Gordon Institute of Business Science
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Application of TPB to quality management systems as basis for corporate sustainability reporting

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Abstract

Management systems, whether documented or informal, have been a fundamental part of doing business as long as commercial trade has been practised since time memorial. Requirements have since been formalised into standards such as ISO 9001 and stakeholder desires have evolved to include the need for creditable accurate sustainability reporting. Core to successful implementation of these requirements are engaged employees. This study adds to the body of knowledge by testing the Theory of Planned Behaviour (TPB) to evaluate employees' perceptions and intention to exhibit Quality Management System (QMS) compliance behaviour in economically successful companies that complete Corporate Sustainability Reporting (CSR).

A mixed exploratory methodology was followed, utilizing the standard TPB model to determine whether the compliance intention of employees could be assessed and predicted; and themed codes to provide insight into employee perceptions, contributing factors and levels of engagement.

Results indicated a relatively weak predictive value of the TPB model, prompting an extended model to be recommended for future research in this context. Attitude proved to be the largest influencer of intention; the more positive employees, the more likely they are to behave in compliance with QMS requirements. Further paradoxical findings regarding employees' perceived control and self-efficacy over their actions were found. While, employees are likely to have the intention to comply with QMS requirements, varying levels of Perceived Behavioural Control (PBC) indicated a possible lack of active engagement. Significantly, overwhelming employee support for the use of QMS as information highway to ensure reliable, accurate and verifiable data for CSR was found.

Keywords

Theory of planned behaviour (TPB);
Quality management systems (QMS);
Corporate sustainability reporting (CSR);
ISO 9001;
Employee engagement.

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Masters of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Glory-May Jacobs Date: 13 January 2016

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ABBREVIATIONS

ATT	:	Attitude
Ave	:	Average
CSR	:	Corporate sustainability reporting
INT	:	Intention
ISO	:	International Organization for Standardization
MLR	:	Multiple linear regression
PBC	:	Perceived behavioural control
PC	:	Principle component
PCA	:	Principle component analysis
PCR	:	Principle component regression
PLS	:	Partial least squares regression
QMS	:	Quality management system
SN	:	Subjective norms
TPB	:	Theory of planned behaviour

CHAPTER 1. INTRODUCTION TO RESEARCH PROBLEM

1.1 Introduction

"If we each take responsibility in shifting our own behavior, we can trigger the type of change that is necessary to achieve sustainability for our race or this planet."

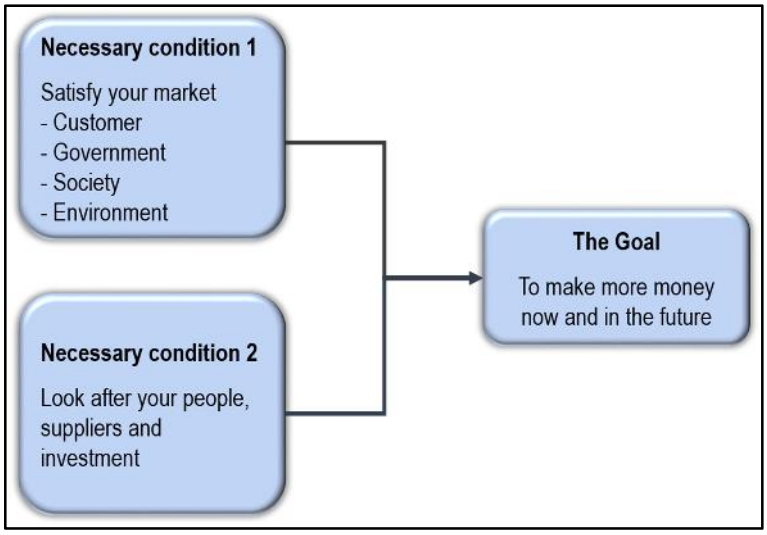
Yehuda Berg, rabbi & author. (Brainy Quote, n.d.g)

Sustainability development was introduced by the Brundtland Commission (1987), as "the way for improving the quality of life and well-being for the present and future generations". The concept of the triple bottom line was later presented by Elkington (1994) as a mechanism for companies to report their financial, social and environmental risks, responsibilities and opportunities which has since developed into the broader concept of sustainability reporting (Elkington, 1994). Hopkins (2009) identified that the benefits to a company for sustainability are not only financial from energy saving and resource efficiencies, but also increased labour and resource productivity and employee engagement.

In a recent survey (Ernst & Young, 2012), it was surmised that corporate sustainability has become an expectation by shareholders and proposed that corporate sustainability is as core to the company operations as quality, safety, customer satisfaction and employee retention.

Figure 1.1 Company sustainability

(Adapted from Pretorius, 2002)



Conversely, Goldratt (1990) proposed a sustainability model (Figure 1.1) that consists of two necessary conditions to ensure company goal achievement, which is to be profitable now in such a way as to ensure profitability in the future. Condition one is the need to satisfy the company's market, consisting of customers, government, society and the physical environment. Condition two is to nurture the relationships with the company's employees, suppliers and investments. Both of these conditions can be fulfilled by the implementation of processes that together form a quality management system which incorporates all company operations (Hopkins, 2009). Recent studies (Enticott & Walker, 2008; Mishra & Napier, 2015) have postulated that a positive relationship exists between corporate sustainability, quality management and company performance.

Ernst and Young (2012) further predict that since sustainability practices have shown an upward trend since the global recession in 2008, mainly as a tool for cost cutting and meeting stakeholder expectations, sustainability reporting is expected to increase. Implementing sustainability within a company requires the establishment of a management system able to draw on verifiable information to make sustainable management decisions (Ernst & Young, 2012), which can be successfully completed by integrating total quality management into the business (Christofi, Sisaye, & Bodnar, 2008). It is clear that sustainability and quality management systems (QMS) are interlinked. Therefore, the researcher contends that an efficient QMS creates a basis for sustainability reporting and corporate sustainability.

"Quality is not an act, it is a habit."

Aristotle, Greek philosopher. (Brainy Quote, n.d.f)

The implementation of management systems and sustainability require employees to be engaged (Zeng, Tian, & Tam, 2007; Levine & Toffel, 2010; Al-Rawahi & Bashir, 2011; Watson, 2015). It is further required that employees cognitively change their behaviour to act in compliance with requirements, empowered by an organization deemed worthy and who value employees' opinions (Seppälä, Lipponen, Bardi, & Pirttilä-Backman, 2012). The success of employee behavioural change is driven by the likely consequences that exhibiting the behaviour would attract, as postulated by the expectancy theory

(Vroom, 1982). Therefore, employees required behaviour is expected to be influenced by their intentions and volition which is driven by their attitudes, their social norms and perceived behaviour control (Ajzen, 1991; 2011).

"Understanding your employee's perspective can go a long way towards increasing productivity and happiness."

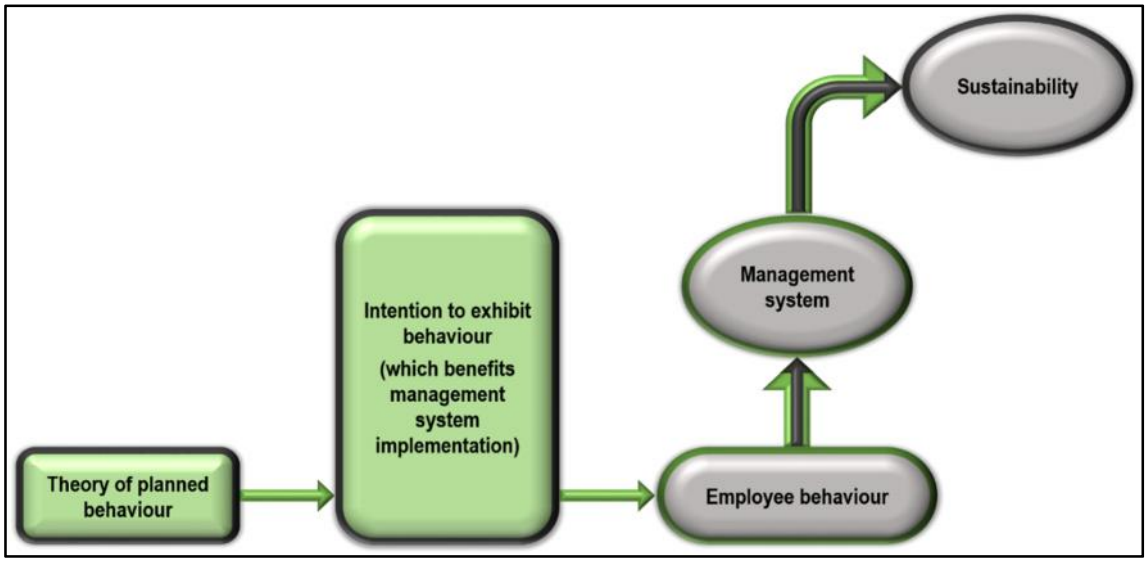
Kathryn Minshew, CEO and co-founder of The Muse. (Brainy Quote, n.d.d)

The theory of planned behaviour (Ajzen, 1991; 2011) has been successfully used in different fields of study to determine the probable intention towards carrying out a behaviour (De Cannière, De Pelsmacker, & Geuens, 2009; Webb, Sniehotta, & Michie, 2010; Yoon, 2011; Kautonen, Van Gelderen, & Tornikoski, 2013; Chen & Tung, 2014). However, the theory of planned behaviour's application to the behaviour required for implementation of management systems as basis for corporate sustainability has received negligible attention.

Intel (Kruschwitz, 2012) is one of the companies that embraced voluntary environmental reporting in 1994 and has shown that sustainability creates value for the company in a variety of areas such as risk management, operational excellence, cost saving, brand value, revenue and new market opportunities. Suzanne Fallender, the Intel director of CSR Strategy and Communications (Kruschwitz, 2012), highlighted the importance of employee engagement by integrating sustainability metrics into organization and financial goals and personnel performance. This allows for all employees to be included in the company sustainability drives and is used as a management initiative to facilitate employee engagement (Kruschwitz, 2012).

Employees as key stakeholders for sustainability of a company is confirmed by the Ernst and Young survey (2012) and therefore employee active engagement is required. Such engagement has many benefits such as employee attraction and retention, improved operational efficiency, strengthening of customer relations, increased innovation and stronger community ties (Ernst & Young, 2012).

Figure 1.2 Research focus



Source: Researcher's own

Figure 1.2 demonstrates the relationships between employee behaviour, management systems and sustainability with the green arrows showing the research area. Sustainability reporting requires verifiable data (Ernst & Young, 2012) which can be provided by an integrated total quality management system due to the proven interlinkage of these two systems (Christofi et al., 2008). Since employee engagement is fundamental to both quality management systems and sustainability (Ernst & Young, 2012; Watson, 2015), measurement and prediction of their behaviour is important to ensuring compliance to both. In order to measure employee behaviour, the theory of planned behaviour will be used to determine the probability of employees' intention to exhibit behaviours that affect the implementation of a management system as a tool to drive sustainability.

1.2 Research problem

The research problem can be summarised as follows:

(a) Academic problem: The applicability of the theory of planned behaviour model within the context of an organization's management system and corporate sustainability to identify employee behaviour towards successful implementation.

(b) Specific business value: Can the theory of planned behaviour model be used to predict the probability of employees to exhibit behaviour in compliance with management system requirements; and thereby enable more targeted

management initiatives to elicit more effective implementation creating the basis for accurate, auditable information for corporate sustainability reporting, to meet stakeholder expectations?

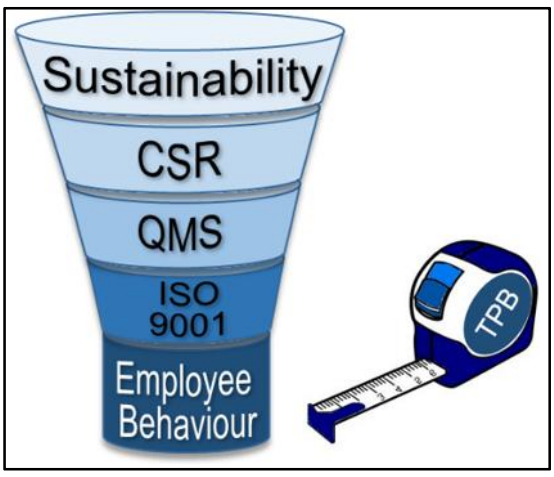
As the basis for many an integrated management system (Hemsworth, Sanchez-Rodriguez, & Bidgood, 2005; Karapetrovic, Leopoulos, Voulgaridou, Bellos, & Kirytopoulos, 2010), ISO 9001 has been the cornerstone of quality implementation. The ISO 9001:2008 quality management system (QMS) standard has recently come to the end of its review cycle and an updated version has been published in September 2015 (ISO, 2015a). With the publication of the new ISO 9001:2015 standard, it is expected that companies ardent about sustainability will have a renewed interest in ensuring compliance to the updated standard.

It is postulated that this study could provide insight for managers into which factors influence employee intention to exhibit compliance behaviour when a certified QMS is used for process, data and information verification as the basis for corporate sustainability reporting.

1.3 Research scope

The scope of this research project has been intentionally limited to the application of the theory of planned behaviour model (TPB) to companies that have a certified ISO 9001:2008 QMS and complete sustainability reporting as part of their financial and management reporting corporate governance requirements.

Figure 1.3 Research scope



Source: Researcher's own

A funnel approach, as depicted by Figure 1.3, was taken leading from the broad concept of sustainability, to the more specific topic of corporate sustainability reporting (CSR), examining what is required to make CSR effective, which led to the identification of management systems and in particular ISO 9001:2008 as an example, required to ensure valid accurate and verifiable information. The restraint of this study to companies that have implemented ISO 9001:2008 was chosen since ISO has exhibited consistent, albeit small, growth globally with increased certification, specifically in the South African industry of 6%.

Figure 1.4 World distribution of ISO 9001 certificates in 2014
(ISO, 2015b)

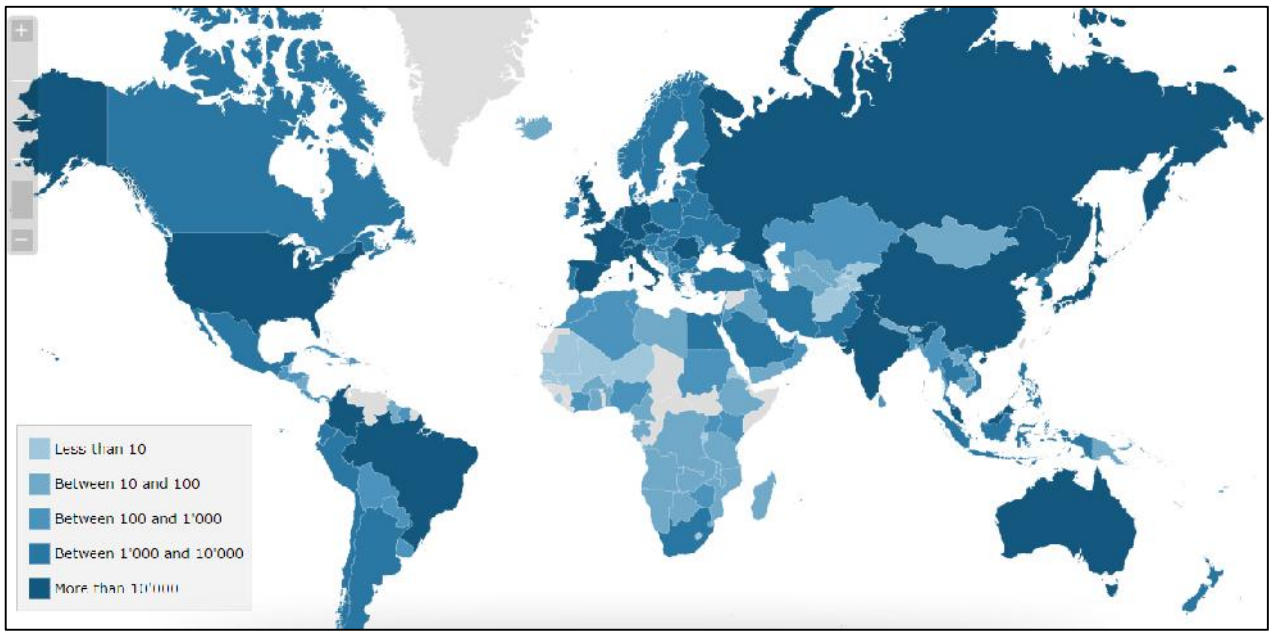


Figure 1.4 shows the ISO 2014 survey of certifications which indicates that the majority (over 70%) of ISO certification is to the standard of ISO 9001 (ISO, 2015b).

Following the focussed approach further, the scope was drilled down to what is required to make a management system effective, which led to pinpointing the need to have employee's exhibit behaviour in support of, and in compliance with, the requirements of a management system. The theory of planned behaviour was chosen as the model to determine whether such behaviour can be identified and predicted within the study context.

1.4 Research objectives

The research objectives are to determine, by applying TPB, the probability of employee intention to engage in behaviours required to successfully implement the organization's management system in order to provide robust data needed for sustainability reporting. Thus ensuring the stakeholder requirements for company sustainability are realised.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction to literature review

This chapter addresses the literature review in four main areas, namely, the theory of planned behaviour (TPB), sustainability, management systems and employee engagement.

Figure 2.1 Literature review layout

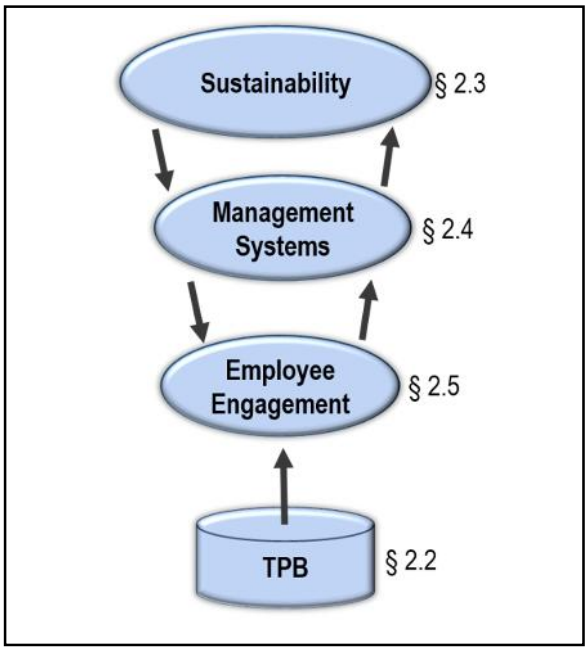


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Figure 2.1 shows the layout of this chapter. The first section (§2.2) explores TPB in more detail, establishes previous use, applicability and possible capability to predict behavioural intention. The second section (§2.3) explores sustainability, corporate sustainability reporting and its relevance to organisational performance as well as its link to management systems. The third section (§2.4) explores quality management systems as a basis for sustainability, reliable reporting and auditing of systems for compliance and transparency. Employee engagement aspects are specifically evaluated in the fourth section (§2.5) to determine whether it is relevant to both effective management systems and sustainability.

Paragraphs 2.3 to 2.5 provide the context of the study, whilst §2.2 provides an evaluation and justification for the use of the theory of planned behaviour within this context. The final paragraph (§2.6) summarises the literature review and provides a holistic view of all four areas examined, identifying the body of knowledge area to which this study has contributed.

2.2 Theory of planned behaviour

2.2.1 TPB explained

Fishbein and Ajzen (1975) proposed that an individual's intention to exhibit a specific behaviour can be predicted by the Theory of Reasoned Action. However, it was highlighted (Chiou, 1998), that this model had limitations (Liska, 1984; Sheppard, Hartwick, & Warshaw, 1988), such as its inability to address behaviour that required resources, skills and cooperation from others nor does it take into account the individual's experience. Thus the TPB was developed by Ajzen (1991) which proposed that the extent to which an individual's intention to exhibit a behaviour can be determined based on their attitude towards the behaviour, the individual's subjective norms, and their perceived behavioural intention.

Figure 2.2 Theory of Planned Behaviour

(Adapted from Ajzen, 2011)

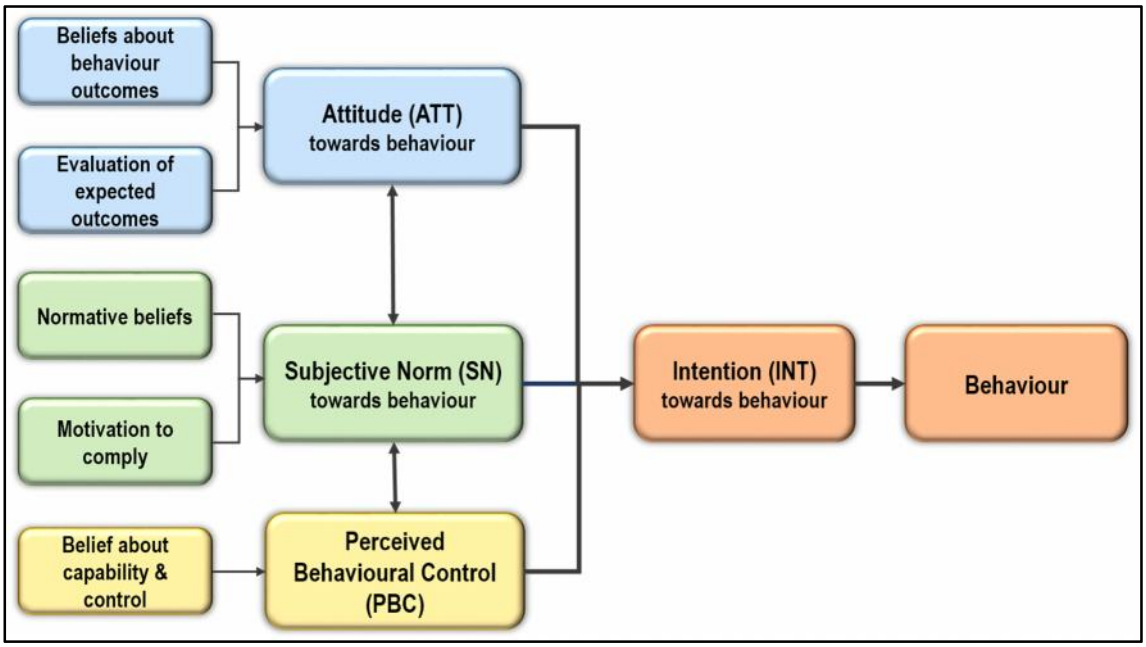


Figure 2.2 demonstrates the relationship that attitudes (ATT), subjective norms (SN) and perceived behavioural control (PBC), as independent variables, have on behavioural intention (INT), the dependent variable (Cordano & Frieze, 2000). The TPB model, a cognitive approach to explaining behaviour, examines the underling beliefs, attitudes and perceived behavioural control (Morris, Marzano, Dandy, & O'Brien, 2012). Perceived behavioural control is similar to self-efficacy (Bandura, 1997), where the perceived level of difficulty to carry out the behaviour is determined. The higher the perceived behavioural control of the individual due to increased experience and access to resources, the more control the individual has over his behaviour, self-efficacy, and hence the higher the intention towards carrying out that behaviour, as a probable prediction of the outcome of behavioural intention.

2.2.2 Why TPB?

Whilst many different models (Darnton, 2008; Morris et al., 2012) can be used to assess behaviour, the researcher has selected TPB for this study since perceived behavioural control (PBC) can be used as a proxy to measure for actual behavioural control when the individual's perceptive thereof is realistic (Ajzen, 1991; Ajzen, 2011) and can be used to predict behavioural intention.

Table 2.1 Use and applicability of TPB

Area of study	Outcome	Reference
Preferences of environmental managers in pollution reduction	"Ajzen's theory of planned behaviour provides useful foundation that investigates managerial decision that impact environmental performance."	Cordano & Frieze (2000, p.638)
Contrasting the TPB "with the Value-Belief-Norm Model in explaining conservation" behaviour.	"The TPB is impressive at explaining concertation intention (76%) and conservation behavior (95%), even when moral concepts are not addressed explicitly."	Kaiser, Hübner & Bogner, (2005, p.2167)
"Ethical decision making in the public accounting profession"	"Arguably, extending the framework to the moral domain is testing the boundary limits of the theory; however, recent research efforts have demonstrated promise in this area."	Buchan (2005, p.178)
"Predicting intention to increase physical activity"	"In common with previous research, it has shown that the standard TPB methodology is not sufficient in adequately eliciting effective behavioural beliefs and that effective attitudes explain unique variance in intention above and beyond that explained by standard TPB variables."	French et al. (2005, p.1844)
Whether changing behavioural intentions stimulates behaviour change	"Similarly, the effect sizes obtained for the TRA/TPB suggest that this model provides a worthwhile basis for developing interventions in addition to its role in identifying useful process and outcome variables…."	Web & Sheeran (2006, p.261)

Table 2.1 Use and applicability of TPB (Continued)

Area of study	Outcome	Reference
Understanding and predicting the adoption of electronic commerce	"By accounting for both deliberate (prior experience) and automated (habit) past behaviors as control variables, we find empirical evidence for the adequacy of TPB perceptions to reflect past activities, validating Ajzen's (1991) theoretical assertion, at least for the two e-commerce behaviors."	Pavlou & Fygenson (2006, p.133)
The "role of environmental concerns" on TPB	"The approach of this study – that is, the integration of environmental concerns within Ajzen's (1985) theory of planned behaviour – can provide important insights to policymakers in motivations that underlie intention to use a new transferium."	De Groot & Steg (2007, p.1832)
"Young people's use of social networking web sites"	"Overall, the present study provided some support for the application of the TPB model in the context of high-level SNW use with attitude and subjective norms significantly predicting intention, which, in turn, significantly predicted behaviour."	Pelling & White (2009, p.758)
Applicability to green hotel choice as environmental friendly activities	"The present study tested the appropriateness of TPB in explaining hotel customers' intention formation to choose a green hotel. With the exemption of the effect of EFA, our study objectives were achieved."	Han, Hsu & Sheu, (2010, p.330)
The role of TPB in digital piracy	"The research model that combines the TPB and ethics theories, and adds perceived benefits, perceived risk, and habit, is proposed and the hypotheses are established to empirically test the research model. The results show that all hypotheses are supported."	Yoon (2011, p.414)
Exploring environmental behavioural intentions in the work place	"Overall, our findings showed that the TPB constructs accounted for between 55-68% of the variance in employee intentions to engage in three environmental behaviors."	Greaves, Zibarras & Stride (2013, p.31)
Predicting entrepreneurial behaviour	"In spite of the limitations, this article demonstrates the potential of the TPB in studying the emergence of complex economic behaviour such as entrepreneurship prior to the onset of any observable action."	Kautonen, et al. (2013, p.704)
Predicting consumers' "intention to visit green hotels"	"The results also confirm that the TPB model is a research framework useful for explaining the consumer's intention to visit green hotels."	Chen, & Tung (2014, p.227)

The application of TPB has been demonstrated in Table 2.1 across a variety of study fields and has predominantly shown to be useful in the prediction of behaviour. Conner and Armitage (1998) confirmed that this theory could be widely applied to successfully predict a variety of behaviours; and went further to suggest that it could be expanded to understand how attitudes, based on perception, drives behaviour which has an impact on the achievement of a goal.

In some instances (French et al., 2005), TPB has not been sufficient in predicting behaviour. However, these areas have included additional variables such as emotion.

The researcher has noted that TPB has strong detractors (Sniehotta, Presseau, & Araújo-Soares, 2014) who argue that TPB does not take into account emotion or unconscious influences and that TPB has too large a focus on rational reasoning. However, since, this research study is conducted in the business context and not in the personal motivational or health fields, it is not expected that an excess of emotion will play a significant part in the application of TPB and therefore will not distract from the intended purpose, as stated in §1.4 of this study.

Further, the Sniehotta, Presseau and Araújo-Soares (2014) article has received strong criticism from Ajzen (2014) and Conner (2014), both renown in the field of psychological sciences, who have demonstrated that the opinion of Sniehotta, Presseau and Araújo-Soares (2014) was based on a flawed, imperfect understanding and interpretation of the TPB Model. Conner (2014) went further to propose that TPB is not only alive and well, but should be extended rather than retired. Whilst there is sure to be a continuing debate amongst academics as to the merits of the TPB, the value of its use has been clearly demonstrated as listed in table 2.1, making it an appropriate model for the purposes of this study.

It is proposed that by determining the attitudes that enable successful implementation of a management system, through management intervention, these attitudes can be enhanced by providing the resources and support needed to drive organisational norms, and employee self-efficacy towards their intention to carry out essential compliance behaviour. For the purposes of this study, compliance behaviour is that which would enable continued compliance and implementation of a management system in order to provide reliable auditable information required for sustainability.

2.2.3 Applicability to study

The TPB model will be used to explain and predict probable intention to exhibit compliance behaviour and is considered a useful method to identify influences on that behaviour which could be intentionally targeted by management to drive change (Hardeman et al., 2002).

However, although TPB is able to demonstrate relationships with exhibited behaviour, it is not considered to be an effective tool for use in developing or designing the type of

intervention to promote behavioural change (Hardeman et al., 2002; Webb et al., 2010). It should be noted that demonstration of effective interventions is outside the scope of this study, but would be considered an area for further research.

2.3 Sustainability

2.3.1 Definitions

Innumerable studies (Kolodinsky, Madden, Zisk, & Henkel, 2010) have attempted to determine a definition for corporate sustainable reporting and sustainability, however agreement on a singular definition has not been reached. Similarly, a universally agreed definition for corporate sustainability has not been found (Roca & Searcy, 2012). Duque Ciceri, Garetti and Terzi (2009) suggested use of a simple semantic definition, i.e., "sustainability is a quality that permits to preserve, to keep, to maintain something". This is consistent with the sustainability model in which Goldratt (1990) asserts that the goal of a company is to be profitable now in such a way as to ensure it can remain profitable in the future. Hahn (2011) contends that sustainability and corporate sustainability reporting are consistent concepts, meaning that they are part and parcel of the same set of requirements. This logic is backed up with the logical definitions provided by Goldratt (1990) and Duque Ciceri et al. (2009).

The concept of sustainability, as first proposed in 1987 by the Brundtland Report (Brundtland Commission, 1987) which defined sustainable development as a means for improving the quality of life and well-being for the present and future generations, was further developed into the triple bottom line (Elkington, 1994) for company reporting on three dimensions, i.e. financial, social and environmental risks, with a fourth, technology, introduced by Baud (2008).

The first dimension of financial reporting covers the general economic indicators on economic issues within an existing regulatory framework such as Generally Accepted Accounting Principles (GAAP) or International Financial Reporting standards (IFRS) (Hahn & Kühnen, 2013). The second dimension of corporate social responsibility is defined as the company's integration of social and environmental concerns. The third dimension, into the company's business operations and interactions with stakeholders (Tencati, Perrini, & Pogutz, 2004). Technology is used (Duque Ciceri et al., 2009) as the

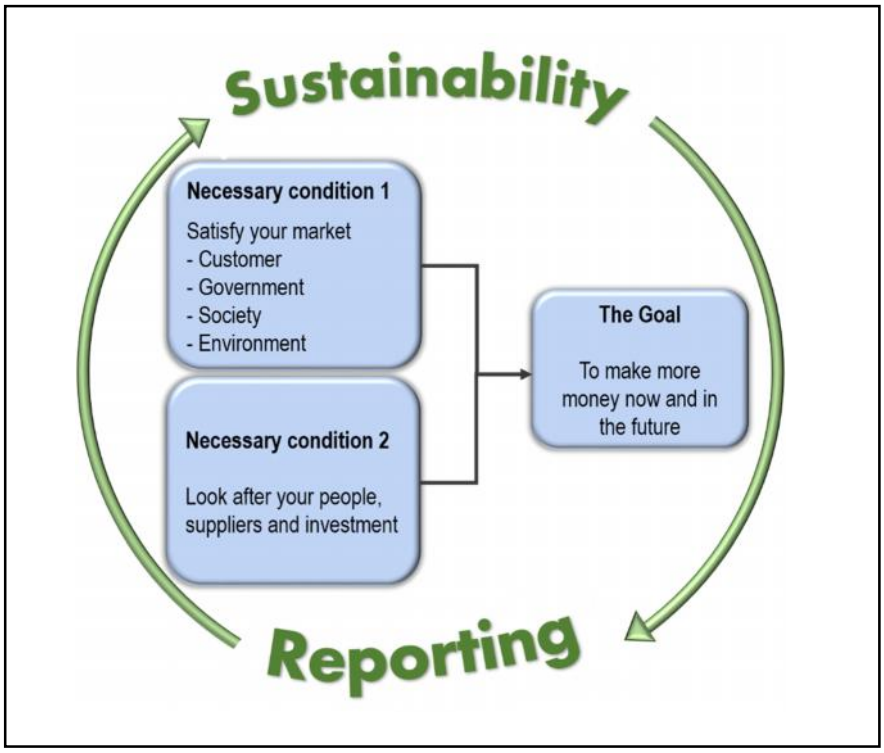
fourth pillar for sustainability engineering, which is defined as the application of scientific knowledge to design and implement products, systems and processes that takes into account constraints applicable due to sustainability. The fourth dimension is consistent with aspects of management systems, which is the focus of this study.

2.3.2 Why is sustainability relevant?

Implementation of environmental initiatives, such as those associated with sustainablity, with adequate human resource support, motivates staff and increases job satisfaction and employee retention (Benn, Teo, & Martin, 2015).

Since the goal of a for-profit company is "to make money now and in the future" (Goldratt & Cox, 2004), it needs to do so in a way which is sustainable. In order to accomplish that vision it is essential that the company draw data into decision-making information in a systematic manner (Goldratt, 1990).

Figure 2.3 Company sustainability reporting
(Adapted from Pretorius, 2002)



As shown in Figure 2.3 and briefly explained in §1.1, sustainability can be accomplished by ensuring achievement of the necessary conditions combined with the ability to draw

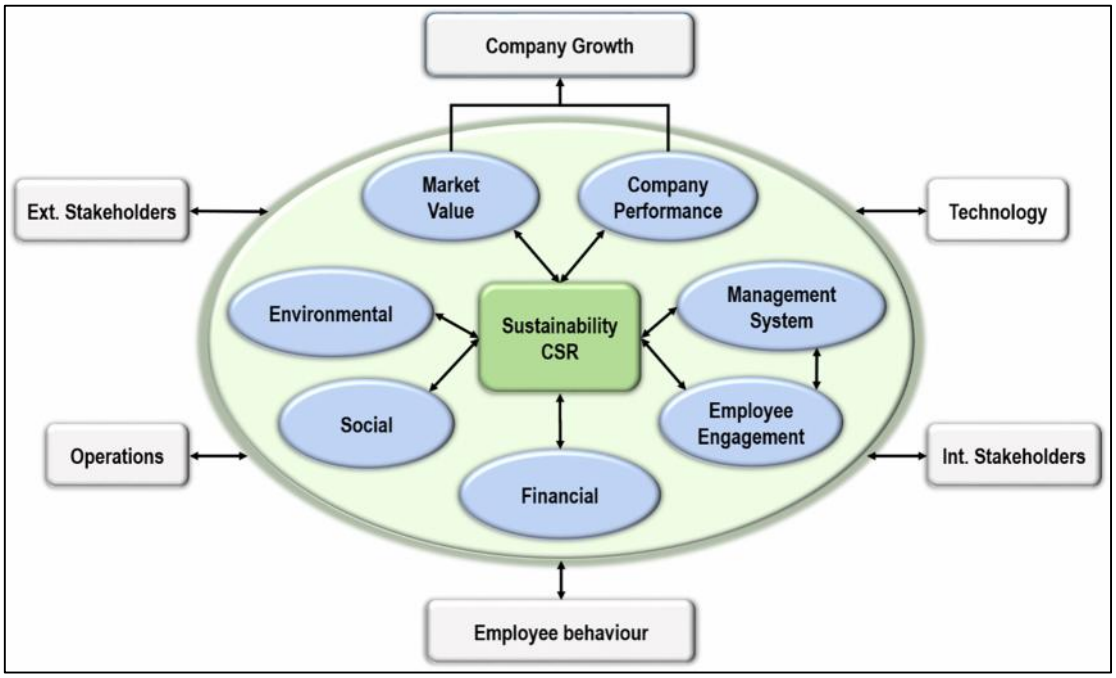
information from the system which can be used to demonstrate company performance, responsibility, profitability and growth to stakeholders (Goldratt, 1990), i.e. sustainability reporting, which has increasingly been acknowledged as a significant component of corporate sustainability (Lozano & Huisingh, 2011).

Sustainability reporting has numerous advantages such as better market positioning and increased corporate trust and reputation (Tencati et al., 2004) and has a positive impact on company reputation, used as a proxy for management quality (Hopkins, 2009). If the company is rigorous and thoughtful about how it conducts its business, then it is likely to be rigorous and thoughtful about other business aspects such as finance, markets and the technical quality of its products (Hopkins, 2009).

Whilst there appears to be some debate regarding the positive relationship of market value with the degree and quality of corporate sustainability reporting, with some claiming mixed results (Clarkson, Overell, & Chapple, 2011; Clarkson, Li, Richardson, & Vasvari, 2008; Stanny & Ely, 2008), and others indicating a significantly positive relationship (Prado-Lorenzo, Rodríguez-Domínguez, Gallego-Álvarez, & García-Sánchez, 2009), there is a growing trend towards stakeholder expectation of company sustainability reporting (Ernst & Young, 2012). Enticott and Walker (2008) established that a positive relationship exists between sustainable management and sustainable performance.

Sustainability reporting is increasingly used by multinational companies to demonstrate commitment to social and environmental activities, thereby being accountable to a broader array of stakeholders (Kolk, 2003; Blair, Williams, & Lin, 2008; Kolk, 2010; Clarkson, Li, Richardson, & Vasvari, 2011; Perego & Kolk, 2012; Nazari, Herremans, Warsame, Kakabadse, & Fleur, 2015). Further studies have shown that sustainability reporting indicates a positive relationship to how the company is perceived (Vuko & Vitezić, 2012) especially during economic downturns and uncertainty (Lackmann, Ernstberger, & Stich, 2012), and the financial performance of large and profitable firms (Lourenço, Branco, Curto, & Eugénio, 2012).

Figure 2.4 Sustainability influencers as drivers for company growth



Source: Researcher's Own

Based on literature, the researcher has noted that many factors influence sustainability, as summarised in Figure 2.4. It is evident that sustainability is a multidimensional concept that can appear chaotic. However, how a company manages the accompanying challenges is dependent on the information available for decision making (Schneider, 2015). If that information is based on systematically derived accurate data, the resultant management decision will drive the company towards higher performance attaining sustainability over all dimensions. Not only has an effective management system and top management support been recognized as important for overall business performance, but these factors also enhance sustainability reporting (Nazari et al., 2015). Stakeholder involvement, such as employee engagement processes, increases the potential to align business activities with sustainability initiatives (Schneider, 2015).

2.3.3 Reporting trends

Whilst sustainability reporting is primarily voluntary with the reporting practices both flexible and disclosing in nature, there is an increasing trend toward multidimensional reporting (Kolk, 2010) and integrated reporting (KPMG, 2011). This trend has led to the establishment of voluntary reporting standards by the Global Reporting Initiative (GRI) (Kolk, 2010; Global Reporting Initiative, 2011). However, in spite of these standardization initiatives, large differences between the reporting quality and content

of companies remain (Fortanier, Kolk, & Pinkse, 2011). Therefore, a company needs to have established internal structures and resources to facilitate sustainable reporting and behaviour (Clarkson et al., 2011; Perego & Kolk, 2012). The GRI standards are helpful in this regard, specifying the dimensions of sustainability, financial, social and environmental, separately, but does not address technology (Baud, 2008; Duque Ciceri et al., 2009) or any interactions between these dimensions (Lozano & Huisingh, 2011; Lozano, 2013). The GRI G3 guideline broadens the scope of reporting to not only include financial assurance, but also non-financial aspects (Blair et al., 2008), including requirements to verify these non-traditional issues (Perego & Kolk, 2012).

Hence, the quality of the sustainability reporting is becoming more important to stakeholders, having a significant effect on investor's decisions (Lackmann et al., 2012). Reliability of information used for reporting is an area for further development and research (Lackmann et al., 2012). Stakeholders have increasingly expected that information used for reporting be transparent and verifiable, which is positively linked to third party auditing and certification (Ernst & Young, 2012). Stakeholders' perception of sustainability information reported by companies is influenced by its plausibility and trustworthiness, which has resulted in companies increasing the exposure of their sustainability reports to a larger number of stakeholders through extended media coverage, thereby signalling the legitimacy of the information (Hahn & Kühnen, 2013).

Whilst it is clear that much research is required into the standardization of sustainability reporting, the researcher advocates that a robust certified management system would provide the platform to comply with any further developed sustainability reporting standards or requirements. Quality of sustainability reporting remains an obstacle due to the differing financial standards, such as GAAP used by the United States versus the IFRS used by the European Union (Tschopp & Nastanski, 2014). These differing financial reporting standards notwithstanding, when the data used for reporting is gained through a certified quality management system allowing for the verification of data, it shows reliability by consistent adherence to processes and systems - providing further rigor and legitimacy to the quality of corporate sustainability reports.

While assurance levels across companies vary significantly, assurance requirements have increased internationally (Simnett, Vanstraelen, & Chua, 2009). The researcher further asserts that the crux of effective implementation of a quality management lies with the employees, which is further evaluated in §2.5.

2.4 Management systems

"Quality is never an accident. It is always the result of intelligent effort."

John Ruskin, English art critic of the Victorian era, art patron and philanthropist.

(Brainy Quote, n.d.e)

2.4.1 Management system standards

Numerous standards have been associated with sustainability, such as ISO 26000, ISO 14000 and ISO 9001 (Fortanier et al., 2011) as well as the GRI-G3 standard for sustainability reporting (Tschopp & Nastanski, 2014).

Table 2.2 Available standards associated with sustainability

Standard	Purpose	Use
ISO 26000	Reporting tool, rather than a standard, that provides guidance on implementing and integrating social responsibility into an organisation (Tschopp & Nastanski, 2014).	Not a standard, rather principle based, not an accredited standard (Tschopp & Nastanski, 2014), not a management system.
GRI G3	Reporting framework and standard. Voluntary use (Tschopp & Nastanski, 2014).	Not a management standard, only applicable to reporting. Does not have any assurance activities (Tschopp & Nastanski, 2014).
ISO 14001	Recognised third party certification management system (Tschopp & Nastanski, 2014).	Accredited management system with quality assurance (auditing) function (Tschopp & Nastanski, 2014).
ISO 9001	Recognised third party certification management system (Tschopp & Nastanski, 2014). Often used as basis to integrate other standards such as ISO 14001 and OSHAS 18001 (Bernardo, Casadesus, Karapetrovic, & Heras, 2009).	Accredited management system with quality assurance (auditing) function (Tschopp & Nastanski, 2014).

As highlighted in Table 2.2, the GRI-G3 standard does not provide an assurance function, which is an area that is clearly a concern for stakeholder who require that the information used for sustainability reporting be verifiable and legitimate (Lackmann et al., 2012). Therefore, without the auditing function, the GRI-G3 standard is no more than a "voluntary wish list" (Hahn & Kühnen, 2013).

The ISO standards (ISO, n.d.) are developed by an international organisation that has 163 member countries, one of which is South Africa. The International Organisation for Standardization uses the acronym of ISO, which is derived from the Greek “isos”, meaning “equal”. ISO is recognised as the largest developer of voluntary international standards. In the economic globalisation of business, it is advantageous that an internationally recognised management standard be applied to a business, as this allows for a universal and consistent understanding of the processes and product/service quality of the company, facilitating international trade (ISO, n.d.).

The ISO 26000 standard is not considered an accredited standard, but rather a guideline for sustainability reporting, similar to the GRI-G3 standard. Both ISO 9001 and 14001 are recognized management standards. However, it has been found that predominantly when organizations implement ISO 14001, ISO 9001 is considered the basis and ISO 14001 is then integrated into the system (Karapetrovic, 2002; Bernardo et al., 2009; Karapetrovic & Casadesús, 2009). Further, it has been suggested that quality management can serve as the bridge between sustainability and practical implementation of business processes (Rusinko, 2005). Therefore, ISO 9001 has been selected as example of a management system for this study.

2.4.2 Link to company performance and sustainability

“Quality is the best business plan.”

John Lasseter. Animator, film director, screenwriter. (Brainy Quote, n.d.c)

The use of a quality management system to strengthen a company’s competitive position in all markets has received extensive acknowledgement as a fundamental business management strategy (Zelnik, Maletič, Maletič, & Gomišček, 2012). Studies (Zwetsloot, 2003; Aikens, 2011; Mishra & Napier, 2015) have established positive links between company success and sustainability as well as between management systems and sustainability. Significant value has been found from implementing an ISO 9001 management system ranging from improved financial performance (Sharma, 2005), increased sales (Heras, Dick, & Casadesus, 2002), to improved productivity (Tzelepis, Tsekouras, Skuras, & Dimara, 2006). Therefore, the researcher contends that the implementation of a quality management system, such as ISO 9001, is a prudent business decision.

Companies that have adopted a quality management system perform better in terms of flexibility and ability to adjust to requirements and changes in their company strategies and administrative processes, than companies that did not (Gómez-Gras & Verdú-Jover, 2005). Paradoxically, such increased performance did not necessarily translate to greater economic performance (Gómez-Gras & Verdú-Jover, 2005). However, contradictory evidence (Lam, Lee, Ooi, & Lin, 2011) found that companies with an implemented quality management system showed improved financial and market performance.

A significant positive relationship was established between quality management and market performance, indicating that the adoption of quality management practices improved company efficiency in competitiveness both locally and internationally specifically pertaining to the Malaysian service industry (Lam et al., 2011). In a later study (Bello-Pintado & Merino-Díaz-de-Cerio, 2013), it was found that companies that have high levels of business and industry uncertainty are more likely to adopt a quality management system to attain improved business performance. A recent study (Wang & Huynh, 2014) found consistent results indicating that organisational performance is enhanced by the adoption of a quality management system. Furthermore, the stakeholder requirement for independent, third party assurance (Lackmann et al., 2012) is also met by the implementation of a management system (Aikens, 2011).

Whilst the research reviewed on the results of adopting a quality management system showed differing opinions on the benefits thereof, it is clear that even if a study found no link (Gómez-Gras & Verdú-Jover, 2005) to company performance, the overwhelming majority of studies found a positive relationship between a quality management system and company performance. Thus adopting a quality management system would seem a sensible management decision.

2.4.3 Effective implementation

Since a quality management system is fundamental to company efficiency, the successful implementation thereof is similarly important. Regular third-party audits by certification bodies and internal audits establishes both the effectiveness, whether the quality management system has been developed to meet the needs of the company and the certification standards; and the efficiency, whether the company is implementing its

system, optimally (Tschopp & Nastanski, 2014). The success of such implementation, in turn, is heavily influenced by attitudes, perceptions and behaviours exhibited by the employees involved in the business processes (Gollan, 2005; Dahlgaard-Park, 2011; Al-Zoubi, 2012; Dahlgaard-Park, 2012; Green, 2012; Renwick, Redman, & Maguire, 2013; Wickramasinghe & Perera, 2014; Benn et al., 2015).

Factors affecting the efficiency of management system implementation are: continuous improvement, customer focus and prevention of nonconformities (Psomas, Pantouvakis, & Kafetzopoulos, 2013). These are all factors that are based on employee behavioural aspects to have the desired outcome. The researcher argues that for a system to be efficient and effective, it is required that all parts work together, which in a company requires that it functions as a team. This in itself necessitates that a social norm be established where cohesion and cooperation among team members, as well as individual participative and creative behaviours, be developed (Janssen & Huang, 2008).

Involvement of people is one of the eight principles of quality management (ISO, 2012) under the ISO 9001:2008 version; and has been retained as one of the seven quality management principles in the recently updated ISO 9001:2015 version (ISO, 2015c). Thus, employee engagement is still considered one of the cornerstones for successful implementation and maintenance of a quality management system (El Tigani, 2012).

Further, the success of adopting a new quality management system, as would be the case for ISO 9001:2015, depends largely on employee involvement and buy-in (El Tigani, 2012). Implementation and the ability to assess effectiveness is considered the most difficult part of a quality management system. Both, implementation and effectiveness are dependent on employee's levels of engagement (El Tigani, 2012).

Whilst there is a clear linkage between employee involvement and the success of quality system implementation, many quality related initiatives are not as effective as they could potentially be due to insufficient consideration of the level of employee involvement (Dahlgaard-Park, 2011). This indicates that research into the human aspects of employees and their engagement at work is needed (Dahlgaard-Park, 2012).

2.5 Employee engagement

"It is not necessary to change. Survival is not mandatory."

Edwards Deming. Engineer, statistician, author. (Brainy Quote, n.d.b)

Research (Harter, Schmidt, & Hayes, 2002) suggests that increased employee satisfaction, derived from increased employee engagement, increases business outcomes such as profit. It is fundamental to understand what is meant by employee engagement in these terms. An engaged employee is defined as an individual that is "fully involved in, and enthusiastic about, his or her work" (Seijts & Crim, 2006); whilst engaged refers to the "individual employee's cognitive, emotional and behavioural state directed towards desired organisational outcomes" (Shuck & Wollard, 2010). Further research (Harter et al., 2002; Seijts & Crim, 2006; Shuck & Wollard, 2010; Christian, Garza, & Slaughter, 2011; Medlin & Green Jr., 2014) linked high levels of employee engagement to improved employee and organisational performance. Recent research (Medlin & Green Jr., 2014) found that engaged employees exhibit more efficiency and are more effective in implementing processes required to ensure customer satisfaction which leads to higher utilisation of organisational resources.

Business processes such as those required for both management and sustainability systems therefore, are dependent on employee engagement for a successful outcome (Janssen & Huang, 2008; Lamm, Tosti-Kharas, & King, 2014). Although the role of employees in implementing sustainability policies has not been well understood (Ramus & Killmer, 2007; Boiral & Paillé, 2012), some believe that for sustainability to be effective it needs to be part of how the company operates (Haugh & Talwar, 2010). How the company operates is documented in their management system, implemented by their employees. Therefore, employees are the key to ensuring effective and efficient implementation of management systems.

It is postulated (Lamm et al., 2014) that the sustainability behaviour of a company is not dependent on the organisational level but by the individual employee level. If an employee values sustainability and perceives that the company values sustainability, it has a positive effect on job attitude and employee intention to carry out that behaviour. Further benefits to the employees and company is psychological empowerment, more organisation identification and job retention when employees are more aligned and engaged in an environmentally sustainable company (Lamm et al., 2014).

The implementation of a quality management system such as ISO 9001 has a beneficial relationship, with financial and safety benefits for both the organization and its employees (Levine & Toffel, 2010). Employees derive more job satisfaction from working for sustainable companies (Lamm et al., 2014). The company therefore needs to create a working environment that provides employees the assurance that the company values their contributions and are concerned with their welfare (Wickramasinghe & Perera, 2014).

The importance of employee participation for the success of environmental initiatives is widely supported in literature (Renwick et al., 2013). By empowering employees with quality participation processes, the company achieves organisational effectiveness with an increase in job satisfaction and staff retention which, in turn, results in increased dividends (Gollan, 2005). Quality participation processes that include integrated performance evaluations, rewards and career advancement spur personnel to go the extra mile, subsequently enhancing the employees' engagement on the physical, cognitively and emotional levels (Wickramasinghe & Perera, 2014).

For an organisation to be a sustainable company, it should provide reliable, auditable information (Ernst & Young, 2012) which can be done by having a management system in place such as ISO 9001. This requires the engagement and compliance of employees towards implementing the management system (Janssen & Huang, 2008; Lamm et al., 2014) to provide robust data needed for sustainability reporting. The attitude and support of employees is especially important when new initiatives, such as ISO 9001:2015 updates or new reporting standards, are introduced in a company (Oreg, Vakola, & Armenakis, 2011).

The importance of employees on the success of quality management systems and sustainability has been recognised in literature, however little empirical evidence on the effects of employee attitudes and expectations has been provided (Wickramasinghe & Perera, 2014). Although, a recent study (Thoradeniya, Lee, Tan, & Ferreira, 2015) found that by using the TPB, it was possible to link managers' intention to engage in sustainablity reporting activities based on their attitudes, beliefs and perceived control, there remains scant information about the behaviour of employees in company sustainability and quality management practices.

2.6 Summary of literature review

The quality of sustainability reporting and whether integrated reporting satisfies stakeholders' information needs and contributes to their empowerment has been identified as a field of interest in sustainability. More specifically the quality of the processes for collecting the data and information used for such reporting, which can be done by the implementation of a management system. If these processes are consistently completed to a specified quality level, auditable and verifiable, the quality of reporting substantially increases, providing rigor by demonstrating compliance to a quality standard such as ISO 9001:2008 as example.

Therefore, if a company has a certified management system, it can provide transparency and credibility to its reporting. More specifically, it is important to ensure employee engagement in compliance behaviour, i.e. behaviour that consistently is driven towards implementation of management system requirements. It is acknowledged that fundamental to the success and continued compliance of a management system are the employees and their behaviour. Since human behaviour is dependent on the situation and social norms, it is not possible to establish with certainty what that behaviour will be. However, it has been demonstrated that the TPB can predict, with some success, the probability of the intention to behaviour in a required manner once the attitude, social norms and perceived behavioural controls have been established. Such information can be used to drive management initiatives to create the environment most conducive to increase the probability of such compliance behaviour.

The TPB has been successfully used to determine management intention to behave sustainably by engaging in corporate reporting. However, it has been recognised that more study into psychological factors which influence sustainability behaviour is needed. This study attempts to determine whether TPB can be applied in the context of a company's management system to predict employees' intention to exhibit compliance behaviour in order to provide robust data for sustainability reporting.

CHAPTER 3. RESEARCH QUESTIONS

3.1 Introduction to research questions

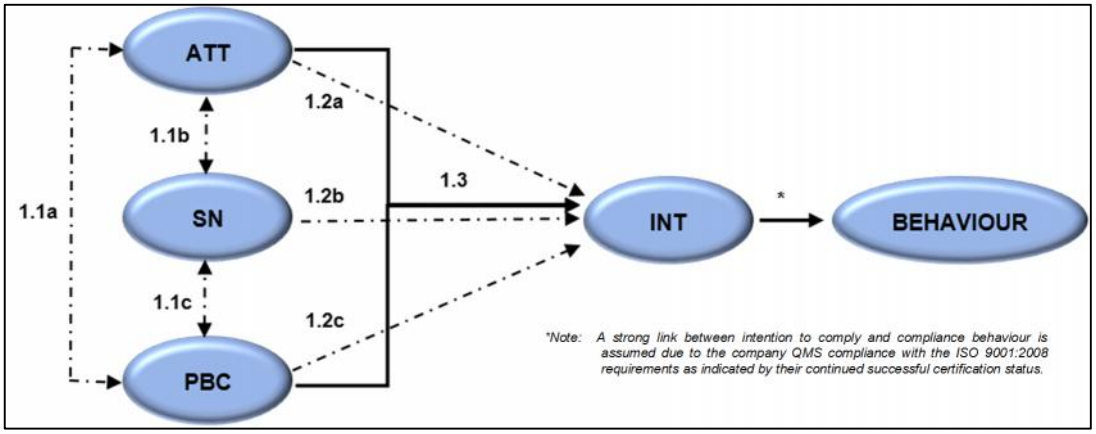
The research questions emanate from the need to examine the role of employees' compliance behaviour towards quality management systems, such as ISO 9001. In the literature review, it was shown that such systems provide a basis for information validation, verification and flow to enable corporate sustainability reporting. This study explores whether the theory of planned behaviour (TPB), as analysis model, can be used to determine and predict the intention of employees to exhibit compliance behaviour in the context of a quality management system, as the basis for sustainability reporting.

3.2 Research questions

3.2.1 Research question 1

Does a relationship exist between employee attitude (ATT), their subjective norms (SN) and perceived behavioural control (PBC) and the employee's intention (INT) to exhibit behaviour in support of quality management system requirements to ensure reliable and auditable data for sustainability reporting?

Figure 3.1 TPB research questions



Source: Researcher's Own

Figure 3.1 shows research question 1 linked to the following constituent sub-questions:

(1.1) How independent are the variables ATT, SN and PBC?

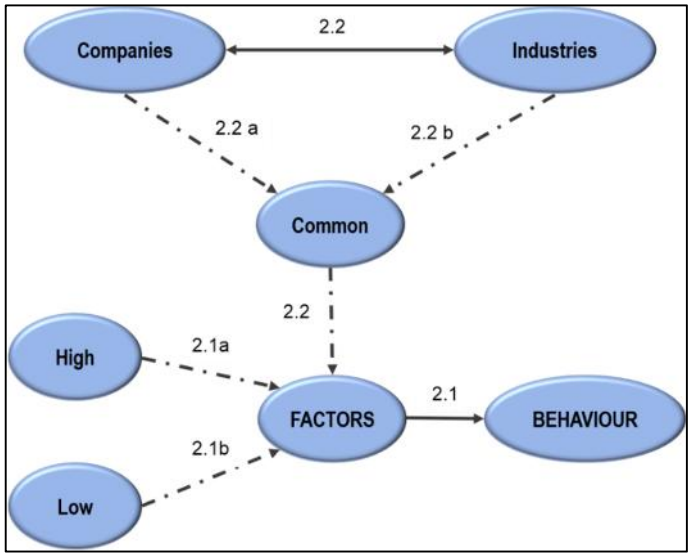
(1.2) Are there any relationships between each independent variable ATT, SN, PBC and the dependent variable INT?

(1.3) Can ATT, SN and PBC be combined, as TPB model, to predict probability of INT?

3.2.2 Research question 2

Are any trends or factors evident that could affect quality management system implementation or sustainability reporting?

Figure 3.2 Trend research questions



Source: Researcher's Own

Figure 3.2 shows the constituent sub-questions of research question 2 as follows:

(2.1) What are the most significant trends observed or factors contributing towards employee attitude and compliance behaviour?

(2.2) Are there common trends or factors across companies or industries?

3.3 Summary of research questions

In summary, the first research question seeks to establish whether relationships between the variables of the TPB model exits and to determine whether one or more of the independent variables are able to explain the variance of the dependent variable. Thus becoming a model that could provide a predictive tool for employee intention to exhibit compliance behaviour.

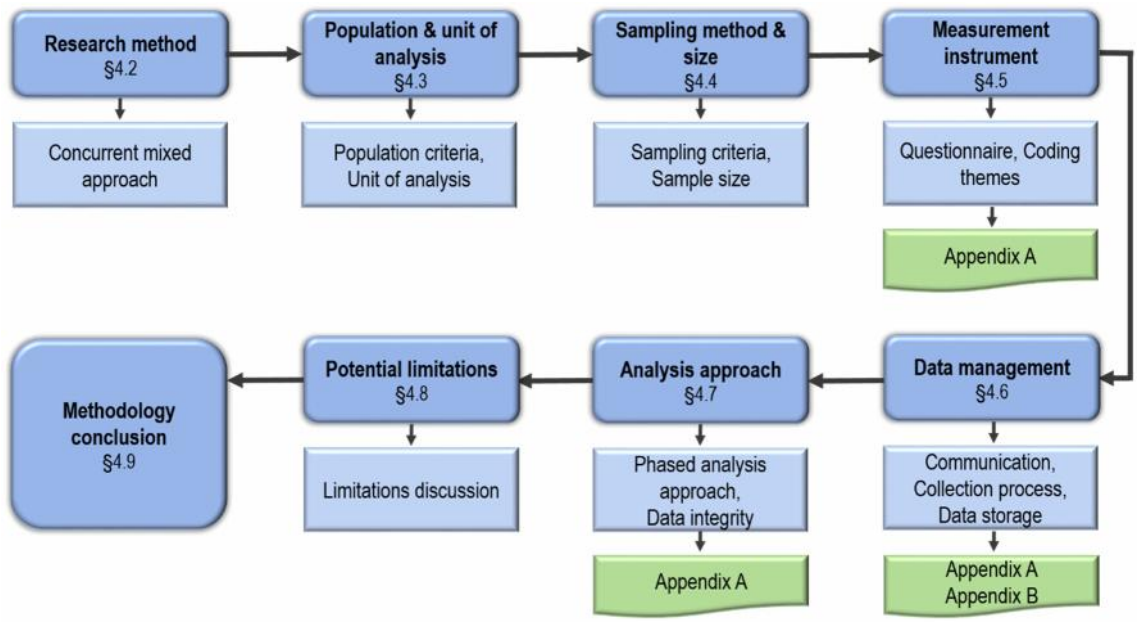
The second research question seeks to establish whether contributing and common factors can be determined towards compliance behaviour between organisations and in the population as a whole. These questions drive the methodology selected as detailed in the following chapter.

CHAPTER 4. METHODOLOGY

4.1 Introduction to methodology

This chapter provides detailed description of the methodology approach, justification for choice of methodology, identifies the population, details the sampling methods, the research tools used, data management, the data analysis methods and limitations of the methods employed.

Figure 4.1 Chapter 4 layout



Source: Researcher's Own

Figure 4.1 provides guidance for the flow of the chapter with a quick reference to which paragraph covers specific topics and their associated appendices, if any.

4.2 Research method

The research methodology has followed a deductive approach, due to the application of an established theory (TPB) within the context of management systems, with a post hoc model to determine whether any trends could be identified that affected the implementation (Saunders, Lewis, & Thornhill, 2012). Using a concurrent approach, the research questions are based on a theory that was expected to hold, and tested within the logic of the argument (Blaikie, 2009). This research study was separated into the following two phases to answer the research questions posed in §3.2:

(1) use of TPB to establish to whether a relationship exists between employee attitudes (ATT), subjective norms (SN), perceived behavioural control (PBC) and their intention (INT) to exhibit compliance-based behaviour towards management system requirements; and

(2) determining possible trends that affect QMS implementation or sustainability reporting.

The research questions, lends itself to a concurrent mixed methodology, which involves more than one phase of methodology, data collection and analysis (Saunders et al., 2012). The first phase, quantitative, involved using a modified questionnaire as data collection tool, designed using the Ajzen (2006) TPB conceptual questionnaire design. Standard measurement tools were used to develop the questionnaire in order to determine the attitudes, subjective norms and perceived behavioural control towards the intention to exhibit behaviour that was conducive to the implementation of a management system.

The second phase, predominantly a qualitative approach involved the identification and coding of themes identified in the questionnaire to determine whether trends could be detected that affected the implementation of a management system or sustainability reporting. Since the purpose of this study was exploratory, phase 2 attempted to provide more robust business context.

This research, combining phase one and phase two, was an exploratory mixed study (Saunders et al., 2012), meaning that the two phases provided a more holistic view of the effect of employees on the implementation of a management system, the applicability of TPB in this context and provide insight for further research.

A survey research strategy was employed for this study, as it is closely associated with a deductive research approach, which is a common strategy in business and management research, and fitted well with the exploratory research methodology using the TPB model. This allowed for data analysis using descriptive and inferential statistics to establish possible relationships between variables and coding to determine potential related trends (Saunders et al., 2012).

4.3 Population and unit of analysis

The universe consisted of employees and managers of companies listed on the Johannesburg Stock Exchange (JSE) that have a certified ISO 9001:2008 QMS, as well as complete sustainability reporting according to the GRI list, within South Africa.

For the purposes of this study, it was necessary to select companies that have an established management system in order to provide richer data as to the experience of the employees and managers leading to established attitudes, subjective norms and perceived behavioural control within the context of the management system requirements. Further, the selection of companies that have a certified QMS, implies that employees have been successfully engaged in compliance behaviour as evident by the company's continued certification status.

The unit of analysis therefore is the intention to exhibit compliance behaviour based on the attitudes, subjective norms and perceived behavioural control experienced or perceived by the employees.

4.4 Sampling method and size

A probability sampling technique was initially employed using mixed sampling methods. The first sampling strategy required that JSE listed companies were evaluated against the following three criteria:

- Implemented QMS
- ISO 9001: 2008 certified
- Complete GRI reporting

Companies were removed from the population if any one of the criteria was not verifiable via an examination of their company websites and integrated annual reports. A random sample of 12 companies was choosing using a random online number generator (Strat Trek, n.d.).

Phase 2 involved a non-probability sampling technique following a purposive approach as all responses to phase 1 were selected due to the pertinence of the information to the research questions (Saunders et al., 2012). Therefore, data collection and analysis for both phases occurred concurrently.

Phase 1 results have received priority since the main purpose of this research was to determine the applicability of the TPB model within the context of a QMS; with phase 2 results providing milieu and depth to the results (Creswell, 2003).

4.4.1 Phase 1 sample size

The companies were approached after ethical clearance and requested to send the online questionnaire link to their employees across all job levels within a specific functional area. The targeted sample size was at least 20 respondents per company with at least 10 companies taking part in the survey.

Since, the researcher contacted the company representative telephonically first, before sending email correspondence, the researcher expected an 85% response rate for company participation and a 60% employee response rate since their management sent out the request.

Figure 4.2 Sample size calculation

$$n_a = \frac{n \times 100}{re\ \%}$$

Where:
n_a = actual sample size required
n = minimum sample size (targeted number)
$re\ \%$ = estimated response rate

$$n_a = \frac{10 \times 100}{85\ \%}$$
$$= 11.7$$
$$= \sim 12 \text{ companies}$$

$$n_a = \frac{20 \times 100}{60\ \%}$$
$$= 33.3$$
$$= \sim 33 \text{ employees per company}$$

Source: Researcher's Own

Figure 4.2 shows the calculation completed to determine the number of companies to sample, and number of employees to send requests for participation (Saunders et al., 2012).

4.4.2 Phase 2 sample size

Since a non-random sampling approach was required, all the responses from phase 1 were included in the sample size.

4.5 Measurement instrument

4.5.1 Phase 1: TPB questionnaire

The questionnaire was developed according to a generic set of management system compliance behaviours. Categorical information was requested such as job level to determine whether any prevalent trends exist at the companies during phase 2. Each question was constructed using the Ajzen (2006) questionnaire construction methodology.

(a) Target behaviour

The target behaviour, i.e., compliance behaviour, (as defined in §2.2.2) taking its Target, Action, Context and Time (TACT) into consideration (Ajzen, 2006) was defined in elements:

T = target behaviour of compliance
A = any action which shows compliance
C = management system
T = within the last year and expected for the next year

It should be noted that the time (T) element of the questionnaire development guide (Ajzen, 2006), was specified on the front page of the questionnaire by including it in the research description, and therefore was not specific for each question. Each TACT element was evaluated using the principles of compatibility, specificity and generality (Ajzen, 2006) as follows:

(i) Compatibility

Compatibility in this context refers to defining the constructs of the TPB model in the same manner as for the element (Ajzen, 2006). For example, for the fictional intention to submit an operational report by the specified deadline, the questions should be phrased to determine the attitude compatible with the behaviour; the subjective norms, such as perceived organisational pressure to comply, and the perceived behavioural control to assess what level of control the respondent feels about their ability to exhibit the behaviour.

(ii) Specificity and generality

Since this study was generic about the intention to exhibit compliance behaviour within the context of a QMS, specificity was not added. The generality of the intention was included within the timeframe set at the start of the questionnaire, based on the respondents' experience over the past year and their intentions over the next year and therefore based on their general attitudes and intentions towards compliance behaviour. Although Ajzen (2006) advocates that both of these types of questions are required to determine the intention to exhibit the behaviour, these requirements were based within the context of changing health related behaviour such as intention to exercise; which were not relevant for this study within the context of a QMS.

(b) Reliability

To ensure a more reliable measure of the intention to behaviour in a specified manner, the element context was changed to provide more robust results. The responses were aggregated to provide a more generalised score, which provided for a more accurate predictive result (Ajzen, 2006).

(c) Standard Direct Measures

Each construct, was broken down into components. For each component between two and five questions were posed to more accurately determine the response for each (Ajzen, 2006). The responses to the questions per component were analysed to determine the highest internal reliability coefficient which was aggregated as the construct score.

Table 4.1 Summary of TPB constructs, components and associated questions

Construct	Components	Questionnaire Questions
Attitude	ATT1: Having a QMS is beneficial to me and the company.	Q1; Q9; Q10; Q22; Q39
	ATT2: Having a QMS increases the efficiency and profitability of the company.	Q23; Q28; Q34
	ATT3: A QMS supports sustainability reporting.	Q5; Q14; Q17; Q26
	ATT4: QMS training helps me to know why I need to implement the system and what I have to do.	Q2; Q8; Q27
	ATT5: ISO 9001 is a useful standard and the requirements are reasonable.	Q7; Q18; Q25; Q29
Subjective Norms	SN1: It is expected that I comply with QMS requirements.	Q11; Q30; Q40
	SN2: My family and friends expect me to follow rules and requirements at work.	Q13; Q24
	SN3: I am influenced by what I see others doing.	Q3; Q33

Table 4.1 Summary of TPB constructs, components and associated questions (continued)

Construct	Components	Questionnaire Questions
Perceived Behavioural Control	PBC1: I have authority to complete tasks assigned to me.	Q37; Q38
	PBC2: I have input into QMS requirements affecting me.	Q16; Q20
	PBC3: My opinion is valued.	Q21; Q31; Q36
Intention	INT1: My intention is to be compliant at work.	Q4; Q6
	INT2: I want to comply with QMS requirements.	Q15; Q32; Q35
	INT3: I intend to contribute to the success of the company.	Q12; Q19

Source: Researcher's own

Table 4.1 shows a summary of the TPB constructs, their constituent components and the questionnaire question numbers associated to each component.

(i) Attitude

The standard attitude scaling of Likert (Likert, 1932) was used with a numeric scale such as '1 = strongly disagree' to '7 = strongly agree'. The questions were set with adjective pairs that were opposite in meaning, such as 'harmful' and 'beneficial', 'unlikely' and 'likely' or 'disagree' and 'agree' (Ajzen, 2006). Each question was carefully structured to counterbalance the positive or negative attitudes for each element. The following components made up the construct of Attitude (ATT):

ATT1: Having a QMS is beneficial to me and the company.

ATT2: Having a QMS increases the efficiency and profitability of the company.

ATT3: A QMS supports sustainability reporting.

ATT4: QMS training helps me to know why I need to implement the system and what I have to do.

ATT5: ISO 9001 is a useful standard and the requirements are reasonable.

(ii) Subjective Norms

Subjective norms questions were structured to assess the same component in a variety of contexts in a descriptive manner. Such as for example: my peers expect me to complete the operational report on time, with numerical scaling 'definitely true' to 'definitely false'; my colleagues whom I value most would be

disappointed if I did not complete the operational report on time, with scaling ranging from 'highly likely' to 'highly unlikely' or 'strongly agree' to 'strongly disagree'. The aim of these types of questions was to determine approval and disapproval of the expected behaviour (Ajzen, 2006). The following components made up the construct of Subjective Norms (SN):

SN1: It is expected that I comply with QMS requirements.

SN2: My family and friends expect me to follow rules and requirements at work.

SN3: I am influenced by what I see others doing.

(iii) Perceived Behavioural Control

The purpose of the questions for perceived behavioural control was to measure the respondent's confidence about their capacity to carry out the behaviour, their control over being able to exhibit the behaviour and their intention to carry out the behaviour in that context (Ajzen, 2006). These led to questions constructed in such a way as to elicit responses ranging from 'definitely true' to 'definitely false' or 'strongly agree' to 'strongly disagree'. The following components made up the construct of Perceived Behavioural Control (PBC):

PBC1: I have authority to complete tasks assigned to me.

PBC2: I have input into QMS requirements affecting me.

PBC3: My opinion is valued.

(iv) Intention

Components were selected for different behaviours specifically pertaining to the direct measure of intention. The questions were separated and placed into a non-systematic order in-between the other constructs to provide more reliable measures and test the TPB's predictive validity (Ajzen, 2006). The scale used was, depending on the context, 'highly unlikely' to 'highly likely', and 'strongly disagree' to 'strongly agree'. The following components made up the construct of Intent (INT):

INT1: My intention is to be compliant at work.

INT2: I want to comply with QMS requirements.

INT3: I intend to contribute to the success of the company.

(d) Variables

(i) Dependent

The dependent variable was the intention to carry out compliance behaviour (INT) and was expected to be dependent on the respondent's attitude, subjective norms and perceived behavioural control in one or more combinations thereof.

(ii) Independent

The independent variables are attitude (ATT), subjective norms (SN) and perceived behavioural control (PBC). These were expected to be independent of each other, but have either a positive or negative relationship to intention to exhibit compliance behaviour.

4.5.2 Phase 2: Coding of themes

The data gathered through the online surveys, researcher-generated data (Marshal & Rossman, 2014), was used for this qualitative approach. Electronic and internet based data gathering methods for qualitative studies has received more support due to the pervasiveness of technology in modern society (Marshal & Rossman, 2014).

Although, not open-ended questions, due to the exploratory nature of this study, the questions guided towards themes which were relevant in the context of this study, i.e. implementation of a quality management system and sustainability reporting.

Table 4.2 Code Themes

Themes	Positive toward QMS	Negative towards QMS
QMS usefulness	QMS is beneficial	QMS is harmful/useless
ISO 9001	ISO 9001 is a useful system	ISO 9001 is not a useful system
Information flow for CSR	QMS assists with information flow & CSR	QMS does not assists with information flow & CSR
Control of activities	I have knowledge of, control over & input into QMS requirements in my work area	I have limited of no knowledge of, no control over & no input into QMS requirements in my work area
Expectations	It is expected and I intend to comply with rules and requirements at work	It is not expected nor do I intent to comply with rules and requirements at work

Source: Researcher's own

Table 4.2 shows the themes used for the qualitative coding. Appendix A provides more detail regarding the questionnaire threads and associated codes that were used to categorise the ordinal rank-ordered qualitative data (Wegner, 2012).

4.6 Data management

The researcher initially contacted the quality managers or directors of the sample companies telephonically. This communication was followed-up with an email detailing the purpose, requirements and benefits of the study, and providing a link to the online questionnaire n the Survey Monkey website (Appendix B).

Each company received a uniquely numbered questionnaire which enabled the researcher to aggregate responses to each company. The surveys were closed by end of November 2015 and the data was collected via the survey website. Each response was downloaded into a pdf format and the detailed data into an Excel file for further data analysis. The pdf files were imported into a records file and the Excel file for coding according to the themes detailed in Appendix A.

The researcher found that the processes of data management were continuous, iterative and robust throughout this study which added legitimacy to the outcome of this research study.

4.7 Analysis approach

4.7.1 Phase 1

The data from this phase was analysed using various descriptive and inferential statistical tools. The data was downloaded into Excel spreadsheets and formatted for Excel analysis. This phase involved inferential statistics to estimate population values and test relationships (Wegner, 2012). ANOVA and regression tools were used, together with the appropriate hypotheses t-tests and f-tests to determine the extent of possible relationships. When the result indicated a significant relationship, the researcher used the predictive modelling aspects of the TPB to estimate, within a 95% confidence interval, to estimate the probability of intention to exhibit compliance behaviour as the basis for sustainability reporting.

The analysis of the population was done by using all questionnaire survey results, collected by the end of November 2015, to determine whether the predictive modelling aspects of the TPB are applicable to the context of compliance behaviour in a quality management system.

4.7.2 Phase 2

A deductive approach was used to devise a framework of themes and codes for the data analysis (Saunders et al., 2012). The themes were categorised using a concept driven, based on existing theory and literature approach (Strauss & Corbin, 1998). The Excel spreadsheet was coded using formula to identify the threads and code according to the guide prescribed in Appendix A. Descriptive and inferential statistical tools were used to determine whether any trends were evident using Excel tools such as ANOVA, summary tables, trend lines and probabilities.

Since the purpose of phase 2 of data analysis is to answer question 2 of Chapter 3, only the highest and lowest ranking responses were used to ensure that the data was relevant to the research question. The responses in the neutral agreement or disagreement areas were not included to ensure data relevancy (Wegner, 2012).

The questionnaire survey results from companies with a response number of 10 or higher were analysed separately and a comparison done to establish whether differences or similarities were observed between companies or industries. The company names have been kept confidential, with each company identified by an alphabetical letter and the industry used as a descriptor.

It should be noted that although the phase 1 data analysis was required as input for the phase two data analysis, both of these processes were completed concurrently (Saunders et al., 2012).

4.7.3 Data integrity, reliability and validity

The internal validity of the TPB questionnaire was tested using the Cronbach's coefficient alpha, based on the responses received from 34 randomly selected respondents. The criteria for the validation respondents was that they were required to be working or had worked for a company with a valid, certified ISO 9001:2008 QMS.

Feedback received from validation questionnaire respondents was used to amend the initial questionnaire to ease the completion thereof. To determine the internal validity, Cronbach's alpha analyses was completed on the questionnaire as a whole, each construct and subsequent components (Field, 2013).

Further, the criteria used for assessment of both quantitative and qualitative research approaches, which are considered be commonly accepted across both (Petty, Thomson, & Stew, 2012), was used by the researcher.

Table 4.3 Criteria for quality in qualitative and quantitative research

(Petty et al., 2012)

Quantitative research criteria of quality	Qualitative research criteria of quality	Descriptor	Strategies
Objectivity or neutrality	Confirmability	The extent to which the findings are the product of the inquiry and not the bias of the researcher	Audit trail of the process of data analysis Triangulation Member checking Reflective research journal
Reliability	Dependability (consistency, auditability)	The extent to which the study could be repeated and variations understood	Audit trail of the procedures and processes Triangulation Reflective research journal
Internal validity	Credibility (truth value)	The degree to which the findings can be trusted or believed by the participants of the study	Prolonged engagement Persistent observation Referential adequacy materials Peer debriefing Member checking Triangulation Negative case analysis Reflexive research journal
External validity	Transferability (applicability, fittingness)	The extent to which the findings can be applied in other contexts or with other participants	Thick description Purposive sampling Reflexive research journal

The researcher used the following methods extracted from Table 4.3 to ensure quality of data, analysis and reporting for this research project:

(a) Confirmability and dependability

The researcher kept notes of the communications and correspondence with companies to ensure an audit trail. Similarly, a table with the sample numbers and companies contacted was included in the records files. However, in order to meet the confidentiality criteria of this research project, only the company industries were linked to the sample numbers.

The researcher verified the reliability of data transferred from the Survey Monkey website into the Excel file format, by examining randomly selected questionnaires per company in detail for correctness. After completion of coding of the questionnaires, the researcher

chose five randomly selected files to confirm accuracy of coding and to verify the reliability of the Excel formula used. The researcher employed a colleague to double check the verification files.

Researcher bias was reduced by the use of questionnaires and coding guidelines which ensured that the researcher's opinion, prior knowledge of the subject matter or expectations would not influence the results (Marshall & Rossman, 2014).

(b) Credibility

Whilst it is acknowledged that the complexity of the research problem could cause a credibility problem, it should be noted that the nature of the research required the researcher to be completely engaged during the collection and analysis period. Thus prolonged engagement allowed the researcher to experience a deeper understanding of the area of study and required interaction and feedback from peers, respondents and more specifically the research supervisor who provided different perspectives to review interpretations (Petty et al., 2012). Such changes in perspectives were recorded in the records file to ensure an audit trail.

(c) Transferability

Although this research was specific to the management system context, the transferability of the results into other management aspects could be completed by more generalization of findings. Further the TPB has been proven to be transferable into many different contexts.

However, since this an exploratory study, it would be presumptuous to accept the transferability of the results based on the results. Therefore, the researcher would caution such transferability without more comprehensive descriptive research completed for the management context. Although, the researcher has keep a research journal as well as meeting the purposive sampling (§4.5), a more in-depth sampling protocol would be recommended for future research.

4.8 Potential limitations

This research project is limited in its scope, which is only applicable to the behaviour of employees towards implementing a certified ISO 9001:2008 QMS in companies that complete sustainability reporting according to the GRI standard and constrained by the restricted time to complete. Therefore, the following limitations were found:

- The research will not provide a holistic view of the entire company's cultural environment which could have an influence on the attitudes of employees. For instance, should a non-inclusive culture exist, it might skew the attitudes of the employee. Similarly, should an employee have received a bad performance appraisal shortly before completing the questionnaire, this could negatively affect their perceptions of anything associated with management, such as a management system.

- Determining whether TPB is effective as an intervention and planning tool for behavioural change within the context of a management system and required compliance behaviour is outside the scope of this research project.

- Also, a relatively small sample was used which is not necessarily representative of all types of companies or industries. The results of this study should not be generalised to all organisations and does not necessarily provide a comprehensive picture of the effect of employee behaviour on quality management systems.

- This research study is exploratory in nature; therefore, it does not include analysis of the most appropriate predictive model in the context of a management system.

4.9 Methodology conclusion

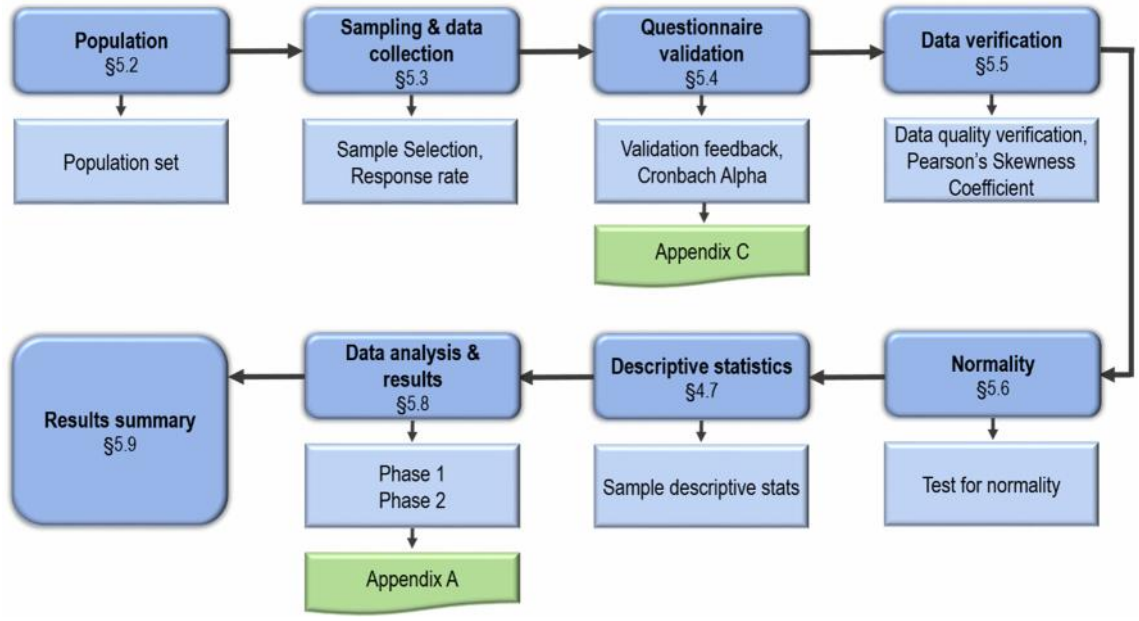
The research methodology provided a clarified path for seeking and analysing data to answering the research questions posed in Chapter 3. The results of data collection and statistical analysis activities followed has been addressed in the following chapter.

CHAPTER 5. RESEARCH RESULTS

5.1 Introduction to research results

This chapter provides information regarding the outcome of the methodology described in Chapter 4, analysis of the data, justification for choice of analysis methods used and lastly this chapter documents findings specific to each research question.

Figure 5.1 Chapter 5 layout



Source: Researcher's Own

Figure 5.1 provides guidance for the flow of the chapter with a quick reference to which paragraph covers specific topics and their associated appendices, if any.

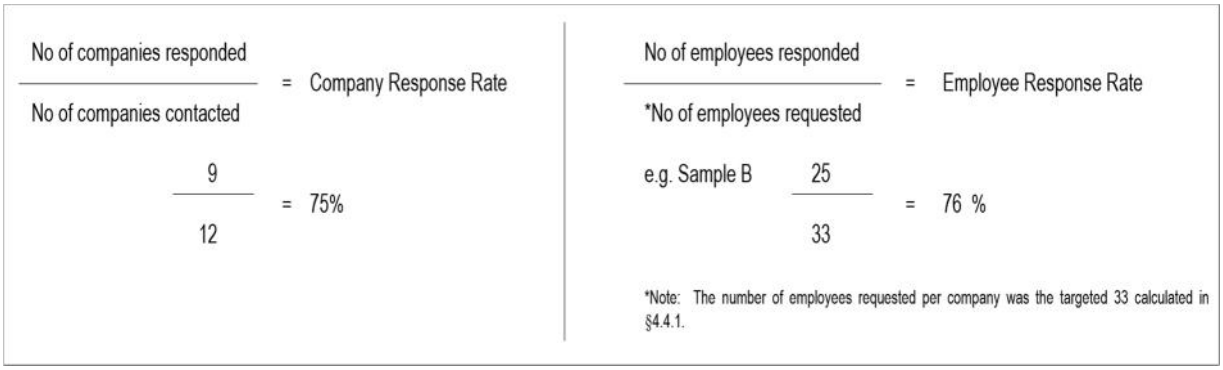
5.2 Population

After completion of the first sampling criteria check (§4.4), to verify that the company was listed on the JSE, completed GRI sustainability reporting and had a certified ISO 9001:2008 QMS, the population was found to consist of 53 companies. Confidentiality requirements were honoured during the reporting of results with no company or individual names associated with the sample data.

5.3 Sampling and data collection

The 12 randomly sampled companies, selected utilizing the Strat Trek (n.d.) online number generator, were identified by alphabetic characters, linking only their sample criteria of ISO 9001:2008 certification, JSE listing and GRI reporting with the company industry.

Figure 5.2 Response rate calculations



Source: Researcher's Own

Figure 5.2 shows the response rates calculated in two ways: first on the response rate of companies requested to participate; and the second on the number of employees that responded.

Table 5.1 List of employee response rates

	Industry	Sample no.	No of Responses	Response Rate
1	Chemicals	A	1	3%
12	Consulting	B	25	76%
33	Industrial Equipment	C	27	82%
28	Healthcare Services	D	11	33%
31	Household and Personal Products	E	17	52%
11	Construction Materials	F	3	9%
6	Construction	G	0	0%
41	Mining	H	0	0%
23	Food and Beverage Products	I	0	0%
52	Telecommunications	J	0	0%
8	Construction Materials	K	30	91%
22	Food and Beverage Products	L	12	36%
	Total	12	126	75%

Source: Researcher's Own

Table 5.1 denotes the questionnaires sent to the sample companies, the number of responses per company and the response rate per company. It can be seen that the response rates varied greatly, with only three company employee response rates above the target of 60%. The researcher noted the following details during the data collection phase:

- The mining industry was under severe pressure at the time of this research study with a sample company declining due to undergoing a retrenchment process; the quality director was disinclined to take part in this research due to the tension between employees and management.
- Whilst some companies were eager to participate, the timing of the study (October – November) was not ideal to obtain responses from their employees who were finalising work projects and tasks with most shutting down operations for the December holidays.
- Large companies had been sampled by students earlier in the year for research projects, resulting in the companies not being willing to take part in yet another research project. One operations manager stated, "We have reached our survey saturation point", which depicted a large number of similar responses to requests to participate.

5.4 Questionnaire validation

Feedback from respondents on the initial questionnaire indicated that some questions seemed repetitive and the questionnaire could be shortened. Hence, the researcher completed Cronbach's alpha analyses in SPSS on the questionnaire as a whole, each construct and subsequent components (Field, 2013). Based on the results thereof, the questionnaire was shortened whilst increasing the internal reliability of the data collection tool.

Table 5.2 Cronbach results

Const.	Comp.	Initial Cronbach Alpha		Changes	Final Cronbach Alpha	
		per Constr.	per Comp.		per Constr.	per Comp.
INT	INT1	0.793	0.917	-	0.822	0.917
	INT2		0.640	Q5 deleted, Q19 added to INT2		0.710
	INT3		0.713	Original INT3 deleted, added no value. INT4 renumbered to INT3		0.713

Table 5.2 Cronbach results (continued)

Const.	Comp.	Initial Cronbach Alpha		Changes	Final Cronbach Alpha	
		per Constr.	per Comp.		per Constr.	per Comp.
ATT	ATT1	0.946	0.888	-	0.947	0.888
	ATT2		0.823	ATT4 too similar to ATT2, therefore deleted Q32, Q34, Q43, Q47 deleted. Too many questions pertaining to one component		0.866
	ATT3		0.772	-		0.772
	ATT4		0.711	Delete Q20. ATT5 renumbered to ATT4		0.784
	ATT5		0.793	ATT6 renumbered to ATT5		0.793
SN	SN1	0.649	0.609	Delete Q16, Q27, Q29	0.796	0.638
	SN2		0.729	Original SN2 deleted, not applicable, SN3 changed to SN2		0.729
	SN3		0.631	SN4 renumbered to SN3		0.631
PBC	PBC1	0.909	0.889	-	0.945	0.889
	PBC2		0.639	Delete Q7		0.879
	PBC3		0.784	Delete Q4		0.850
Initial Cronbach Alpha (questionnaire)		0.940		Final Cronbach Alpha (questionnaire)	0.969	

Notes: Abbreviations: Constr. = Construct; Comp. = Component

Source: Researcher's Own

Table 5.2 depicts the changes made to the questionnaire, as well as the changes in the associated Cronbach alpha values. The internal validity was found to be 0.940 before breaking it down into each construct and subsequent components.

Although, at first glance, it appears to be good values, the component values indicated lower values for internal validity. Whilst, some (Nunnally, 1978) would argue that these values are sufficient for the purposes of an exploratory study, to ensure robustness of the questionnaire, the researcher aimed for values of between 0.700 and 0.900 (Field, 2013). Field (2013) proposes that any value above 0.900 could indicate redundancy in the questionnaire, however, Ajzen (1991, 2011) argues for exactly such redundancy to provide more rigor to the TPB model. Although, some of the components are lower than the 0.700 target, literature (Nunnally, 1978) suggests that values above 0.600 are adequate for exploratory studies.

Based on the results of the Cronbach alpha analysis, 11 questions were deleted. This is standard practice to increase the internal reliability of a questionnaire (Blaikie, 2009). The questions were renumbered and the questionnaire updated to the final version that was used for the data collection process. See Appendix C for the final questionnaire.

5.5 Data verification

The researcher checked the correctness and data quality transferred from the Survey Monkey website by a random selection of respondent data. This was verified by a colleague. The Excel spreadsheets were checked by employing a formula that noted errors in the data as "false", allowing the researcher to correct syntax errors in raw data, such as additional spaces in response threads. Two such errors were corrected on Q34.

All negatively phrased questions were demarcated by * and a formula added in Excel to transpose into the positive response to allow for standard response analysis (Field, 2013) and minimize bias errors (Ajzen, 2006).

After completion of coding of the questionnaires, the researcher chose five randomly selected files to confirm accuracy of coding and to verify the reliability of the Excel formula used. The researcher employed a colleague to double check the verification files.

5.6 Test for normality

The distribution of responses was analysed per construct using the Pearson's Coefficient of Skewness in Excel (Wegner, 2012). Pearson's skewness coefficient provides a measure of the distribution for a dataset, with a score of zero indicating normal distribution. Any deviation negatively or positively from zero indicates a level of skewness. Such deviations are expected in real data. However, should the deviation be below -1 or above +1, it indicates excessive skewness associated with outliers in the data (Wegner, 2012).

Table 5.3 Pearson's coefficient of skewness results

	ATT Ave	SN Ave	PBC Ave	INT Ave
Median	6.0	6.1	5.5	6.3
Mean	5.8	6.0	5.2	6.3
Standard deviation	0.8	0.7	1.2	0.4
No of values (n)	126	126	126	126
Pearson's Coefficient of Skewness	-0.4	-0.6	0.3	0.0

Source: Adapted from Excel

Table 5.3 shows the results of the Pearson skewness coefficient calculations using aggregated values for each construct of the TPB model. The skewness coefficient for the variables of ATT (-0.4) and SN (-0.6) indicate moderate negative values; whilst the value for the PBC variable (0.3) is slightly positive with the coefficient for the dependent variables, INT, as equal to zero (0.0). Since all the values are close or equal to zero, it can be concluded that sufficient symmetry exists to show normal distribution for all variables. The closeness of the variable mean to its median provides further evidence in support of the normality assumption being satisfied. The closer the mean to the median, the more normal the distribution (Wegner, 2012). Due to the normal distribution of the sample data, it can be concluded that no outliers were evident in the dataset and that the results of the sample can be generalized to the population (Blaikie, 2009).

5.7 Descriptive Statistics

The sample descriptive information provides the quantifiable characteristics that cover the sample set of the population. It provides an initial understanding of the dataset, forming the basis for establishing trends or identifying patterns that could establish a contributing factor to answering the research problem (Marshall & Rossman, 2014).

Table 5.4 Sample descriptive information

	No	% of respondents
Gender		
Male	72	57.1%
Female	54	42.9%
Age		
18 - 29	25	19.8%
30 - 44	58	46.0%
45 - 59	38	30.2%
60+	5	4.0%
Job category		
Quality practitioner	19	15.1%
Management	57	46.8%
Professional	26	20.6%
Admin & support	15	11.9%
Unspecified	7	5.6%

Source: Adapted from Excel

Table 5.4 shows the demographic breakdown of the sample, with 57% male and 43% female respondents, majority (46%) between the ages of 33 and 44, and most operating

in management roles, such as plant, operations or business managers. Quality managers were included in the "quality practitioner" category as it was expected that these individuals would behave in a manner compliant with the QMS, since this is their area of responsibility.

Descriptive statistics in the exploratory data analysis approach allows for an understanding of the data by comparing variables numerically (Saunders et al., 2012). This allows for an overview of the data and a starting point for the analyses required to extract information to answer the research questions.

Table 5.5 Descriptive statistics from TPB survey

TPB Constructs	No of responses	Mean	Standard Deviation
Attitude	126	5.8	0.8
Subjective Norms	126	6.0	0.7
Perceived Behavioural Control	126	5.2	1.2
Intention	126	6.3	0.4

7-point scale: 7 = Strong agree, 6 = Somewhat agree, 5 = Slightly agree, 4 = Neutral, 3 = Slightly disagree, 2, Somewhat disagree, 1 = Strong disagree

Source: Researcher's Own

Table 5.5 provides a summary of the descriptive statistics from the respondents of the TPB survey of the independent variables, ATT, SN, and PBC and the dependent variable of the intention to exhibit compliance behaviour, INT. The largest standard deviation is shown on the variable PBC (1.2) with the lowest on the dependent variable INT (0.4).

5.8 Data analysis and results

5.8.1 Phase 1: Research Question 1

Does a relationship exist between employee attitude (ATT), their subjective norms (SN) and perceived behavioural control (PBC) and the employee's intention (INT) to exhibit behaviour in support of quality management system requirements to ensure reliable and auditable data for sustainability reporting?

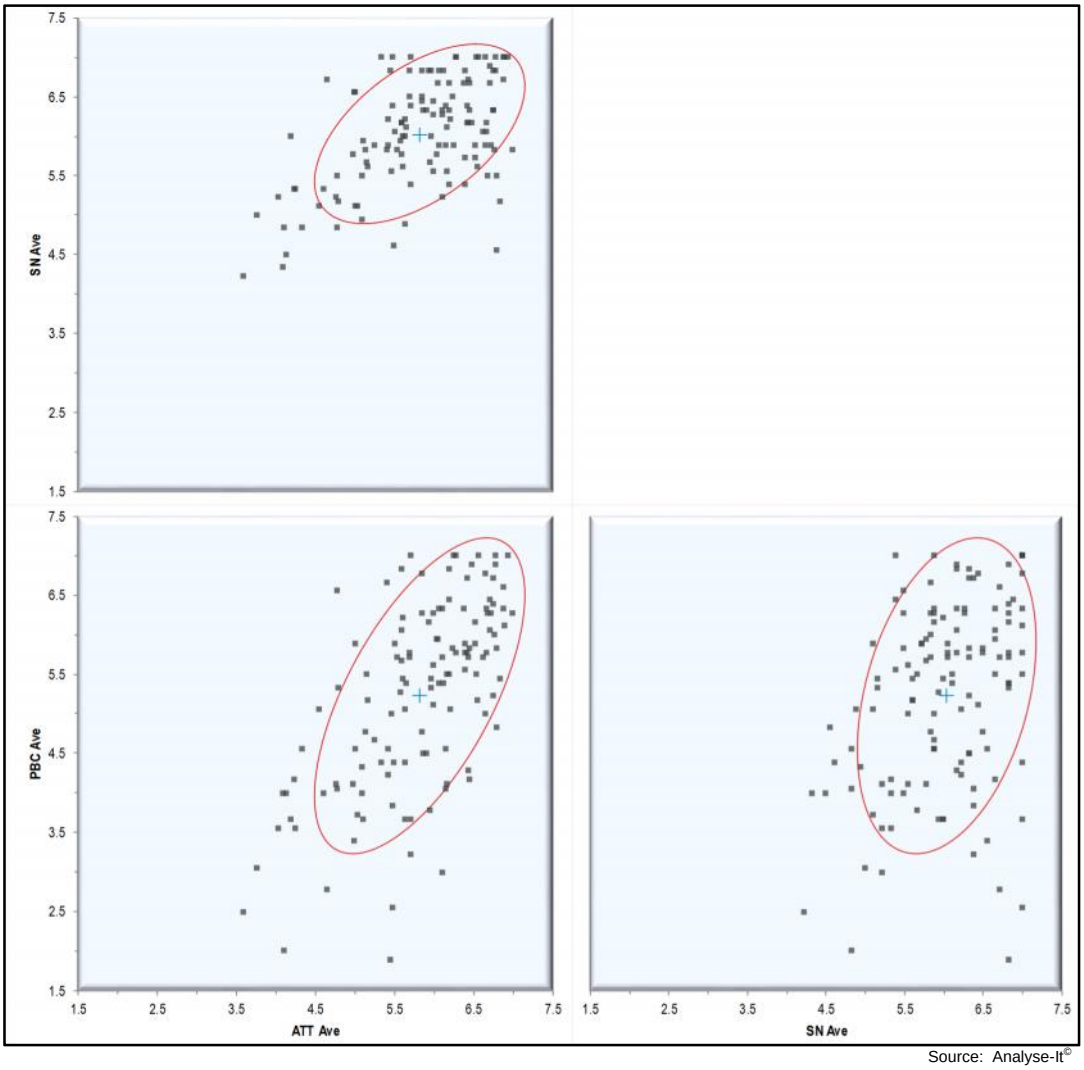
(a) Sub-question 1.1

(1.1) How independent are the variables ATT, SN and PBC?

To establish whether the independent variables have an influence on each other or are truly independent of each other, scatter plots and Pearson's r correlation analysis was completed in Excel Analyse-it©.

The use of scatter diagrams is an effective technique to determine the type of relationship that exists between two variables (Blaikie, 2003). It allows the researcher to determine whether the relationship is linear, exponential, logarithmic or polynomial, and guides towards the method of relationship analysis that should be used.

Figure 5.3 Scatter diagram: independent variables



Source: Analyse-It©

Figure 5.3 shows ranging degrees of multi-collinearity (Wegner, 2012) between ATT and PBC, ATT and SN, PBC and SN. This is evident by the moderate to steep slopes of the data points, highlighted by the circled areas on the plots that positive linear relationships exist. The degree of closeness of the points measures the strength of the relationship and is quantified by the correlation analysis (Wegner, 2012).

Table 5.6 Pearson's *r* correlation: independent variables

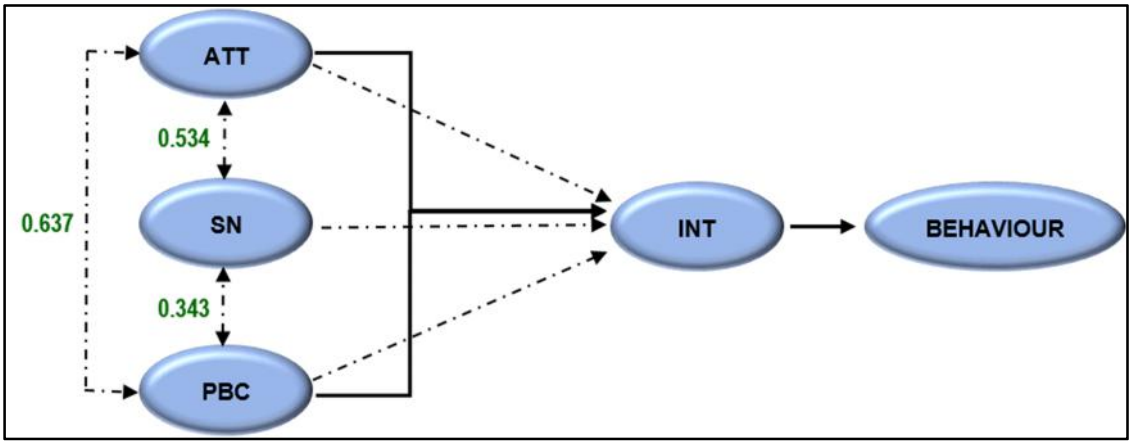
Correlation			
Pearson's r	ATT Ave	SN Ave	PBC Ave
ATT Ave	-	0.534	0.637
SN Ave	0.534	-	0.343
PBC Ave	0.637	0.343	-

Source: Analyse-It©

Table 5.6 shows the correlation of the independent variables of the TPB model using the sample data. Correlation describes the strength of the relationship between two variables (Field, 2013). The correlation coefficient value can range from -1 to +1, with +1 indicating a perfect direct linear relationship, -1 a perfect inverse linear relationship and zero, no linear relationship (Blaikie, 2003).

The variable, ATT, has moderate correlations with variables PBC (0.673) and SN (0.534). While the variable, SN, has weak correlation with PBC (0.343). Correlations above 40% indicate multi-collinearity, which does not meet the conditions for a standard multiple regression model to be used as predictive model for estimation of the dependent variable, INT (Wegner, 2012).

Figure 5.4 Multi-collinearity between independent variables



Source: Researcher's own

The correlations between the independent variables, ATT, SN and PBC and the dependent variable, INT, are shown in Figure 5.4. Hence, it appears that the variables of ATT, SN and PBC are not independent of each other, but have an influence on each other. However, in order to determine whether the associations are true reflections of the relationships and not merely by chance, a significance test was completed. Since, it has been established in §5.6 that no noteworthy outliers are present in the sample dataset and that the data is normally distributed, a Pearson's r correlation coefficient could be determined at a 95% confidence level with a two-sided hypothesis test.

Table 5.7 Independent variables relationship significant test

Null:	H_0:	$p = 0$	i.e., no relationship
Alternative:	H_1:	$p \neq 0$	i.e., relationship is real

Pair	Pearson's r	95% CI	p-value
ATT Ave, SN Ave	0.534	0.397 to 0.649	<0.0001 [1]
ATT Ave, PBC Ave	0.637	0.520 to 0.730	<0.0001 [1]
SN Ave, PBC Ave	0.343	0.179 to 0.489	<0.0001 [1]

[1] Reject the null hypothesis in favour of the alternative hypothesis at the 5% significance level.

Source: Adapted from Analyse-It©

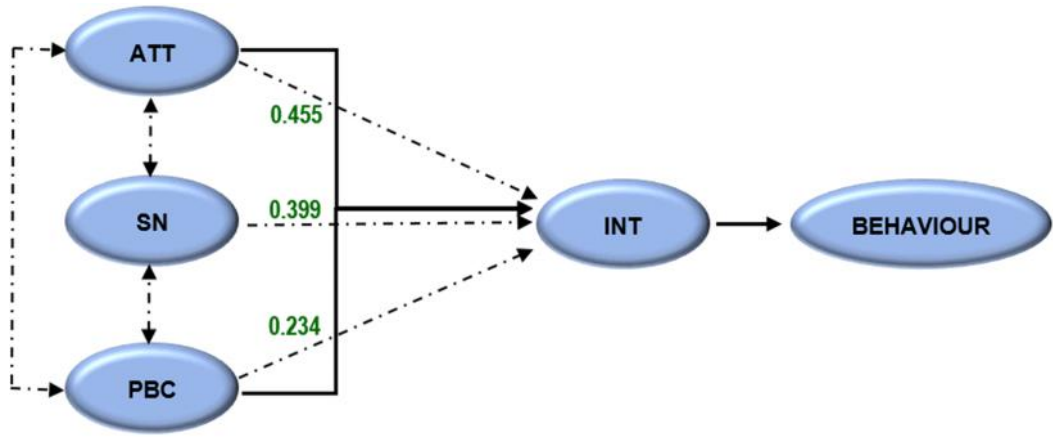
Table 5.7 shows the results of the significance tests completed on the relationships between each of the independent variable pairs. Since the p-values for each pair is substantially less than the significance level (0.0001<<<0.05), the null hypothesis has been rejected in favour of the alternative. There is sufficient sample evidence to suggest that the relationships between the independent variables are real and representative of the sample population. Therefore, the independent variables would not provide a statistically correct model when trying to predict INT using a simple multiple regression model.

(b) Sub-question 1.2

(1.2) Are there any relationships between each independent variable ATT, SN, PBC and the dependent variable INT?

Due to the multi-collinearity found in §5.8.1 (a), it was necessary to determine whether any of the independent variables have a significant contribution to the variance observed in the independent variable, INT.

Figure 5.5 **Pearson's *r* correlation: independent and independent variables**



Correlation

Pearson's r	ATT Ave	SN Ave	PBC Ave	INT Ave
ATT Ave	-	0.534	0.637	0.455
SN Ave	0.534	-	0.343	0.399
PBC Ave	0.637	0.343	-	0.234
INT Ave	0.455	0.399	0.234	-

Source: Adapted from Analyse-It©

Figure 5.5 shows the correlation of the independent variables of the TPB model against the dependent variable, INT. The variable, INT, shows weak to moderate correlations with independent variables PBC (0.234), SN (0.399) and ATT (0.455). In order to determine whether the correlations are genuine and not due to chance, a Pearson's r correlation coefficient was determined at a 95% confidence level using a two-sided hypothesis test.

Table 5.8 Independent - dependent variables pairs significance test

Null:	H_0: $p = 0$	i.e., no relationship
Alternative:	H_1: $p \neq 0$	i.e., relationship is real

Pair	Pearson's r	95% CI		p-value
ATT Ave, INT Ave	0.455	0.304	to 0.584	<0.0001 [1]
SN Ave, INT Ave	0.399	0.241	to 0.537	<0.0001 [1]
PBC Ave, INT Ave	0.234	0.062	to 0.393	0.0083 [1]

[1] Reject the null hypothesis in favour of the alternative hypothesis at the 5% significance level.

Source: Adapted from Analyse-It©

Table 5.8 shows the results of the significance tests completed on the relationship between each of the independent and dependent variable pairs. Since the p-values for each pair is substantially less than the significance level ($0.0001<<<0.05$; $0.0083<<0.05$), the null hypothesis has been rejected in favour of the alternative. There is sufficient sample evidence to suggest that the relationships between the independent variables and the dependent variables are real and representative of the sample population. However, due to the multi-collinearity between the independent variables, the net effect on INT should be further evaluated.

(c) Sub-question 1.3

(1.3) Can ATT, SN and PBC be combined, as TPB model, to predict probability of INT?

To predict the dependent variable, INT, based on the independent variables, a least squared technique is required, since this minimizes the error in the model (Blaikie, 2003). The most commonly known of these techniques is the multiple linear regression (MLR) model. Where the independent variables (x) are regressed against the dependent variable (y) to create a predictive straight-line equation:

$$\hat{y} = b_0 + \phi\, b_i\, x,$$

where, $\hat{y}$ = estimated dependent variable
b_0 = y-intercept
b_i = computed regression coefficient for independent variables
$x,$ = value of the independent variables
I = number of independent variables

However, due to the multi-collinearity of the independent variables, the data does not meet the condition of independence and therefore the standard MLR model would not yield statistically correct results (Wegner, 2012). The principle component regression (PCR) technique overcomes this collinearly problem by finding uncorrelated, principle component (PC) scores which is then used in the MLS model. The principle components are computed as representative of the independent variables, without including the covariance of independent variables. Therefore, each PC is composed of a loading from the uncorrelated variance of each independent variable (Blaikie, 2003). The sample dataset is transformed using the following equation:

$$Z_{pci} = AX_n$$

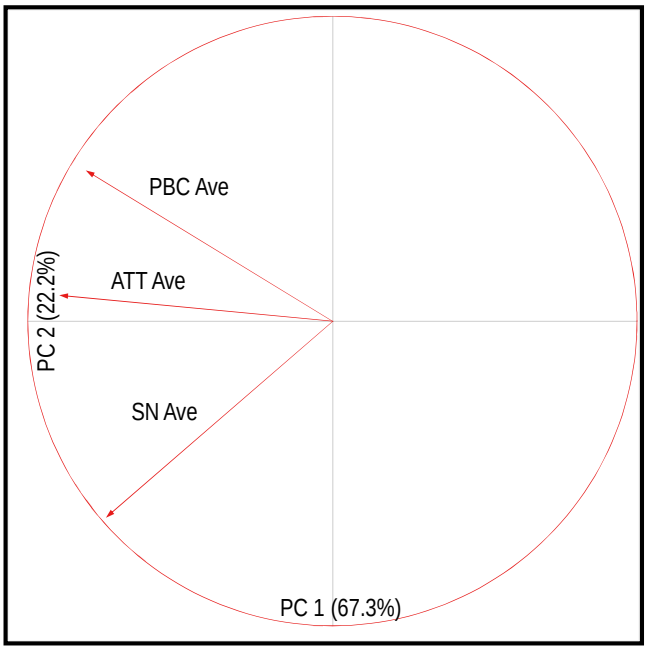
where, Z_{pci} = transformed data for PCi (i = no of PC)

A = Component loading coefficient

X_n = original data value for n number of observations

Principle component regression has the ability to deal with multi-collinearity and since the TPB model has one dependent variable is better suited to the data set than partial least squares (PLS) regression model which takes into account more than one dependent variable (Blaikie, 2003).

Figure 5.6 Correlation monoplot



Source: Analyse-It©

The independent variables and the principle components of the dataset are represented in Figure 5.6. The correlation monoplot shows that 89.5% of the variance represented by the independent variables can be explained by the two principle components. The angles between the vectors, PBC Ave, ATT Ave and SN Ave shows visually the correlation. The smaller the angle, the higher the correlation between the vectors. Angles of 90% indicate no relationship, whilst 180% shows a perfectly inverse relationship. All the vectors show a degree of correlation.

Figure 5.7 PC loading equations

Coefficients

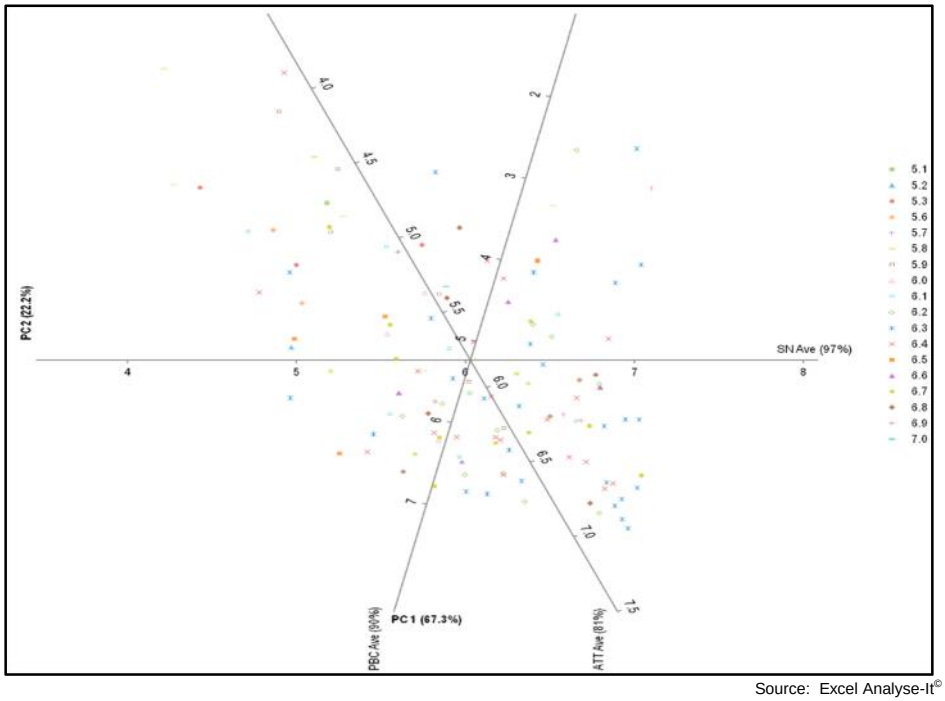
	Component		
	1	2	3
ATT Ave	-0.632	0.106	-0.768
SN Ave	-0.524	-0.788	0.323
PBC Ave	-0.571	0.606	0.554

PC = ATT Ave coefficient * (ATT value) + SN Ave coefficient * (SN value) + ATT Ave coefficient * (ATT value)
PC1 = -0.623 (ATT) - 0.524 (SN) - 0.571 (PBC)
PC2 = 0.106 (ATT) - 0.788 (SN) + 0.606 (PBC)
PC3 = -0.768 (ATT) + 0.323 (SN) + 0.554 (PBC)

Source: Adapted from Excel Analysis-It©

Figure 5.7 shows the component loading coefficients resulting from the PCA. These equations are used to transform the data to each principle component (PC). The transformed PC data was used to run the multiple linear regression and the predictive significant thereof evaluated.

Figure 5.8 PCA biplot



Source: Excel Analyse-It©

The PCA biplot, represented in Figure 5.8, shows a two-dimensional picture of the similarities between observation, vectors and principle components, orthogonally. This diagram shows that the rank order of independent variance contribution as SN (97%), PBC (90%) and lastly ATT (81%).

Table 5.9 Regression results: principle components with INT

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.496
R Square	0.246
Adjusted R Square	0.228
Standard Error	0.324
Observations	126

ANOVA

	df	SS	MS	F	Significance F
Regression	3	4.179	1.393	13.301	1.436E-07
Residual	122	12.778	0.105		
Total	125	16.957			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	4.670	0.274	17.050	4.422E-34	4.128	5.213
PC1	-0.165	0.026	-6.222	7.163E-09	-0.217	-0.112
PC2	-0.103	0.042	-2.438	0.0162	-0.187	-0.019
PC3	0.107	0.062	1.737	0.0849	-0.015	0.230

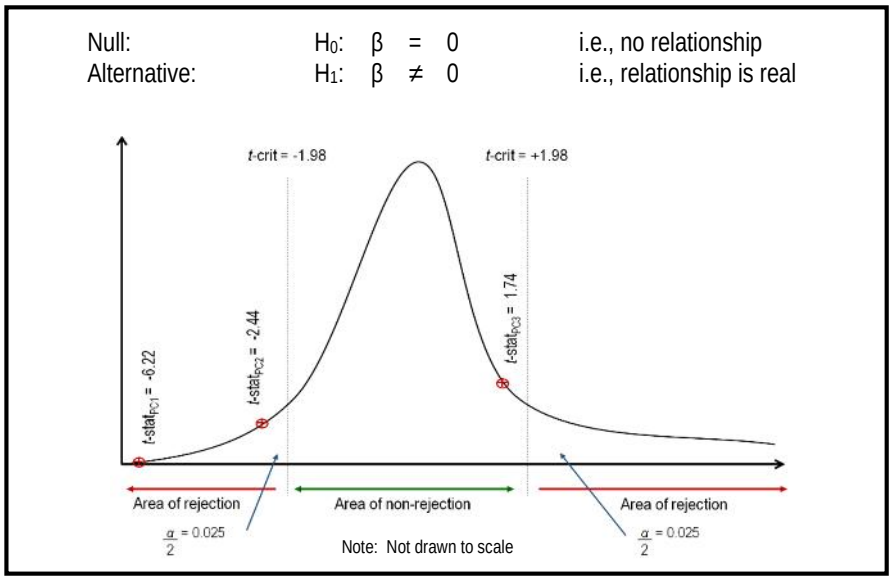
F-crit =	2.679
T-crit =	1.980

Source: Excel

Table 5.9 shows the results of the multiple regression completed using the transformed data with the principle components (PCs) as the independent variables and the dependent variable, INT. The regression correlation coefficient (0.496) indicates a moderate correlation between the PCs and INT. However, the coefficient of determination (R^2 = 0.246) shows the proportion of variation that the independent variables explains is only 24.6 % of the variance in INT, indicating a weak association. Since, only three independent variables are used as part of the TPB model, all PC were included in the MLR.

In order to determine whether the association is a true reflection of the relationship and not merely by chance, the researcher completed a t-test. Therefore, a two-sided hypothesis test was completed.

Figure 5.9 Multiple linear regression significance test



Source: Researcher's own

Figure 5.9 shows that at a 5% level of significance (t-crit = 1.98), for each of the principle components that sufficient sample evidence is available to show:

- PC1 (t-stat = -6.22 < -1.98) lies within the area of rejection. Therefore, the null hypothesis is rejected in favour of the alternative. The regression coefficient is not zero, hence the association of PC1 to INT is a true moderate association which can be generalised to the sample population.
- PC2 (t-stat = -2.44 < -1.98), lies within the area of rejection. Therefore, the null hypothesis is rejected in favour of the alternative. The regression coefficient is not zero, hence the association of PC2 to INT is a true weak association which can be generalised to the sample population.
- PC3 (t-stat = 1.74 < 1.98), lies within the area of acceptance. Therefore, the null hypothesis is accepted and the alternative rejected. The regression coefficient is statistically zero, hence the association of PC3 to INT is not a true association and is considered insignificant in predicting INT.

Figure 5.10 Predictive model equation

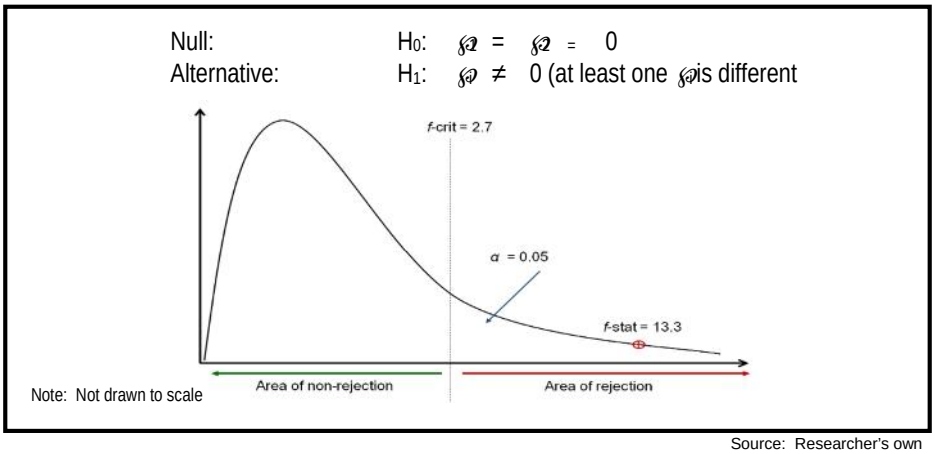
Estimated INT	=	Intercept	+	$\wp_1$(PC1)	+	$\wp_2$(PC1)
		4.67	+	(- 0.165) (PC1)	+	(-0.103) (PC2)

Source: Researcher's own

Figure 5.10 shows the predictive straight-line equation resulting from the multiple linear regression completed (Table 5.9) and the subsequent significance tests (Figure 5.9). For every one unit increase or decrease of PC1 and PC2, it inversely increases or decreases INT by 0.165 and 0.103 units, respectively.

The reliability of the y-intercept and x-coefficients is further confirmed by the p-values ($p_{Intercept}$ = 4.42 x 10^{-34}, p_{PC1} = 7.16 x 10^{-09} and p_{PC2} = 0.0162) which are lower than the significance value (α) of 0.05, indicating that the y-intercept and x-coefficients are correct.

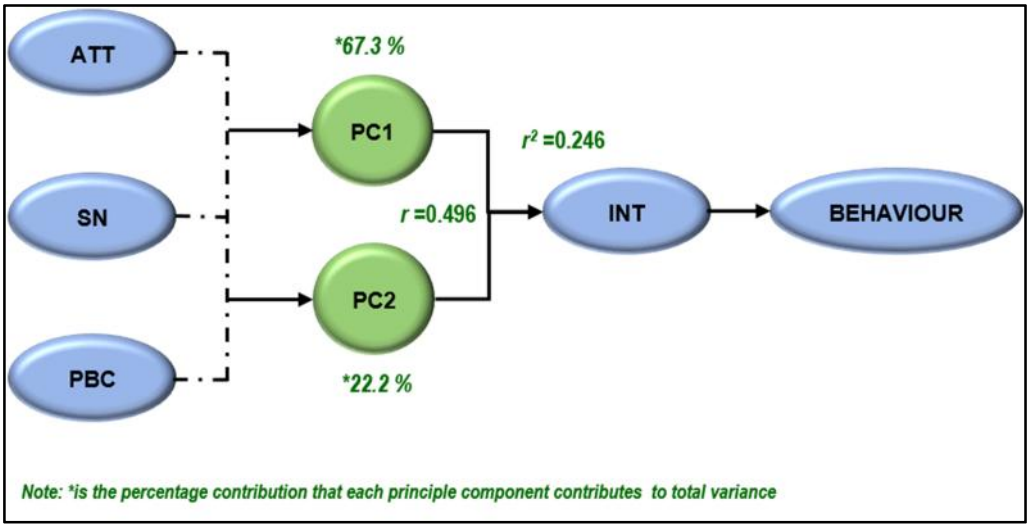
Figure 5.11 Multiple linear regression: overall model significance



Source: Researcher's own

The overall model significance (f-test) in Figure 5.11 shows that the f-stat value (13.3) for the model falls outside of the area of non-rejection (f-crit < 2.7) at a significance value of 0.05, thus providing sufficient evidence to reject the null hypothesis in favour of the alternative. Therefore, the multiple linear regression model is statistically significant. This is further confirmed by the ANOVA p-value, which shows that at a probability of 3.1 x 10^{-5} exists that the output of this regression was by random chance. Hence, the sample results can be generalised to the population.

Figure 5.12 Summary of predictive variance of TPB model



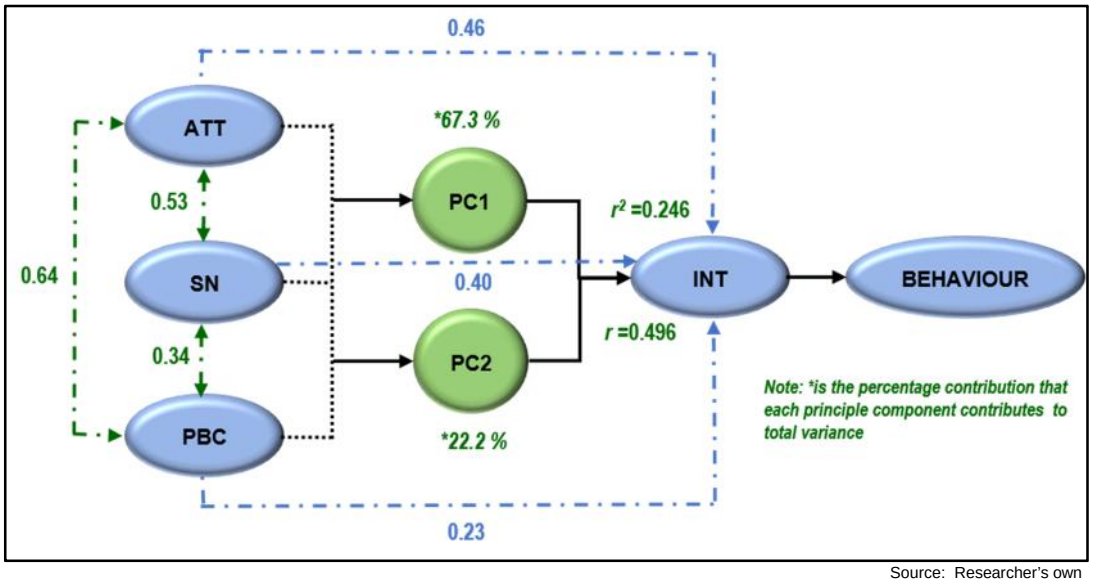
Source: Researcher's own

Figure 5.12 shows the combination of the multi-collinear independent variables, ATT, SN and PBC which contribute to the principle components allowing the TPB model to explain 24.6 % of the variance in the dependent variable, INT.

(d) Question 1 Summary

In summary, the results indicate that a relationship does exist between employee attitude (ATT), their subjective norms (SN) and perceived behavioural control (PBC) and the employee's intention (INT) to exhibit behaviour in support of quality management system requirements to ensure reliable and auditable data for sustainability reporting.

Figure 5.13 TPB research questions results summary



Source: Researcher's own

Figure 5.13 shows a summary of the results of the sub-questions for question 1. It displays the multi-collinear relationships that were found between the independent variables, the correlations of each independent variable with the dependent variable and the final predictive model for intention to exhibit behaviour compliant with the requirements of a quality management system.

5.8.2 Phase 2: Research Question 2

Are any trends or factors evident that could affect quality management system implementation or sustainability reporting?

(a) Sub-question 2.1

(2.1) What are the most significant trends or factors observed contributing towards employee attitude and compliance behaviour?

To determine whether trends are evident between different age and job categories, the data was coded into the main themes as per the coding framework in Appendix A. The count of strong, moderate and slight code frequencies was summed and converted to percentage of total possible frequencies. The trends in each theme were graphically represented and examined.

Figure 5.14 Themes: graphical representation

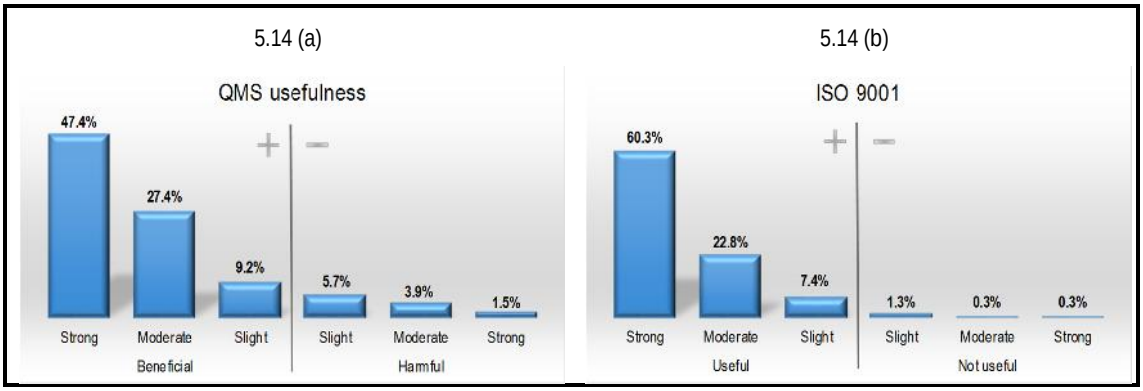
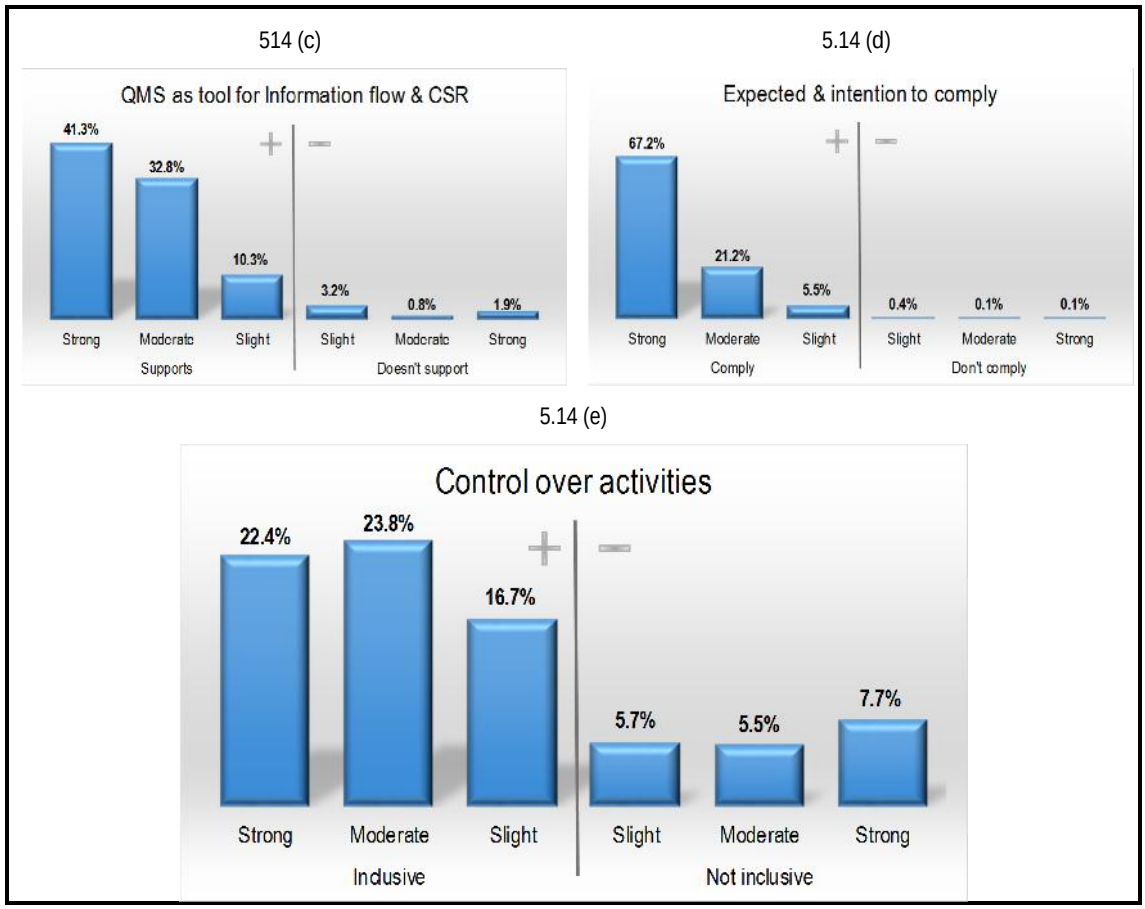


Figure 5.14 Themes: graphical representation (continued)



Source: Excel

Figure 5.14 shows that the views of employees of companies with certified ISO 9001:2008 quality management systems (QMS) in place, seem to be predominately positive towards the QMS usefulness (5.14 (a)), ISO 9001 (5.14 (b)), use of QMS as a tool for information flow and CSR (5.14 (c)) and expectations and intentions to comply with system requirements (5.14 (d)). A trend towards positive attitude was observed, with the frequency decreasing as the measurement becomes less positive into the negative zone.

However, the trend for the belief that employees have control over their activities, hence the inclusivity of QMS requirements (5.14 (e)), did not follow the same pattern. Although, predominately more positive than negative, most employees felt only moderately positive (23.8 %) about the inclusivity of QMS requirements, with the highest negative frequencies of all themes with a score of 7.7%. This would suggest that some

employees perceive that QMS requirements were set up exclusively, without taking into account their opinions, suggestions or knowledge of the work area.

In the ISO 9001:2008 certified companies, that formed part of the population sample, it was assumed that employee behaviour was in compliance to QMS requirements due to the company's continued successful certification status. The following factors appear to influence employee's attitude towards being optimistic about compliance behaviour in the context of a QMS:

- Understanding of the QMS benefits to themselves, their work and the company;
- Understanding how the ISO 9001 standard assists in meeting customer requirements and driving company efficiencies;
- QMS is a useful tool for information flow which facilitates corporate sustainability reporting (CSR);
- Strong social norm to comply with work requirements and internal drive to do so.

A factor that does not appear to follow the expected trend is the employee's perception of the inclusivity of QMS requirements, establishment and changes (Figure 5.14 (e)). This is further evident from the relatively high negative responses (5.5 – 7.7 %), in comparison to other trends, received to questions pertaining to employees' perceptions that management values their opinion, or that they have control of changes to requirements in their work areas. Whilst this does not seem to be an obstacle in employee's intention to behave in compliance with work requirements, it is worth noting.

A comparison of the trends between sample companies was completed, in Sub-question 2.2 to determine whether these factors were common for the population.

(b) Sub-question 2.2

(2.2) Are there common trends or factors across companies or industries or are there significant differences?

In establishing whether any differences or commonalties could be observed between companies, it was necessary to determine whether statistical differences could be found between the responses of the employees of the different companies to the questionnaires. Therefore, the analysis of variance (ANOVA) technique was employed to test for equality of means across multiple populations (Wegner, 2012). The test determines whether any observed differences or similarities are by random chance or whether the origin company was the influencing factor.

For the purposes of this study, each sample of above 10 responses represented a sub-population. Since the responses were based on a standardised collection tool, the TPB model, an ANOVA hypothesis test was used to determine whether any differences or similarities could be established between the responses to the different variables of the questionnaire, ATT, SN, PBC and INT.

Figure 5.15 Hypothesis test for ANOVA

Null:	H_0:	$\mu_B = \mu_C = \mu_D = \mu_E = \mu_K = \mu_L$
Alternative:	H_1:	At least one μ_i differs (i = B, C, D, E, K, L)

Source: Researcher's own

Figure 5.15 shows the hypothesis test employed for each variable of the TPB responses across the sub-population sets. The null states that all the means across the different sample companies are equal, therefore no statistical difference can be observed. Conversely, the alternative states that at least one of the means are different, therefore a statistical difference can be observed. An ANOVA test for each of the constructs of the questionnaire was completed to determine whether any of the subsequent codes show any differences between samples.

Figure 5.16 ANOVA: ATT

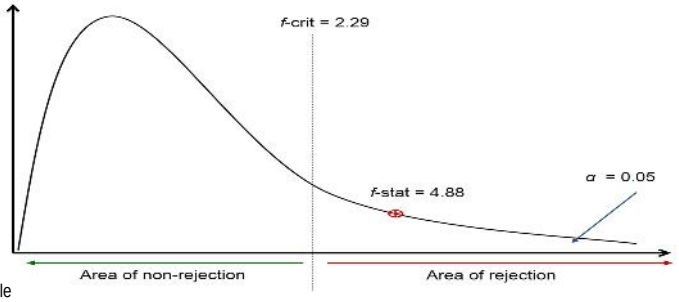
Anova: Single Factor

SUMMARY - ATT

Groups	Count	Sum	Average	Variance
B	25	134.6	5.4	0.6
C	27	154.5	5.7	0.7
D	11	66.3	6.0	0.7
E	17	109.6	6.4	0.2
K	30	169.8	5.7	0.6
L	12	71.7	6.0	0.4

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	13.132	5	2.62641	4.881	0.0004	2.293
Within Groups	62.423	116	0.53813			
Total	75.555	121				



Note: Not drawn to scale

Source: Adapted from Excel

The ANOVA results shown in Figure 5.16 suggest that sufficient sample evidence exists to reject the null hypothesis in favour of the alternative. The f-stat value of 4.48 is larger than the f-crit value of 2.29 at a significance level of 0.05. This is further confirmed by the p-value of 0.0004, which is much smaller than the significance level of 0.05. Hence, it can be concluded, with 95% confidence, that there is a difference in at least one company's responses.

Table 5.10 Rank order of attitude

Groups	Industry	Count	Average	Ranking
E	Household & personal products	17	6.4	(1) moderately positive
D	Healthcare products	11	6.0	(2) moderately positive
L	Food & beverage products	12	6.0	(3) moderately positive
C	Industrial equipment	27	5.7	(4) moderately positive
K	Construction material	30	5.7	(5) moderately positive
B	Consulting	25	5.4	(6) slightly positive

Scale: 1.0 – 1.4 = strongly negative; 1.5 – 2.4 = moderately negative; 2.5 – 3.4 = slightly negative; 3.5 – 4.4 = neutral; 4.5 – 5.4 = slightly positive; 5.5 – 6.4 = moderately positive; 7 = strongly positive

Source: Adapted from Excel

In terms of employee attitude towards compliance behaviour, Table 5.10 shows that sample company E, in the household and personal products industry, is the most positive with moderately positive attitude. In contrast, the company with the weakest attitude is sample company B, in the consulting industry, with slightly positive attitude. Therefore, the differences observed between the company employee attitudes towards management systems were not due to random chance.

Figure 5.17 ANOVA: SN

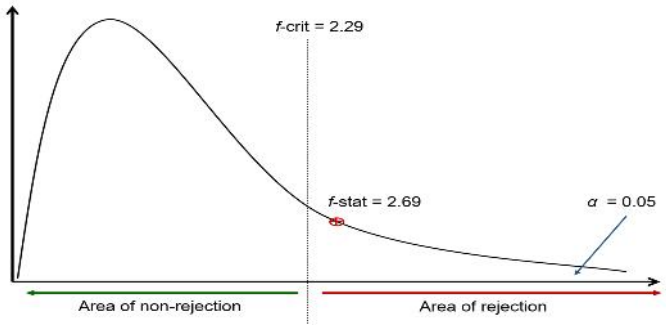
Anova: Single Factor

SUMMARY - SN

Groups	Count	Sum	Average	Variance
B	25	144.4	5.8	0.5
C	27	158.0	5.9	0.7
D	11	66.8	6.1	0.4
E	17	108.9	6.4	0.3
K	30	181.6	6.1	0.4
L	12	75.6	6.3	0.1

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5.831	5	1.166	2.687	0.025	2.293
Within Groups	50.343	116	0.434			
Total	56.174	121				



Note: Not drawn to scale

Source: Adapted from Excel

The ANOVA results shown in Figure 5.17 suggest that sufficient sample evidence exists to reject the null hypothesis in favour of the alternative. The f-stat value of 2.69 is marginally higher than the f-crit value of 2.29 at a significance level of 0.05. This is further confirmed by the p-value of 0.025, which is smaller than the significance level of 0.05. Hence, it can be concluded, with 95% confidence, that there is a difference in at least one company's responses.

Table 5.11 Rank order of subjective norms

Groups	Industry	Count	Average	Ranking
E	Household & personal products	17	6.4	(1) moderately positive
L	Food & beverage products	12	6.3	(2) moderately positive
D	Healthcare products	11	6.1	(3) moderately positive
K	Construction material	30	6.1	(4) moderately positive
C	Industrial equipment	27	5.9	(5) moderately positive
B	Consulting	25	5.8	(6) moderately positive

Scale: 1.0 – 1.4 = strongly negative; 1.5 – 2.4 = moderately negative; 2.5 – 3.4 = slightly negative; 3.5 – 4.4 = neutral; 4.5 – 5.4 = slightly positive; 5.5 – 6.4 = moderately positive; 7 = strongly positive

Source: Adapted from Excel

Table 5.11 shows that sample company E has the highest scores for subjective norms. In contrast, the company with the weakest norms is sample company B with an average value still in the moderately positive range. Therefore, differences between the subjective norms of company employees towards management systems are observed which are not due to random chance.

Figure 5.18 ANOVA: PBC

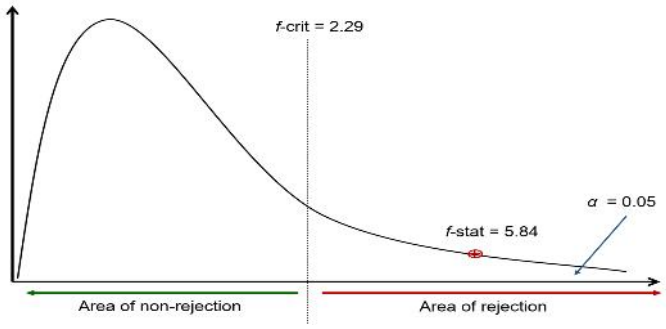
Anova: Single Factor

SUMMARY - PBC

Groups	Count	Sum	Average	Variance
B	25	115.8	4.6	1.3
C	27	139.6	5.2	0.9
D	11	51.5	4.7	2.1
E	17	105.9	6.2	0.3
K	30	151.3	5.0	1.7
L	12	69.7	5.8	0.6

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	34.270	5	6.854	5.835	7.627E-05	2.293
Within Groups	136.268	116	1.175			
Total	170.539	121				



Note: Not drawn to scale

Source: Adapted from Excel

The ANOVA results shown in Figure 5.18 suggest that sufficient sample evidence exists to reject the null hypothesis in favour of the alternative. The f-stat value of 5.84 falls within the area of non-rejection (f-crit = 2.29) at a significance level of 0.05. This is further confirmed by the p-value of 7.6×10^{-5}, which is significantly smaller than the significance level of 0.05. Hence, it can be concluded, with 95% confidence, that there is a difference between responses of different company's employees in terms of perceived behavioural control.

Table 5.12 Rank order of perceived behavioural control

Groups	Industry	Count	Average	Ranking
E	Household & personal products	17	6.2	(1) moderately positive
L	Food & beverage products	12	5.8	(2) moderately positive
C	Industrial equipment	27	5.2	(3) slightly positive
K	Construction material	30	5.0	(4) slightly positive
D	Healthcare products	11	4.7	(5) slightly positive
B	Consulting	25	4.6	(6) slightly positive

Scale: 1.0 – 1.4 = strongly negative; 1.5 – 2.4 = moderately negative; 2.5 – 3.4 = slightly negative; 3.5 – 4.4 = neutral; 4.5 – 5.4 = slightly positive; 5.5 – 6.4 = moderately positive; 7 = strongly positive

Source: Adapted from Excel

Table 5.12 shows that the employees of sample company E feel the most positive regarding their control and input into the requirements of the company's management system with the highest average score in the moderately positive scale. In contrast, the company with employees feeling the least positive about their control and input into the management system is sample company B with the lowest average score in the slightly positive range. Therefore, differences between how the employees of companies perceive their control and input into the requirement of the management system were not due to random chance.

Figure 5.19 ANOVA: INT

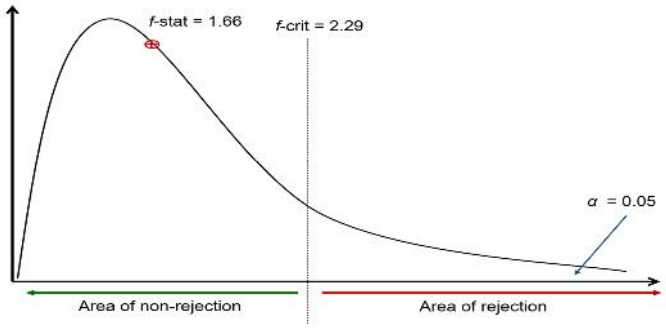
Anova: Single Factor

SUMMARY - INT

Groups	Count	Sum	Average	Variance
B	25	156.2	6.2	0.1
C	27	166.3	6.2	0.2
D	11	69.4	6.3	0.2
E	17	108.6	6.4	0.0
K	30	192.1	6.4	0.1
L	12	76.6	6.4	0.1

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.110	5	0.222	1.663	0.149	2.293
Within Groups	15.496	116	0.134			
Total	16.606	121				



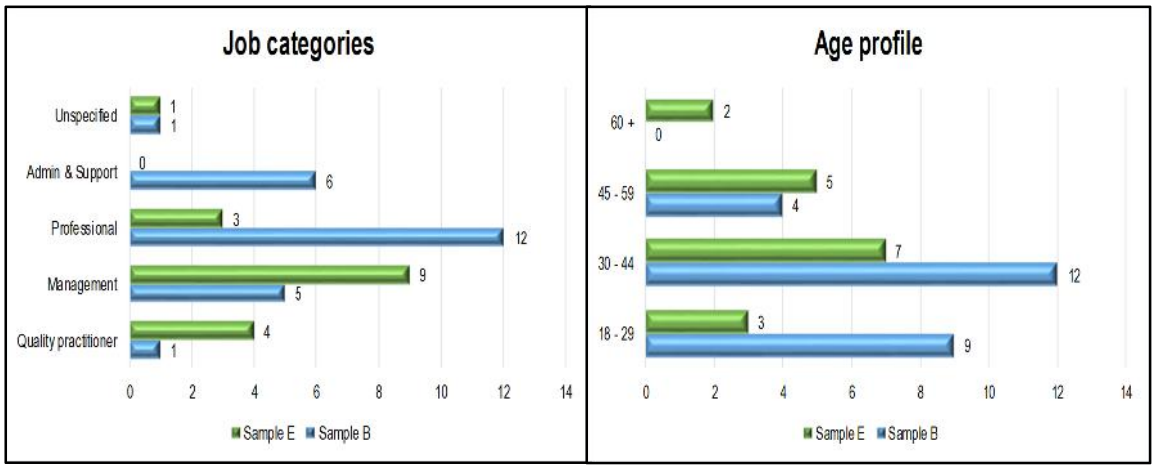
Note: Not drawn to scale

Source: Adapted from Excel

The ANOVA results shown in Figure 5.19 suggests that insufficient sample evidence exists to reject the null hypothesis in favour of the alternative, therefore the null hypothesis is accepted. The f-stat value of 1.66 falls within the area of non-rejection (f-crit = 2.29) at a significance level of 0.05. This is further confirmed by the p-value of 0.149, which is higher than the significance level of 0.05. Hence, it can be concluded, with 95% confidence, that there is no difference between responses of different company's employees in terms of their intention to exhibit compliance behaviour.

The largest differences were found between sample company E with the most positive and sample company B as the least positive attributes towards compliance behaviour. Therefore, the possible reasons for these differences were further examined.

Figure 5.20 Sample company E vs B: job categories & age profile



Source: Excel

Figure 5.20 shows the comparison between sample E as the more positive and sample B as the least positive. Sample E has more managers, quality practitioners and less admin and support and professional staff that took part in the survey. The differences could be attributed to the general difference in demographics of the two sample companies or the participative culture in each company.

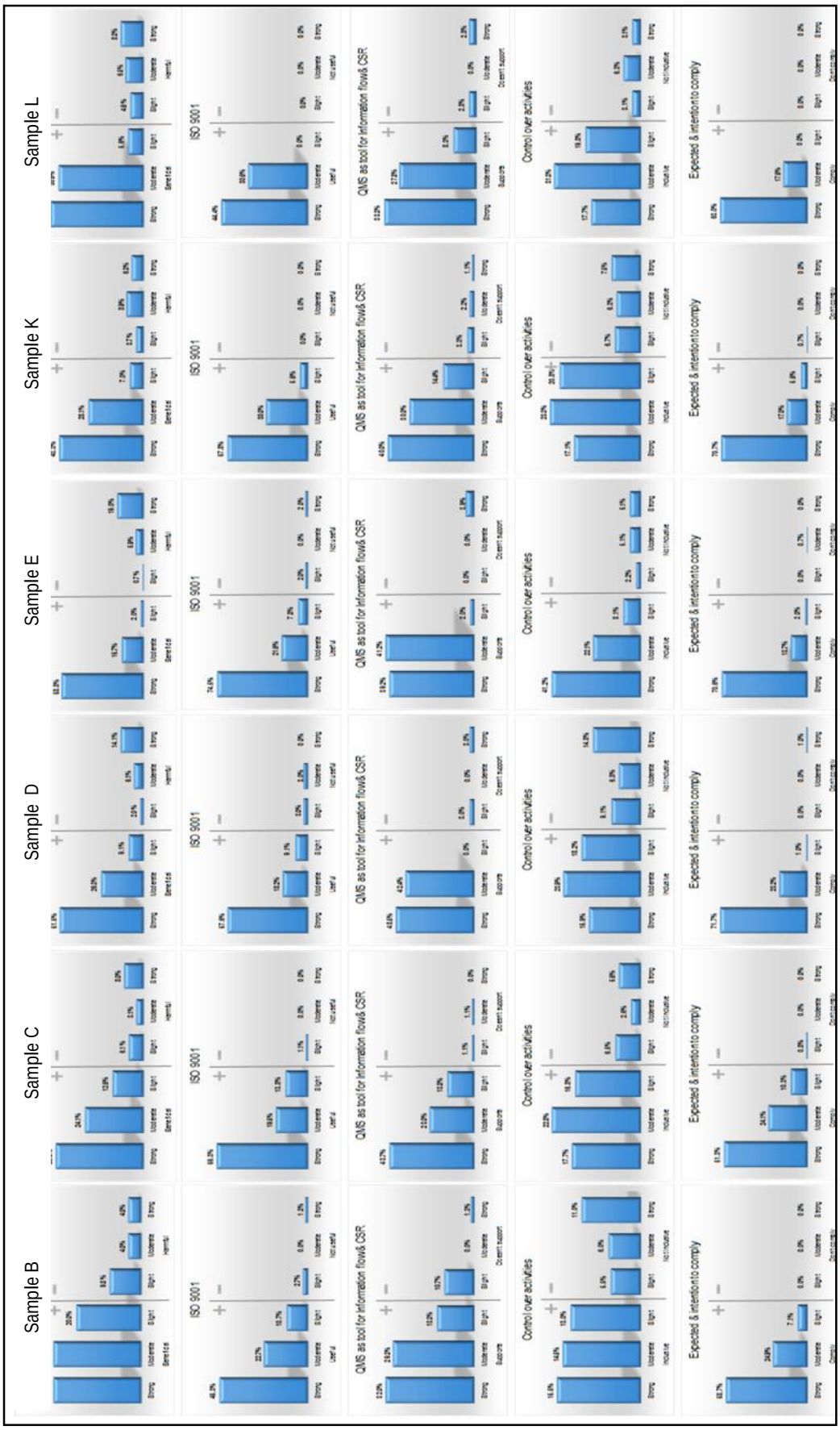
One factor that could be deduced from sample E is that the more managers and quality practitioners that are participating and have positive attitudes towards the management system initiatives, the more positive the workforce appears.

A second factor deduced from the age profile (Figure 5.20) is that a company with older more experienced workers seem to recognise the value of a management system more than a company with a younger age distribution. This was evident by the distribution of ages of respondents in sample company B being skewed to the younger age categories, whilst sample company E's distribution is skewed towards the older age categories.

The only variable that showed similarity was the intention (INT) to behave in compliance with the requirements of a management system. This leads to the deduction that any differences observed between companies do not affect the compliance behaviour of employees. Whether employees are feel strongly positive or slightly negative, they complete their compliance tasks.

In order to determine if any common factors could be determined across industries with more than 10 responses, a trend analysis using the derived factors from the code themes was completed.

Figure 5.21 Trend comparison



Source: Excel

Figure 5.21 shows the comparison of the sample companies over the five main factors established in the coding guide. The following common factors were extracted from the comparison:

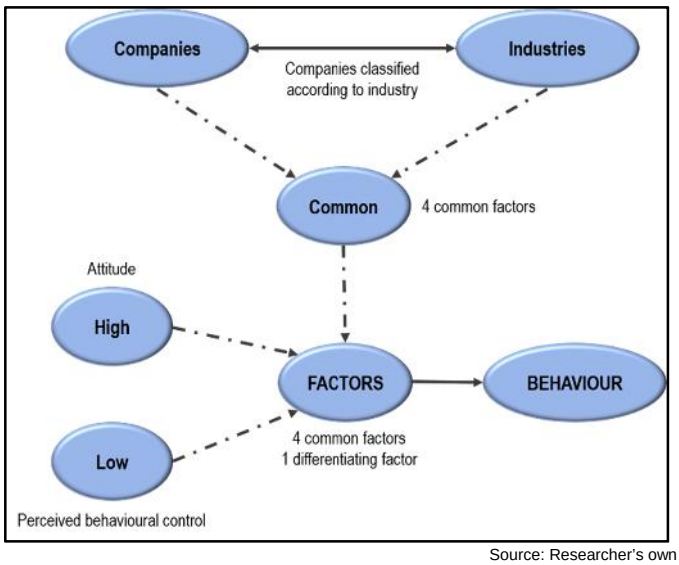
- most employees are predominantly positive towards a QMS, even though some feel that the requirements are too complicated to effectively implement;
- all employees are positive about the benefits of ISO 9001;
- most employees see QMS as a tool for information flow as a basis for CSR;
- all employees feel that it is expected and they intend to comply with QMS and work requirements.

The only differentiating factor found was the levels of perceived behavioural control that varied significantly across the companies. Although it does not appear to affect the overall intention to be compliant, it does indicate that the more employees perceive that they have input and control of the requirements in their work areas, the more positive that company is towards the QMS. This is evident in the large differences between sample company B, which is overall the least positive, and sample company E, which is the most positive.

(c) Question 2 Summary

In summary, the results indicate that trends were observed that appear to affect quality management system implementation or sustainability reporting.

Figure 5.22 Trend research question results summary



Source: Researcher's own

Figure 5.22 shows a summary of the results of the sub-questions for question 2. It displays the number of common and differentiating factors found between companies, the highest factor, attitude, and the lowest factor, perceived behaviour control, found to contribute towards employee's intention to exhibit compliance behaviour.

5.9 Results summary

The results establish that a relationship does exists between employee attitude, their subjective norms and perceived behavioural control and employees' intention (INT) to exhibit behaviour in support of quality management system (QMS) requirements as the basis for corporate sustainability reporting. However, the relative strength of that relationship in the context of a QMS is weak with only a 24,6% variance in INT being explained by the TPB model. Strong interwoven relationships exist between attitude, subjective norms and perceived behaviour control. Hence, subjective norms and perceived behaviour control have an influence on employee attitude and vice versa.

The results of the second research question indicate that common trends were found across companies which remain true for the population. The common factors contributing towards positive compliance behaviour were an understanding of the benefits that a QMS, in particular a ISO 9001 system, can bring to the employee and the company, as well as the perception that the QMS forms the basis for information flow, which creates the platform for CSR. It was found that the most unanimous factor influencing the population of successful ISO certified and CSR companies is that their employees feel an expectation to conform to the management system which drives their intention to behave in a manner compliant with requirements.

The factor that seemed to contribute the least to INT, whilst being the most varied across companies, was perceived behaviour control. The PBC scores did appear to have an influence on the ATT and SN of company employees, with those companies with more positive scores in PBC, having similar higher scores in ATT and SN. However, the higher scores did not appear to influence the intention to behave in compliance with QMS requirements.

Sample demographics, in particular the age and job categories profiles of the companies, appear to have an influence on the positive perception of employees towards the management system. However, since the demographic profiles of the sample companies are not known, these results cannot be used to infer any statistical significant difference between the companies or the industries.

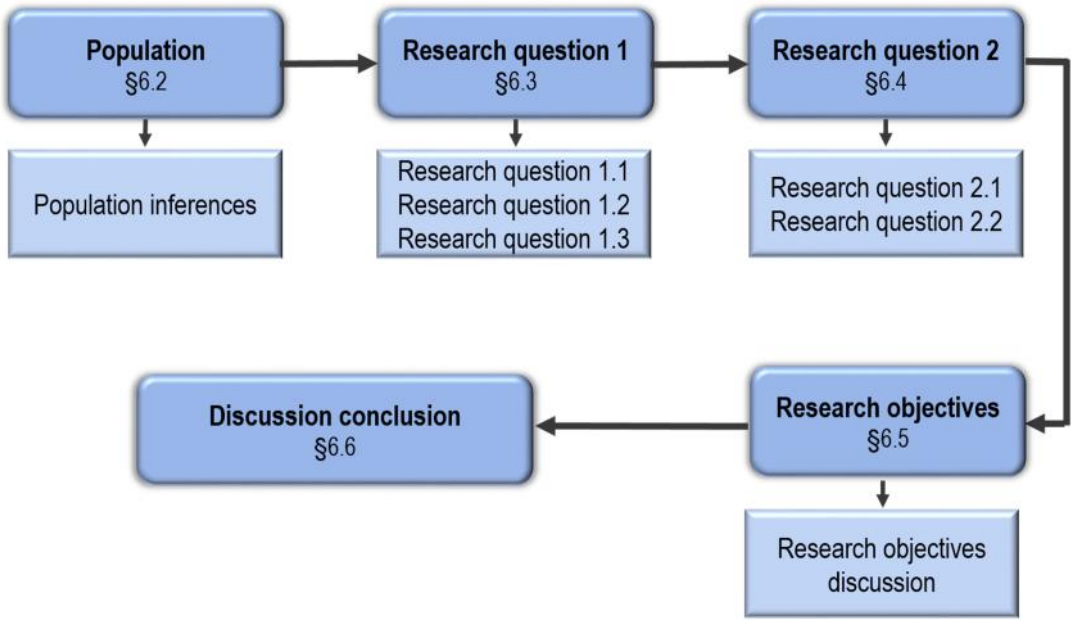
The results of the data collection and statically analysis activities documented in this chapter have provided potential answers to the research questions posed in Chapter 3. The following chapter will further evaluate and discuss the context and implications of the results of this chapter.

CHAPTER 6. DISCUSSION

6.1 Introduction

This chapter discusses the results of the analyses completed and presented in Chapter 5 within the context of the literature presented in Chapter 2, the research questions posed in Chapter 3, and the research objectives stated in Chapter 1.

Figure 6.1 Chapter 6 layout



Source: Researcher's own

The aim of Figure 6.1 is to provide the reader with an overview of the flow of the chapter with a quick reference to the paragraphs and specific topics each covers.

6.2 Population

The sample size of 126 respondents was found to be of sufficient size for an exploratory study (Nunnally, 1978). Due to the normal distribution of the sample data, all results could be generalized to the population of ISO 9001:2008 certified, JSE listed companies that complete GRI sustainablity reporting. However, the researcher cautions that the results of this study should not be considered conclusive for the population due to the small sample size lest it be erroneously applied to a larger population other than that specified.

Although the response rate could be considered moderate, it was disappointing that some companies were not willing to take part in the study. However, it was not entirely unexpected, as forewarned by Marshall & Rossman (2014), that the timing of a study would affect response rates. In the case of this research study, the lateness of the year and the current volatile international and national economic conditions did appear to detrimentally affect participation and response. This could have been mitigated, were the researcher more experienced in conducting survey based research and the time frame longer for the completion of this study.

However, the responses were of high quality and sufficient quantity to fulfil the purposes of an exploratory study. Those companies that did partake in the survey were from a wide range of industries, which allowed for comparison across these industries within the relatively small population set of 53 companies. Subsequently, the results discussed are representative and therefore generalised for the entire population.

6.3 Research question 1 discussion

6.3.1 Research question 1.1

(1.1) How independent are the variables ATT, SN and PBC?

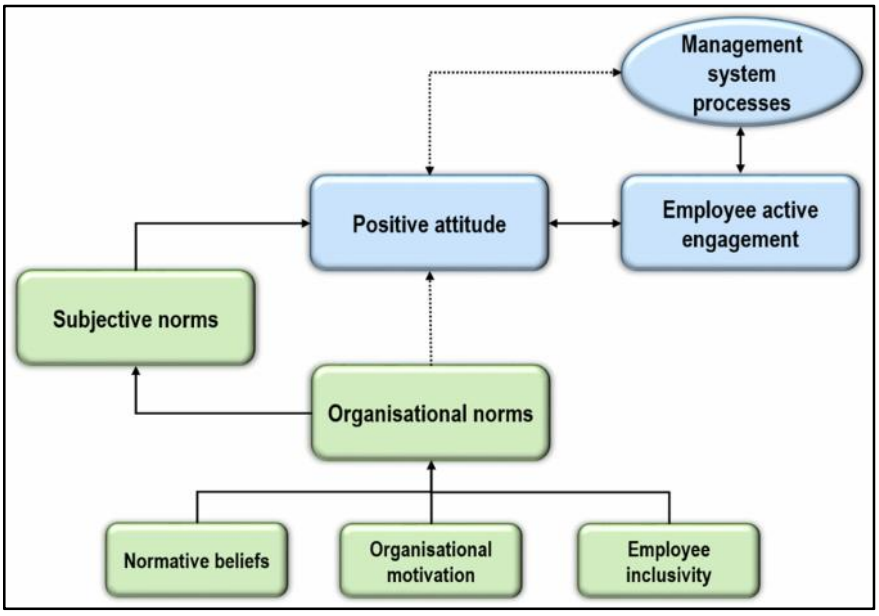
The results from the data indicate that the variables of attitude, subjective norms and perceived behavioural control are not independent of each other. This is not entirely unexpected as Ajzen (1991) proposed that the variable of attitude is influenced by the subjective norms and perceived behavioural control of the respondents. Other studies where the theory of planned behaviour was applied (Buchan, 2005; De Cannière et al., 2009; Thoradeniya et al., 2015), found similar trends in the data displaying multivariate correlation.

In particular, the results of this research study were extremely close to those of the correlation results obtained in the De Cannière et al. (2009) study. Both studies found that the correlations between attitude and subjective norms (0.53 vs 0.54) and between attitude and perceived behavioural control (0.64 vs 0.69) to be similar, with this study finding a lower correlation between subjective norms and perceived behavioural control (0.34 vs 0.48) than the De Cannière et al. (2009) study. Such comparability adds rigour to the validity of the results of this study.

The research results therefore suggest that in the context of a management system, attitude is strongly influenced by both subjective norms and perceived behavioural control of employees confirming the Ajzen (1991) proposition. Hence, the more positive employees' perception about their control over their activities and the more their opinions are valued (Wickramasinghe & Perera, 2014), the more actively engaged employees are (Seijts & Crim, 2006) in implementing business processes (Medlin & Green Jr., 2014), such as quality management systems. Such active engagement, in turn, carries more success at effective and efficient implementation (El Tigani, 2012), bringing legitimacy to information used for sustainability reporting by providing a bridge between sustainability and business processes (Rusinko, 2005).

In the business context, using a management system as a basis for sustainability reporting, this research shows that in order for managers to promote positive employee attitude, they need to be cognisant of specific levers such as subjective norms and perceived behavioural control. Positive employee attitude is essential when new initiatives such as ISO 9001:2015 are introduced (Oreg et al., 2011). By harnessing and cultivating specific normative beliefs, organisational motivation and inclusivity, management can drive organisational norms to become part of the employees' subjective norms due to active employee engagement, increasing buy-in and participation. Beliefs such as the positive benefits that the ISO 9001 standard and sustainability have, for both the individual and the company, provides a platform for inclusivity and promotes positive expectations of outcomes such as cohesion and cooperation between team members (Janssen & Huang, 2008).

Figure 6.2 Framework for driving active engagement in QMS



Source: Researcher's own

Figure 6.2 indicates the researcher's proposed framework to guide managers to create positive employee attitude and encourage active engagement in the quality management system processes. If managers are able to successfully identify and cultivate a beneficial work environment, the processes of a management system will become synonymous with the company identity. Active employee engagement and positive employee attitude go hand-in-hand, becoming part of the cycle of continuous improvement of the quality management system.

6.3.2 Research question 1.2

(1.2) Are there any relationships between each independent variable ATT, SN, PBC and the dependent variable INT?

Statistically, the results suggest significant relationships, albeit weak to moderate, between all the independent variables of the theory of planned behaviour model and the dependent variable, intention to exhibit compliance behaviour, in the context of a quality management system.

A weak relationship was found between intention and perceived behavioural control with only a 0.234 correlation. This confirms results of a study by Pelling and White (2009), when applying the theory of planned behaviour to the use of social networking websites, that perceived behavioural control was an inconsequential predictor of intention. Likewise, Kaiser et al. (2005) proposed that perceived behaviour control could be omitted as a direct predictor of intention to exhibit behaviour. In line with the paradigm that perceived behavioural control is not a direct predictor of intentions, this research study found that the weak relationship between perceived behavioural control and intention was considered statistically significant. However, when the results of sub-question 1.2 are evaluated taking into account the results of sub-question 1.1, though perceived behavioural control does not appear to have much influence on intention directly, it does have an influence on attitude and hence an indirect influence on intention.

Moderate correlations were found between the influences of subjective norms (0.399) and attitude (0.455) on intention. The results confirm previous assertions (Ajzen, 1991; De Cannière et al., 2009) that attitude tends to be the stronger determinant of intention, higher than subjective norms and perceived behavioural control. Conversely, the results of this study contradict those found in a similar study (Thoradeniya et al., 2015) where, during an evaluation of the application of the theory of planned behaviour to manager's intention to complete sustainability reporting, subjective norms was the strongest determinant of intention for listed companies. Since the population of this study is JSE listed companies, the findings are contradictory in the context of listed companies, holding true that attitude is the strongest determinant of intention (Ajzen, 1991) for the study population.

The results of this study are enlightening for managers of companies with certified quality management systems in place. The correlation found between attitude and intuition shows that the more positive employees' attitude, the more employees are inclined to exhibit compliance behaviour. If managers are planning on introducing new standards or system requirements, they would be well advised to focus on the soft issues such as employee attitude as highlighted in Figure 6.2. It is proposed that this approach would be a prudent management strategy as numerous research studies (Harter et al.,

2002; Gollan, 2005; Christian et al., 2011; Dahlgaard-Park, 2012; Benn et al., 2015) have found the crucial component in the success of such an endeavour is the cooperation and fortitude of the employees.

Subjective norms can be used to increase intention towards compliance behaviour by harnessing its antecedents such as motivation to comply. Intel (Kruschwitz, 2012) found by bringing compliance behaviour into performance measurement as well as adding additional motivations such as rewards for improvement suggestions, the company was able to increase the efficiency of its systems and outputs. When combined with the proposed approach for increasing positive employee attitude (Figure 6.2), it could become a useful tool prior to initiating new system requirements or standard updates.

Since employee self-efficacy can be boosted by increasing their perceived behavioural control (Greaves et al., 2013), it would be advised that a more inclusive approach (Gollan, 2005) be adopted when establishing system requirements. This should be done by remaining cognisant of the sustainability criteria set by Goldratt (1990), ensuring that the regulatory, environmental, customers, suppliers, other stakeholders and shareholder needs are met in such a way that the company is profitable and remains so in the future.

6.3.3 Research question 1.3

(1.3) Can ATT, SN and PBC be combined, as TPB model, to predict probability of INT?

It is acknowledged that the use of theory of planned behaviour in the context of a management system is not necessarily consistent with the purpose that the theory was originally designed to predict (Sheppard et al., 1988), which is the intention to change physical behaviour.

This study confirms the expectation (Sheppard et al., 1988) that the theory of planned behaviour would not fare well outside of its original purpose. However, it should be noted that the theory of planned behaviour has been very successful at predicting behaviour in a wide range of areas within the business context for which it was not

originally intended (Pavlou & Fygenson, 2006; Pelling & White, 2009; Nazari et al., 2015; Thoradeniya et al., 2015). Hence, exploring the application of the theory of planned behaviour within the context of intention to exhibit compliance behaviour shows a semblance of success. Although, the independent variables only account for ~ 25% of the variance in intention, an extension of the variables applying the theory of planned behaviour model is recommended. Greaves et al. (2013) claims to have successfully employed this approach by engaging with the target population to identify relevant antecedents to the three independent variables when applying TPB to environmental behaviour in United Kingdom-based companies. However, the feasibility of a similar approach in the South African context would need to be explored, but holds promise.

Whilst it is clear that emotions do not appear to play a significant role in this business context, other influences, conscious or subconscious, are in play when predicting the intention to behave compliant with system requirements (Sniehotta et al., 2014) as is evident by the low predictive value of the theory of planned behaviour model. Studies (Sniehotta et al., 2014) have shown that the strength of a habit, the ability to self-determine activities, the anticipated regret and self-identity or self-regulatory measures such as planning, regularly predict behaviour over and above theory of planned behaviour measures.

While some (Sniehotta et al., 2014) recommend that the theory of planned behaviour be retired, others (Conner, 2014) suggest an extension of the theory of planned behaviour taking into account the basis of human behavioural intention whilst providing a robust framework for the inclusion of additional contributing factors. Support for the possible inclusion of such additional variables, depending on the context, has been widely embraced (Chiou, 1998, Conner & Armitage, 1998; Buchan, 2005; Pavlou & Fygenson, 2006; Pelling & White, 2009; Yoon, 2011; Chen & Tung, 2014). The extension could prove useful where the theory of planned behaviour has proven reliability, performing well as predictor of intention to meet a goal (Conner & Armitage, 1998), such as the updating of the management system to the ISO 9001:2015 standard.

The researcher advises that the proposed extended theory of planned behaviour model be developed and employed prior to the initiation of an ISO 9001 update or implementation of a sustainablity reporting standard. This would allow managers to

determine the organisational readiness and employee perceptions, thereby identifying areas that management could target to improve the outcome or goal achievement of such initiatives.

Figure 6.3 Proposed extended TPB model

(Adapted from Ajzen, 2011)

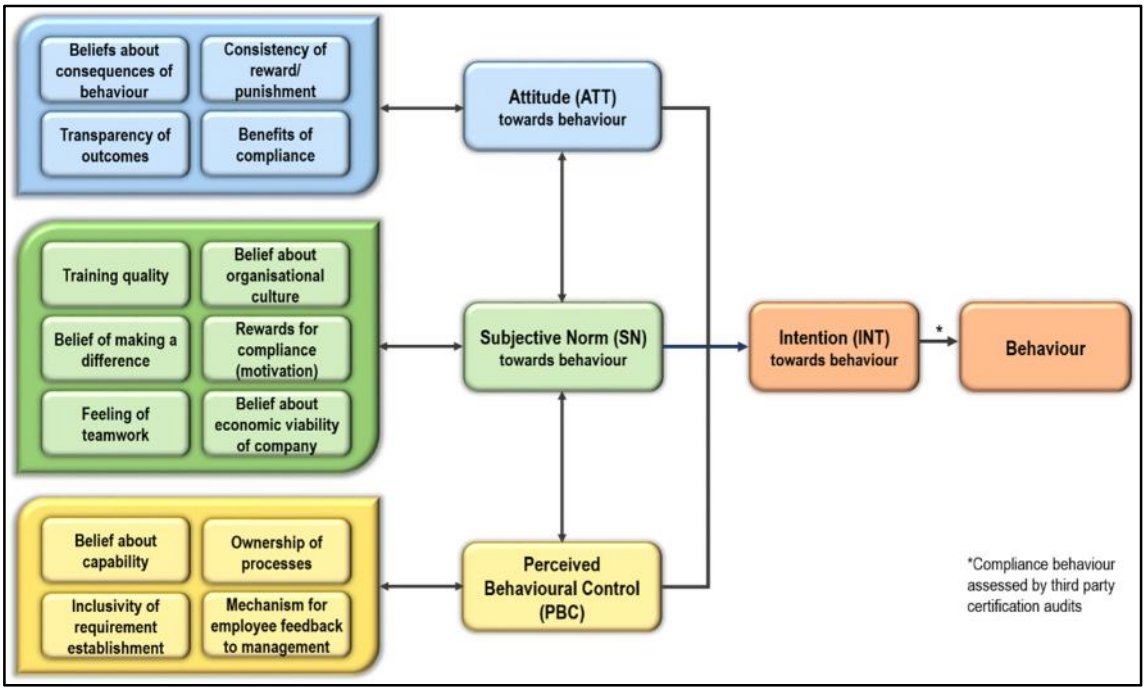


Figure 6.3 proposes an extension to the antecedents of the independent variables of the theory of planned behaviour to encompass more factors affecting employees' perceptions. An example of one of the proposed factors is employees' belief about the economic feasibility of the company. Such beliefs would indicate how they perceive job security and their willingness to speak up and make recommendations for improvement. This in turn, would affect how employees see their value to the company and enable them to feel more empowered, hence have higher perceived behavioural control leading to more positivity. As shown in this research, positivity leads to higher intentions to exhibit compliance behaviour, which in terms of a management system, it what is required for verifiable auditable information flow for corporate sustainablity reporting. Testing of the proposed extended model is recommended as an area for further study.

6.3.4 Question 1 summary

(1) Does a relationship exist between employee attitude (ATT), their subjective norms (SN) and perceived behavioural control (PBC) and the employee's intention (INT) to exhibit behaviour in support of quality management system requirements to ensure reliable and auditable data for sustainability reporting?

A relationship does exist between employee attitudes, their subjective norms and perceived behavioural control and their intention to behave in compliance with quality management system requirements to ensure reliable and auditable data for sustainability reporting. However, the strength of the relationship and the predictive nature thereof is weak. This indicates, that in the context of a quality management system, more factors influence behavioural intention than just attitude, subjective norms and perceived behavioural control.

Some inkling of the possible additional influential factors was eluded to by several authors during the literature review process, albeit not in the same context as this research. Specific influences should be tested in the context of a quality management system to develop a more robust predictive model based on the theory of planned behaviour. This approach would be advised, rather than using the low predictive model found by this research study.

6.4 Research question 2 discussion

6.4.1 Research question 2.1

(2.1) What are the most significant trends or factors observed contributing towards employee attitude and compliance behaviour?

In the evaluation of economically successful (JSE listing as proxy), ISO 9001:2008 certified and GRI reporting companies, it was found that employees feel most strongly about the expectations to be compliant with quality management system requirements

and their own internal drive to do so. This finding is supported by literature where it was found that a social norm of participation and cooperation among team members was one of the factors required for successful quality management system implementation (Janssen & Huang, 2008; Dahlgaard-Park, 2011). Further, a high level of employee engagement is required for successful ISO 9001 certification (El Tigani, 2012). However, the researcher cautions managers to remain vigilant, as maintenance of certification status requires constant employee engagement (El Tigani, 2012) well after the glow of the certification ceremony has worn off.

A second factor where employees are extremely positive, is the value that the ISO 9001 standard brings to the company. Widespread support (Heras et al., 2002; Sharma, 2005; Tzelepis et al., 2006; Lam et al., 2011) exists of the benefits that an ISO 9001 management systems brings to a company, quality management systems being acknowledged as a fundamental business management strategy (Zelnik et al., 2012). This thought paradigm has clearly had a positive impact on the perception of employees towards the benefits of ISO and the competitive advantage that they feel certification brings. It could also indicate a high quality level of ISO training. However, this assumption could not be verified with the data collected.

Thirdly, employees are predominantly positive about the use of the quality management system as information highway to facilitate corporate sustainability reporting (Zwetsloot, 2003). Since, a positive relationship was found between the market positioning of a company and the quality of its corporate sustainablity reporting (Prado-Lorenzo et al., 2009), and that sustainability reporting increases the positive market perception of a company (Vuko & Vitezić, 2012), especially during economic downturns and uncertainty (Lackmann et al., 2012), the quality of such reporting becomes more important for South African companies. The current uncertain economic environment has some scholars (Johnson, 2015) warning of an impending recession. Whether this prediction is to be believed or not, it would be judicious to plan strategically to address the possibility.

An effective management system has been recognized as not only important for overall business performance, but also enhances sustainability reporting (Nazari et al., 2015).

The importance of internal processes within the quality management system to facilitate sustainable reporting (Clarkson et al., 2011; Perego & Kolk, 2012) appears to be shared by employees who were of the opinion that a quality management system assists with the flow of information required for corporate sustainability reporting.

The last factor found was that most employees felt positive about the benefits that their company's quality management system brings, in line with the findings of similar studies (Enticott & Walker, 2008; Mishra & Napier, 2015). However, the perceptions about the level of benefits appear to be lower than those associated with the ISO 9001 standard. This discrepancy could be due to some employees feeling that the manner in which the standard requirements have been implemented is too complicated to implement efficiently. It would appear that ease of implementation is often curtailed by some quality practitioners lack of understanding of the unique requirements of the company leading to unnecessarily complicated quality processes which diminish job satisfaction (Heras et al., 2002; Levine & Toffel, 2010).

The ISO standard and new 2015 requirements (ISO, n.d.) are written in such a way as to drive for quality processes to take more cognisance of business requirements by tailoring processes into operational business process flows, rather than adding additional quality assurance requirements; remaining mindful of the constraints associated with the specific industry and company strategic goals.

The only factor that appeared to show significant trends (~ 20%) in the negative scales, was the perception some employees have of being excluded in setting requirements, changing requirements or having control over activities in their work areas. Although, this did not seem to influence their intention to act in compliance with the requirements, however reluctantly.

As involvement of people is one of the seven quality management principles in the recently updated ISO 9001:2015 standard (ISO, 2015c) and studies have shown that to implement and maintain quality management systems, employee engagement is fundamental (El Tigani, 2012), this study shows that it is a definite area for improvement.

Research (Dahlgaard-Park, 2012) has shown that whilst quality management systems are successfully implemented, they are not as effective as they could potentially be due to insufficient levels of employee involvement. With the update of their quality management systems to the 2015 version, managers now have the opportunity to rectify this weakness.

6.4.2 Research question 2.2

(2.2) Are there common trends or factors across companies or industries or are there significant differences?

Upon comparison of the trends across the sample companies, it was found that the variables of attitude, subjective norms and perceived behavioural control all showed levels of differentiation, with only intention indicating no statistical differences. It was further found that variances between the sample company results could be due to the divergent age and job category profiles of each company. However, insufficient evidence was available to determine whether the sample profiles were representative of the sample company. Hence, no inferences into company differences due to the profile dissimilarities observed, could be completed.

The contrast of factors across the sample companies, did however, show some commonalities existed, and one obvious differentiator. These findings were consistent with the pattern discerned for the overall population, as elucidated in §6.4.1.

The only differentiating factor found was perceived behaviour control. It should be noted that one of the reasons for the choice of the theory of planned behaviour for this study, was the assertion (Darnton, 2008; Morris et al., 2012) that perceived behavioural control can be used as a proxy to measure actual behavioural control. When the employee's perception thereof is realistic (Ajzen, 1991; Ajzen, 2011), it allows the theory to be used to predict behavioural intention. However, this assertion has not held true as is evident by the results of this research study.

Perceived behavioural control has varied greatly across the different companies sampled, but does not appear to have a substantial influence towards the intention to be compliant, although it does seem to have an effect on the attitude and the extent of positivity employees feel towards the management system. The higher the positive scores for perceived behavioural control, the higher the overall positive attitude of the company. Companies with higher perceived behavioural control scores, tended to exhibit higher positivity towards the management system. Conversely, this did not translate into an associated increase in the intention to behave in compliance, as the company differences in intention was found to be statistically insignificant.

Two possible reasons for the weak association of perceived behavioural control within this research context are proposed by the researcher. One, employees have a skewed or unrealistic perception of their actual behavioural control which is influenced by unquantified factors not included in the theory of planned behaviour model (Buchan, 2005). Two, within the context of a quality management system, it matters not whether an employee has, or perceives to have, control over the requirements of the management system, only that they intend to behave in compliance with work requirements, even reluctantly. A similar assertion was made by (Buchan, 2005) where it was suggested that an indirect path to behaviour exists where people believe they have little control is symptomatic of lack of motivation to engage in the behaviour.

6.4.3 Question 2 summary

(2) Are any trends or factors evident that could affect quality management system implementation or sustainability reporting?

It was proposed (Shuck & Wollard, 2010) that the success of employee engagement can be evaluated by their attitude, in particular those that drive organisational norms and employee self-efficacy (Seppälä et al., 2012). This proposal rings true based on the results of the study, where a trend towards understanding of the benefits of the management system and the ISO 9001 standard brought more positive attitudes towards intention to comply with the system requirements.

However, the theory of planned behaviour does not appear to quantify the subjective norms as a proxy for organisational norms or the perceived behavioural control as a proxy for self-efficacy in this context. Much evidence exists (Seijts & Crim, 2006) that both organisational norms and self-efficacy play important roles in employee buy-in and active engagement. It would appear from the perceived behavioural control results, that in the quality management system context, some employees are not actively engaged as they do not feel their opinions are valued. It can be deduced from this study that although not all employees are positive towards the quality management system, such a relatively small negative percentage, ranging between 12.4% and 30.7% in companies sampled, would not detrimentally affect the implementation of the system.

The question should be asked that if not all employees are actively engaged, how sustainable are the systems in the long term? Since, one of the necessary conditions of sustainability is to look after employees (Goldratt, 1990), their active engagement becomes a fundamental requirement to ensure that the company remains profitable. Similarly, as third dimension of sustainability (Tencati et al., 2004), a company needs to ensure their business operations and stakeholder interactions are optimal.

Significantly, the results of this study show that even though the companies surveyed have successfully certified quality management systems, some employees feel that the processes involved are too complicated to implement efficiently and that they are excluded in the establishment of, or changes to, the management system requirements. This implies that there is substantial room for improvement in these two areas. In fact, the ISO 9001:2015 version demands for more inclusion of employees to ensure process optimisation (ISO 2015c), as further evident by the inclusion of people involvement as one of the seven quality management principles.

6.5 Research objectives discussion

The research problem was compartmentalised into the different academic and business aspects. The academic facet was conceptualised as determining whether the theory of planned behaviour model could be used to predict employee behavioural intention towards successful implementation of a management system. The business facet was

moulded around whether the model could be used to identify areas where management could target initiatives to create a more efficient management system which could be used to provide accurate, verifiable information required for corporate sustainablity reporting, a proven stakeholder expectation. These concepts were tested by applying the model to successfully ISO 9001:2008 certified companies, JSE listed as a proxy for financial viability, that complete GRI reporting.

The analyses, inferences and discussions resulting from this study has answered the research problem on both the academic and business dimensions. This study has successfully met the research objectives by determining the factors contributing to management system compliance, areas for improvement and identified significant areas to integrate management systems for information gathering for corporate sustainability reporting; and determining the predictability of the theory of planned behaviour model as well as enhancements for improving that predictive value.

6.6 Discussion Conclusion

The discussion of each research question under its constituent sub-questions has aided the understanding of the results found in Chapter 5, within the literature reviewed in Chapter 2 and the intended research objectives as set out in Chapter 1.

The research has found that the theory of planned behaviour is applicable to the context of a management system to predict employee intention to behave compliantly. However, the strength of the predictive model needs to be further developed by including more antecedent factors to the independent variables of the theory of planned behaviour framework. The researcher proposed such an extension to the theory of planned behaviour, presented in Figure 6.3, that would be expected to yield higher predictability of the theory of planned behaviour model, as an area for further research.

Based on the influence found that subjective norms and perceived behavioural control exerts on attitude, combined with the finding that attitude is the strongest determinant of behavioural intention, the researcher proposed a shortcut to increase compliance behaviour (Figure 6.2). It was proposed that should managers cultivate a constructive,

engaging and inclusive work environment that influences employees' subjective norms; it would lead to increased positive perceptions of benefit to employees, which in turn leads to more positive attitude and higher intention to behave in compliance with quality management system requirements.

Although the companies sampled had similar trends in terms of positivity to the benefits of an ISO 9001 quality management and their company's specific management systems, some areas of improvement were identified. One such area was cultivating an environment of inclusivity where employees should be included in the establishment of quality requirements in their areas of work and responsibility. Another, the optimisation of quality requirements into the operational processes to ensure that constraints are managed and the whole system optimised. Both these areas of improvement fall within the domain of employee engagement and if successfully completed should build the company into remaining sustainable in the long term.

Further insight was gained through this research process. The first was that in the research context, it would appear that employees' perception of behavioural control or self-efficacy in their work areas does not affect their intention to behave in compliance with the requirements of the quality management system. Plainly put, employees will do what is required, even though grudgingly. This leads to the question of how sustainable such compliance behaviour would be in the long term.

The second insight, was that most employees see the quality management system as a mechanism to gather, verify and supply information required for management and in particular corporate sustainablity reporting purposes. This is a concept that the researcher strongly urges managers to act on, by incorporating sustainability requirements into the management system, more robust reporting mechanisms can by developed that become part of the company's manner of doing business.

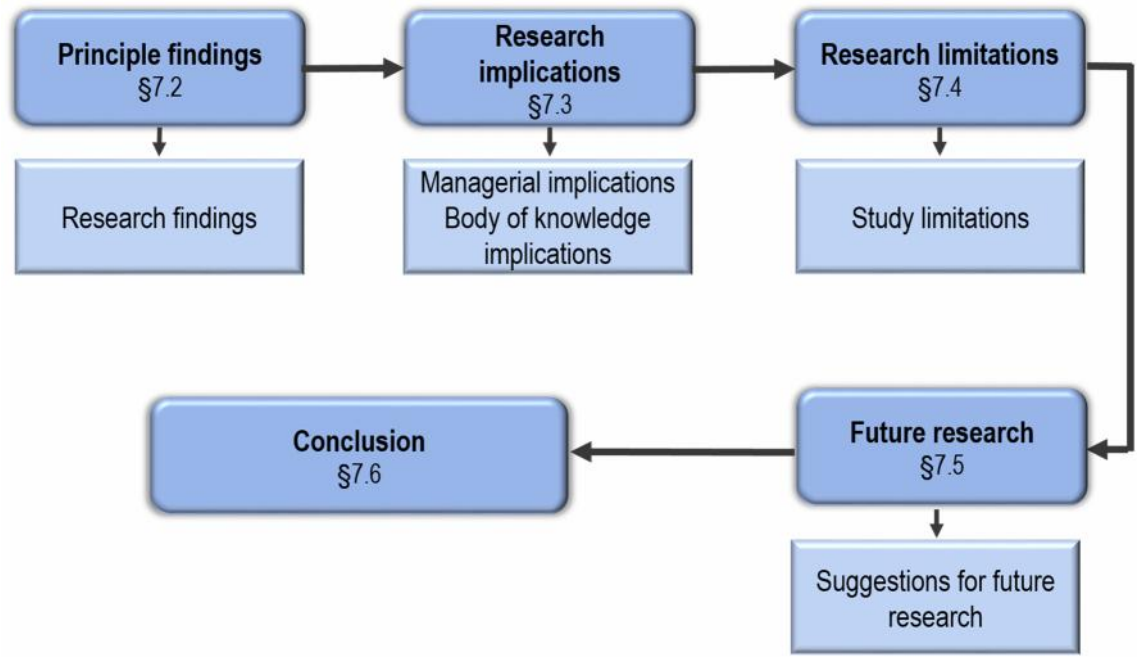
The following chapter will build on the main findings by presenting recommendations for practical applications thereof and recommendations for further additions to the body of knowledge.

CHAPTER 7. CONCLUSION

7.1 Introduction

This chapter highlights the main findings of this research study, proposes recommended managerial implications, contribution to the body of knowledge and finally gives recommendations for future research.

Figure 7.1 Chapter 7 layout



Source: Researcher's Own

The aim of Figure 7.1 is to provide the reader with an overview of the flow of the chapter with a quick reference to the paragraphs and specific topics each covers.

7.2 Principle findings

The applicability of the theory of planned behaviour to the context of compliance behaviour required for a management system was proven by the results of this study. Although the classic model showed only ~ 25% prediction strength, the data indicates that with the proposed extension (§6.3.3, Figure 6.3) to the model, a higher predictive value could be attained (Conner & Armitage, 1998; Buchan, 2005; Greaves et al., 2013; Chen & Tung, 2014; Thoradeniya et al., 2015).

Significantly, the influence of subjective norms and perceived behavioural control on that of attitude, as the strongest determinant of the intention (De Cannière et al., 2009) to exhibit compliance behaviour, was an interesting finding. The managerial implications thereof are expanded on in §7.3.1 when discussing the proposed framework for driving active engagement in the management system.

An absorbing result was that within the study context, the perception of control over activities and the inclusivity in the establishment of quality requirements did not appear to directly affect employees' intention to behave in compliance with quality system requirements. This is in line with studies such as Kaiser et al. (2005) and Pelling and White (2009) where it was found that perceived behavioural control was inconsequential as direct predictor of intention.

Conversely, the more positive the employees were towards the ISO 9001 standard and the company's quality management system, the higher the intention to be compliant. This suggests that when all other work environmental factors, such as active employee engagement (Seijts & Crim, 2006), lead to an inclusive quality culture where employees feel their opinions are valued (Lamm et al., 2014), it increases the efficiency of the system (Dahlgaard-Park, 2011).

Finally, the most enlightening finding is that employees feel that a quality management system is an effective information mechanism for flow of data to management for corporate sustainability reporting. Rather than seeing sustainability as a separate system, corporate reporting requirements should be incorporated into the business processes (Schneider, 2015).

Summary of the principle findings are listed below:

- Weak predictability (~25%) of the standard theory of planned behaviour model in the context of a management system;
- Subjective norms and perceived behavioural control have moderate influence on attitude (~53% and ~64% correlations, respectively);
- Attitude is the strongest determinant of intention to behave compliantly;

- Even if some employees do not feel included or have control over the requirements set in their work areas, they still feel compelled to behave in compliance with QMS requirements;
- The more positive employees are towards their ISO 9001 certified systems, the more their intention to behave in compliance with the requirements;
- The use of a QMS for the flow and verification of information is a concept most employees perceive as practical.

7.3 Research implications

7.3.1 Managerial

If managers have an overview of the perceptions and overriding level of positivity or negativity that employees identify with the workplace, they can leverage factors that promote positivity into creating a more effective and efficient management system, improving business processes, satisfying customers and improving profitability (Gollan, 2005; Medlin & Green Jr., 2014).

The proposed framework highlighted in §6.3.1 (Figure 6.2), is a practical approach to guide managers into shaping a positive workforce that not only effectively implement the management system requirements, but also actively engage in improvement activities to increase the efficiencies of those processes. By creating more inclusive processes for the establishment, implementation and improvement of a management system, managers craft a working environment that shows that the company values employee contributions, integrates these into performance evaluations and rewards, and inspires employees to be actively engaged (Wickramasinghe & Perera, 2014). Actively engaged employees (Seijts & Crim, 2006) are personally invested into directing their behaviour towards the company goals (Shuck & Wollard, 2010). Subsequently, this leads to increases in job satisfaction and staff retention, resulting in increased dividends (Gollan, 2005).

The approach recommended by the researcher (Figure 6.2) would be advantageous for companies when updating their management system processes to become compliant with the new ISO 9001:2015 standard requirements. Research (Oreg et al., 2011) backs

the recommendation that managers should be mindful of the soft issues that increase the positive attitude and support of employees when introducing new initiatives such as ISO 9001:2015 updates or new reporting standards. Such changes should be integrated into the management system processes (Rusinko, 2005; Karapetrovic & Casadesús, 2009) in an inclusive and transparent manner (Haugh & Talwar, 2010; Lamm et al., 2014).

This study has confirmed that the majority of employees feel that the quality management system of their company is a useful tool to gather, verify and transfer data into management information needed for sustainablity reporting (Rusinko, 2005). Therefore, inclusion of sustainablity reporting requirements would be readily supported and accepted by employees in companies with certified ISO 9001 quality management systems.

Further, managers should be cognisant that by increasing the efficiency of their management systems, they increase overall business performance, enhance sustainability reporting (Nazari et al., 2015) and add credibility to the company by increasing corporate trust and reputation (Tencati et al., 2004). However, whilst this study shows that employees will behave in compliance with quality system requirements, they are not always actively engaged in improving the efficiency of the system, this study queries the sustainability that such lack of inclusivity brings to the work environment (Dahlgaard-Park, 2011; Dahlgaard-Park, 2012).

The researcher urges managers to question the efficiency of the management system if employees are not actively engaged. This research has shown that companies with higher perceived behavioural control scores have consistently scored higher in subjective norms and attitude; the higher the attitude scores, the higher the intention to be compliant, and the exhibition of compliance behaviour. Hence, engaging employees lead to more positivity towards the management system, more ownership of work outcomes (Benn et al., 2015), more performance improvements (Zelnik et al., 2012; Wang & Huynh, 2014), more process optimisation (Medlin & Green Jr., 2014; Tschopp & Nastanski, 2014) and better quality sustainability reporting (Lamm et al., 2014).

7.3.2 Body of knowledge

This study has highlighted, at first glance, paradoxical implications for the body of knowledge with regards the theory of planned behaviour. While the results have confirmed some aspects of previous research claims (Sniehotta et al., 2014) that the TPB model does not cover all factors that influence the intention to behave in the context of this study, it has also confirmed that the TPB model has the potential to predict compliance behaviour with an extension of the antecedent of the independent variables as found by numerous research studies (Yoon, 2011; Chen & Tung, 2014; Conner, 2014). It leads to the deduction that in order to derive maximum benefit from the TPB model, an exploratory approach should first be employed to identify the contributing factors that influence intention and behaviour in the context of the proposed study. These factors should then be used to extend the TPB model to provide a more accurate prediction value.

The TPB model also provides invaluable information about the perceptions of employees with regards to the implementation of a management system and the use of that system as a mechanism for data collection and verification for sustainability reporting. In the context of this study, the TPB model has been effective at extracting perceptions leading to intended behavioural actions. Therefore, the researcher asserts that, irrespective of the on-going debate about the utility of the TPB model, the successful outcome of a TPB study is dependent more on the preparation and correct identification of contributing factors, than on the application of the model. As long as the logic and theory behind the factors are sound, the TPB model has the ability to predict intention to exhibit identified behaviour.

Secondly, this research has added to the human aspects of employees and their engagement at work (Dahlgaard-Park, 2012) by showing that although it would appear that self-efficacy would not negatively affect implementation of a management system, it indirectly affects the intention to behave compliantly by influencing employee attitude. This leads to the conclusion that for a management system to be more than merely efficient (doing things right), but effective (doing the right things), it has to identify the correct processes to employ. Such efficacy can only be accomplished with positive employees who feel their contributions are valued by the company. The results of this study further supports the Goldratt (1990) condition for sustainability which, amongst

others, is to look after employees. Valued employees contribute to continually improving the business processes and management system and eliminating constraints (Goldratt & Cox, 2004).

Lastly, this research has added to the sustainability body of knowledge by showing that employees are positive about the use of an ISO 9001 management system as an information highway for the collection, analysis and transformation of data into management information that can be used for accurate credible sustainability reporting to satisfy stakeholders. Sustainablity reporting requirements should be integrated into the management systems as one cohesive business process, rather than an additional segregated system.

7.4 Research limitations

The application of only one model, TPB, for determining the attitudes, intentions and behaviours of employees was tested in this study, which is a limitation in itself. The research population consisted only of successfully ISO 9001 certified companies. Hence, a comparison could not be completed to determine whether differences exist between how certified companies and non-certified companies engage with their employees. This would have provided some insight into the value of certification. Although much research is available that demonstrates the financial and market benefits, little is known of the employee engagement benefits that certification could bring to the company.

The research population was limited to JSE listed companies which complete GRI sustainability reporting. Therefore, it was not able to determine whether different reporting standards have an impact on the quality management system or whether the ISO 9001 standard has diverse impacts on the quality of corporate sustainability reporting.

The sample size was relatively small which added limitations to the representativeness of the results. It would have been advantageous if a larger sample with more companies from the different industrial sectors could have been acquired. This would have allowed for a more descriptive comparison between the industries, rather than a comparison between companies. An interesting aspect would have been to determine whether significant differences could be observed between companies in the same industry.

7.5 Suggestions for future research

- Since, this is an exploratory study, it is strongly suggested that a more in-depth evaluating of behavioural theory and possible predictive models be evaluated to establish whether an extension to the theory of planned behaviour or a different theory such as grounded theory would be best suited for the context of a management system. A comparison of more than one behavioural model would be recommended for future research.

- Completing a comparison of the differentiating factors between successfully certified companies, non-certified companies and companies that have lost their certification, especially in terms of the manner in which they engage their employees could lead to pertinent managerial insights.

- Further research could be to assess what the impact of different management system standards are on corporate sustainability reporting from information gathering, data verification to quality of reporting. This could be extended to determine whether differences can be observed between the quality of corporate sustainability reporting between companies with a certified management system versus those that do not have a certified management system.

- Investigating the predictability of the proposed extended TPB model (Figure 6.3) in a wider population of certified ISO companies is also recommended. Including differing ISO standards such as ISO 9001, ISO 14001 and integrated management systems would provide wider insight into the usefulness of the extended TPB model in the context of a management system.

- Examining the effectiveness of management interventions to promote behavioural change would be recommended when making any changes to the management system requirements.

- An evaluation of the effect that organisational culture, leadership styles and decision making approaches have on the effectiveness and efficacy of a quality management system could provide valuable managerial insight for top management when updating to the more employee inclusive and participative approach required by the new ISO 9001:2015 standard.

7.6 Conclusion

The standard theory of planned behaviour model can predict about a quarter of employees' intention to behave in compliance with quality management system requirements in successfully ISO 9001 certified companies. Since, this study found factors identified as areas for improvement (§6.6), it is recommended that when applying the theory of planned behaviour in future to this context, an extended model be developed for the specific company or industry, as proposed in Figure 6.3.

Even though companies are successfully certified, all employees are not actively engaged which could lead to inefficiencies, where employees carry out the tasks they are required to do without enthusiasm or proprietorship. Whilst employees could behave compliantly, such behaviour would not necessarily be effective. Without active employee engagement in the establishment of processes and system requirements, it is extremely likely that the system could be efficient, but not effective. The continual improvement process, as an example of one of the mechanisms for system improvement to increase efficiencies, requires active employee engagement.

The model proposed in Figure 6.2 provides managers with a framework to establish and drive positive employee attitude through enhancing employee engagement by increasing the inclusivity of the working environment. This is accomplished by including rewards in performance measurement systems, driving corporate beliefs through communication and by actively engaging employees allowing them to influence management system processes.

Sustainability, by embracing consistent innovation through active employee engagement, can be accomplished through continuously improving business processes which can only be successfully accomplished via inclusive leadership, not autocratic management.

"Without continual growth and progress, such words as improvement, achievement and success have no meaning."

Benjamin Franklin. Author, scientist, inventor, diplomat. (Brainy Quote, n.d.a)

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Appendix A. Detailed Coding Guide

Theme	Positive			Code			Negative			Code		
	Ques. no.		Thread	PSl	PM	PSt	Ques. no.		Thread	NSl	NM	NSt
QMS usefulness	Q1	QMS is beneficial	QMS is slightly likely to benefit me	✓			Q1	QMS is harmful/useless	QMS is slightly unlikely to benefit me	✓		
	Q1		QMS is somewhat likely to benefit me		✓		Q1		QMS is somewhat unlikely to benefit me		✓	
	Q1		QMS is highly likely to benefit me			✓	Q1		QMS is highly unlikely to benefit me			✓
	Q9		QMS is slightly likely to positively benefit company	✓			Q10		Slightly agree that QMS hinders my work	✓		
	Q9		QMS is somewhat likely to positively benefit company		✓		Q10		Somewhat agree that QMS hinders my work		✓	
	Q9		QMS is highly likely to positively benefit company			✓	Q10		Strongly agree that QMS hinders my work			✓
	Q10		Slightly disagree that QMS hinders my work	✓			Q14		Slightly unlikely that QMS improves the flow of management information	✓		
	Q10		Somewhat disagree that QMS hinders my work		✓		Q14		Somewhat unlikely that QMS improves the flow of management information		✓	
	Q10		Strongly disagree that QMS hinders my work			✓	Q14		Strongly unlikely that QMS improves the flow of management information			✓
	Q14		Slightly likely that QMS improves the flow of management information	✓			Q22		Slightly disagree that QMS has added value	✓		
	Q14		Somewhat likely that QMS improves the flow of management information		✓		Q22		Somewhat disagree that QMS has added value		✓	
	Q14		Strongly likely that QMS improves the flow of management information			✓	Q22		Strongly disagree that QMS has added value			✓
	Q22		Slightly agree that QMS has added value	✓			Q22		Slightly agree that company would be as efficient without QMS	✓		
	Q22		Somewhat agree that QMS has added value		✓		Q23		Somewhat agree that company would be as efficient without QMS		✓	
	Q22		Strongly agree that QMS has added value			✓	Q23		Strongly agree that company would be as efficient without QMS			✓
	Q26		Slightly agree that QMS clarifies vision & goals	✓			Q28		Slightly disagree that effective QMS makes company more competitive	✓		
	Q26		Somewhat agree that QMS clarifies vision & goals		✓		Q28		Somewhat disagree that effective QMS makes company more competitive		✓	
	Q26		Strongly agree that QMS clarifies vision & goals			✓	Q28		Strongly disagree that effective QMS makes company more competitive			✓
	Q28		Slightly agree that effective QMS makes company more competitive	✓			Q29		Slightly agree that QMS requirements are too complicated & time-consuming to implement effectively	✓		
	Q28		Somewhat agree that effective QMS makes company more competitive		✓		Q29		Somewhat agree that QMS requirements are too complicated & time-consuming to implement effectively		✓	
	Q28		Strongly agree that effective QMS makes company more competitive			✓	Q29		Strongly agree that QMS requirements are too complicated & time-consuming to implement effectively			✓
	Q34		Somewhat agree that not having QMS negatively impacts company	✓			Q34		Slightly disagree that not having QMS negatively impacts company	✓		
	Q34		Somewhat agree that not having QMS negatively impacts company		✓		Q34		Somewhat disagree that not having QMS negatively impacts company		✓	
	Q34		Strongly agree that not having QMS negatively impacts company			✓	Q34		Strongly disagree that not having QMS negatively impacts company			✓
	Q39		Complying with QMS is slightly beneficial	✓			Q39		Complying with QMS is slightly harmful	✓		
	Q39		Complying with QMS is somewhat beneficial		✓		Q39		Complying with QMS is somewhat harmful		✓	
	Q39		Complying with QMS is extremely beneficial			✓	Q39		Complying with QMS is extremely harmful			✓

Appendix A. Detailed Coding Guide

Theme	Positive			Code			Negative			Code		
	Ques. no.	Thread		PSI	PM	PSt	Ques. no.	Thread		NSI	NM	NSt
ISO 9001	Q7	ISO 9001 is a useful system	Slightly agree that ISO is useful system	✓			Q7	ISO 9001 is not a useful system	Slightly disagree that ISO is useful system	✓		
	Q7		Somewhat agree that ISO is useful system		✓		Q7		Somewhat disagree that ISO is useful system		✓	
	Q7		Strongly agree that ISO is useful system			✓	Q7		Strongly disagree that ISO is useful system			✓
	Q25		Slightly likely that ISO certification has benefited the company	✓			Q25		Slightly unlikely that ISO certification has benefited the company	✓		
	Q25		Somewhat likely that ISO certification has benefited the company		✓		Q25		Somewhat unlikely that ISO certification has benefited the company		✓	
	Q25		Highly likely that ISO certification has benefited the company			✓	Q25		Highly unlikely that ISO certification has benefited the company			✓
	Q40		Slightly likely that our customers expect us to be ISO certified	✓			Q40		Slightly unlikely that our customers expect us to be ISO certified	✓		
	Q40		Somewhat likely that our customers expect us to be ISO certified		✓		Q40		Somewhat unlikely that our customers expect us to be ISO certified		✓	
	Q40		Highly likely that our customers expect us to be ISO certified			✓	Q40		Highly unlikely that our customers expect us to be ISO certified			✓
Information flow for CSR	Q5	QMS assists with information flow & CSR	Slightly agree that it would be difficult to complete CSR without a QMS	✓			Q5	QMS does not assists with information flow & CSR	Slightly disagree that it would be difficult to complete CSR without a QMS	✓		
	Q5		Somewhat agree that it would be difficult to complete CSR without a QMS		✓		Q5		Somewhat disagree that it would be difficult to complete CSR without a QMS		✓	
	Q5		Strongly agree that it would be difficult to complete CSR without a QMS			✓	Q5		Strongly disagree that it would be difficult to complete CSR without a QMS			✓
	Q14		Slightly likely that flow of management information would be difficult without a QMS	✓			Q14		Slightly unlikely that flow of management information would be difficult without a QMS	✓		
	Q14		Somewhat likely that flow of management information would be difficult without a QMS		✓		Q14		Somewhat unlikely that flow of management information would be difficult without a QMS		✓	
	Q14		Highly likely that flow of management information would be difficult without a QMS			✓	Q14		Highly unlikely that flow of management information would be difficult without a QMS			✓
	Q17		Slightly agree that QMS compliance provides accurate information for CSR	✓			Q17		Slightly disagree that QMS compliance provides accurate information for CSR	✓		
	Q17		Somewhat agree that QMS compliance provides accurate information for CSR		✓		Q17		Somewhat disagree that QMS compliance provides accurate information for CSR		✓	
	Q17		Strongly agree that QMS compliance provides accurate information for CSR			✓	Q17		Strongly disagree that QMS compliance provides accurate information for CSR			✓
Control of activities	Q2	I have knowledge of, control over and input into QMS requirements in my area	Slightly agree that I know what is required of me for QMS compliance	✓			Q2	I have limited or no knowledge of, or control over and no input into QMS requirements in my area	Somewhat disagree that I know what is required of me for QMS compliance	✓		
	Q2		Somewhat agree that I know what is required of me for QMS compliance		✓		Q2				✓	
	Q2		Strongly agree that I know what is required of me for QMS compliance			✓	Q2		Strongly disagree that I know what is required of me for QMS compliance			✓
	Q16		Slightly agree that my suggestions to improve the QMS would be considered by management	✓			Q16			✓		
	Q16		Somewhat agree that my suggestions to improve the QMS would be considered by management		✓		Q16		Somewhat disagree that my suggestions to improve the QMS would be considered by management		✓	
	Q16		Strongly agree that my suggestions to improve the QMS would be considered by management			✓	Q16		Strongly disagree that my suggestions to improve the QMS would be considered by management			✓
	Q20		Slightly agree that I have input in QMS requires for my work	✓			Q20			✓		
	Q20		Somewhat agree that I have input in QMS requires for my work		✓		Q20		Somewhat disagree that I have input in QMS requires for my work		✓	
	Q20		Strongly agree that I have input in QMS requires for my work			✓	Q20		Strongly disagree that I have input in QMS requires for my work			✓
	Q21		Slightly true that if I have objectives, it would change QMS requirements	✓			Q21			✓		
	Q21		Somewhat true that if I have objectives, it would change QMS requirements		✓		Q21		Somewhat false that if I have objectives, it would change QMS requirements		✓	
	Q21		Definitely true that if I have objectives, it would change QMS requirements			✓	Q21		Definitely false that if I have objectives, it would change QMS requirements			✓
	Q31		Slightly agree that I have influence over changes made to the QMS	✓			Q31			✓		
	Q31		Somewhat agree that I have influence over changes made to the QMS		✓		Q31		Somewhat agree that I have influence over changes made to the QMS		✓	
	Q31		Strongly agree that I have influence over changes made to the QMS			✓	Q31		Strongly disagree that I have influence over changes made to the QMS			✓
	Q32		Slightly disagree that I don't understand what I am supposed to do to comply	✓			Q32			✓		

Appendix A. Detailed Coding Guide

Theme	Postive			Code			Negative			Code		
	Ques. No.	Thread		PSI	PM	PSt	Ques. No.	Thread		NSI	NM	NSt
	Q32		Somewhat disagree that I don't understand what I am supposed to do to comply		✓		Q32		Somewhat agree that I don't understand what I am supposed to do to comply		✓	
	Q32		Strongly disagree that I don't understand what I am supposed to do to comply			✓	Q32		Strongly agree that I don't understand what I am supposed to do to comply			✓
	Q36		Slightly true that my opinion about the QMS is valued by management	✓			Q36			✓		
	Q36		Somewhat true that my opinion about the QMS is valued by management		✓		Q36		Somewhat false that my opinion about the QMS is valued by management		✓	
	Q36		Definitely true that my opinion about the QMS is valued by management			✓	Q36		Definitely false that my opinion about the QMS is valued by management			✓
	Q38		Slightly likely that changes I suggest to the QMS will be implemented	✓			Q38			✓		
	Q38		Somewhat likely that changes I suggest to the QMS will be implemented		✓		Q38		Somewhat unlikely that changes I suggest to the QMS will be implemented		✓	
	Q38		Highly likely that changes I suggest to the QMS will be implemented			✓	Q38		Highly unlikely that changes I suggest to the QMS will be implemented			✓
Expectations & Intentions	Q4	It is expected, and I intent to comply with rules and requirements at work	Slightly agree that I intent to abide by company rules	✓			Q4	It is not expected, nor do I intent to comply with rules and requirements at work	Slightly disagree that I intent to abide by company rules	✓		
	Q4		Somewhat agree that I intent to abide by company rules		✓		Q4		Somewhat disagree that I intent to abide by company rules		✓	
	Q4		Strongly agree that I intent to abide by company rules			✓	Q4		Strongly disagree that I intent to abide by company rules			✓
	Q6		Slightly agree that when arriving at work, it is my intention to comply with all my job requirement	✓			Q6		Slightly disagree that when arriving at work, it is my intention to comply with all my job requirement	✓		
	Q6		Somewhat agree that when arriving at work, it is my intention to comply with all my job requirement		✓		Q6		Somewhat disagree that when arriving at work, it is my intention to comply with all my job requirement		✓	
	Q6		Strongly agree that when arriving at work, it is my intention to comply with all my job requirement			✓	Q6		Strongly disagree that when arriving at work, it is my intention to comply with all my job requirement			✓
	Q11		Slightly true that it is expected that I comply with QMS requirements	✓			Q11		Slightly false that it is expected that I comply with QMS requirements	✓		
	Q11		Somewhat true that it is expected that I comply with QMS requirements		✓		Q11		Somewhat false that it is expected that I comply with QMS requirements		✓	
	Q11		Definitely true that it is expected that I comply with QMS requirements			✓	Q11		Definitely false that it is expected that I comply with QMS requirements			✓
	Q12		Slightly agree that I want to contribute to the success of the company	✓			Q12		Slightly disagree that I want to contribute to the success of the company	✓		
	Q12		Somewhat agree that I want to contribute to the success of the company		✓		Q12		Somewhat disagree that I want to contribute to the success of the company		✓	
	Q12		Strongly agree that I want to contribute to the success of the company			✓	Q12		Strongly disagree that I want to contribute to the success of the company			✓
	Q13		Slightly true that my friends expect to follow rules & requirements at work	✓			Q13		Slightly false that my friends expect to follow rules & requirements at work	✓		
	Q13		Somewhat true that my friends expect to follow rules & requirements at work		✓		Q13		Somewhat false that my friends expect to follow rules & requirements at work		✓	
	Q13		Definitely true that my friends expect to follow rules & requirements at work			✓	Q13		Definitely false that my friends expect to follow rules & requirements at work			✓
	Q15		Slightly likely that I will try my best to meet even demanding requirements	✓			Q15		Slightly unlikely that I will try my best to meet even demanding requirements	✓		
	Q15		Somewhat likely that I will try my best to meet even demanding requirements		✓		Q15		Somewhat unlikely that I will try my best to meet even demanding requirements		✓	
	Q15		Strongly likely that I will try my best to meet even demanding requirements			✓	Q15		Strongly unlikely that I will try my best to meet even demanding requirements			✓
	Q24		Slightly true that my family expects me to follow rules & requirements at work	✓			Q24		Slightly false that my family expects me to follow rules & requirements at work	✓		
	Q24		Somewhat true that my family expects me to follow rules & requirements at work		✓		Q24		Somewhat false that my family expects me to follow rules & requirements at work		✓	
	Q24		Definitely true that my family expects me to follow rules & requirements at work			✓			Definitely false that my family expects me to follow rules & requirements at work			✓

Appendix A. Detailed Coding Guide

Theme	Positive			Code			Negative			Code		
	Ques. no.		Ques. no.	PSl	PM	PSt	Ques. no.		Thread	NSl	NM	NSt
	Q30		Slightly agree that my colleagues expect me to comply with QMS requirements	✓			Q30		Slightly disagree that my colleagues expect me to comply with QMS requirements	✓		
	Q30		Somewhat agree that my colleagues expect me to comply with QMS requirements		✓		Q30		Somewhat disagree that my colleagues expect me to comply with QMS requirements		✓	
	Q30		Strongly agree that my colleagues expect me to comply with QMS requirements			✓	Q30		Strongly disagree that my colleagues expect me to comply with QMS requirements			✓
	Q35		Slightly agree that I want to implement all QMS requirements	✓			Q35		Slightly disagree that I want to implement all QMS requirements	✓		
	Q35		Somewhat agree that I want to implement all QMS requirements		✓		Q35		Somewhat disagree that I want to implement all QMS requirements		✓	
	Q35		Strongly agree that I want to implement all QMS requirements			✓	Q35		Strongly disagree that I want to implement all QMS requirements			✓

Notes: PSL = Slightly positive; PM = Moderately positive; PSt = Strongly positive; NSl = Slightly negative; NM = Moderately negative: NS = Strongly negative

Appendix B. Email Template for Data Collection

Email Template

Hi {Company Contact Name}

Thank you for taking the time to engage with me. Herewith more information on the research.

{Company Name} is one of the companies selected for my research due to its efficiency from both the implementation of Quality Management Systems and Corporate Sustainability Reporting aspects.

The basis of this project is to use successful companies to determine whether the compliance behaviour of their employees can be predicted and therefore replicated. Attached is a short description of the study.

There are some benefits for {Company Name} in taking part in this study. By having an idea of what the employees' perceptions of the QMS is, it should allow management to identify areas to target when updating to the recently released ISO 9001:2015 standard.

The study will involve the completion of an online questionnaire by employees, which should take about 10 minutes. It would be required that someone within your organisation send the link to the employees and copy myself so that I can keep track of the response rate. Below is the link for the questionnaire.

https://www.surveymonkey.com/r/TPB-Sample_{Sample_No.}

The time frame for the completion of the data gathering phase is the end of November 2015.

All responses are kept confidential and the company will be given the results of their surveys. Please note that all research is governed by the strict ethics code of GIBS (Gordon Institute of Business Science), University of Pretoria.

I will then contact you towards the end of November to schedule an interview using the survey results as basis.

Please do not hesitate to contact me should you have any queries.

Kind Regards,

Glory-May
079 497 8648

Appendix B. Email Template for Data Collection

Email Attachment

Gordon Institute of Business Science
University of Pretoria

Application of the theory of planned behaviour to quality management systems as basis for corporate sustainability reporting

An increasing number of companies are completing corporate sustainability reporting as part of their annual reports or as a separate report. Such reporting requires accurate, reliable and verifiable information. One method of ensuring data integrity is to implement a management system such as ISO 9001:2008. However, a Quality Management System (QMS) is only as effective as the company's commitment to comply with all its requirements, which is dependent on the behaviour of its employees.

This study seeks to establish whether it is possible to predict whether it is likely that employees will exhibit compliance behavior, meaning that they intend to comply with the requirements of the QMS. These variables are used in the Theory of Planned Behavior (TPB) model to establish whether it is possible to predict compliance behavior based on the attitudes, social norms and autonomy of the employee.

Your participation will be used to broaden the body of knowledge in the vital area of management systems as the information highway of the business.

If you have any concerns, please contact the researcher or supervisor below.

Researcher: Glory-May Jacobs
15384952@mygibs.co.za
079 497 8648

Supervisor: Dr Pieter Pretorius
pretoriusp@gibs.co.za
082 893 0477

Appendix C. Final TPB Questionnaire

Gordon Institute of Business Science
University of Pretoria

Application of Theory of Planned Behaviour (TPB) to Quality Management Systems (QMS) as basis for sustainability reporting

MBA Research Survey

Research Description

An increasing number of companies are completing corporate sustainability reporting as part of their annual reports or as a separate report. Such reporting requires accurate, reliable and verifiable information. One method of ensuring data integrity is to implement a management system such as ISO 9001:2008. However, a Quality Management System (QMS) is only as effective as the company's commitment to comply with all its requirements, which is dependent on the behaviour of its employees.

This study seeks to establish whether it is possible to predict whether it is likely that employees will exhibit compliance behavior, meaning that they intend to comply with the requirements of the QMS. These variables are used in the Theory of Planned Behavior (TPB) model to establish whether it is possible to predict compliance behavior based on the attitudes, social norms and autonomy of the employee.

CONSENT

Your honest response to the questions posed in this survey is vital to better understand the relationship between system efficiency and employee behavior. Participation is voluntary and you can withdraw at any time without penalty. All surveys are anonymous and confidential, the data will be used for research purposes only. **It should take approximately 10 minutes to complete**

Please contextualize your responses to your experience within the last year and your future intentions to within the next year. By completing the survey, you have indicated that you voluntarily participate in this research. If you have any concerns, please contact the researcher or supervisor below.

Researcher: Glory-May Jacobs, 15384952@mygibs.co.za, 079 497 8648
Supervisor: Dr Pieter Pretorius, pretoriusp@gibs.co.za, 082 893 0477

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Appendix C. Final TPB Questionnaire

*** 1. If I comply with the requirements of the QMS, it will benefit me in my work.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Extremely Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 2. I know exactly what is required of me to comply with the QMS.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 3. Observing my colleagues not complying with QMS requirements, will increase the probability that I will also not comply.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Highly Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 4. I want to abide by all the company rules.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 5. If the company did not have a QMS, it would be difficult to complete sustainability reporting.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 6. When I arrive at work, I intend to comply with all the requirements of my job.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 7. ISO 9001:2008 is a useful system.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

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Appendix C. Final TPB Questionnaire

*** 8. QMS training is useful to get buy-in from employees.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 9. If I comply with the requirements of the QMS, it will positively benefit the company.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Extremely Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 10. The requirements of the QMS is a hindrance when doing my work.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 11. It is expected that I will comply with the requirements of the QMS.**

Definitely False	Somewhat False	Slightly False	Neutral	Slightly True	Somewhat True	Definitely True
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 12. I want to contribute to the success of my company.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 13. My friends expect me to follow the rules and requirements at my work.**

Definitely False	Somewhat False	Slightly False	Neutral	Slightly True	Somewhat True	Definitely True
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 14. If the company did not have a QMS, the flow of information to management would be impaired.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Highly Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

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Appendix C. Final TPB Questionnaire

*** 15. Even when the requirements are demanding, I try my best to meet them.**

Highly Unlikely 1	Somewhat Unlikely 2	Slightly Unlikely 3	Neutral 4	Slightly Likely 5	Somewhat Likely 6	Highly Likely 7
○	○	○	○	○	○	○

*** 16. If I wanted to, I could offer suggestions to improve the QMS which would be considered by management.**

Definitely False 1	Somewhat False 2	Slightly False 3	Neutral 4	Slightly True 5	Somewhat True 6	Definitely True 7
○	○	○	○	○	○	○

*** 17. Complying with QMS requirements allows the company to provide accurate information for sustainability reporting.**

Strongly Disagree 1	Somewhat Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Somewhat Agree 6	Strongly Agree 7
○	○	○	○	○	○	○

*** 18. I think the requirements of the QMS are reasonable within the resources available.**

Strongly Disagree 1	Somewhat Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Somewhat Agree 6	Strongly Agree 7
○	○	○	○	○	○	○

*** 19. I want to provide the company's clients and stakeholders the best service and products possible.**

Highly Unlikely 1	Somewhat Unlikely 2	Slightly Unlikely 3	Neutral 4	Slightly Likely 5	Somewhat Likely 6	Highly Likely 7
○	○	○	○	○	○	○

*** 20. I have input into the QMS requirements relating to my work.**

Strongly Disagree 1	Somewhat Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Somewhat Agree 6	Strongly Agree 7
○	○	○	○	○	○	○

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Appendix C. Final TPB Questionnaire

*** 21. I am confident that my objections would change the QMS requirements.**

Definitely False	Somewhat False	Slightly False	Neutral	Slightly True	Somewhat True	Definitely True
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 22. The QMS has added value to the organisation over the last year.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 23. The company would have been as efficient as it is now even without a QMS.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Highly Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 24. My family expect me to follow the rules and requirements at my work.**

Definitely False	Somewhat False	Slightly False	Neutral	Slightly True	Somewhat True	Definitely True
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 25. Being ISO 9001:2008 certified has benefited the company.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Highly Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 26. Having a QMS clarifies the vision and goals of the organisation.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 27. QMS training helped me to get a better understanding of why we have such a system.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

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Appendix C. Final TPB Questionnaire

*** 28. An organisation is in a better competitive position when it has an effective QMS.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 29. The requirements of the QMS are too complicated and time-consuming to implement effectively.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 30. Most of my colleagues expect me to comply with the QMS requirements.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Highly Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 31. I have influence over the changes that are made to the QMS.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 32. Sometimes, I want to comply but don't understand what I am supposed to do.**

Strongly Disagree	Somewhat Disagree	Slightly Disagree	Neutral	Slightly Agree	Somewhat Agree	Strongly Agree
1	2	3	4	5	6	7
○	○	○	○	○	○	○

*** 33. Should I see colleagues ignoring QMS requirements, I would bring to their attention the need to comply.**

Highly Unlikely	Somewhat Unlikely	Slightly Unlikely	Neutral	Slightly Likely	Somewhat Likely	Highly Likely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

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Appendix C. Final TPB Questionnaire

*** 34. If the company did not have a QMS, it would negatively impact the efficiency of the organisation.**

Highly Unlikely 1	Somewhat Unlikely 2	Slightly Unlikely 3	Neutral 4	Slightly Likely 5	Somewhat Likely 6	Highly Likely 7
○	○	○	○	○	○	○

*** 35. I want to implement all the QMS requirements.**

Strongly Disagree 1	Somewhat Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Somewhat Agree 6	Strongly Agree 7
○	○	○	○	○	○	○

*** 36. If I express an opinion about the QMS requirements, it is valued by management.**

Definitely False 1	Somewhat False 2	Slightly False 3	Neutral 4	Slightly True 5	Somewhat True 6	Definitely True 7
○	○	○	○	○	○	○

*** 37. I have the authority to complete the compliance tasks assigned to me.**

Definitely False 1	Somewhat False 2	Slightly False 3	Neutral 4	Slightly True 5	Somewhat True 6	Definitely True 7
○	○	○	○	○	○	○

*** 38. When I have offered suggestions to change the QMS, they have been implemented.**

Highly Unlikely 1	Somewhat Unlikely 2	Slightly Unlikely 3	Neutral 4	Slightly Likely 5	Somewhat Likely 6	Highly Likely 7
○	○	○	○	○	○	○

*** 39. Complying with the requirements of a QMS is:**

Extremely Harmful 1	Somewhat Harmful 2	Slightly Harmful 3	Neutral 4	Slightly Beneficial 5	Somewhat Beneficial 6	Extremely Beneficial 7
○	○	○	○	○	○	○

*** 40. Our costumers expect that our company has an ISO 9001:2008 certified QMS.**

Highly Unlikely 1	Somewhat Unlikely 2	Slightly Unlikely 3	Neutral 4	Slightly Likely 5	Somewhat Likely 6	Highly Likely 7
○	○	○	○	○	○	○

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Appendix C. Final TPB Questionnaire

*** 41. Age**

- <18
- 18 - 29
- 30 - 44
- 45 - 59
- 60+

*** 42. Gender**

- Male
- Female

43. Job Title

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Gordon Institute of Business Science
University of Pretoria

Dear Glory Jacobs

Protocol Number: **Temp2016-02108**

Title: Application of Theory of Planned Behaviour to Quality Management System Implementation as basis for Corporate Sustainability Reporting

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker