs have a significant and positive effect on attitude toward engagement in sustainability accounting because the evidence from Table 35 indicates the path coefficient equals 0.570 and the p-value is less than 0.05 (p-value = 0.000).

The fourth hypothesis (H4) predicts a positive relationship between subjective norm and accountants’ intentions to engage in sustainability accounting. The data do not support this hypothesis because the path coefficient is 0.068, and the p-value is 0.524, which is far more than the significance level of 0.05.

The fifth hypothesis (H5) tests accountants’ normative beliefs’ positive impact on the subjective norm. The results in Table 35 show that the path from normative beliefs to the

subjective norm is significant (path coefficient = 0.585, p-value = 0.000<0.05), which supports this hypothesis.

The sixth hypothesis (H6) examines the positive relationship between perceived behavioural control and accountants' intentions to engage in sustainability accounting. The results support this hypothesis with a path coefficient of 0.350 and a p-value less than the significance level of 0.05 (p-value = 0.000).

The seventh hypothesis (H7) is proposed to test the accountants' control beliefs positively influencing perceived behavioural control. Control beliefs positively and significantly affect perceived behavioural control (path coefficient = 0.771, p-value = 0.000<0.05), indicating support for this hypothesis.

The eighth hypothesis (H8) investigates the positive relationship between the moral norm and accountants' intentions to engage in sustainability accounting. The data in Table 35 support this hypothesis because the path coefficient is 0.356, and the p-value (p-value = 0.000) is less than the 0.05 significance level. The closer the path coefficients are to +1, the stronger the positive relationships (Hair et al., 2017a). Therefore, among the four determinants of intention, moral norm shows the most significant influence on the intention with the largest value of path coefficient 0.356, which means that one unit change in moral norm changes intention by the magnitude of 0.356 when everything else remains constant.

Table 35: Hypotheses Summary (excluding H9)

Hypotheses	Path Coefficients	p-values	Significance Level	Significance	Results
H1: There is a positive relationship between accountants' intentions to engage in sustainability accounting and the behaviour of engaging in sustainability accounting.	0.620	0.000	0.05	Significant	Support H1
H2: There is a positive relationship between accountants' attitudes toward engaging in sustainability accounting and their intentions to engage in sustainability accounting.	0.182	0.009	0.05	Significant	Support H2
H3: Accountants' behavioural beliefs positively influence accountants' attitudes toward engaging in sustainability accounting.	0.570	0.000	0.05	Significant	Support H3
H4: There is a positive relationship between the subjective norm of engaging in sustainability accounting and accountants' intentions to engage in sustainability accounting.	0.068	0.524	0.05	Not significant	Reject H4
H5: Accountants' normative beliefs positively influence the subjective norm of engaging in sustainability accounting.	0.585	0.000	0.05	Significant	Support H5
H6: There is a positive relationship between perceived behavioural control and accountants' intentions to engage in sustainability accounting.	0.350	0.000	0.05	Significant	Support H6
H7: Accountants' control beliefs positively influence the perceived behavioural control of engaging in sustainability accounting.	0.771	0.000	0.05	Significant	Support H7
H8: Moral norm positively influences accountants' intentions to engage in sustainability accounting.	0.356	0.000	0.05	Significant	Support H8

6.7.4. Coefficient of determination (R^2 value)

The R^2 value measures the model's predictive power (Hair et al., 2017a). It quantifies the combined influence of exogenous latent factors on the endogenous latent variable (Hair et al., 2017a). The R^2 value is between 0 and 1, with higher values suggesting greater prediction accuracy (Hair et al., 2017a). "R^2 values of 0.75, 0.50, or 0.25 for endogenous latent variables in the structural model can be described as substantial, moderate, or weak, respectively" (Hair et al., 2011, p. 145). Table 36 indicates that the R^2 values are between 0.321 and 0.619, which are accepted with small and moderate predictive accuracy.

Table 36: R^2 Value

Constructs	R Square
behaviour	0.384
intention	0.619
attitude toward the behaviour	0.321
subjective norm	0.342
perceived behavioural control	0.594

6.7.5 Effect size f^2

Journal editors and reviewers increasingly encourage the f^2 effect size (Hair et al., 2017a). The f^2 assesses how the omitted exogenous construct affects the endogenous constructs' R^2 value (Hair et al., 2019; Wong, 2013). "The f^2 values for 0.02, 0.15, 0.35 respectively represent small, medium, and large effects (Cohen, 1988) of the exogenous latent variable, and the effect size values of less than 0.02 indicate that there is no effect" (Hair et al., 2017a, p. 201).

Table 37 suggests that omitting subjective norm has a very weak effect on the intention, with f^2 far less than 0.02. Attitude toward the behaviour and moral norm both have small effects on intention. All beliefs have large effects on attitude toward the behaviour, with f^2 larger than 0.35. Perceived behavioural control has a moderate effect on intention.

Table 37: Effect Size f^2

	behaviour	intention	attitude toward the behaviour	behavioural beliefs	subjective norm	normative beliefs	perceived behavioural control	control beliefs	moral norm	actual control	Moderating Effect 1
behaviour										0.344	0.061
intention	0.357				0.004		0.169		0.127		
attitude toward the behaviour		0.07		0.472							
behavioural beliefs											
subjective norm						0.52					
normative beliefs											
perceived behavioural control								1.463			
control beliefs											
moral norm											
actual control											
Moderating Effect 1											

6.7.6 Blindfolding and predictive relevance Q^2

Unlike R^2, which reflects the model's predictive power within the sample (Sarstedt et al., 2014), Q^2 indicates the model's out-of-sample predictive power or predictive relevance (Hair et al., 2017a). "Q^2 values larger than zero for a specific reflective variable indicate the path model's predictive relevance for a particular dependent construct" (Hair et al., 2017a, p. 202). In table 38, "SSO shows the sum of the squared observations, SSE the sum of squared prediction errors, and the last column shows the final value Q2" (Hair et al., 2017a, p. 217). Table 38 shows that the Q^2 values of all endogenous constructs are significantly greater than zero. As a result, it demonstrates the model's predictive power regarding the endogenous latent variables.

Table 38: Q^2

Constructs	SSO	SSE	Q^2 (=1-SSE/SSO)
behaviour	1152	869.152	0.246
intention	576	291.239	0.494
attitude toward the behaviour	480	371.282	0.226
behavioural beliefs	1536	1536	
subjective norm	384	278.65	0.274
normative beliefs	480	480	
perceived behavioural control	384	247.145	0.356
control beliefs	1152	1152	
moral norm	384	384	
Moderating Effect 1	96	96	
actual control	864	864	

6.7.7 effect size q^2

The calculation of the q^2 effect size allows the assessment of the relative influence of one construct in terms of its predictive relevance (Sarstedt et al., 2014). The q^2 must be calculated manually by the researcher because they are not provided by SmartPLS software (Hair et al., 2017a). "Values of 0.02, 0.15, and 0.35 indicate that an exogenous construct has a small, medium, or large predictive relevance respectively for a certain endogenous construct" (Hair et al., 2017a, p. 208). Table 39 shows the q^2 results. According to this, both normative and control beliefs have largely predictive relevance to the subjective norm and perceived behavioural control, respectively. The rest exogenous variables have medium impacts on

their corresponding endogenous variables except subjective norm, which has very small predictive relevance to intention.

Table 39: q^2

	behaviour	intention	attitude toward the behaviour	subjective norm	perceived behavioural control
intention	0.326				
attitude toward the behaviour		0.040			
behavioural belief			0.292		
subjective norm		0.002			
normative belief				0.377	
perceived behavioural control		0.101			
control belief					0.553
moral norm		0.075			

6.8 Moderator

6.8.1 Moderator in this research

Moderation occurs when an independent variable's direct influence on a dependent variable is altered or changed as a result of a third variable (Collier, 2020). The moderator can alter the strength or even the direction of a relationship between two constructs in the model (Hair et al., 2017a). The researcher should make a priori hypotheses about moderation links and test them specifically (Hair et al., 2017a). In this research, the actual control is assumed to be a moderator between intention and behaviour (see Figure 5).

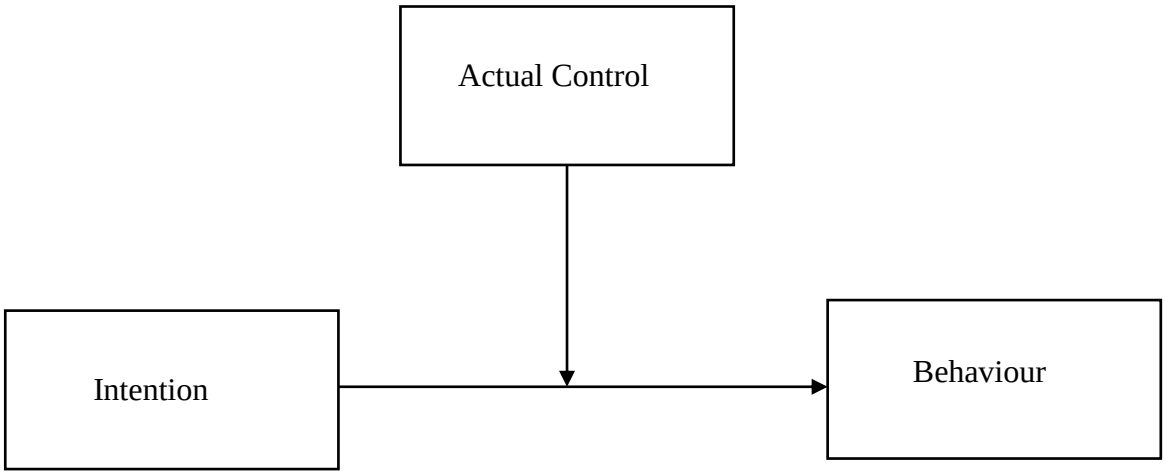

Figure 5: Moderating Relationship in This Research (conceptual model)

6.8.2 Moderation analysis

Criteria for evaluating measurement and structural models also apply to moderator models (Hair et al., 2017a). When evaluating reflective measurement models, the moderator variable must satisfy all relevant criteria for internal consistency, reliability, convergent validity, and discriminant validity (Hair et al., 2017a). Section 6.6 has shown the moderator's validity and reliability.

In order to detect moderating effects, it is necessary to form a product term (interaction term) of intention and actual control to assess their interaction. As the relationship between intention and behaviour is moderated by actual control, it is necessary to see how the interaction of intention and actual control influences behaviour. Different methods can test the moderating effect (Hair et al., 2017a). This research applies the two-stage approach to create the interaction term because the moderator is a reflective model. The objective is to determine whether or not the actual control has a substantial impact on the relationship between intention and behaviour.

The moderating analysis in PLS-SEM shows that the interaction term positively affects behaviour with a positive value of 0.177. In contrast, the simple effect of intention on behaviour is 0.445. Jointly, these results show that the relationship between intention and behaviour is 0.445 for an average level of actual control. The link between intention and behaviour becomes stronger as the actual control levels rise. For a higher level of actual

control, the relationship between intention and behaviour increases by the size of the interaction term. The p-value of moderating effect is 0.017 ($p<0.05$). Therefore, the moderating effect is significant. The bias-corrected bootstrap confidence interval of the interaction term's effect is [0.012, 0.307]. The conclusion is that the effect is significant because the confidence interval for the interaction term's effect does not encompass zero.

The last hypothesis (H9) predicts the actual control moderates the effect of the intention on the behaviour of engaging in sustainability accounting. This hypothesis is supported because the interaction term is positively related to the behaviour (0.177), and the p-value is less than the significance level of 0.05 (p-value = 0.017).

The final step handles the moderator's f^2 effect size to ensure that the results are completely represented. Kenny (2018) suggests that the realistic effect size for moderators might be 0.005, 0.01, and 0.025 for small, medium, and large. In this research, the f^2 impact size of the interaction term in this research is 0.061, which shows a large effect.

6.9 Chapter summary

This chapter shows the survey data results. The demographic information shows the diverse background of questionnaire respondents. The PLS-SEM analysis indicates the measurement models in this research are both valid and reliable. Based on this, the structural model is analysed with hypotheses tests. The results indicate that other hypotheses are all supported apart from the relationship between subjective norm and intention.

Chapter 7 Discussion

7.1 Chapter overview

This chapter deeply analyses and discusses the results shown in chapter 6. Every construct and relationship in the theory of planned behaviour is discussed in the context of this research to reveal the information behind the statistics.

7.2 Beliefs

The results in Chapter 6 show that behavioural beliefs, normative beliefs, and control beliefs are highly connected to attitude toward the behaviour, subjective norm, and perceived behavioural control, respectively. These results verify the hypotheses in TPB that beliefs contribute to overall attitude toward the behaviour, subjective norm, and perceived behavioural control (Fishbein and Ajzen, 2010; Ajzen, 2020). In addition, the positive relationship also indicates that behavioural beliefs, normative beliefs, and control beliefs promote the attitude toward the behaviour, subjective norm, and perceived behavioural control, respectively (Ajzen, 1991; Fishbein and Ajzen, 2010). In other words, the more strongly these beliefs, the greater the expected contribution to the overall attitude toward the behaviour, subjective norm, and behavioural control, respectively (Ajzen, 1991; Fishbein and Ajzen, 2010). This relationship has been supported by the meta-analysis study of Armitage and Conner (2001). Specifically in this research's situation, accountants who believe in the benefits of engaging in sustainability accounting are more likely to have a favourable attitude toward engaging in sustainability accounting. The more important persons accountants are motivated to comply with think they should engage in sustainability accounting, the more likely accountants perceive social pressure to engage in sustainability accounting. Accountants who believe there are more facilitators than barriers are likely to develop a sense of capability to engage in sustainability accounting. Therefore, accountants' beliefs play an important role in shaping their corresponding attitudes toward the behaviour, subjective norm, and perceived behavioural control.

7.3 Attitude toward the behaviour

The results in Chapter 6 indicate that there is a positive and significant relationship between attitude toward the behaviour and intention. This result demonstrates the general rule in TPB that the more favourable the attitude toward the behaviour, the stronger the intention to perform the behaviour (Fishbein and Ajzen, 2010). But the effect is somewhat lower than that of both the moral norm and perceived behavioural control in relation to intention because its path coefficient is lower than those two. Thus, the importance is less than perceived behavioural control and moral norm. In addition, its mean value is also less than perceived behavioural control and moral norm. However, the significant relationship between attitude toward the behaviour and intention is consistent with the research of Bebbington et al. (1994), which also stresses the important role of attitude in encouraging accountants to engage in sustainability accounting. Bebbington et al. (1994) also suggest that accountants have the prerequisite attitudes to be involved in sustainability accounting. Contrary to the research in Ghana by Kwakye et al. (2018), accountants' attitudes toward the behaviour do not have a significant relationship with intention. As for the effect of attitude toward the behaviour being somewhat lower than perceived behavioural control, the research of Barbera and Ajzen (2020) may explain this. They point out that the greater perceived behavioural control tends to raise the relative importance of attitude in predicting the intention.

7.4 Subjective norm

The result in Chapter 6 indicates that there is not a significant relationship between subjective norm and intention. This is contrary to the result of Kwakye et al. (2018) that accountants' subjective norm has a significant relationship with their intention. In addition, Bebbington et al. (1994) suggest that social norms can support forming sustainability-related behavioural intentions. The insignificance of the subjective norm related to the intention reflected that the relative importance of attitude, subjective norm, and perceived behavioural control varied across different situations (Ajzen, 1991). The insignificance relationship between subjective norm and intention can be due to the interactions between subjective norm and perceived behavioural control revealed by Barbera and Ajzen (2020) and Ajzen (1991). They indicate that perceived behavioural control tends to reduce the importance of the subjective norm. This weak association between subjective norm and intention may also confirm that accountants could play a role in sustainability accounting is not well accepted by persons important to accountants (Wilmshurst and Frost, 2001). Companies may hold considerably less support for accountants taking an active role in environmental practice and not consider

accountants to be initiators and see them as having responsibilities to engage in sustainability accounting (Davey and Coombes, 1996).

7.5 Perceived behavioural control

The previous analysis in Chapter 6 indicates that there is a significant and positive relationship between perceived behavioural control and intention. This result demonstrates the general rule in TPB that the greater the perceived behavioural control, the stronger the intention to perform the behaviour (Fishbein and Ajzen, 2010). Therefore, the greater the perceived behavioural control, the higher the accountants' intention to participate in sustainability accounting. When accountants believe they have resources and can overcome difficulties, they will have much more intention to engage in sustainability. Because the path coefficient value is big and significant, it is a key determinant of intention. This result is consistent with the result of Kwakye et al. (2018) that perceived control has a significant relationship with accountants' intention to engage in sustainability accounting. As Davey and Coombes (1996) indicate that if accountants have the ability to proceed the sustainability accounting, they will have the intention to engage in sustainability accounting.

7.6 Moral norm

There is a significant relationship between the moral norm and intention. Moral norm also has the most significant direct effect on intention among these four determinants of intention because of the highest path coefficient. This result shows that accountants' moral responsibility plays a very important role in accountants' engagement in sustainability accounting. It reflects the important role ethical motivation should play for accountants to address sustainability issues (Schaltegger and Burritt, 2010). It also shows accountants have a strong moral duty to achieve sustainability (Gray, 2002b). This reflects that accounting tends to be a social and moral practice (Carnegie et al., 2021). Since this determinant is an additional construct of the TPB, it is surprising to see this result to some extent.

7.7 Intention and behaviour

The intention has a significant and positive relationship with accountants' current engagement in sustainability accounting. The greater the intention is, the more likely it is that

accountants will engage in sustainability accounting. This result demonstrates the general rule in TPB that the greater the intention, the more likely it is that the behaviour is performed (Fishbein and Ajzen, 2010). This result is also supported by Schaltegger and Zvezdov (2015) that the active intention to engage in sustainability accounting contributes to proactive behaviour. On the other side, this result also demonstrates the view of Wilmshurst and Frost (2001) that the lack of intention led to the low involvement of accountants in sustainability accounting. Accountants' reluctance to embrace sustainability accounting contributes to inactive engagement in sustainability accounting and makes them not work actively with other departments to find solutions to solve sustainability problems (Ascani et al., 2021).

7.8 Actual control

The significant moderating effect supports Ajzen (2020, p. 316)'s view that "actual control over a behaviour is said to moderate the effect of intention on behaviour such that intentions are likely to be followed by the performance of the behaviour to the extent that actual control is high". Therefore, the greater the presence of facilitators and the more accountants are able to overcome barriers, the more likely they will engage in sustainability accounting. However, the qualitative research of Renzi (2008) argues that actual control factors can not explain differences in online teaching model adoption.

7.9 Chapter summary

This chapter shows that some constructs and relationships in the model are supported by literature, whereas some are not. They offer interesting points of this research.

Chapter 8 Second Stage: Qualitative Research

8.1 Chapter overview

The first stage of research indicates the results of the discussion of the hypotheses. However, they all need more empirical and recent data in practice to explore the explanations from a practical and realistic perspective from those who respond to the questionnaire. This chapter introduces the research design related to the second stage of research. It first presents the semi-structured interview as the method to achieve the aim of this research. Then this chapter introduces all the preparations before conducting the formal semi-structured interview, including the specific type of semi-structured interview, the interview guide design, the pilot interview, and the identification of interviewees. After which, the semi-structured interview conduction process is presented. Before the interview data analysis, the interview data is transcribed. The final two sections introduce the discussion of the interview data analysis method and procedure separately.

8.2 Aims of the second stage of research

The overall objective of this research is to investigate accountants' behaviour of engaging in sustainability accounting to promote their future involvement by identifying different factors influencing their engagement in sustainability accounting and understanding the practice in reality to promote their engagement in sustainability accounting. In order to identify different factors influencing accountants' engagement in sustainability accounting, the first research stage has detected the factors for accountants' engagement in sustainability accounting based on the theory of planned behaviour by answering the first three research questions by means of the survey, which provides a broad overview of the factors influencing accountants' behaviour of engaging in sustainability accounting. However, it shows little insight into the much more detailed, specific, and practical information from accountants' experience and practice of how to promote accountants' engagement in sustainability accounting. Thus, to understand the practice, in reality, to promote accountants' engagement in sustainability accounting by answering the fourth research question, this second research stage deepens and extends the understanding of accountants' engagement in sustainability accounting to capture their views, experience, suggestions, and expectations according to their current practice. Specifically, the first stage of research has mentioned the importance of establishing the TPB

at the beliefs level and shown that the beliefs significantly and positively influence their antecedents. As Fishbein and Ajzen (2010) point out, researchers can acquire most of the concrete information unique to a given behaviour and learn about the substantive considerations that guide people's decisions to perform the behaviour. More importantly, a richer understanding of the beliefs factor can be used to design effective behaviour change interventions (Fishbein and Ajzen, 2010). Therefore, this research stage first investigates the specific beliefs. Besides learning the explanation of important beliefs in current practice can inspire accountants' future engagement in sustainability accounting, it is also important to know the most important factor to the intention (moral norm), accountants' constructive suggestions from realistic practice and experience, and accountants' future expectations to inspire more potential future changes to promote accountants' engagement in sustainability accounting.

8.3 Qualitative research

While the quantitative findings obtained in the first step provide an investigation of the correlations between variables, a more thorough comprehension of the results is necessary. Therefore, qualitative research is adopted to complement and explain the issues that cannot be seen in quantitative research. Unlike quantitative research focusing on numbers and measures (Gibbs, 2007), qualitative research often places a greater emphasis on words rather than figures while collecting and analysing data (Bell et al., 2019; Saunders et al., 2019). Thus, qualitative data and outcomes might contribute to that knowledge by shedding insight into quantitative results occur and how they can be explained (Creswell and Plano Clark, 2018). Thus, qualitative research entails a more in-depth, extensive investigation with a smaller number of participants (Salmons, 2015).

8.4 Interview

8.4.1 Rationale for using the semi-structured interview

There are different types of qualitative research techniques to conduct qualitative research, such as interviews, focus groups, and observations (Bryman, 2016). This research adopts the interview. The interview is a guided, deliberate conversation between two or more persons (Sekaran and Bougie, 2020). Individuals may speak freely on a subject during an interview

(Creswell and Creswell, 2018) and pass their knowledge to the researcher via conversations (Boeije, 2010). Therefore, the interview provides the most direct, research-oriented interaction between the researcher and interviewees (Rubin and Rubin, 2005).

After deciding to conduct the interview, the next step is determining which type of interview is applied for this research. The qualitative interview has a variety of ways to be categorised (Qu and Dumay, 2011; Saunders et al., 2019). In general, they are classified as unstructured-interviews, semi-structured interviews, and structured interviews (Qu and Dumay, 2011). The structured interview is not adopted because, on the one hand, the structured interview asks the same questions and offers interviewees a fixed answer scope (Bryman, 2016); on the other hand, this type of interview is applied to collect quantifiable data (Saunders et al., 2019). The unstructured interview is not applied because questions emerge during the interview (Channuntapipat et al., 2019; Saunders et al., 2019). Additionally, the interviewee may lose focus on critical issues because the unstructured interview is not directed, and questions are not scheduled (Matsumoto et al., 2005).

In contrast to the structured and unstructured interviews, although the general interview guide instructs the semi-structured interview to keep consistency for each interview, it allows for changes in the sequence of questions (Saunders et al., 2019). Therefore, it has some flexibility to ask questions if significant issues emerge during the interview (Saunders et al., 2019). The flexibility also manifests in interviewers can communicate with interviewees if interviewers think they need to do so (Corbetta, 2003). Additionally, interviewers may maintain control of the interview and prevent it from deviating from the study subject during the semi-structured interview (Alshenqeeti, 2014). Moreover, throughout the semi-structured interview, the interviewer is not pleased with simple “yes” or “no” responses but rather with the interviewees’ views and deeper explanations (Kajornboon, 2005). Semi-structured interviews can not only be employed to understand “what” and “how” questions but also more “why” questions (Saunders et al., 2019). The semi-structured interview enables interviewees to share their experiences, and researchers can explore the meanings that interviewees assign to concepts and phrases (Meho, 2006). Therefore, the researcher can have a comprehensive conversation with interviewees and acquire interviewees’ various views, opinions, performances, and experiences (Meho, 2006). In this way, the interviewer can explore new knowledge that has not been explored before (Gray, 2004). In addition, the interviewer can ask any of the questions by employing terms that are similar from one

interviewee to another (Bryman, 2016). Interviewers can clarify questions to interviewees if they are unclear about them, or they can rephrase questions for interviews in case a misunderstanding leads to the data being invalid (Kajornboon, 2005). Apart from the above features, the semi-structured interview can reveal the concealed reality and aspects of human and organisational behaviour (Qu and Dumay, 2011), which is consistent with the context and the aim of the second stage of research. These reasons all fit the aim of this second stage of research.

8.4.2 Semi-structured interview conduction methods

Following the determination to conduct the semi-structured interview, the next step is to consider how the semi-structured interview can be carried out for this research. The semi-structured interview can be conducted in different methods (Cassell, 2015; Bell et al., 2019). When choosing the proper and feasible approaches, the researcher considers three perspectives: the reality the researcher has to face, the features of different semi-structured interview conduction methods, and the interviewees' situation.

The general and influential background the researcher has to face is the Covid-19 pandemic, which significantly changes and challenges commonly used face-to-face interview methods and the way people work and communicate. Because it was very important to keep safe and healthy for both the researcher and interviewees, the interviews have to be conducted online, a relatively new method of collecting data (Cole, 2017). Compared to the traditional face-to-face interview that can be conducted outside office hours in public places, conducting online interviews has another problem: fewer constraints on interviewees. Because the remote interview provides both time and space flexibility, the interviewees may be more reluctant to sacrifice their break to be interviewed, which means interviews have to be completed to a great extent during working hours. Furthermore, interviewees may work from home or in their offices. Therefore, the sound of the interview may also disturb other family members or staff. Due to the complexity of the researcher's and interviewees' situations, the researcher provided diverse online interview techniques for interviewees to choose from according to their concerns. This interviewee-friendly design also aims to increase the number of interviewees in case they decide not to participate in the interview due to the lack of suitable online interview methods. From different options, interviewees can make feasible and

reasonable choices based on their strengths and circumstances. The online interview methods are as follows:

- Email interview

Email interviewing gives a chance to access, in an interactive way, participants' thoughts, ideas, and recollections in their own words (Meho, 2006). It facilitates recording various tales that participants give to enrich the narratives of their experiences (Meho, 2006). It also enables participants to design their own experiences using their discourse and contact with the researcher (Meho, 2006). The email interview has many advantages that fit the researcher's and interviewees' situations. Before choosing this research method, the following issues are taken into consideration:

Firstly, the researcher is pressed for time, and the email interview can be time efficient. The email interview can reduce the transcribing cost (Meho, 2006). The interviewees type their responses via email for each interview question. Therefore, the email interview requires little editing and formatting work for the research before analysis (Meho, 2006). This also eliminates concerns associated with recording and transcribing, such as inaccuracy and participants' apprehension (Saunders et al., 2019). In addition, the email interview is an asynchronous electronic interview (Saunders et al., 2019). Thus, the email interview reduces the necessity for synchronised interview times (Meho, 2006). It enables the researcher to interview more than one participant at a time, irrespective of the location and time zone (Meho, 2006; O'Connor and Madge, 2017).

Secondly, it is considered that some interviewees may refuse to take part in the interviews because they may not consider themselves good at doing face-to-face interviews but are good writers. The e-mail enables to interview shy people or people who are not good at expressing themselves as effectively verbally as they can in writing (Metho, 2006).

Thirdly, for some interviewees, their working environments may not be convenient for them to have an audible interview with the researcher. Hence, the email interview provides a quiet interview environment for them.

Fourthly, considering some interviewees may not intend to show their faces to the researcher or take their visual anonymity very seriously, the email interview can protect their privacy.

Fifthly, staff in the company are usually too busy during the period the researcher conducts the interview. They may refuse to participate in the interviews because they cannot spare around one hour for a face-to-face online interview. In order to minimise the occurrence of this, the email interview is in the researcher's consideration because interviewees can respond to the interview questions at their convenience to their work-based schedules (James and Busher, 2012; O'Connor and Madge, 2017).

Sixthly, considering some office computers may have software installation restrictions, and some interviewees may not incline to install the online interview software, the email interview is very simple to operate (James and Busher, 2012). Especially in the UK, email is the dominant and most popular way of daily work. The email interview can conveniently and inexpensively generate high-quality data with a careful handle (Meho, 2006).

- Face-to-face online interview and online audio interview

Face-to-face online interviews and online audio interviews are provided for those who can spare approximately one hour for the interview, have software such as Skype, Zoom, and Google Meet to participate in the interviews online, or are more willing to communicate via speaking. Considering some interviewees may not like face-to-face communication even if they would like to talk, the online audio interview is also one of the options the researcher provides for them.

- Interview via social media

Considering some interviewees may like to use social media to deal with things outside of daily work, the research designs this alternative method for the remote interview. Interviewees can choose to use different social media, such as Facebook, Messenger, and WhatsApp.

- Other

To conduct an interviewee-friendly interview and increase the chance to inspire more interviewees, the researcher is also flexible with any other methods for the remote interview if interviewees suggest to the researcher as long as they would like to participate in the interviews.

8.5 Interview guide design

Regarding the characteristics of the semi-structured interview, this kind of interview should be started with a predetermined list of themes underpinned by some essential questions connected to the corresponding themes to guide the interview (Qu and Dumay, 2011; Saunders et al., 2019). Therefore, the interview guide has been established before undertaking the semi-structured interview to achieve the research aims and address the research questions (see Interview Guide in the Appendix). The interview guide contains a series of themes covered during the interview to lead the conversation and ensure that every interview refers to a similar primary line of enquiry and that all the major topics are covered. However, in different situations, the flow of the conversation can be changed, the original themes can be omitted, some questions can be modified, and new themes and questions can emerge and develop from the interview interaction (Saunders et al., 2019). Therefore, if necessary, the questions and themes are continuously refined as each interview progresses during this semi-structured interview period.

This interview guide comprises three parts. The first part is the introduction which includes six aspects before the formal interview starts:

- researcher's self-introduction
- introducing the aims of the interview
- research ethics
- expected interview duration
- asking for the interview record permission (online face-to-face or online audio interview only)
- any questions before the interview starts

The second part is the major part of the interview guide containing four themes. The first theme is designed to have a basic understanding of the accountants and the general context of companies' sustainability. The second theme focuses on the accountants' perceptions of engaging in sustainability accounting. These questions are the main questions from Ajzen's instructions on using the theory of planned behaviour. However, unlike simply asking these questions, the researcher takes a further step to asking why questions to gain an in-depth understanding of the factors and the existence of relationships in the theory of planned behaviour. The third theme is to know how accountants are integrated into sustainability accounting in practice or under what circumstances they would like to engage in sustainability accounting, with the aim of learning experience from practice to inspire accountants' future engagement in sustainability accounting. The last theme proposes to discover the future development and expectations of accountants' engagement in sustainability accounting.

The third part of the interview guide is to end the interview. This part is mainly to find out if the interviewees would like to add anything to the previous interview questions and this topic.

8.6 Pilot interview

Two colleagues engaged in the pilot process. In the pilot process, colleagues gave feedback on the interview questions and helped the researcher simulate all the online interview processes. The researcher also gained experience and the opportunity to practice interview skills. Two language advisory staff were engaged in order to test the clarity and grammar of these questions. According to this, some questions were rephrased. Data from pilot interviews were not recorded and included in the interview data analysis.

8.7 Identifying interviewees for semi-structured interviews

Data collection commences with the identification of potential interviewees. The frame of interviewees is identified from the survey respondents who have expressed their willingness or intentions to take part in the second research and left their contact details. Firstly, the second research stage builds on the study's first stage. Therefore, these respondents can ensure the continuity of this research and serve the purpose of this research. Secondly, these respondents are familiar with this research because they already have some understanding of

this research through their involvement in the first stage of research. Thus, they can better understand the interview questions and be more focused on helping with the research topic. Thirdly, the potential interviewees and the researcher have established some rapport through the first stage of the research, which is beneficial for conducting the second research stage. As Meho (2006) points out, online connections that develop over longer time frames can become comfortable for the interviewee, and there may be a propensity toward self-disclosure beyond the scope of the interview topic(s). Fourthly, the first part of the online questionnaires has already collected demographic information on potential interviewees. Therefore, the sampling process is very targeted, and this information does not need to be collected a second time. However, the researcher did not use any sampling methods but sent invitations to all these persons because it was not sure how many potential interviewees could finally participate in the interview at the current amount.

8.8 Conducting semi-structured interviews

The semi-structured interview was carried out between January 2022 to March 2022. The interview invitations were first sent to survey respondents who had the potential willingness to engage in the follow-up research. After this step, reminders were sent three times to potential respondents who did not reply to the invitations to increase the number of interviewees. Initially, six respondents accepted to take part in the interview, but finally, one interviewee withdrew. Therefore, the final number of interviewees was five. No agreement is made on the appropriate number of participants for the interview (Beitin, 2012; Salmons, 2015). However, this number of interviewees satisfies the number of interviewees recommended by Creswell (1998) and Kvale (2018). They suggest at least five interviewees for the interview due to the time and resources available for the researcher.

Once the interviewees accepted the interview, they could receive their confirmation emails for the interviews. Finally, one interview was taken by a one-to-one, face-to-face online interview because this interviewee had the spare time to conduct it. However, other interviewees only accepted the email interviews because they had a significant workload in their daily work. Therefore, they were too busy to spare approximately one hour to be interviewed. They show that the researcher's considerations in adding the email interview as one of the semi-structured interview methods are reasonable, practical, and realistic. Therefore, giving potential interviewees more options to engage in the interview helps to

increase their willingness to participate in the interview because this prevents them from refusing to take part in the interview because interview methods do not fit their situations. However, no one chose the social media interview. This may be related to the work habits or their image, identity, and role as professional staff in the company.

During the whole interview process, different interviews were conducted at different progressions at the same time. The face-to-face online interview was conducted by Zoom for around fifty minutes. Notes were taken during the face-to-face online interview. The consent form and information sheet were all sent to the interviewee prior to the formal interview to save time in the formal interview. The researcher did not repeatedly ask for demographic information in the formal interview because this was already collected in Part A of the questionnaire, which was time-saving and convenient for both the researcher and interviewees. In order to avoid the possibility of rehearsed responses, the interviewee was not provided with detailed questions in advance but was given an overview of the research's objectives, which was to offer a chance for the interviewee to reflect on current events and conditions as well as their personal experiences.

Before the formal email interviews, consent forms and information sheets were also sent to the interviewees, and the demographic information was not repeatedly asked. The email interviews were conducted by sending a series of emails containing several questions. However, the situations also existed as James and Busher (2012) and Saunders et al. (2019) described that interviewees could be distracted by other demands on their time during an email interview, not feel pushed to answer, or were too busy to respond. Thus, the researcher sent reminders to these interviewees to deal with this problem.

8.9 Interview transcription

Once the interviews are completed, the next step is transcribing the interview data (Morris, 2015). The researcher transcribed and proofread each interview for further data analysis as soon as possible after each interview. The researcher recorded the face-to-face online interview and then transcribed it in Word. During the transcription, both the interviewer and the interviewee were distinguished, as suggested by Saunders et al. (2019). Furthermore, because the template analysis research emphasises the importance of data, the interview is transcribed verbatim (King and Brooks, 2017). The researcher does this transcription because

it is financially saving and not too time-consuming. More importantly, the researcher can familiarise the interview data, identify the gaps, and gauge where the research can improve (Ezzy, 2002). Another benefit of transcribing by the researcher is the researcher can also add comments to the material (Morris, 2015). The researcher transcribed the interview data very carefully. This is because accurate transcripts are crucial for assessing the interview data (Morris, 2015). Once the interview transcription is completed, it is often considered the research's rock-bottom empirical data (Birkmann and Kvale, 2018). In most circumstances, it is preferable to quote the exact words of interviewees (Morris, 2015).

The email interview does not need to transcribe because each interview has a continuous and visible text-based record built through its course on email (James and Busher, 2012). The interview transcripts are more likely to be correct because interviewees can review the contents during interviews, as they can scroll back and forth across the text (James and Busher, 2012). Misrepresentation of what is said during an interview, which sometimes happens during transcribing, does not occur here because participants are not required to wait a certain amount of time after interviews to confirm their recall (James and Busher, 2012). Additionally, since the interviewees in this study are very professional, their replies are formal, focused, and well-structured. Their writing is also very logical. The researcher only needs to integrate their responses into the Word files, adjust the format, and check the grammar and spelling.

8.10 Interview data analysis method

Choosing the most suitable analytical technique for the study is a critical component of qualitative research (Gibson and Hugh-Jones, 2012). In contrast to quantitative data analysis, qualitative data analysis has few well-established and commonly acknowledged rules (Bell et al., 2019; Lune and Berg, 2017). Qualitative data analysis includes different techniques, such as thematic analysis, grounded theory, and discourse analysis (Saunders, 2019). Though there are other qualitative data analysis techniques, thematic analysis and grounded theory are the two most often used qualitative data analysis techniques (Bell et al., 2019). However, this research does not adopt the grounded theory because it focuses on the development of the theory (Bell et al., 2019; Mills et al., 2014; Starks and Brown Trinidad, 2007). This is not consistent with the aim of this research.

“Thematic analysis is a systematic approach to the analysis of qualitative data that involves identifying themes or patterns of cultural meaning; coding and classifying data, usually textual, according to themes; and interpreting the resulting thematic structures by seeking commonalities, relationships, overarching patterns, theoretical constructs, or explanatory principles” (Mills et al., 2010, p. 926). Thematic analysis is not exclusive to any one style of study but is used by researchers in a wide variety of topics and disciplines (Mills et al., 2010). Thematic analysis is a broad term that refers to a method for organising and analysing qualitative data that encompasses a variety of various styles or forms (King and Brooks, 2017). Therefore, it is not a particular approach but a broad category of methods for qualitative analysis (Brooks et al., 2015). A feature that sets it apart from other textual methods is its application of themes because not all forms of qualitative textual analysis are thematic, such as discourse analysis and conversation analysis (Wetherell et al., 2001). A theme encapsulates an essential aspect of the data with respect to the research question and signifies some degree of structured response or significance within the data set (Braun and Clarke, 2006). All kinds of thematic analysis include two connected basic processes: developing themes that characterise major qualities of the data and structuring them in some way that demonstrates conceptual connections between the themes (King and Brooks, 2017).

The distinctions between thematic analysis approaches are the result of variances in how themes are identified and/or how structures are organised (King and Brooks, 2017). Template analysis originates as a generic method within the broader tradition of thematic analysis (King and Brooks, 2017). It emphasises the application of hierarchical coding but balances the relatively high structure and flexibility of the particular research (Brooks et al., 2015).

This research adopts the template analysis for the following reasons:

Firstly, template analysis is a generic method of data analysis; that is, it is not bound to a particular philosophical perspective, as some forms of thematic analysis are incorporated within the specific methodology and philosophical assumptions (Brooks et al., 2015). Therefore, this feature is also suitable for this research’s pragmatism philosophy position.

Secondly, the template analysis can be used for the qualitative part of mixed methods research, which incorporates both quantitative and qualitative methodologies (King and Brooks, 2017). When the survey component of a mixed methods study makes use of certain

theoretical concepts, they might also influence the qualitative analysis through the way a priori topics are constructed (King and Brooks, 2017). Therefore, these features are consistent with the research design.

Thirdly, the position of template analysis in the induction-deduction balance is not fixed; it varies depending on the methodological approaches chosen (Kind and Brooks, 2017). It is not the most strongly inductive and most strongly deductive end; just like in reality, relatively few qualitative data analysis methods are purely inductive (King and Brooks, 2017). This fits the discussion of the abduction stands discussed in section 4.4.

Fourthly, template analysis is not constrained by the research design it may employ, such as cross-sectional research (King and Brooks, 2017). In this research, both the survey and the interviews are cross-sectional research.

Fifthly, the template analysis normally produces an initial version of the template based on the subset data (Brooks et al., 2015). Additionally, the template analysis produces themes at the initial template stage to guide further coding and template development procedure. Template analysis stresses the necessity of being able to refer back to the data to support the themes the researcher builds and arranges (King and Brooks, 2017). Using a priori themes enables the researcher to tailor the analysis to the assessment criteria for a specific project while allowing for the capture of unforeseen issues through emergent themes (King and Brooks, 2017). Thus, the template analysis fits the researcher's situation of analysing the data while doing the interview.

8.11 Interview data analysis procedure

In this research, data analysis is carried out at the same time as the data collection because it is impractical to wait until data collection is fully completed before beginning data analysis with a tight time. This data analysis follows the steps noted by Saunders et al. (2019): familiarisation with the raw data, preliminary coding, clustering codes, production of an initial coding template, development of this template, and application of the final template.

Central to the procedure is the creation of a coding template, often based on a subset of data, which is subsequently applied to further data and altered as necessary (Brooks et al., 2015).

Therefore, the material for preliminary coding is the content of the first interview. The researcher initially codes the first interview transcript and attempts to create the first draft template (King, 2004). The template analysis allows beginning with some prior themes that are likely to be relevant to the data analysis (Brooks et al., 2015; Waring and Wainwright, 2008). Brooks and King (2014) suggest that template analysis suits well to the research with theoretical concerns that need to be incorporated into the analysis. Therefore, the coding is shaped by the themes preidentified in the interview guide and the hierarchical theoretical structure of TPB. This aims to correspond interviewees' answers with the concepts of variables in the TPB and the predefined themes. Then the same contents are clustered in the same theme. However, these themes are usually tentative because they may be redefined or eliminated if they cannot contribute to the current analysis.

After coding the first interview data, the coding process for the remaining interviews repeats the entire process of coding the first interview. The researcher takes great care to ensure that subsequent analysis is neither skewed nor unnecessarily confined by the original template design. In this process, specifically, as the following interviews are continually added to the data analysis, the relationships between themes are gradually established within and between groupings (Brooks et al., 2015). At the same time, the template is continually refined and developed until the finalised template can comprehensively and richly represent the researcher's interpretation of data, cover the clear relevance to the research, and need minimal modifications.

Finally, after continuously iteratively analysing the interview data, the first theme (General context of the company's engagement in sustainability) in the questionnaire is removed from the template because it is only to obtain some background and general information. The interview data from theme 2 (Perceptions of engaging in sustainability accounting) and theme 3 (How are accountants integrated into the sustainability process?) are divided into two parts. One part relates to the TPB, which matches the interview data to the corresponding structure in TPB (behavioural beliefs, normative beliefs, control beliefs, and moral norm). The other part independently shows accountants' suggestions for their engagement in sustainability accounting. The last theme (Future Expectations) in the interview guide is retained because it also provides some directions for accountants' future engagement in sustainability accounting. These themes form the first hierarchy (see the left column in Table 40) of the template showing the more general and descriptive codes in the template because they all revolve

around the aim to deepen the understanding related to the survey and promote the accountants' engagement in sustainability accounting. The right-hand column in Table 40 shows the codes in the second hierarchy in the template. "costs" satisfy the definition of behavioural beliefs indicated by Ajzen (2020) because this code shows the outcome of engaging in sustainability accounting. "customers and suppliers", "daughter", "board and owners", and "employees" match the definition of normative beliefs indicated by Fishbein and Ajzen (2010) because they are the persons or groups who can influence their engagement in sustainability accounting. "standards", "time", and "resources" match the definition of control beliefs indicated by Ajzen (1991) because they are specific inhibitors for accountants to engage in sustainability accounting. "Information", "changing mindsets", and "education" reflect three specific aspects of accountants' suggestions for engaging in sustainability accounting. Moral norm is an extended factor for TPB Moral norm and future expectations do not show obvious specific aspects under them. Thus, they do not have the codes in the second hierarchy.

After the whole process, the final satisfactory template version is created (see Table 40). As the transcription is not a big workload, the researcher uses Word to analyse the data rather than using Software such as Nvivo.

Table 40: Template

Behavioural beliefs	Costs
Normative beliefs	Customers and suppliers
	Daughter
	Board and owners
	Employees
Control beliefs	Standards
	Time
	Resources
Moral norm	
Accountants' suggestions	Information
	Changing mindsets
	Education
Future expectations	

8.12 Chapter summary

This research stage proposes giving more in-depth survey results and promoting the future engagement of accountants in sustainability accounting. The semi-structured interview is chosen as a proper method to achieve this aim. In order to conduct a good interview, the interview guide is first designed, followed by the pilot of the interview. The interviewees are identified as those who have the potential intention to participate in the follow-up interview. Finally, five interviewees participate in the semi-structured interview, with four email interviews and one face-to-face online interview. In order to analyse these interviews, the interview data is transcribed, and the template analysis method and procedure are applied to analyse the data because it meets the research objectives and research design.

Chapter 9 Interview Results

9.1 Chapter overview

The interview data analysis is based on the template analysis discussed in chapter 8. A typical feature of this approach is the use of themes. Therefore, the structure of this chapter follows the themes derived from the theory of planned behaviour and interviews. Specifically, this chapter first focuses on the findings according to the theory of planned behaviour and then detects accountants' suggestions for engagement in sustainability accounting and their expectations to inspire more accountants' engagement in sustainability accounting in the future.

9.2 Demographic information of interviewees

All the interviewees are respondents from the questionnaire stage. A total of five interviewees are interviewed. Their demographic information is also acquired from the first part of the questionnaire. Because of keeping anonymity and confidentiality, identification information is concealed, but Table 41 shows a brief profile of the interviewees, showing their status and the nature of their organisations.

Table 41: Demographic Information of Interviewees

No.	Interviewees	Companies	Job Title	Length of Working	Education Level	Accounting Certificate	Company Size	Sustainability Training Experience
1	I-A	C-A	Financial Controller	10 years or more	Other	None	0-250	Current Company
2	I-B	C-B	Financial Director	1-3 years	Master's Degree	ICAEW	0-250	None
3	I-C	C-C	Financial Director	10 years or more	Bachelor's Degree	ICAEW	0-250	None
4	I-D	C-D	Financial Director	10 years or more	Other	ACCA	More than 250	None
5	I-E	C-E	Financial Controller	4-6 years	Other	Other	0-250	None

9.3 Semi-structured interview results

9.3.1 Behavioural beliefs

9.3.1.1 Costs

In the interviews, the issues of costs were the most mentioned. Most interviewees were unfavourable of engaging in sustainability accounting because of the cost burden for the company to survive.

Interviewees pointed out that they were facing enormous cost pressures of the increasing cost, which forced them to make efforts to reduce any extra costs.

> "Whilst that's not small, the pressure on our resources to maintain profitability is immense. Inflation is now a real concern, and we are seeing large increases in certain of our material costs. Coupled with this, we have a workforce that has been traditionally low-paid, and we have had to give pay increases to simply to stop them from leaving and going to our competitors. In this environment, we are constantly having to go back to unwilling customers to ask for price increases from them in order to maintain our profitability and remain a viable company". (I-D, C-D)

In this background, saving costs became a priority choice. Some sustainability activities were implemented because they were cost-saving.

> "Some things are quick and easy to achieve, for example, we changed all our factory lighting to LED which significantly saved on electricity. The associated cost saving was easy to measure based on the number of lights and the differential in wattage. Cost savings were easily calculated, and a fast payback was proven, which got the CAPEX approved. Other 'obvious and easy' projects are those that are affordable and where investment will happen anyway, but the eco-friendly option saves the most money. Electric cars, though more expensive, save significant amounts on the cost of fuel and are highly tax-efficient. We needed new air compressors, and again the tax incentives to get highly efficient

compressor replacements made this an easy decision. In these cases, the capital cost was below £50k, and the spend would be occurred with or without environmental considerations". (I-D, C-D)

In addition, this interviewee also pointed out the cost savings were only in the early stage.

"But after taking the low-hanging fruit, this gets more and more difficult (and costly). We have put LED lighting in the factory and are looking at more efficient compressors, etc., but it gets difficult beyond the obvious and easy things, and progress grinds to a halt". (I-D, C-D)

In addition, this interviewee also pointed out that although cost saving was a benefit, responding to sustainability issues also had the initial cash outlay disadvantage.

"The main disadvantage is that of initial cash outlay. The low-hanging fruit is the LED lighting, cars, etc. We have to purchase and maintain certain assets with a given cost anyway, so making sustainable choices where there is a clear need to invest anyway makes these decisions easy". (I-D, C-D)

"Beyond these things, however, you get into some serious costs and longer payback periods. It is difficult not to take a short-term view when the cycles in which financial performance is measured are monthly or annual. As an example, we are looking at a project to put solar panels all over our factory roof areas. The green solar energy created would be fed back into the grid, and we would get cheaper electric because of this. The cost of the hardware, however, would be in excess of £1m, which is not an easy thing to swallow. We could, no doubt, get funding for this project, but with a payback of 30 years +, it is not so attractive, especially when you weigh up the risks to a project like this over such a long timeframe. This is just one measure that would help in carbon reduction, but it is a difficult and costly decision to make and to become carbon neutral, there would be many more projects to take on that all have similar cost/payback/risk profiles". (I-D, C-D)

Another interviewee also stressed the cost pressure forced them to make some changes.

> "It's especially that be forced to adopt because of energy prices going up. So the sustainability aspects that we face are internal costs going up. And that's what we're trying to save resources using here, such as light energy, heat, lights, power".
> (I-C, C-C)

Some interviewees also explained similarly to the above that they took action only if there were cost savings.

> "We do the things that we believe are right for C-E to do without incurring a large cost that has to get passed on somewhere". (I-E, C-E)

However, one interviewee gave a completely different opinion on the cost.

> "Companies have to evolve ecologically, and we don't consider the cost implementation that dramatic a difference……We decided to give ourselves a 10% leeway and are willing to contribute that towards helping the environment…… We have cash reserves, and the adjustments that we take in-house relating to our kind of business wouldn't have too much of a financial impact upon us". (I-A, C-A)

9.3.2 Normative beliefs

9.3.2.1 Customers and suppliers

Most of the interviewees also indicated that there was a significant influence from customers and suppliers. Interviewees also gave more detailed information on the important role of customers and suppliers in their engagement in sustainability accounting.

One interviewee pointed out that engaging in sustainability accounting was important for maintaining cooperative relationships with customers and suppliers.

> "There is a lot of 'corporate requirement' to report on this topic. So customers and suppliers need to tick the box. They might not engage with us otherwise". (I-B, C-B)

Another interviewee also reflected on the similar influence from customers in a more detailed way.

> "Some insist on us partnering with an entity called Ecovadis (which is a quality measuring platform). Ecovadis gives us a score based on our documentation for areas that include ethics, environment, sustainability, etc. As a matter of interest, we currently score Silver, which to my knowledge, is higher than all our major competitors. Without a satisfactory Ecovadis rating, we would not be on their list of suppliers or able to tender for their business". (I-D, C-D)

Different from the pressures from customers' or suppliers' evaluation of sustainability to companies, another interviewee pointed out customers' preference for sustainable products.

> "The other thing is that some of our customers ask for environmental products that we make customise to our customers and projects. And increasingly, customers are asking for sustainable products". (I-C, C-C)

However, this interviewee also revealed a harsh reality, indicating the negative impact of using environmental products and the gap between ideal and reality.

> "We got issues whereby we use quite a lot of plastic sheet material. And recycled plastic sheet material is 20 times the cost of virgin material. Customers won't wear that cost change. And, therefore, we don't use that material because customers won't pay for it". (I-C, C-C)

Although another interviewee also pointed out customers' influence on their engagement in sustainability accounting, the impacts and actions seemed very passive. This interviewee said:

> "It will only be when our customers demand that we can evidence an ESG policy that we will formally adopt a form of reporting and evaluation. This is because it

> will obviously incur a cost to the company of potentially another employee to be able to fulfil this function……You never know when your customers may start to require proof that they are dealing with a company that takes sustainability accounting seriously, i.e., in the form of policies or statistics. At some stage, I am sure one or more of our customers will request such evidence". (I-E, C-E)

9.3.2.2 Daughter

A very special case was that, unlike the impact from the business-related persons mentioned above, an interviewee's daughter greatly influenced this interviewee. This is also not mentioned in previous literature.

> "My daughter studied Environmental Science at the University of York, so her doing this has certainly broadened my knowledge of this subject and has made me aware of how much I can do to improve as an individual running a business…… I've learned a lot through my daughter whilst she's been studying the subject and that even as a small business, we may have such a profound and positive impact doing our bit going forward". (I-A, C-A)

9.3.2.3 Boards and owners

Some interviewees showed the different influences from boards to sustainability accounting.

One interviewee indicated that the board focused on sustainability issues.

> "Increasingly, shareholders are interested in the impact on the environment of business activities as well as social and ethical issues……Sustainability is discussed qualitatively in board meetings" because "There is increasing news of its importance". (I-B, C-B)

In contrast, another interviewee said that the board centrally focused on profits.

> "The company consists of several individuals, all with different goals and perspectives. The owners will look at cost vs. benefit, and if a project doesn't

> make financial sense, then it will be unattractive to them…… Sustainability is obviously desirable, but only works for them if it makes good financial sense within the organisation and does not put the business at risk (e.g., by overstretching cash flow)". (I-D, C-D)

9.3.2.4 Employees

Interviewees also revealed the different degrees of influence from employees.

One interviewee's response showed that employees had already determined some sustainability responsibilities.

> "Our employees already dictate part of our ESG responsibilities. They are keen that they work for a company that considers such measures". (I-E, C-E)

This interviewee further explained the reason for employees' interest in sustainability.

> "Employees from a recruitment and retention perspective. Professional bodies from both a CPD point of view for me and in line with influences of the time". (I-E, C-E)

I-E also revealed that employees influenced their engagement in sustainability accounting through different channels.

> "By talking to us, by writing articles, by bringing this point up at annual company meetings". (I-E, C-E)

However, another interviewee indicated that although employees tended to be more interested in sustainability, the influence was still small.

> "Employees are increasingly interested. But we have a small employee base, and it's probably not yet a basis for their choice of the employer". (I-B, C-B)

9.3.3 Control beliefs

9.3.3.1 Standards

Most of the interviewees mentioned the influence of the lack of legislation from different perspectives.

An interviewee pointed out that no uniform standards wasted time for the company.

> "There is no set standard for accounting on sustainability……There isn't a consistent standard for reporting, so it's taking up a lot of time for businesses who do not have the resource to look at it". (I-B, C-B)

This interviewee also pointed out that no uniform standards could cause the whitewashed information.

> "……a lot of sustainability is not 'standardised' so businesses can basically say what sounds good!". (I-B, C-B)

The interviewee also pointed out the standards were not complete enough to reflect the companies' efforts.

> "The current reporting standards are not 'absolute', and therefore, it is all about how an organisation is reducing its footprint rather than looking at its overall activity. But just because it's a hard topic doesn't mean we shouldn't engage with it……but we've already done that, so trying to put forward additional measurements for reduction to our footprint doesn't take account of what we have already done". (I-B, C-B)

Another interviewee pointed out the accuracy problem.

> "Reporting may not always be accurate as there are no defined standards".
> (I-E, C-E)

9.3.3.2 Time

Interviewees also pointed out the time shortage problems.

An interviewee showed that:

> "What actually happens in my experience is that people don't have the time for this". (I-D, C-D)

Another interviewee explained the reason for the time shortage was the survival priority.

> "The Company is an SME and as such does not have much time to devote to the subject in its own right. The company would consider that day-to-day business running the first priority". (I-B, C-B)

I-A explained from the measuring perspective.

> "Measuring the data can be a little time-consuming". (I-A, C-A)

9.3.3.3 Resources

Both SMEs and large companies mentioned the lack of resources.

> "Small companies don't know what's involved, and they haven't got the skills to measure whereas large companies have probably gotten more resource".
> (I-E, C-E)

> "We do not have the internal resource to report ahead of being required to do so…… The business has little resource to devote actually measuring new initiatives such as Net Zero, but it does try to consider its broad environmental impact……we do not have a dedicated HR or IT specialist, let alone a Sustainability specialise".
> (I-B, C-B)

In a large company, this problem also existed.

> "The hard truth, therefore, is that to take sustainability seriously it needs resources, dedicated individuals with a budget to effect the kind of positive changes that are needed to be able to positively report on sustainability issues…… Sustainability is a good thing, no one would argue otherwise, but finding time to approach the subject and take real action when you have so much else to do is never at the top of anyone's priority list in an organisation such as this, there simply isn't the spare resource to have anyone dedicated to it - as you would in a large organisation".
> (I-D, C-D)

9.3.4 Moral norm

Although interviewees expressed their awareness of moral obligation, their views were slightly different.

One interviewee expressed the company's support for moral obligation.

> "I 100% think there's a moral obligation to undertake sustainability accounting. We all have to be responsible for ensuring that further generations have an environment which flourishes for generations to come. The more information that we gather, the more we have an obligation to implement the information into the daily running of our business". (I-A, C-A)

> "We take sustainability very seriously (even as a smaller business), as we believe it's everyone's responsibility to protect the world and environment for the younger generation". (I-A, C-A)

Some interviewees also recognised the importance of moral obligation.

> "That's a strong word! I think we all have a moral obligation to see that the planet is habitable for our children's children". (I-B, C-B)

> "Personally, it is an area that more and more is being written and heard about, and I would lean on the side that would encourage such accounting". (I-E, C-E)

However, although the moral obligation was realised and committed, some interviewees gave more realistic replies.

> "There's more, but yes, there's no obligation there without someone paying us to do it". (I-C, C-C)

> "I have no real comment to make on moral obligation; this is a concept more akin to an individual than a corporate entity". (I-D, C-D)

9.4 Accountants' suggestions

9.4.1 Information

Some interviewees said they needed more information and guidance to instruct their practice.

> "Possibly through more information provided by governing bodies to small businesses……and I think being given information specifically to our industry would help too". (I-A, C-A)

> "It would be useful to have a guide for SMEs to use as a tool to follow…… The tool could be in the form of checklists or apps that help provide some direction". (I-B, C-B)

9.4.2 Changing mindsets

Some interviewees pointed out the importance of changing the way of thinking about development. Companies should free themselves from the completely reckless pursuit of profits and achieve profits in sustainable development conditions.

> "We have to change our mentality that running a business is not only about profit for the business but to grow and benefit the planet plus our people within the

company. We have to be more accountable and aware within our supply chains of environmental issues and deal with like-minded companies". (I-A, C-A)

"Accountants will never be able to lose sight of achieving profitability, after all, no organisation is viable unless it achieves that, but there will be a shift to achieving (maybe less) profitability under specific environmental and social conditions". (I-D, C-D)

9.4.3 Education

Some interviewees pointed out the importance of knowledge and the role of education in the acquisition of knowledge.

"It can only improve as knowledge is improved I would say…… If you're educated in only a small way (I've just read literature.) then any progress may be measured accurately". (I-A, C-A)

"Accounting institutions and Higher Education can come up with formats and recommended proposals for providing a unified approach to reporting". (I-B, C-B)

However, an interviewee also pointed out that accountants' increased engagement should be achieved by educating business owners so that they could exert a positive influence on accountants.

"We need to accelerate the education of business owners to abandon their short-term views and to wake up to the fact that unless they get real about sustainability issues, then they risk losing their business through human attrition (younger employees migrating to more ethical industries), and through the bad press (name and shame type reporting, etc.) reducing the number of businesses that will be prepared to partner with them. As this process accelerates, it will generate a need for the management within an organisation to put sustainability policies firmly into play, and the accountants will, happily, step up to this role as it sits well with most of them due to their ethical outlook". (I-D, C-D)

9.5 Future expectations

Accountants had expectations and concerns for their future engagement in sustainability accounting.

One interviewee thought that accountants could still have a role to play in sustainability accounting for industries that had to be sustainable in order to survive.

> "I think the qualities that I have generally seen in accountants are honesty and numeracy, coupled with an ethical and work-driven outlook. These are still exactly the qualities that you would want in the people that will drive sustainability. The shift will come within industries which are realising that in order to remain viable, they have to be sustainable. This shift will promote the accountants to be able to drive for profitability under a wider umbrella of criteria, which will include social and environmental responsibility. Accountants will be just as valuable as they have ever been as we move into this era". (I-D, C-D)

One interviewee hoped that accountants could continue to make their contributions.

> "Please be assured that we take our responsibilities seriously and will always continue to do so". (I-A, C-A)

However, one interviewee also showed some concerns.

> "It has taken the accountancy profession a very long time to come up with accounting standards that are agreed-even now there are differences-so it will be even harder with sustainability". (I-B, C-B)

> "I'm afraid it might become a reporting burden". (I-B, C-B)

9.6 Chapter summary

Through identifying themes, interviewees' opinions on these issues have been presented. These reflect diverse issues these interviewees mainly focus on and their similar or different views under different themes.

Chapter 10 Discussion

10.1 Chapter overview

Presenting interviewees' views in chapter 9 shows that this semi-structured interview acquires more detailed information from the interviewees. Some results are hardly seen in the literature, and some results verify the previous literature. These issues raise some new and in-depth thoughts. These ideas are also discussed based on the pre-identified themes in this chapter. For variables that are not mentioned in the interview but appear in the questionnaire, it does not mean they are not valid items.

10.2 Behavioural beliefs

In these interviews, the majority of accountants, whether from SMEs or large companies, emphasise the considerable pressures from costs they currently have to face to survive. This shows that accountants are always concerned about the costs and benefits issues related to sustainability accounting (Tilt, 2009). Therefore, the priority and inspiration for evaluating engaging in sustainable development projects are cost savings benefits. Although contributing to sustainability can help companies achieve some short-term and easily achievable cost savings, the early investment takes up money and the subsequent maintenance also still requires investment. In some long-cycle projects, the high costs, long-term risks, and single benefits discourage accountants from helping companies undertake sustainability activities. Therefore, on the one hand, cost savings can promote the contribution to sustainability; on the other hand, as Mistry et al. (2014) mention, high costs discourage choosing sustainability projects. On a deeper thought, the high costs also show that the cost of converting technological achievements in favour of sustainable development into real-life applications remains relatively high now. As a result, many long-term efforts should be made to produce low-cost and widely applicable environmental technologies.

In contrast to other companies' cost pressures, an accountant in an exceptional SME does not mention the cost pressure but has a positive attitude to sustainability accounting and actively contributes to sustainability, and gives leeway for this expenditure. This is a unique sample that is hardly seen in the previous literature because they usually show how inactive accountants are involved in sustainability accounting, especially in SMEs (e.g., Mistry et al.,

2014; Spence et al., 2012; Williams and O'Donovan, 2015). Additionally, keeping the leeway may provide practical experience for accountants in other companies who may be interested in contributing to sustainability.

These different situations also demonstrate the intricacy and variety of the business's circumstances the accountants face. Large companies may not always be optimistic about sustainability, whereas SMEs may not always be pessimistic and make no attempt to practise sustainability. This finding is contrary to commonly agreed conclusions in the literature that SMEs hardly engage in sustainability (e.g., Loucks et al., 2010; Mistry et al., 2014).

In conclusion, most accountants in companies still consider that the disadvantages of high costs overwhelm the benefits when evaluating engaging in sustainability accounting. This may reduce their favourable attitudes toward engagement in sustainability accounting and thus weaken their intentions and final engagement in sustainability accounting.

10.3 Normative beliefs

The semi-structured interview results show new persons not included in the questionnaire influence accountants' engagement in sustainability accounting: customers and suppliers, board and owners, employees, and the daughter of one interviewee. Findings on customers and suppliers show that customers' and suppliers' sustainability assessments of their partners can influence their cooperation with these companies. In addition, this research also comes across a similar situation revealed by Beusch et al. (2022), where customers prefer the benefits of cost-saving more than the sustainability-related benefits of products. Although the results in chapter 9 show that accountants can provide quotes for environmentally friendly products, the actual cooperation is not reached due to the high price. This finding also contradicts Lin et al. (2013)'s results that customers purchasing environmentally friendly products can save costs. Therefore, green manufacturing purchasing is expected to add value to both environmental and financial performance when satisfying the needs of customers and suppliers (Kalyar et al., 2020). The above discussions show how customers and suppliers can influence accountants to engage in sustainability accounting. This provides another idea to promote accountants' engagement in sustainability accounting: external factors/referents. From the supply chain perspective, the results show that it is still tricky to make a broad consensus on sustainability in the supply chain at a practical level. Therefore, when every

company in the chain recognises the importance of sustainability and works together, accountants can make a greater contribution to sustainability.

Although previous research in sustainability accounting and accountants focuses on factors from the business perspective (e.g., Bebbington et al., 1994; Chowdhury and Nahar, 2017; Rapacioli, 2014), the impact of the family factor of the daughter on accountants emerges as an unexpected case in the interview. Therefore, this point seems to broaden our thinking that the non-commercial areas may also exert influence on accountants. The power of family members can also be important.

Apart from factors external to the company, boards and owners, employees are all internal factors of the company. Although sustainability issues are discussed on the board, the financial aspect is still the priority. The influence of employees also supports the view of Le Roux and Pretorius (2019) that sustainability can be better achieved when the employees have a much deeper understanding of sustainability accounting and internalise it in their beliefs, attitudes, and behaviour.

In summary, the people mentioned above show their approval or disapproval of accountants' engagement in sustainability accounting. These results indicate that there is still no broad consensus, either externally or internally, on accountants' involvement in sustainability accounting. Therefore, the social pressure for accountants to engage or not engage in sustainability accounting may not be big enough to form strong intentions. Thus, this inspires us that striving for sustainability and approving accountants' engagement in sustainability accounting will promote accountants' motivations and behaviour to engage in sustainability accounting, regardless of whether referents' societal roles are within or outside companies. Finally, as persons mentioned by the interviewees are not in the questionnaire, this may be the other reason why the survey results show that subjective norm is insignificant to the intention.

10.4 Control beliefs

The standards, time, and resources are all included in the questionnaire. However, the interviewees provide more details. Accountants point out the lack of standards for sustainability accounting. The interview result of a lack of uniformity in sustainability

accounting standards is consistent with the previous literature (e.g., Kuasirikun, 2005; Setthasakko, 2010). For reporting, interviewees point out that different reporting systems and standards also create difficulties for reporting and reduce the accuracy and comparability of reports, which confirms the research results of Ngwakwe (2012). Although there is no uniformity in reporting now, this is not an entirely negative thing because different reporting rules provide a large number of valuable references for building a comprehensive and consistent reporting system in the future. Therefore, that is the direction for future efforts. Although the time and resource problems align with the corresponding literature presented in Table 15, to think in-depth, the deeper issue may be that sustainability accounting is not the priority work for accountants. These inhibitors show how difficult for accountants to engage in sustainability accounting.

10.5 Moral norm

In the questionnaire, the moral norm has the strongest relationship to intention. The views of moral norms in the interviews can be generally divided into three levels: firm support, recognition, and realism. The first two are the most reflected in the interviews. Individuals are likely to assess the morality of a particular action according to their perceptions of the probable outcomes (Unerman and Bennett, 2004). Therefore, accountants broadly accept that it is their moral responsibility to engage in sustainability accounting. Although there is a broad consensus on the moral norm, there is still the realistic view that achieving moral norms requires profit motives. It may remind us that although the pursuit of profits is not a problem, it is time to consider more broadly and deeply what profit is in the context of sustainable development, what kind of profits companies should gain, how companies should make profits, and what is the relationship between moral norm and profits.

10.6 Accountants' suggestions

Different interviewees express their demands and suggestions for accountants' future participation in sustainability accounting.

Firstly, accountants need practical tools (e.g., checklists or apps) and clear and specific industry guidance to assist in their practice. This point extends previous research that only indicates the need to provide reporting standards (e.g., Lodhia, 2003).

Secondly, making profits should not be the antithesis of sustainability. Although making profits is still the basis of business survival, the question is how businesses can make the interaction between profitability and sustainability a virtuous circle rather than a vicious circle under long-term development. Currently, the world is now facing a variety of crises, such as energy, water, land, and food crises. These crises, which threaten the survival of humankind, also make it impossible for companies to stand alone. As accountants play an important role in the company, their mindsets also influence the development of the company. Therefore, accountants should help companies pursue reasonable profits in the context of sustainable development rather than endless maximisation of profits. Furthermore, contrary to the view that accountants lack mindsets for achieving sustainability initiatives (e.g., Gray et al., 1996), it is clear from the interviews in this research that accountants have become aware of developing a sense of sustainability, which is certainly a good step forward.

Thirdly, sustainability knowledge helps accountants contribute to sustainability accounting. Changes in the business world lead to changes in skills needs (Graham, 2019). Incorporating sustainability accounting into education can help accountants to meet the challenge and support business practices (Cho et al., 2022). As mindsets and paradigm shifts are more likely to occur at the training and education stage (Cho et al., 2022), both accounting institutions and Higher Education should make contributions, which coincides with the research of Christ et al. (2018). The overlap between the views of researchers and practitioners indicates the importance they attach to education. However, this also reflects another aspect of the current lack of education, revealed by Gray and Collison (2002).

In contrast to current research that mainly focuses on educating accountants (e.g., Bebbington, 1996; Dyball and Thomson, 2013), the findings of this research extend the previous literature by offering a new idea of educating business owners to develop awareness and knowledge of sustainability, because this will attract more accountants who share their goals to work with them to achieve sustainability.

10.7 Future expectations

The interviewees see the prospects from different perspectives. Accountants need to follow the trend of sustainable development in the industries that have to survive by achieving

sustainability. Accountants need to continue their engagement in sustainability accounting. It takes a long time to establish and develop sustainability accounting standards fully. Reporting sustainability may burden accountants. These expectations from different perspectives show the complex mindsets of accountants regarding their future engagement in sustainability accounting. Therefore, accountants need to be infused with more confidence and consensus about sustainability accounting in different industries. In order to achieve this, all supportive methods should be improved to facilitate accountants' contributions to sustainability accounting.

10.8 Chapter summary

The discussions combine the interviewees' opinions and the researcher's more profound thoughts and reflections. After finishing all the research processes, the next chapter draws the research conclusion.

Chapter 11 Conclusion

11.1 Introduction

This research aims to study the motivational factors and behaviour of accountants' engagement in sustainability accounting. In order to accomplish this purpose, this research employs the planned behaviour theory to analyse accountants' intentions and behaviour in sustainability accounting comprehensively. Following that, semi-structured interviews are undertaken to get a better understanding of specific beliefs influencing accountants' participation in sustainable accounting. Additionally, the interviews reveal some ideas for the future involvement of accountants in sustainability accounting. Therefore, the combination of quantitative and qualitative research offers a complementary insight into the intention and behaviour of accountants' involvement in sustainability accounting.

This chapter is organised into four sections: first, the main findings are reviewed and summarised briefly to answer the research questions; second, four dimensions are dedicated to the research contributions; third, the limitations of this research are presented, and future research inspired by this research's limitations and findings is highlighted.

11.2 Summary of research questions and findings

This research aims to investigate accountants' motivational factors and behaviour in engaging in sustainability accounting to promote their future involvement by identifying different factors influencing their engagement in sustainability accounting and understanding the practice in reality to promote their engagement in sustainability accounting. In order to achieve the research objective, the first stage of research answers the first three research questions. This stage tests nine hypothesised relationships in TPB regarding behavioural beliefs and attitude toward the behaviour, normative beliefs and subjective norm, control beliefs and perceived behaviour control, attitude toward the behaviour and intention, subjective norm and intention, perceived behaviour control and intention, moral norm (an extra construct of TPB) and intention, and intention, actual control and behaviour. The relative contributions of factors in TPB can be different in terms of different behaviour and population under consideration (Fishbein and Ajzen, 2010). In this research, the moral norm is the main determinant positively affecting the intention of accountants to engage in

sustainability accounting, while perceived behavioural control is the second most important factor positively influencing the intention. Attitude toward the behaviour has a weaker positive influence on the intention relative to the moral norm and perceived behavioural control. However, the statistical results do not support the relationship between subjective norm and intention. Therefore, the subjective norm is not significant to the intention. Behavioural beliefs, normative beliefs, and control beliefs are significant and positive to their antecedent attitude toward the behaviour, subjective norm, and perceived behavioural control, respectively. The findings also imply that intention has a significant and positive association with accountants' behaviour of engaging in sustainability accounting and actual control has a significant moderating effect between intention and behaviour.

In summary, accountants' intention to engage in sustainability accounting is positively and significantly influenced by attitude toward the behaviour, perceived behavioural control, and moral norm. Each belief has a positive and significant effect on its antecedent. The intention to engage in sustainability accounting has a significant relationship with the behaviour of engaging in sustainability accounting. The actual control as a moderator can significantly weaken this relationship.

The first stage of statistical analyses of TPB gives a quantitative framework to understand the intention and behaviour of accountants' involvement in sustainability, which provides general and basic inspiration to promote the involvement of accountants in sustainability accounting, whereas the last question answered by the second stage semi-structured interviews enables a much more detailed, specific, and practical understanding of factors, practical suggestions, and expectations in practice, which have the potential to provide direction for future efforts to promote accountants' engagement in sustainability accounting. The cost increase is an extremely important outcome for accountants to engage in sustainability accounting. Customers and suppliers contribute to accountants' engagement in sustainability accounting. Compared to them, the board and owners are more focused on profits. Accountants realise the growing influence of employees on their involvement in sustainability accounting. A surprising finding is that the daughter influences the accountant to engage in sustainability accounting. Accountants think they have no uniform sustainability accounting standards to follow. They do not have time to do this work. They do not have enough knowledge to do things. Most accountants recognise the important role of the moral norm in the involvement in sustainability accounting.

To promote the involvement of accountants in sustainability accounting, interviewees make three suggestions: governing bodies and industries should provide more guidance for them; accountants should change their mindsets to make profits in the sustainable development environment; accountants should improve their knowledge in sustainability accounting. Educating owners about sustainability knowledge can unite ethical accountants to participate in the sustainability practice. However, there is still a long way to go to engage a wide range of accountants in sustainability accounting.

11.3 Research contributions

This research makes contributions in four aspects:

- Contributions to the knowledge

This research is taken from the micro-processes from the accountants' perspectives to detect their intention and behaviour in order to shed light on their future engagement in sustainability accounting. Therefore, it responds to Rodrigue and Romi (2022), that call for a greater focus on sustainability at the individual level rather than at the organisational level. As Christ et al. (2018) point out, sustainability-related issues are ingrained in business practice, and addressing them without the help of practitioners is akin to putting the cart before the horse. It is impractical and unlikely to result in the real-world effects sought by academics (Christ et al., 2018). By presenting a more comprehensive and in-depth investigation into accountants' intentions and engagement in sustainability accounting, this research takes a more practical perspective from accountants themselves to understand the factors that influence their intentions and engagement in sustainability accounting and their relationship with each other.

This research extends the current undeveloped and limited research about accountants' engagement in sustainability accounting. As Adams and Larrinaga (2019) point out, researchers need to draw on new perspectives of sustainability accounting research. By borrowing the theory of planned behaviour from psychology, the research on accountants' engagement in sustainability accounting can be interpreted from a new perspective that has hardly been used in previous research on sustainability accounting. This is also in line with

the perspective of focusing on the micro and individual levels mentioned above. This new perspective shows the importance of psychology in facilitating accountants' engagement in sustainability accounting and reducing potential barriers. Furthermore, it also provides a theoretical basis for the action of accountants' involvement in sustainability accounting.

This research also contributes to closing the gap between academic research and practice in accounting and sustainability management indicated by Christ et al. (2018). By showing the different significance of each determinant in the analysis of the intention and behaviour, as well as details provided by accountants from their practical perspective, practitioners can know which aspects should be strengthened to enhance the accountants' engagement in sustainability accounting. Therefore, this research also responds to the prospect of investigating how accountants can be more strongly involved in sustainability accounting (Schaltegger and Zvezdov, 2015). The extended discussion is in "contributions to practice".

- Contributions to the application of the theory

Because this research uses TPB, it also contributes to applying this theory. This research extends the scope of the application of TPB to study the research area of accountants and sustainability, which is hardly seen in the previous literature. Thus, this research provides a reference case for the future application of this theory to the research area of accountants and sustainability. In addition, this research tests the moral norm as an additional factor in the theory of planned behaviour in the condition of sustainability accounting. This quantitative relationship between the moral norm and intention has not been tested in the previous literature in this context. The finding of this research demonstrates that the moral norm is a good extra factor to be added to TPB when studying the accountants' behaviour of engaging in sustainability accounting because it is the most significant factor related to the intention. The moral norm can be significant to some intention of behaviour, such as waste separation (Razali et al., 2020) and recycling (Botetzagias et al., 2015). However, the moral norm is not always significant to the intention of certain behaviours, such as engagement in earnings management (Sayal and Singh, 2020). Therefore, future research can investigate more behaviour to test whether more norm is significantly related to the intention of certain behaviours. Moreover, this research does not limit the research using TPB to the widely used survey method to test the relationship between variables but also goes further to TPB research with the follow-up interviews that provide deeper insights into the TPB variables.

Furthermore, this research is cross-sectional research. Therefore, future research can be longitudinal studies in following up on whether intention predicts future behaviour or intervention studies to examine if the beliefs change due to a particular type of intervention (e.g., education).

Very little research has focused especially on establishing that actual control impacts the level of consistency between intentions and actions (Sheeran, 2002). Although the actual control has been a factor in the TPB (Ajzen, 2006), it is hardly measured and tested in the literature (Fishbein and Ajzen, 2010). In order to break out of this situation, this study makes a preliminary attempt to measure actual control and quantitatively test its moderating influence on the relationship between intention and behaviour, which validates Ajzen's theoretical description of actual control, provides an idea and possibility for future research with actual control, and contributes to the development of TPB in a more profound and practical direction. In this process, because almost no research with TPB measures the actual control, there is no empirical evidence to show whether the actual control should be a reflective construct or not when using structural equation modelling. Therefore, this research uses the most recent and advanced technique, CTA-PLS, to test the type of actual control construct. This result shows that the actual control is a reflective construct. Thus, this result can shed light on future research that aims to study actual control with quantitative methods and provide evidence for those who would like to use actual control as the reflective construct when using structural equation modelling for their data analysis. In summary, all the above discussions show the TPB provides an effective theoretical framework to study accountants' engagement in sustainability accounting.

- Contributions to practice

This research can respond to Unerman and Chapman (2014), that encourage research on sustainability accounting from a practical perspective, and Christ et al. (2018) that concern with the need to bridge the gap between research and practice. The research findings uncover different practical implications to address the challenges of accountants' engagement in sustainability accounting.

The implication is firstly derived from the general framework established in this research. This framework provides the overarching ideas for promoting accountants' involvement in

sustainability accounting. First and foremost, it is of utmost importance to make accountants have strong intentions to engage in sustainability accounting. In order to achieve this, the most important issue is to develop a sense of responsibility (moral norm) for accountants to work toward sustainability accounting. Then it is important to reduce the barriers and increase facilitators (control beliefs) for accountants to enable them to engage in sustainability accounting (perceived behavioural control). In addition, it is also necessary to generate more positive consequences and reduce negative consequences for accountants to engage in sustainability accounting (behavioural beliefs) to let them have a favourable evaluation of engaging in sustainability accounting (attitude toward the behaviour). Once accountants form strong intentions, and then they have skills and abilities, and without environmental constraints, accountants will finally translate the intention into the real engagement of sustainability accounting. Although the social pressure (subjective norm) does not show its importance to intention, it does highlight the importance of choosing the right and influential persons to exert sufficient influence on accountants. Apart from this general idea, various specific factors and actors in society are still important. Therefore, the following discussion of implications is based on specific items.

In terms of the research results, the negative impact of increased cost makes them have an unfavourable evaluation of engaging in sustainability accounting. Therefore, there is a need to encourage research and development of new technologies and products compatible with the requirements of sustainable development and low costs. When this is achieved, accountants are more likely to be able to engage in sustainability accounting, which may encourage them to build intentions and ultimately perform the behaviour.

The research finds the important influence of customers and suppliers on accountants. Therefore, enhancing the supply chain management and improving sustainability practices in the whole supply chain are also ways to increase the accountants' social pressures to engage in sustainability accounting. In addition, enhancing the employees' awareness and involvement in sustainability also make them approve of accountants' engagement in sustainability accounting. Moreover, although accountants influenced by the daughter who learns the sustainability-related major in the university is a particular case that emerged from this research, it reveals that the influence of non-business factors (e.g., family members) is also important and cannot be ignored.

This research also finds that accountants lack the time and resources to involve in sustainability accounting. Therefore, in order to make accountants more capable of engaging in sustainability accounting, on the one hand, sustainability accounting needs to be integrated into the accounting routine; on the other hand, as mentioned by interviewees, more resources (e.g., staff, skills) should be made available to SMEs while large companies should increase the importance of sustainability and facilitate the integration of their sustainability-related resources.

This research shows that moral norm plays the most important role in forming accountants' intentions. As accountants play an ethical role in their companies (Reynolds and Mathews, 2000), their ethics strongly influence their intentions to engage in sustainability accounting and, thus, to some extent, influence decision-makers and their companies. Therefore, accountants need to strengthen their ethical awareness of achieving sustainable development. In this research, accountants also suggest that to promote their engagement in sustainability accounting, they should shift to a mindset of pursuing profits in the context of sustainable development.

In this research, accountants suggest the importance of education to promote their engagement in sustainability accounting. On the one hand, accountants need to broaden their knowledge to engage in sustainability accounting. Higher Education and accounting institutions are responsible for this. On the other hand, only educating accountants is not enough. It is necessary to extend sustainability education to business owners. As this research shows, business owners focus too much on short-term profits. Therefore, education can help them raise the level of awareness to gain a longer-term perspective as well as to achieve a virtuous circle of development so that they can approve accountants to engage in sustainability accounting.

The lack of uniform standards is one of the inhibitors of accountants' engagement in sustainability accounting. It is necessary to establish uniform standards and instructions for companies and industries and to develop an authoritative, complete, and comprehensive system to guide the practice of accountants and thereby enhance the practice and comparability of sustainability across different companies and industries.

From the results of the interviews, it is also clear that accountants still have a lot of concerns about engaging in sustainability accounting at present and in the future, which shows they have a complex mindset and recognition of the prospects for their involvement in sustainability accounting. Therefore, policymakers need to build the confidence of accountants and create a broad consensus among accountants to participate in sustainability accounting.

- Contributions to methods

After discussing the main contributions, the secondary contributions to methods are found in the research process. Email interviews are rarely used in accounting research, let alone in sustainability accounting research. This study attempts to adopt this approach and explores the possibilities and methods of applying it to generate interview data in practice. This attempt provides a source of inspiration for future researchers interested in this method to improve its application.

This research also explores the use of the most recent and advanced CTA-PLS technique in PLS-SEM to identify the model type of actual control in TPB. Thus, this research also contributes to the application of this technology.

11.4 Research limitations and future research

While this research contributes to the sustainability accounting research area in several ways, as with all research, this research also faces some limitations that need to be considered. These limitations can be overcome in the future or shed on further research. In addition, the findings of this research can also inspire and generate new opportunities for future research.

Firstly, in the context of the Covid-19 pandemic, the conduct of the research is severely restricted, so the researcher can hardly extend the sample size and increase the response rate. Thus, future research can be improved by expanding the sample size.

Secondly, this research solely focuses on the manufacturing industry in the UK. Whether the findings can be generalised to other countries or industries has not been tested. Therefore, future research can expand the study to different industries or countries to investigate whether

these findings are applicable in other contexts. More specifically, on the one hand, if researchers are competent enough to carry out the study of different industries or even entire industries, they can gain a more comprehensive and in-depth understanding of the involvement of accountants in sustainability accounting. On the other hand, researchers can also compare the same industry in comparable countries or comparable industries in a particular country to find their commonalities and differences.

Thirdly, this research has an exclusive focus on companies rather than other types of organisations, such as non-profit organisations, and public sectors. Therefore, researchers can conduct research in these organisations.

Fourthly, this research uses survey and interview methods to obtain the information. Future research can seek out companies that have successfully engaged accountants in sustainability accounting to conduct case studies to discover their successful models or summarise their patterns, which can provide practical experience for other companies. Although it is not easy to find such companies, the most important thing is that as long as they can provide some experience, it is valuable to learn from them. These cases can contribute to learning from successes and even failures.

Fifthly, new items of normative beliefs factors are identified in this research. Other researchers can embed these items into normative beliefs to test the relationships between normative beliefs, subjective norms, and intention. They can also carry out independent research into particular items that interest them. For example, they can study how customers and suppliers influence the contribution of accountants and companies to sustainability accounting. Researchers can also explore other external or internal factors influencing accountants' involvement in sustainability accounting. Researchers can also examine how internal and external factors combine to affect the performance of accountants in sustainability accounting.

Sixthly, this research also reveals the complexity of companies' situations. These complications need to be taken into account when doing future research or projects for policymaking. Therefore, a large amount of research will be needed to map out the situation, draw patterns, and make targeted recommendations and plans to guide future development.

Seventhly, according to the research results, perhaps cost sensitivity has the potential to be a new perspective for classifying and studying sustainability accounting. Thus, future research can compare the cost-sensitive companies with none cost-sensitive companies to understand: firstly, how these companies differ in the adoption of sustainability accounting; secondly, to what extent costs influence the practice of sustainability accounting; thirdly, how to manage the conflict between the economy and sustainability to achieve a virtuous circle of profitability and sustainability; fourthly, how to reduce the burden of costs on the implementation of sustainability.

Eighthly, one interviewee points out the benefit of educating business owners. Inspired by this, future research may further study the education or training of company executives on sustainability.

Ninthly, this study attempts to study sustainability accounting by email interview and shares some experience doing this type of interview. Future studies may further investigate: firstly, under what conditions email interviews can be effective; secondly, how to improve the quality of the email interview data in practice.

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Appendix (I) Tables 7-19

Table 7: Demographic Information with Questions and References

No.	Questions	References
1	What is your current job title?	Kathuria and Partovi (1999)
2	How long have you been employed by your current company?	Ribeiro et al. (2013)
3	What is your highest level of education completed?	Dobosh (2017)
4	What accounting professional certificate(s) do you hold?	Iyer et al. (2005) Iyer et al. (2013) Kabir et al. (2015)
5	How many employees (full and part-time), including yourself, are employed in your current company?	Schaap (2006)
6	Please indicate in which organisation(s) you have received training in sustainability matters.	Schaap (2006)

Table 8: Items of Behaviour

No.	Items	References
1	Developing sustainability policies	Ahmad (2014) Bebbington et al. (1994) Bebbington (2001) Gray and Bebbington (2001) ICAEW (2013) Wilmshurst and Frost (2011)
2	Developing robust systems to collect, store and analyse sustainability information	Gray and Bebbington (2001) Joshi and Li (2016) Rapacioli (2014) Wilmshurst and Frost (2011)
3	Connecting sustainability with companies' strategy	Rapacioli (2014)
4	Disclosure of sustainability information	Bebbington et al. (1994) Mistry et al. (2014) Wilmshurst and Frost (2011)
5	Formulating a sustainability budget	Bebbington et al. (1994) Wilmshurst and Frost (2011)
6	Evaluating risks presented by sustainability issues	Calisikan (2014) Mistry et al. (2014)
7	Sustainability impact assessment	Bebbington et al. (1994) Wilmshurst and Frost (2011)
8	Response to government sustainability legislation	Wilmshurst and Frost (2011)
9	Sustainability audit or reviews	Wilmshurst and Frost (2011)
10	Collecting, analysing and measuring sustainability data	Bebbington et al. (1994) Rapacioli (2014)
11	Investment appraisal in sustainability	Bebbington et al. (1994) Mistry et al. (2014)
12	Tax related to sustainability	ACCA (2014)

Table 9: Items of Intention

No.	Items	References
Intention		
1	I intend to engage in sustainability accounting in my company.	Kautonen et al. (2013)
2	I plan to engage in sustainability accounting in my company.	Kautonen et al. (2013)
3	I will try to engage in sustainability accounting in my company.	Fishbein and Ajzen (2010)
Expectation		
4	I will engage in sustainability accounting in my company.	Kautonen et al. (2013)
5	I expect to engage in sustainability accounting in my company.	Fishbein and Ajzen (2010)
Willingness		
6	I have the will to engage in sustainability accounting in my company.	De Leeuw et al. (2015)

Table 10: Items of Attitude toward the Behaviour

No.	Measures	Reference
For me, performing the sustainability accounting behaviours in question 7 is		
Instrumental in nature		
1	Extremely bad (1)/Extremely good (7)	Han et al. (2010)
2	Harmful (1)/Beneficial (7)	Ajzen (2002a) Han et al. (2010)
3	Worthless (1)/Valuable (7)	Ajzen (2002a)
Experiential in nature		
4	Extremely unenjoyable (1)/Extremely enjoyable (7)	Yadav and Pathak (2017)
5	Extremely unfavourable (1)/Extremely favourable (7)	Fishbein and Ajzen (2010)

Table 11: Items of Behavioural Beliefs

No.	Measures	References
To me, engaging in sustainability accounting behaviours in question 7 will		
1	drive the achievement of the company's sustainability goals	CIMA (2010)
2	contribute to achieving the sustainability outcomes	CIMA (2010)
3	lead the sustainability change in the company	CIMA (2010)
4	add value to sustainability management	Egan and Tweedie (2018)
5	result in more efficient and effective information management practices	Bennett et al. (2013)
6	contribute to translating sustainability data into accessible measurements	CIMA (2010)
7	increase the customer loyalty	James (2015)
8	enhance the company's reputation	James (2015)
9	increase the company's profits	James (2015)
10	save costs arising from more efficient and effective operations	James (2015)
11	increase employee loyalty and recruitment	James (2015)
12	help the company enhance the industry leadership	James (2015)
13	enhance access to financing capital	James (2015)
14	refine company mission and strategies	James (2015)
15	enhance regulatory compliance	James (2015)
16	enhance opportunities for grants	James (2015)
17	increase the burden of my workload	Mistry et al. (2014)
18	increase the cost to the company	Mistry et al. (2014)

Table 12: Items of Subjective Norm

No.	Items	References
1	Most people who are important to me would think I should engage in sustainability accounting in the company.	Mancha et al. (2014)
2	Most people who are important to me want me to engage in sustainability accounting in the company.	Fishbein and Ajzen (2010)
3	People whose opinions I value would prefer that I engage in sustainability accounting in my company.	Ajzen (2002a) Han et al. (2010)
4	Most people who are important to me approve of my engagement in sustainability accounting in the company.	Ajzen website

Table 13: Items of Normative Beliefs

No.	Items	References
1	Chief Executive Officer (CEO)	Wilmshurst and Frost (2001)
2	Chief Finance Officer (CFO)	Wilmshurst and Frost (2001)
3	Sustainability Manager	Passetti et al. (2014)
4	Operating Manager	Goretzki and Messner (2019) Johnson and Kaplan (2002)
5	Production Manager	Egan and Tweedie (2018)

Table 14: Items of Perceived Behavioural Control

No.	Items	References
1	I see myself as capable of engaging in sustainability accounting in the company.	Mancha et al. (2014)
2	I am confident that I can engage in sustainability accounting in the company.	Fishbein and Ajzen (2010)
3	I have the resources to engage in sustainability accounting in the company.	Han et al. (2010) Ajzen (2002a)
4	I have opportunities to engage in sustainability accounting in the company.	Ajzen website

Table 15: Items of Control Beliefs

No.	Items	References
1	I have sustainability accounting-related knowledge and skills.	Davey and Coombes (1996) Lodhia (2003) Setthasakko (2010) Williams (2015)
2	Sustainability issues can influence financial performance.	CIMA (2011)
3	Sustainability information is relevant to my company.	Medley (1997) Rapacioli (2014)
4	My company does not engage in sustainability.	Rapacioli (2014)
5	Sustainability issues can influence cost, risk, and value.	Rapacioli (2014)
6	I do not clearly understand sustainability accounting.	Egan and Tweedie (2018) Medley (1997) Passetti et al. (2014)
7	I have no experience in sustainability accounting.	Kuasirikun (2005)
8	I lack training and education about sustainability accounting.	Bebbington et al. (1994) Spence et al. (2012)
9	The company lacks training in sustainability accounting.	CIMA (2011) Egan and Tweedie (2018) Rapacioli (2014)
10	I lack time to engage in sustainability accounting.	CIMA (2011) Egan and Tweedie (2018) Rapacioli (2014)
11	I am not interested in engaging in sustainability accounting.	CIMA (2011)
12	Sustainability accounting is outside my job sphere.	Rapacioli (2014)
13	Other colleagues in the company provide sustainability information.	Ahmad (2014) Egan (2018) Rapacioli (2014)
14	The current accounting system and processes do not support the inclusion of sustainability data.	Adams (2002) Mistry et al. (2014) Wilmshurst and Frost (2001)
15	There is a lack of sustainability accounting standards.	Lodhia (2003)
16	There is a lack of necessary guidance for accountants to practise sustainability accounting.	Kuasirikun (2005)

Table 16: Items of Moral Norm

No.	Measures	References
1	I have a moral obligation to participate in sustainability accounting in the company.	Shin and Hancer (2016)
2	Engaging in sustainability accounting is consistent with my moral principles.	Shin and Hancer (2016)
3	I have a moral responsibility to participate in sustainability accounting in the company.	Shin and Hancer (2016)
4	I would feel like I am doing something morally right when I engage in sustainability accounting.	De Leeuw et al. (2015)

Table 17: Items of Actual Control

No.	Items
1	Does your current company engage in sustainability?
2	Does your current company have sustainability strategies?
3	Does your company have a sustainability system?
4	Does your company have a dedicated department responsible for sustainability?
5	Do you work with different departments on sustainability?
6	Do staff from other departments require your engagement in dealing with sustainability?
7	Does your company give you guidance on how to deal with sustainability?
8	Do the decision-makers require you to engage in sustainability?
9	Is dealing with sustainability part of your job role?
10	Do you have any knowledge about how to undertake sustainability accounting?
11	Does your current company train you in how to deal with sustainability?
12	Are you self-learning about sustainability outside your company?
13	Are there sustainability accounting rules you must follow in your company?

Table 18: Scales of the Constructs in the Theory of Planned Behaviour for This Research

Question No.	Constructs	Type of scales	Verbal descriptions	Number of scale points
7	behaviour	Likert scale	(1) Not at all to (6) To a very great extent	six-point
8	intention	Likert scale	(1) Strongly disagree to (7) Strongly agree	seven-point
9	attitude toward the behaviour	Semantic differential scale	(1) Strongly disagree to (7) Strongly agree	seven-point
10	behavioural beliefs	Likert scale	(1) Strongly disagree to (7) Strongly agree	seven-point
11	subjective norm	Likert scale	(1) Strongly disagree to (7) Strongly agree	seven-point
12	normative beliefs	Likert scale	(1) Extremely unlikely to (7) Extremely likely	seven-point
11	perceived behavioural control	Likert scale	(1) Strongly Disagree to (7) Strongly agree.	seven-point
13	control beliefs	Likert scale	(1) Strongly disagree to (7) Strongly agree.	seven-point
11	Moral norm	Likert scale	(1) Strongly disagree to (7) Strongly agree.	seven-point
14	Actual control	Nominal scale	Yes/No/I do not know	-

Table 19: SIC 2007 Manufacturing Industry List

C	**MANUFACTURING**				
	10	**Manufacture of food products**			
		10.1	**Processing and preserving of meat and production of meat products**		
			10.11	Processing and preserving of meat	
			10.12	Processing and preserving of poultry meat	
			10.13	Production of meat and poultry meat products	
		10.2	**Processing and preserving of fish, crustaceans and molluscs**		
			10.20	Processing and preserving of fish, crustaceans and molluscs	
		10.3	**Processing and preserving of fruit and vegetables**		
			10.31	Processing and preserving of potatoes	
			10.32	Manufacture of fruit and vegetable juice	
			10.39	Other processing and preserving of fruit and vegetables	
		10.4	**Manufacture of vegetable and animal oils and fats**		
			10.41	Manufacture of oils and fats	
			10.42	Manufacture of margarine and similar edible fats	
		10.5	**Manufacture of dairy products**		
			10.51	Operation of dairies and cheese making	
				10.51/1	Liquid milk and cream production
				10.51/2	Butter and cheese production
				10.51/9	Manufacture of milk products (other than liquid milk and cream, butter, cheese) n.e.c.
			10.52	Manufacture of ice cream	
		10.6	**Manufacture of grain mill products, starches and starch products**		
			10.61	Manufacture of grain mill products	
				10.61/1	Grain milling
				10.61/2	Manufacture of breakfast cereals and cereals-based foods
			10.62	Manufacture of starches and starch products	
		10.7	**Manufacture of bakery and farinaceous products**		

			10.71	Manufacture of bread; manufacture of fresh pastry goods and cakes	
			10.72	Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes	
			10.73	Manufacture of macaroni, noodles, couscous and similar farinaceous products	
		10.8	**Manufacture of other food products**		
			10.81	Manufacture of sugar	
			10.82	Manufacture of cocoa, chocolate and sugar confectionery	
				10.82/1	Manufacture of cocoa, and chocolate confectionery
				10.82/2	Manufacture of sugar confectionery
			10.83	Processing of tea and coffee	
				10.83/1	Tea processing
				10.83/2	Production of coffee and coffee substitutes
			10.84	Manufacture of condiments and seasonings	
			10.85	Manufacture of prepared meals and dishes	
			10.86	Manufacture of homogenised food preparations and dietetic food	
			10.89	Manufacture of other food products n.e.c.	
		10.9	**Manufacture of prepared animal feeds**		
			10.91	Manufacture of prepared feeds for farm animals	
			10.92	Manufacture of prepared pet foods	
	11	**Manufacture of beverages**			
		11.0	**Manufacture of beverages**		
			11.01	Distilling, rectifying and blending of spirits	
			11.02	Manufacture of wine from grape	
			11.03	Manufacture of cider and other fruit wines	
			11.04	Manufacture of other non-distilled fermented beverages	
			11.05	Manufacture of beer	
			11.06	Manufacture of malt	
			11.07	Manufacture of soft drinks; production of mineral waters and other bottled waters	
	12	**Manufacture of tobacco products**			
		12.0	**Manufacture of tobacco products**		

			12.00	Manufacture of tobacco products	
	13	**Manufacture of textiles**			
		13.1	**Preparation and spinning of textile fibres**		
			13.10	Preparation and spinning of textile fibres	
		13.2	**Weaving of textiles**		
			13.20	Weaving of textiles	
		13.3	**Finishing of textiles**		
			13.30	Finishing of textiles	
		13.9	**Manufacture of other textiles**		
			13.91	Manufacture of knitted and crocheted fabrics	
			13.92	Manufacture of made-up textile articles, except apparel	
				13.92/1	Manufacture of soft furnishings
				13.92/2	Manufacture of canvas goods, sacks etc.
				13.92/3	Manufacture of household textiles (other than soft furnishings of 13.92/1)
			13.93	Manufacture of carpets and rugs	
				13.93/1	Manufacture of woven or tufted carpets and rugs
				13.93/9	Manufacture of carpets and rugs (other than woven or tufted) n.e.c.
			13.94	Manufacture of cordage, rope, twine and netting	
			13.95	Manufacture of non-wovens and articles made from non-wovens, except apparel	
			13.96	Manufacture of other technical and industrial textiles	
			13.99	Manufacture of other textiles n.e.c.	
	14	**Manufacture of wearing apparel**			
		14.1	**Manufacture of wearing apparel, except fur apparel**		
			14.11	Manufacture of leather clothes	
			14.12	Manufacture of workwear	
			14.13	Manufacture of other outerwear	
				14.13/1	Manufacture of men’s outerwear, other than leather clothes and workwear
				14.13/2	Manufacture of women’s outerwear, other than leather clothes and workwear
			14.14	Manufacture of underwear	

				14.14/1	Manufacture of men’s underwear
				14.14/2	Manufacture of women’s underwear
			14.19	Manufacture of other wearing apparel and accessories	
		14.2	**Manufacture of articles of fur**		
			14.20	Manufacture of articles of fur	
		14.3	**Manufacture of knitted and crocheted apparel**		
			14.31	Manufacture of knitted and crocheted hosiery	
			14.39	Manufacture of other knitted and crocheted apparel	
	15	**Manufacture of leather and related products**			
		15.1	**Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur**		
			15.11	Tanning and dressing of leather; dressing and dyeing of fur	
			15.12	Manufacture of luggage, handbags and the like, saddlery and harness	
		15.2	**Manufacture of footwear**		
			15.20	Manufacture of footwear	
	16	**Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials**			
		16.1	**Sawmilling and planing of wood**		
			16.10	Sawmilling and planing of wood	
		16.2	**Manufacture of products of wood, cork, straw and plaiting materials**		
			16.21	Manufacture of veneer sheets and wood-based panels	
			16.22	Manufacture of assembled parquet floors	
			16.23	Manufacture of other builders’ carpentry and joinery	
			16.24	Manufacture of wooden containers	
			16.29	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials	
	17	**Manufacture of paper and paper products**			
		17.1	**Manufacture of pulp, paper and paperboard**		
			17.11	Manufacture of pulp	
			17.12	Manufacture of paper and paperboard	

		17.2	**Manufacture of articles of paper and paperboard**		
			17.21	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	
				17.21/1	Manufacture of corrugated paper and paperboard; manufacture of sacks and bags of paper
				17.21/9	Manufacture of paper and paperboard containers other than sacks and bags
			17.22	Manufacture of household and sanitary goods and of toilet requisites	
			17.23	Manufacture of paper stationery	
			17.24	Manufacture of wallpaper	
			17.29	Manufacture of other articles of paper and paperboard	
	18	**Printing and reproduction of recorded media**			
		18.1	**Printing and service activities related to printing**		
			18.11	Printing of newspapers	
			18.12	Other printing	
				18.12/1	Manufacture of printed labels
				18.12/9	Printing (other than printing of newspapers and printing on labels and tags) n.e.c.
			18.13	Pre-press and pre-media services	
			18.14	Binding and related services	
		18.2	**Reproduction of recorded media**		
			18.20	Reproduction of recorded media	
				18.20/1	Reproduction of sound recording
				18.20/2	Reproduction of video recording
				18.20/3	Reproduction of computer media
	19	**Manufacture of coke and refined petroleum products**			
		19.1	**Manufacture of coke oven products**		
			19.10	Manufacture of coke oven products	
		19.2	**Manufacture of refined petroleum products**		
			19.20	Manufacture of refined petroleum products	
				19.20/1	Mineral oil refining
				19.20/9	Other treatment of petroleum products (excluding mineral oil refining/petrochemicals manufacture)

	20	**Manufacture of chemicals and chemical products**			
		20.1	**Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms**		
			20.11	Manufacture of industrial gases	
			20.12	Manufacture of dyes and pigments	
			20.13	Manufacture of other inorganic basic chemicals	
			20.14	Manufacture of other organic basic chemicals	
			20.15	Manufacture of fertilisers and nitrogen compounds	
			20.16	Manufacture of plastics in primary forms	
			20.17	Manufacture of synthetic rubber in primary forms	
		20.2	**Manufacture of pesticides and other agrochemical products**		
			20.20	Manufacture of pesticides and other agrochemical products	
		20.3	**Manufacture of paints, varnishes and similar coatings, printing ink and mastics**		
			20.30	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	
				20.30/1	Manufacture of paints, varnishes and similar coatings, mastics and sealants
				20.30/2	Manufacture of printing ink
		20.4	**Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations**		
			20.41	Manufacture of soap and detergents, cleaning and polishing preparations	
				20.41/1	Manufacture of soap and detergents
				20.41/2	Manufacture of cleaning and polishing preparations
				20.42	Manufacture of perfumes and toilet preparations
		20.5	**Manufacture of other chemical products**		
			20.51	Manufacture of explosives	
			20.52	Manufacture of glues	
			20.53	Manufacture of essential oils	
			20.59	Manufacture of other chemical products n.e.c.	
		20.6	**Manufacture of man-made fibres**		
			20.60	Manufacture of man-made fibres	
	21	**Manufacture of basic pharmaceutical products and pharmaceutical preparations**			

		21.1	**Manufacture of basic pharmaceutical products**	
			21.10	Manufacture of basic pharmaceutical products
		21.2	**Manufacture of pharmaceutical preparations**	
			21.20	Manufacture of pharmaceutical preparations
	22	**Manufacture of rubber and plastic products**		
		22.1	**Manufacture of rubber products**	
			22.11	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
			22.19	Manufacture of other rubber products
		22.2	**Manufacture of plastics products**	
			22.21	Manufacture of plastic plates, sheets, tubes and profiles
			22.22	Manufacture of plastic packing goods
			22.23	Manufacture of builders' ware of plastic
			22.29	Manufacture of other plastic products
	23	**Manufacture of other non-metallic mineral products**		
		23.1	**Manufacture of glass and glass products**	
			23.11	Manufacture of flat glass
			23.12	Shaping and processing of flat glass
			23.13	Manufacture of hollow glass
			23.14	Manufacture of glass fibres
			23.19	Manufacture and processing of other glass, including technical glassware
		23.2	**Manufacture of refractory products**	
			23.20	Manufacture of refractory products
		23.3	**Manufacture of clay building materials**	
			23.31	Manufacture of ceramic tiles and flags
			23.32	Manufacture of bricks, tiles and construction products, in baked clay
		23.4	**Manufacture of other porcelain and ceramic products**	
			23.41	Manufacture of ceramic household and ornamental articles
			23.42	Manufacture of ceramic sanitary fixtures
			23.43	Manufacture of ceramic insulators and insulating fittings

			23.44	Manufacture of other technical ceramic products
			23.49	Manufacture of other ceramic products
		23.5	**Manufacture of cement, lime and plaster**	
			23.51	Manufacture of cement
			23.52	Manufacture of lime and plaster
		23.6	**Manufacture of articles of concrete, cement and plaster**	
			23.61	Manufacture of concrete products for construction purposes
			23.62	Manufacture of plaster products for construction purposes
			23.63	Manufacture of ready-mixed concrete
			23.64	Manufacture of mortars
			23.65	Manufacture of fibre cement
			23.69	Manufacture of other articles of concrete, plaster and cement
		23.7	**Cutting, shaping and finishing of stone**	
			23.70	Cutting, shaping and finishing of stone
		23.9	**Manufacture of abrasive products and non-metallic mineral products n.e.c.**	
			23.91	Production of abrasive products
			23.99	Manufacture of other non-metallic mineral products n.e.c.
	24	**Manufacture of basic metals**		
		24.1	**Manufacture of basic iron and steel and of ferro-alloys**	
			24.10	Manufacture of basic iron and steel and of ferro-alloys
		24.2	**Manufacture of tubes, pipes, hollow profiles and related fittings, of steel**	
			24.20	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
		24.3	**Manufacture of other products of first processing of steel**	
			24.31	Cold drawing of bars
			24.32	Cold rolling of narrow strip
			24.33	Cold forming or folding
			24.34	Cold drawing of wire
		24.4	**Manufacture of basic precious and other non-ferrous metals**	
			24.41	Precious metals production

			24.42	Aluminium production
			24.43	Lead, zinc and tin production
			24.44	Copper production
			24.45	Other non-ferrous metal production
			24.46	Processing of nuclear fuel
		24.5	**Casting of metals**	
			24.51	Casting of iron
			24.52	Casting of steel
			24.53	Casting of light metals
			24.54	Casting of other non-ferrous metals
	25	**Manufacture of fabricated metal products, except machinery and equipment**		
		25.1	**Manufacture of structural metal products**	
			25.11	Manufacture of metal structures and parts of structures
			25.12	Manufacture of doors and windows of metal
		25.2	**Manufacture of tanks, reservoirs and containers of metal**	
			25.21	Manufacture of central heating radiators and boilers
			25.29	Manufacture of other tanks, reservoirs and containers of metal
		25.3	**Manufacture of steam generators, except central heating hot water boilers**	
			25.30	Manufacture of steam generators, except central heating hot water boilers
		25.4	**Manufacture of weapons and ammunition**	
			25.40	Manufacture of weapons and ammunition
		25.5	**Forging, pressing, stamping and roll-forming of metal; powder metallurgy**	
			25.50	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
		25.6	**Treatment and coating of metals; machining**	
			25.61	Treatment and coating of metals
			25.62	Machining
		25.7	**Manufacture of cutlery, tools and general hardware**	
			25.71	Manufacture of cutlery
			25.72	Manufacture of locks and hinges

			25.73	Manufacture of tools	
		25.9	**Manufacture of other fabricated metal products**		
			25.91	Manufacture of steel drums and similar containers	
			25.92	Manufacture of light metal packaging	
			25.93	Manufacture of wire products, chain and springs	
			25.94	Manufacture of fasteners and screw machine products	
			25.99	Manufacture of other fabricated metal products n.e.c.	
	26	**Manufacture of computer, electronic and optical products**			
		26.1	**Manufacture of electronic components and boards**		
			26.11	Manufacture of electronic components	
			26.12	Manufacture of loaded electronic boards	
		26.2	**Manufacture of computers and peripheral equipment**		
			26.20	Manufacture of computers and peripheral equipment	
		26.3	**Manufacture of communication equipment**		
			26.30	Manufacture of communication equipment	
				26.30/1	Manufacture of telegraph and telephone apparatus and equipment
				26.30/9	Manufacture of communication equipment (other than telegraph and telephone apparatus and equipment)
		26.4	**Manufacture of consumer electronics**		
			26.40	Manufacture of consumer electronics	
		26.5	**Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks**		
			26.51	Manufacture of instruments and appliances for measuring, testing and navigation	
				26.51/1	Manufacture of electronic instruments and appliances for measuring, testing, and navigation, except industrial process control equipment
				26.51/2	Manufacture of electronic industrial process control equipment
				26.51/3	Manufacture of non-electronic instruments and appliances for measuring, testing and navigation, except industrial process control equipment
				26.51/4	Manufacture of non-electronic industrial process control equipment
			26.52	Manufacture of watches and clocks	

		26.6	**Manufacture of irradiation, electromedical and electrotherapeutic equipment**		
			26.60	Manufacture of irradiation, electromedical and electrotherapeutic equipment	
		26.7	**Manufacture of optical instruments and photographic equipment**		
			26.70	Manufacture of optical instruments and photographic equipment	
				26.70/1	Manufacture of optical precision instruments
				26.70/2	Manufacture of photographic and cinematographic equipment
		26.8	**Manufacture of magnetic and optical media**		
			26.80	Manufacture of magnetic and optical media	
	27	**Manufacture of electrical equipment**			
		27.1	**Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus**		
			27.11	Manufacture of electric motors, generators and transformers	
			27.12	Manufacture of electricity distribution and control apparatus	
		27.2	**Manufacture of batteries and accumulators**		
			27.20	Manufacture of batteries and accumulators	
		27.3	**Manufacture of wiring and wiring devices**		
			27.31	Manufacture of fibre optic cables	
			27.32	Manufacture of other electronic and electric wires and cables	
			27.33	Manufacture of wiring devices	
		27.4	**Manufacture of electric lighting equipment**		
			27.40	Manufacture of electric lighting equipment	
		27.5	**Manufacture of domestic appliances**		
			27.51	Manufacture of electric domestic appliances	
			27.52	Manufacture of non-electric domestic appliances	
		27.9	**Manufacture of other electrical equipment**		
			27.90	Manufacture of other electrical equipment	
	28	**Manufacture of machinery and equipment n.e.c.**			
		28.1	**Manufacture of general-purpose machinery**		
			28.11	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	
			28.12	Manufacture of fluid power equipment	

			28.13	Manufacture of other pumps and compressors	
				28.13/1	Manufacture of pumps
				28.13/2	Manufacture of compressors
			28.14	Manufacture of other taps and valves	
			28.15	Manufacture of bearings, gears, gearing and driving elements	
		28.2	**Manufacture of other general-purpose machinery**		
			28.21	Manufacture of ovens, furnaces and furnace burners	
			28.22	Manufacture of lifting and handling equipment	
			28.23	Manufacture of office machinery and equipment (except computers and peripheral equipment)	
			28.24	Manufacture of power-driven hand tools	
			28.25	Manufacture of non-domestic cooling and ventilation equipment	
			28.29	Manufacture of other general-purpose machinery n.e.c.	
		28.3	**Manufacture of agricultural and forestry machinery**		
			28.30	Manufacture of agricultural and forestry machinery	
				28.30/1	Manufacture of agricultural tractors
				28.30/2	Manufacture of agricultural and forestry machinery (other than agricultural tractors)
		28.4	**Manufacture of metal forming machinery and machine tools**		
			28.41	Manufacture of metal forming machinery	
			28.49	Manufacture of other machine tools	
		28.9	**Manufacture of other special-purpose machinery**		
			28.91	Manufacture of machinery for metallurgy	
			28.92	Manufacture of machinery for mining, quarrying and construction	
				28.92/1	Manufacture of machinery for mining
				28.92/2	Manufacture of earthmoving equipment
				28.92/3	Manufacture of equipment for concrete crushing and screening roadworks
			28.93	Manufacture of machinery for food, beverage and tobacco processing	
			28.94	Manufacture of machinery for textile, apparel and leather production	
			28.95	Manufacture of machinery for paper and paperboard production	
			28.96	Manufacture of plastics and rubber machinery	

			28.99	Manufacture of other special-purpose machinery n.e.c.	
	29	**Manufacture of motor vehicles, trailers and semi-trailers**			
		29.1	**Manufacture of motor vehicles**		
			29.10	Manufacture of motor vehicles	
		29.2	**Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers**		
			29.20	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	
				29.20/1	Manufacture of bodies (coachwork) for motor vehicles (except caravans)
				29.20/2	Manufacture of trailers and semi-trailers
				29.20/3	Manufacture of caravans
		29.3	**Manufacture of parts and accessories for motor vehicles**		
			29.31	Manufacture of electrical and electronic equipment for motor vehicles	
			29.32	Manufacture of other parts and accessories for motor vehicles	
	30	**Manufacture of other transport equipment**			
		30.1	**Building of ships and boats**		
			30.11	Building of ships and floating structures	
			30.12	Building of pleasure and sporting boats	
		30.2	**Manufacture of railway locomotives and rolling stock**		
			30.20	Manufacture of railway locomotives and rolling stock	
		30.3	**Manufacture of air and spacecraft and related machinery**		
			30.30	Manufacture of air and spacecraft and related machinery	
		30.4	**Manufacture of military fighting vehicles**		
			30.40	Manufacture of military fighting vehicles	
		30.9	**Manufacture of transport equipment n.e.c.**		
			30.91	Manufacture of motorcycles	
			30.92	Manufacture of bicycles and invalid carriages	
			30.99	Manufacture of other transport equipment n.e.c.	
	31	**Manufacture of furniture**			
		31.0	**Manufacture of furniture**		
			31.01	Manufacture of office and shop furniture	

			31.02	Manufacture of kitchen furniture	
			31.03	Manufacture of mattresses	
			31.09	Manufacture of other furniture	
	32	**Other manufacturing**			
		32.1	**Manufacture of jewellery, bijouterie and related articles**		
			32.11	Striking of coins	
			32.12	Manufacture of jewellery and related articles	
			32.13	Manufacture of imitation jewellery and related articles	
		32.2	**Manufacture of musical instruments**		
			32.20	Manufacture of musical instruments	
		32.3	**Manufacture of sports goods**		
			32.30	Manufacture of sports goods	
		32.4	**Manufacture of games and toys**		
			32.40	Manufacture of games and toys	
				32.40/1	Manufacture of professional and arcade games and toys
				32.40/9	Manufacture of games and toys (other than professional and arcade games and toys) n.e.c.
		32.5	**Manufacture of medical and dental instruments and supplies**		
			32.50	Manufacture of medical and dental instruments and supplies	
		32.9	**Other manufacturing n.e.c.**		
			32.91	Manufacture of brooms and brushes	
			32.99	Other manufacturing n.e.c.	
	33	**Repair and installation of machinery and equipment**			
		33.1	**Repair of fabricated metal products, machinery and equipment**		
			33.11	Repair of fabricated metal products	
			33.12	Repair of machinery	
			33.13	Repair of electronic and optical equipment	
			33.14	Repair of electrical equipment	
			33.15	Repair and maintenance of ships and boats	
			33.16	Repair and maintenance of aircraft and spacecraft	

			33.17	Repair and maintenance of other transport equipment
			33.19	Repair of other equipment
		33.2	**Installation of industrial machinery and equipment**	
			33.20	Installation of industrial machinery and equipment

Appendix (II) Ethics approval letter

Downloaded: 20/10/2021
Approved: 26/03/2020
Bing Pei
Registration number: 170142467
Management School
Programme: PhD
Dear Bing
PROJECT TITLE: The role of accountants in sustainability
APPLICATION: Reference Number 032599
On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 26/03/2020 the
above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation
that you submitted for ethics review:
University research ethics application form 032599 (form submission date: 04/03/2020); (expected project end date:
30/09/2021).
Participant information sheet 1074775 version 5 (04/03/2020).
Participant consent form 1074777 version 2 (23/01/2020).
If during the course of the project you need to deviate significantly from the above-approved documentation please inform
me since written approval will be required.
Your responsibilities in delivering this research project are set out at the end of this letter.
Yours sincerely
Sophie May
Ethics Administrator
Management School
Please note the following responsibilities of the researcher in delivering the research project:
The project must abide by the University's Research Ethics Policy:
https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure
The project must abide by the University's Good Research & Innovation Practices Policy:
https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member
of staff) of any significant changes to the project or the approved documentation.
The researcher must comply with the requirements of the law and relevant guidelines relating to security and
confidentiality of personal data.
The researcher is responsible for effectively managing the data collected both during and after the end of the project
in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Appendix (III) Questionnaire

Part A Demographic Information

1. What is your current job title?
○ Accountant
○ Finance Manager
○ Financial Accountant
○ Financial Controller
○ Financial Manager
○ Management Accountant
○ Other (please specify):

2. How long have you been employed by your current company?
○ Less than 1 year
○ 1-3 years
○ 4-6 years
○ 7-9 years
○ 10 years or more

3. What is your highest level of education completed?
○ Diploma
○ Bachelor's Degree
○ Master's Degree
○ Doctorate Degree
○ Other (please specify):

4. What accounting professional certificate(s) do you hold?
(Please tick or write all certificates you have)
☐ Association of Chartered Certified Accountants (ACCA)
☐ Chartered Global Management Accountants (CGMA)
☐ Chartered Institute of Management Accountants (CIMA)
☐ Institute of Chartered Accountants in England and Wales (ICAEW)
☐ None
☐ Other (Please specify):

5. How many employees (full and part-time), including yourself, are employed in your current company?
○ 0-250 employees

○ more than 250 employees

6. Please indicate in which organisation(s) you have received training in sustainability matters.

☐ Accounting Institution
☐ Current Company
☐ Previous Company
☐ I do not have sustainability training experience.
☐ Other (Please specify):

Part B Accountants and Sustainability

Sustainability accounting is accountants' contribution to using existing or new accounting practices to deal with environmental and social impacts of an organisation's actions.

Environmental aspect in sustainability can include, for example, waste, water, carbon, energy, material, etc., or any other indicators your company applies in this aspect**.** **Social aspect in sustainability** can include, for example, employee health and safety, training and education, customer health and safety, etc., or any other indicators your company applies in this aspect.

7. In your current company, please indicate the extent to which you are engaging in the following sustainability accounting behaviours in your current position.

	Not at all 1	To a very small extent 2	To a small extent 3	To a moderate extent 4	To a great extent 5	To a very great extent 6
7.1 Developing sustainability policies	○	○	○	○	○	○
7.2 Developing robust systems to collect, store and analyse sustainability information	○	○	○	○	○	○
7.3 Connecting	○	○	○	○	○	○

sustainability with companies' strategy						
7.4 Disclosure of sustainability information	○	○	○	○	○	○
7.5 Formulating a sustainability budget	○	○	○	○	○	○
7.6 Evaluating risks presented by sustainability issues	○	○	○	○	○	○
7.7 Sustainability impact assessment	○	○	○	○	○	○
7.8 Response to government sustainability legislation	○	○	○	○	○	○
7.9 Sustainability audit or reviews	○	○	○	○	○	○
7.10 Collecting, analysing and measuring sustainability data	○	○	○	○	○	○
7.11 Investment appraisal in sustainability	○	○	○	○	○	○

7.12 Tax related to sustainability	○	○	○	○	○	○	

8. Please indicate the extent to which you agree or disagree with each of the following statements about engaging in the sustainability accounting behaviours in question 7.

	Strongly disagree 1	Disagree 2	Somewhat disagree 3	Neutral 4	Somewhat agree 5	Agree 6	Strongly agree 7
8.1 I **intend** to engage in sustainability accounting in my company.	○	○	○	○	○	○	○
8.2 I **plan** to engage in sustainability accounting in my company	○	○	○	○	○	○	○
8.3 I **will try** to engage in sustainability accounting in my company.	○	○	○	○	○	○	○
8.4 I **will** engage in sustainability accounting in my company.	○	○	○	○	○	○	○
8.5 I **expect** to engage in sustainability accounting	○	○	○	○	○	○	○

in my company.							
8.6 I **have the will** to engage in sustainability accounting in my company.	○	○	○	○	○	○	○

9. Please indicate the extent to which you agree or disagree with each of the following statements about the sustainability accounting behaviours in question 7. Choosing "1" means you strongly agree with the far left-hand side statement. Choosing "7" means you strongly agree with the far right-hand side statement. Other numbers are for in-between positions.
For me, performing the sustainability accounting behaviours in question 7 is

	1	2	3	4	5	6	7	
9.1 Extremely bad	○	○	○	○	○	○	○	Extremely good
9.2 Extremely unfavourable	○	○	○	○	○	○	○	Extremely favourable
9.3 Harmful	○	○	○	○	○	○	○	Beneficial
9.4 Worthless	○	○	○	○	○	○	○	Valuable
9.5 Extremely unenjoyable	○	○	○	○	○	○	○	Extremely enjoyable

10. Please indicate the extent to which you agree or disagree with each of the following statements.
To me, engaging in sustainability accounting behaviours in question 7 will

	Strongly disagree 1	Disagree 2	Somewhat disagree 3	Neutral 4	Somewhat agree 5	Agree 6	Strongly agree 7
10.1 drive the achievement of the company's	○	○	○	○	○	○	○

sustainability goals							
10.2 contribute to achieving the sustainability outcomes	○	○	○	○	○	○	○
10.3 lead the sustainability change in the company	○	○	○	○	○	○	○
10.4 add value to sustainability management	○	○	○	○	○	○	○
10.5 result in more efficient and effective information management practices	○	○	○	○	○	○	○
10.6 contribute to translating sustainability data into accessible measurements	○	○	○	○	○	○	○
10.7 increase the customer loyalty	○	○	○	○	○	○	○
10.8 enhance the company's reputation	○	○	○	○	○	○	○
10.9 increase the company's profits	○	○	○	○	○	○	○
10.10	○	○	○	○	○	○	○

save costs arising from more efficient and effective operations							
10.11 increase employee loyalty and recruitment	○	○	○	○	○	○	○
10.12 help the company enhance the industry leadership	○	○	○	○	○	○	○
10.13 enhance access to financing capital	○	○	○	○	○	○	○
10.14 refine company mission and strategies	○	○	○	○	○	○	○
10.15 enhance regulatory compliance	○	○	○	○	○	○	○
10.16 enhance opportunities for grants	○	○	○	○	○	○	○
10.17 increase the burden of my workload	○	○	○	○	○	○	○
10.18 increase the cost to the company	○	○	○	○	○	○	○

11. Please indicate the extent to which you agree or disagree with each of the following statements about engaging in sustainability accounting.

	Strongly disagree 1	Disagree 2	Somewhat disagree 3	Neutral 4	Somewhat agree 5	Agree 6	Strongly agree 7
11.1 Most people who are **important** to me would think I should engage in sustainability accounting in the company.	○	○	○	○	○	○	○
11.2 I see myself as **capable** of engaging in sustainability accounting in the company.	○	○	○	○	○	○	○
11.3 I have a **moral obligation** to participate in sustainability accounting in the company.	○	○	○	○	○	○	○
11.4 I am **confident** that I **can** engage in sustainability accounting in the company.	○	○	○	○	○	○	○
11.5 Most people who are **important** to	○	○	○	○	○	○	○

me **want** me to engage in sustainability accounting in the company.							
11.6 Engaging in sustainability accounting is consistent with my **moral principles**.	○	○	○	○	○	○	○
11.7 People whose **opinions** I **value** would **prefer** that I engage in sustainability accounting in the company.	○	○	○	○	○	○	○
11.8 I have a **moral responsibility** to participate in sustainability accounting in the company.	○	○	○	○	○	○	○
11.9 I have the **resources** to engage in sustainability accounting in the company.	○	○	○	○	○	○	○
11.10 I would feel like I am doing something	○	○	○	○	○	○	○

morally right when I engage in sustainability accounting.							
11.11 Most people who are **important** to me **approve** of my engagement in sustainability accounting in the company.	○	○	○	○	○	○	○
11.12 I have **opportunities** to engage in sustainability accounting in the company.	○	○	○	○	○	○	○

12. Please indicate how likely it is that the following people think you should engage in sustainability accounting in the company.

	Extremely unlikely 1	Unlikely 2	Somewhat unlikely 3	Neutral 4	Somewhat likely 5	Likely 6	Extremely likely 7
12.1 Chief Executive Officer (CEO)	○	○	○	○	○	○	○
12.2 Chief Finance Officer (CFO)	○	○	○	○	○	○	○
12.3 Sustaina	○	○	○	○	○	○	○

bility Manager							
12.4 Operating Manager	○	○	○	○	○	○	○
12.5 Production Manager	○	○	○	○	○	○	○

13. Please indicate the extent to which you agree or disagree with each of the following statements.

	Strongly disagree 1	Disagree 2	Somewhat disagree 3	Neutral 4	Somewhat agree 5	Agree 6	Strongly agree 7
13.1 I **have** sustainability accounting-related knowledge and skills.	○	○	○	○	○	○	○
13.2 Sustainability issues can influence financial performance.	○	○	○	○	○	○	○
13.3 Sustainability information is relevant to my company.	○	○	○	○	○	○	○
13.4 My company **does not** engage in sustainability.	○	○	○	○	○	○	○
13.5 Sustainability issues can	○	○	○	○	○	○	○

influence cost, risk, and value.							
13.6 I **do not** clearly understand sustainability accounting.	○	○	○	○	○	○	○
13.7 I have **no** experience in sustainability accounting.	○	○	○	○	○	○	○
13.8 I **lack** training and education about sustainability accounting.	○	○	○	○	○	○	○
13.9 The company lacks training in sustainability accounting.	○	○	○	○	○	○	○
13.10 I **lack** time to engage in sustainability accounting.	○	○	○	○	○	○	○
13.11 I am **not** interested in engaging in sustainability accounting.	○	○	○	○	○	○	○
13.12 Sustainability accounting is **outside** my job sphere.	○	○	○	○	○	○	○

13.13 Other colleagues in the company provide sustainability information.	○	○	○	○	○	○	○
13.14 The current accounting system and processes **do not** support the inclusion of sustainability data.	○	○	○	○	○	○	○
13.15 There is a **lack** of sustainability accounting standards.	○	○	○	○	○	○	○
13.16 There is a **lack** of necessary guidance for accountants to practise sustainability accounting.	○	○	○	○	○	○	○

14. Please indicate your opinion about the following statements according to the situation in your current company.

	Yes	No	I do not know.
14.1 Does your current company engage in sustainability?	○	○	○
14.2 Does your current company have	○	○	○

sustainability strategies?			
14.3 Does your company have a sustainability system?	○	○	○
14.4 Does your company have a dedicated department responsible for sustainability?	○	○	○
14.5 Do you work with different departments on sustainability?	○	○	○
14.6 Do staff from other departments require your engagement in dealing with sustainability?	○	○	○
14.7 Does your company give you guidance on how to deal with sustainability?	○	○	○
14.8 Do the decision-makers require you to engage in sustainability?	○	○	○
14.9 Is dealing with sustainability part of your job role?	○	○	○
14.10 Do you have any knowledge about how to undertake sustainability accounting?	○	○	○
14.11	○	○	○

Does your current company train you in how to deal with sustainability?			
14.12 Are you self-learning about sustainability outside your company?	○	○	○
14.13 Are there sustainability accounting rules you must follow in your company?	○	○	○

15. Is there anything else you would like to add about accountants' engagement in sustainability accounting?

Part C Further Information

16. Would you like to receive a summary of the research results?
(If YES, please provide your name, e-mail address, and telephone number below.)
○ Yes
○ No
17. As a part of this research, would you be willing to participate in the follow-up study?
(If YES or To be decided, please provide your name, e-mail address, and telephone number.)
○ Yes
○ No
○ To be decided

Your name

Email address

Telephone number

You have completed this survey!
Thank you for taking time to answer this survey.

Appendix (IV) Interview guide

Interview Guide

Part I Interview Introduction

- researcher's self-introduction
- introducing the aims of the interview
- research ethics
- expected interview duration
- asking for the interview record permission (online face-to-face or online audio interview only)
- any questions before the interview starts

Part II Interview Questions

Theme 1 General context of the company's engagement in sustainability

- Could you please describe your job role?
- What does sustainability accounting mean to you?
- Has your department or organisation responded to sustainability issues?

  If it has, can you explain the different methods it has used for sustainability accounting?

  If it has not, why do you think that is?

Theme 2 Perceptions of engaging in sustainability accounting

- How would you describe your engagement with sustainability accounting?
- Why have you gotten involved in undertaking sustainability accounting?

- What do you think are the main advantages of you undertaking sustainability accounting?
- What do you think are the main disadvantages of you undertaking sustainability accounting?
- Who are the people that would most likely influence whether you undertake sustainability accounting or not?

Why those people?

How can they influence your engagement?

What do you think are their expectations for you to engage in sustainability accounting?

- Do you think there is a moral obligation to undertake sustainability accounting?

If yes, why?

If not, why?

Theme 3 How are accountants integrated into the sustainability process?

- Did your company encourage or cultivate your engagement in sustainability accounting?

    If yes, what approaches did they use to get you engaged in sustainability accounting?

    If not, what is your company's attitude toward sustainability and your engagement? Then how were you engaged? What role should your company play in this process?

- What are your responsibilities in relation to sustainability accounting?

    How do you manage these issues?

- What are the things that stop you, make it difficult for you or challenge you to undertake sustainability accounting? Why? How do you think they can be overcome?

    If no things are stopping you, what is/are the valuable experiences you've learned?

- What are the things that help you undertake sustainability accounting? Why? How?
- Is there a department that looks after sustainability?

If yes, what is it? What are their roles? How do you work with them?

If not, are you working together with other departments/staff to ensure sustainability in your company?

If yes, what department(s) do you work with?

Why are you required to deal with sustainability with them?

How do you work with them?

- How do you think your current practice can be improved and developed?

Theme 4 Future Expectations

- What are your expectations about your future role in sustainability accounting?
- Will the role of accounting in the future change due to the addition of sustainability?
- How do you see the future development direction and prospects of your role in sustainability accounting?
- What responsibilities may accountants take in sustainability in the future?

Part III End of interview

- Finally, is there anything else we haven't discussed yet that you think would influence your undertaking sustainability accounting? Why would those things be influential?
- What else that is important comes to your mind about accountants' engagement in sustainability accounting that you would like to add?
- Are there any final comments you'd like to make about sustainable accounting?