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## Foreword

For me to complete a master thesis in management has by no means been a straightforward journey. I thought in my younger days that my future was within electronic engineering. After various roles in the maintenance industry, some within electronics, I finally concluded that I was more interested in people than in electrons, and so the journey began. Rediscovering the joy of learning, continuing my personal development, and exploring the field of management has been a meaningful expedition from start to finish. It has been hard work, indeed, but the benefit of studying while working and having the opportunity to immediately practice what you discover has made the personal expedition rewarding throughout.

Some years back, while working in the petroleum industry, I was part of a quality assurance team in which procedure was king. Procedures could be utilised, and were utilised, to solve the majority of quality- and system-related problems in the organisation. Procedures became a manner of living—a universal tool—until one day when a director I was working closely with at the time reminded me, ‘*Stig, remember that hardly any innovations have come from following procedure*’. As this statement contained an element of truth, it opened within me an understanding of humans as more than mere tools for complying with procedures.

When searching for my thesis topic, I remembered this moment and considered exploring the nature of procedures. I would like to understand the reasons why procedures are important to organisations in the wider scheme of business and learn why we as individuals choose to follow them or not.

This thesis marks the end of the programme. However, learning has proved important to me, as it brings opportunities for reflection, energy, and growth. I cannot imagine a reason to stop now. Although I am exhausted from completing this thesis, I will grant myself some time to reflect and digest it all; maybe I will even celebrate the achievement. However, I am already looking forward to my next learning opportunity. I send considerable thanks to my tutor Aslaug Mikkelsen for providing firm and constructive feedback throughout the process. The guidance has been impeccable and indispensable. Thanks also to my employer for lending me access to the organisation to complete my studies. Finally, thanks to my family for keeping up with me over the past months. I will make it up again; I promise!

## Abstract

Organizational culture and compliance are inextricably linked. Through review of literature relating to organisational culture, procedure compliance, management and safety performance the author explores the relationship between a supportive organisational culture, end-user involvement, and procedure compliant leadership towards procedurally compliant intentions and development of a procedurally compliant culture. The relationship is tested by development of six hypothesis relating to the research problem. Each hypothesis is tested individually, and the combined effect from the variables towards compliance culture is tested.

The quantitative method selected is by use of self-reporting from 149 employees of a northern Europe temporary power and temperature operations organisation. The questionnaire and research model are adapted from Amankwa, Loock, and Kritzinger (2018) studying compliance toward IT policies.

The findings from this thesis strengthens the idea that noncompliant behaviour is not entirely based on personal traits or characters, but are influenced by the work environment.

More specifically the findings supports that there is a correlation between the three variables; supportive organisational culture, end-user involvement, and compliance leadership in the direction of attitude toward compliance and compliance behavioural intentions. Furthermore, the study supports that there is a strong relationship between the two variables; behavioural intentions and attitude towards compliance in the direction of development of a compliance culture. 39% of change in the compliance culture variable can be explained by the model used in this thesis.

The author also finds that safety-related research regarding safety compliance, safety performance, and safety culture can be used to understand and clarify general procedurally compliant culture and compliance practises.

The thesis also includes suggestions for further research.

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## 1. Introduction and argument for thesis

As an organisation expands, it normally requires additional employees. With more employees, it becomes impractical to rely on verbal communication alone, and members of staff typically work with a smaller portion of the product or service stream. The organisation is then in need of a horizontal division of labour and a vertical distribution of authority (Mintzberg, 1983).

If a steel manufacturing company is utilised as an example, then one must consider the industry standards, regulations, national laws, and contractual requirements that external stakeholders demand that the company adhere to. As it is not reasonable to expect each employee or subgroup of employees, such as operators on the shop floor, to know the content of all such requirements, the utilisation of procedures can assist in ensuring organisational compliance.

The practice of procedures is a known measure to ensure that a process is repeated in the same manner every time to safeguard product or service quality reliability. This is well imbedded in Total Quality Management, Lean, and other quality management programs (Womack, Jones, & Roos, 1991). The airline industry realised this many years ago, thus the utilisation of checklists and procedures has become ingrained.

A recurring theme in any industry experiencing problems is that ‘procedure was not followed’. History books are full of examples of losses or accidents resulting from lack of procedural compliance. National accidents, including the recent helicopter tilt at Sola Airport outside Stavanger in 2018 (Aasland, 2019) and the Atlantic Airline crash at Stord in 2006 (Thorenfeldt, 2006), are examples of the consequences of not following procedures. On an international scale, the Deepwater Horizon catastrophe is another example of consequences that can result from ignoring procedure (O’Connor, 2014). However, noncompliance toward a procedure might not have such detrimental effects every time. Lack of procedural compliance could simply result in loss of revenue, lost opportunity, or a lost client. In a review article focussing on organisational learning, Titov, Nikulchev, and Bubnov (2015) find that between 3% and 20% of the contract value tends to be wasted in rework, dependent on industry and location. Although Western countries range from the middle to the low-end scale in Titov et al.’s study, the number is still substantial, especially when considering that the majority of losses come directly from the bottom line. While aviation maintenance records provide evidence that as much as 90% of quality lapses are blameless (Reason, 2000), one may wonder who is then to be blamed.

Safety culture research proves that an organisation's culture is important to developing a safe company with acceptable levels of safety performance (F. W. Guldenmund, 2000; E. Olsen, 2009). However, the organisational culture's influence on compliance in general must also be considered separately from the safety aspect, such as on the shop floor, the fabrication yard, and the offices.

Returning to the example of Deepwater Horizon, Reader and O'Connor (2014) argue that organisational factors and organisational culture were an inherent part of the failures that led to this disastrous event. Similarly, Morehead et al. (1991) argue that organisational factors such as group thinking coupled with a lack of procedure or a lack of procedural compliance contributed to the fatal accident of the NASA Challenger launch. It is therefore reasonable to believe that organisational culture influences general procedural compliance outside of the narrow perspective of safety.

Modern organisations could benefit from understanding how their organisational culture influences workforce procedural compliance. Such an understanding can be utilised by the organisation to increase the effectiveness of existing procedure and also to improve the implementation success rate of new procedures. Armed with this knowledge, the organisation can implement targeted activities to improve elements of the culture that negatively influence procedure adherence or to build elements of the culture that are needed to improve said compliance culture.

## Thesis problem

The aim of this study is to test the relationship between a supportive organisational culture, end-user involvement, and compliance leadership toward a procedurally compliant culture.

## 2. Theory

As indicated in the introduction, connecting noncompliance behaviour solely with the individual's personal character or traits may not provide an accurate picture. Such a link between noncompliance and personal character and traits is identified by Reason as the *person approach* (Reason, 2000). The person approach claims that failures and noncompliance primarily arise from '*aberrant mental processes such as forgetfulness, inattention, poor motivation, carelessness, negligence, and recklessness*' (Reason, 2000, p. p768). Such a view excludes elements from culture, climate, and context as likely factors that contribute to failures and noncompliance and thus limits the understanding of behaviour. However, Morse (1996) and others recognise unidentifiable intentions, emotions, and phenomena as potential explanations for noncompliance (Kyngäs, Duffy, & Kroll, 2000). Furthermore, Reason connects lack of adherence to rules with failure in the system (Reason 2000), both of which indicate that noncompliance behaviour may not relate to the individual's character or traits alone and that context, process, and other elements may equally influence the behaviour. For managers, this implies that blaming or replacing a noncompliant individual may not prevent the noncompliant behaviour and attitude from continuing into the future.

### 2.1 Culture and organisational culture

Culture exists on several observable levels, both visible and tangible. Hofstede defines culture as '*the collective programming of the human mind that distinguishes the members of one human group from those of another. Culture in this sense is a system of collectively held values*' (Hofstede, 1980, p. p24). It is common today to divide culture into macro-, micro-, and subcultures (Schein & Schein, 2017). Nations, ethnic groups, and strong professions, such as lawyers, are typically classed as macro-cultures, but larger organisations can also be classed similarly (Schein & Schein, 2017). Organisational culture embodies the beliefs and values of an organisation, which in larger organisations includes subcultures. Schein, focussing on organisational culture, defines culture as:



*the accumulated shared learning of that group as it solves its problems of external adaptation and internal integration; which has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think, feel, and behave in relation to these problems. This accumulated learning is a pattern or system of beliefs, values and behavioural norms that come to be taken for granted as basic assumptions and eventually drop out of awareness. (Schein & Schein, 2017, p. p6)*

People tend to belong to many different cultures (Li & Guldenmund, 2018). For example, individuals are involved in the culture from their upbringing, whether those be national or ethnic cultures. The majority of people are then instructed in an educational culture and an organisational culture at work. Many also belong to religious groups, which additionally have their own cultures (Schein 2017).

Schein's cultural model conceptualises culture in several layers (Schein & Schein, 2017), identifying underlying assumptions (basic assumptions) that are a part of culture, and by that, adding a deeper element to culture than what is seen, heard, and valued. He indicates that espoused values and basic assumptions are not required to be the same and that behaviour originates from basic assumptions as much as from espoused values (Schein & Schein, 2017). Schein focusses on the development of culture, from start-up organisations to larger, more mature organisations. Hence, Schein's model is dynamic and considers everything that an organisation has learned through its evolution.

According to Schein, culture can be identified on three levels: artefacts, espoused values, and basic (underlying) assumptions. Artefacts are the visible parts of a culture, which are normally simple to discover and observe, including the way that people dress, the way that buildings are decorated, the way that people treat each other, and the way that people interact (Schein & Schein, 2017). An example of this is from an organisation in which all engineers wore jeans and t-shirts as their work clothing, even in client meetings. This factor is an artefact of their subculture; it is similar to a tribe uniform. Espoused values are the quotes framed on the walls of the organisation (Schein & Schein, 2017) or imparted during speeches and company presentations. For example, health, safety environment and quality policies demonstrate this idea. Espoused values are typically the way that an organisation would like to be perceived.

Underlying assumptions, in Schein's words, are the beliefs that are taken for granted. These beliefs may have been learned long ago and are no longer under consideration (Schein & Schein, 2017). These values dictate the way that people think and feel and thereby influence behaviour (Schein & Schein, 2017). For example, if a person needed to move a heavy object and asked whether some strong men were available to lend a hand, then this would indicate the underlying assumption that men are stronger than women. However, it can also mean that the person carries a gentlemanly culture and would not dream to ask a female to carry anything. In order to fully understand underlying assumptions, and therefore the important cultural elements associated with them, these assumptions must be identified and investigated (Schein & Schein, 2017).

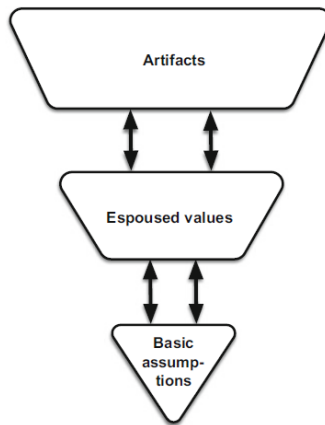


Figure 2.1 Schein's culture model (Li & Guldenmund, 2018).

There is an ongoing debate between organisational climate researchers and culture scholars regarding the content and concepts of climate and culture (Pettigrew, 2000). Climate researchers began their work long ago and can be sourced to Lewin's research on field theory from 1948 and 1951 (Schein, 2000). Organisational climate research typically quantitatively investigates attitudes and behaviours in organisations. *Attitude* is defined as: 'a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor' (F. W. Guldenmund, 2000) and *Behavior* defined as: 'one or more observable actions performed by the individual ...' (Ajzen & Fishbein, 1977). Climate researchers have focussed on context and have exhibited a clear strategy focus, which means that there is a climate for every field. For example, there is a climate for customer service, innovation, safety, quality, and more (Schneider, 2000).

During the 1980s and 1990s, there was a growing awareness that there were more to climate than merely that which could be quantitatively measured. Deeper levels of organisational life were starting to be investigated, and culture as a concept was studied by Hofstede, Schein, and others (Ashkanasy, Wilderom, & Peterson, 2000). Culture research has roots in psychology and sociology, which are fields that typically dig deeper than surface observations to understand the full picture. In addition to quantitative methods such as questionnaires, interviews and other types of intervention are frequently utilised. Schein (2017) stresses that to fully understand an organisation and the reasons that they behave as they do, researchers must examine the history, background, and underlying assumptions of the organisation. Both culture and climate influence people, but climate is typically seen as a narrower term. Culture, however, delves more deeply and emphasises deeper elements to explain the ideas that govern the group (Ashkanasy et al., 2000).

From a historical point of view, the ability of culture to provide a comprehensive picture of the events in organisational life had an immediate appeal within management. The research focus shifted from climate to culture (Ashkanasy et al., 2000). Today the terms live side by side, and while the debate is still ongoing, climate and culture are now seen by some scholars as siblings (Schneider, 2000); they *'represent different but overlapping interpretations of the same phenomenon'* (Ashkanasy et al., 2000, p. p7). Schein references Ashkansy, Wilderom, and Peterson (2000), Schneider (1990), and Erhart, Schneider and Macey (2014) in defining *climate* as:

*'The feeling that [is] conveyed in a group by the physical layout and the way in which members of the organization interact with each other, with customers, or with outsiders. Climate is sometimes included as an artefact of culture, and is sometimes kept as a separate phenomenon to be analysed'* (Schein, 2000, p. p3).

Moran and Wolkwein define *climate* as 'relatively enduring' and *culture* as 'highly enduring' (Moran & Volkwein, 1992). Coupled with Schein's definition of culture, the researcher can conclude that culture is deeper than merely that which is seen and done. Schein therefore concludes that climate is *'a product of culture'* (Schein & Schein, 2017, p. p17) and accordingly is a manifestation of underlying assumptions envisaged as artefacts. He further defines basic and underlying assumptions as the culture's DNA (Schein & Schein, 2017) and 'the theory in use'

from double-loop learning (Argyris & Schön, 1996). According to the double-loop learning theory, one must challenge assumptions in order to effect change. However, underlying assumptions may stabilise a culture by providing guidance for thoughts and feelings when the organisation encounters difficulties and uncertain situations. The organisation's previous response to similar situations makes uncertainty less frightening and potentially easier to handle because members of the organisation understand appropriate reactions based on shared history. However, underlying assumptions may also predict the organisation's reaction to certain changes and challenges based on the same rationale. Therefore, underlying assumptions are both a stabilizer and predictor for groups (Schein & Schein, 2017). According to Ashkanasy and Schein, such assumptions may therefore be difficult to change (Ashkanasy et al., 2000; Schein, 2009; Schein & Schein, 2017), because to challenge underlying assumptions, one must, first of all, be aware of the assumptions, and equally importantly, have the will to challenge them. Other elements of the culture, however, are easier to change. Company logos, dress codes, and the like are artefacts, and as such, are organisational cultural elements that are simple to alter (Schein & Schein, 2017). Still, changes to the underlying assumptions cannot occur automatically. Such assumptions must be identified and challenged before new assumptions can be offered to replace the old assumptions (Schein & Schein, 2017). Therefore, culture is changeable, but some portions, specifically underlying assumptions, are highly enduring, while climate is a snapshot of current espoused beliefs and artefacts that can be viewed as relatively enduring and therefore easier to amend.

## 2.2 Safety and supportive organisational culture

Organisational culture with integrated norms and values related to safety is called *safety culture* (Li & Guldenmund, 2018). It is reasonable to think that some of the same mechanisms found in safety culture also work within the field of general compliance. For someone to follow a safety procedure or safety policy, there must be a willingness or attitude to do so in the first place. This willingness or attitude could originate with intrinsic or extrinsic motivating factors, but it is plausible that the motivations for following procedure for safety reasons should conform to the same models as the motivations for following procedure for quality failure avoidance. In this sense, general compliance may be understood as a part of safety culture or vice versa.

According to Guldenmund (2000), the study of safety culture began with Keenan et al. (1951), but Turner (1978) was the first to include social systems of organisations with the causal factors of accidents (E. Olsen, 2009). However, it was not until after the Chernobyl disaster in 1986 that the International Atomic Energy Agency introduced the term *safety culture* (International Atomic Energy Agency, 1986; Li & Guldenmund, 2018). However, an agreed-upon definition of safety culture has not yet been reached (F. W. Guldenmund, 2000; Li & Guldenmund, 2018; E. Olsen, 2009), and Guldenmund identifies 18 different definitions of safety climate and culture. It must, however, be noted that several of the safety climate and safety culture definitions identified by Guldenmund overlap between culture and climate to a considerable degree.

The Advisory Committee for the Safety of Nuclear Installations defines *safety culture* as ‘*the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation’s health and safety*’ (Advisory Committee for the safety of Nuclear Installations 1993, p. p.23). This definition is similar to Schein’s, but it encompasses deeper layers of culture by specifying values and perceptions as well as artefacts as parts of culture. Values are typically underlying and are not necessarily espoused and expressed directly in artefacts. Guldenmund (2000), in his review of safety culture and climate, establishes the relationship between organisational culture and safety culture, proposing that, based on Schein’s understanding of organisational culture (Schein & Schein, 2017), there is no difference between safety culture and organisational culture: ‘*In the way Schein conceives and defines (organisational) culture, there is no need for a specific definition for safety culture. The basic assumptions permeate throughout the organisation, including its aspect of safety*’ (F. W. Guldenmund, 2000, p. p251).

Safety climate as defined by Williamson et al. (1997) is ‘*the shared perceptions of organisational members about their work environment and, more precisely, about their organisational safety policies*’. This definition demonstrates that climate is more fluctuant; it considers both perception and policies without mentioning shared assumptions or underlying beliefs. As such, both safety climate and safety culture definitions correspond well with the climate and culture discussions in chapter 2.1.

In the early days of this discussion, safety activities focussed on dividing man from machine or on separating employees from hazards in time and space (Shannon, Mayr, & Haines, 1997).

However, Shannon et al. identify that compensation claims related to work accidents in the US remained problematically high and that even though the claims are reduced in numbers since the focus on safety started, the rate of descent had flattened. In their meta-study, Shannon et al. find that work practices typically associated with improved safety performance exhibit a limited or a nil effect on accident rates, which was exemplified by demonstrating that the implementation of a joint health and safety committee (similar to the Norwegian Arbeids Miljø Utvalg) had no significant effect on safety performance (Shannon et al., 1997). However, organisational elements associated with climate and culture, such as delegation, empowerment, and management engagement, exert significantly positive effects on safety performance across several studies in the meta-analyses (Shannon et al., 1997), indicating that both management and improved safety culture and climate may be means to further improve safety performance. Shannon et al.'s findings coincide well with Reason's system approach. Reason, an influencer in the field of safety and the architect behind the system approach, identifies the system—not the man—as a frequent reason for failures (Reason 2000). He argues that human errors are unavoidable and that the system must safeguard human errors to prevent failures or accidents.

The link between safety culture and climate and safety performance has also been confirmed by several scholars documented by Clarke and Tetrick (2006). Sheenan et al. identify the important role of investing in and training middle management as a key to improved occupational health and safety indicators (Sheehan, Donohue, Shea, Cooper, & Cieri, 2016). Likewise, Vinodkumar and Bhasi document a link between management practices—such as safety commitment and safety involvement—and safety compliance and performance (Vinodkumar & Bhasi, 2010).

Shannon et al. (1997) and Mearns and Flin (1999) identify the need to foster safety culture in organisations as well as a need to measure and benchmark safety performance to gauge the organisation's performance in executing safety procedures (1999). This leads to the discussion of measuring safety performance and the factors that must be included in such analyses. Shannon argues for the utilisation of lagging indicators, such as employer compensation claim numbers, but also favours accident rates (Shannon et al., 1997). Cooper (2018) includes both leading indicators and lagging indicators in measuring safety performance. Lagging indicators include number of accidents and mishaps, while leading indicators measure proactive activities, such as near-miss reports, improvement suggestions, and the like. The problem with lagging indicators, however, is that within safety and quality, these factors rely on measuring the absence of

something (Cooper, 2018). Fewer accidents are better than more accidents (Reason, Parker, & Lawton, 1998). However, if an organisation experienced five accidents in the past year and only four this year, it is difficult to determine whether this is based purely on chance or simply on low activity levels rather than on an improved safety performance or safety culture.

Measuring only lagging indicators (accidents, fatalities, or sick leave) may not therefore accurately portray the full truth (Cooper, 2018). Correlation can be illustrated, but causality cannot be proven. Leading indicators, however, are measures of proactive activities (risk reviews, safety reports, and reports of near misses). Cooper argues that only by measuring both leading and lagging indicators, causality between the indicators and safety performance can be determined. Sheenan et al. empirically also demonstrate this relationship in a 2015 study (Sheehan et al., 2016). In demonstrating the link between leading and lagging indicators, Sheenan et al. establish that the leading indicators can provide the organisation with a proactive view regarding safety, and by doing so, enable organisations to predict potential safety concerns before they become accidents.

Cooper (2000) is one of the few researchers who conceptualises a model for safety culture. He modified Bandura's model of reciprocal determinism to consider the context and organisational factors of safety culture. Bandura's (1986) research illustrates that behaviour, cognition, and environment are linked. If people spend time in an environment, then this environment can eventually lead these people to gradually alter their behaviour simply because they have spent time within that environment. This could be a sports, religious, or political environment; the mechanism is the same. Altering behaviour, according to Bandura (1986), leads to influencing the cognition of the individual, which in turn leads to further bonding with the environment. The attractiveness of Bandura's model is that it works regardless of the position in which one begins within the influence circle, and it works both ways (see Figure 2.2). Cognition influences behaviour. Behaviour influences environment, and environment influences cognition. Hence the influence between the elements are reciprocal (Bandura, 1986).

Cooper modified Bandura's model by adding context (see Figure 2.2) and focussing on the reciprocal effects between behaviour, situation, and internal psychological factors in the studied context (2000).

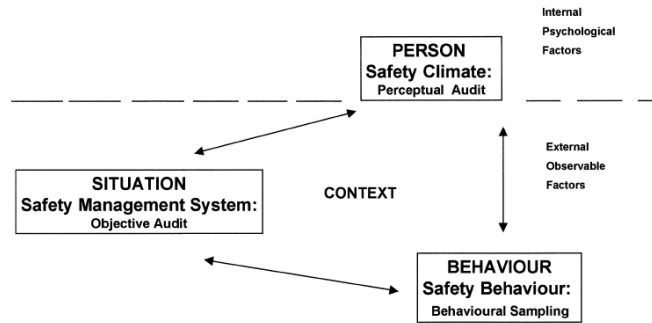


Figure 2.2 Cooper's reciprocal safety culture model (Cooper, 2000).

This model is useful in understanding the ways that behaviour is influenced by context, such as organisational culture, including personal factors, and in understanding the ways that situations influence safety culture.

In Figure 2.2, *Person* describes the personal awareness and approach to the safety goals and standards of the organisation. *Behaviour* defines the daily, safety-related actions of personnel in the organisation. *Situation* defines the management system as it relates to safety. Cooper argues similarly to Bandura: the links between the elements in the model are interactive and reciprocal. Cooper's model has the advantage of being measurable and accounting for context. All the elements of this model are measurable either qualitatively or quantitatively according to Cooper (Cooper, 2000).

Cooper (2000, 2018) further argues that if the focus is on behaviour and the situational aspects when attempting to change culture, then there is no need to focus on the psychological aspects, such as the way that people feel or think about safety. This follows the reciprocal effect in both the situational and behavioural aspects (Cooper, 2000).

In his revised model, Cooper has identified procedures, management systems, and management supervision, amongst other factors, as key elements in safety culture characteristics (Cooper, 2018). Such findings point toward the fact that employees are a part of a dynamic interplay, one which is neither entirely self-deterministic nor entirely controlled by the environment (E. Olsen, 2009).



Cooper's model is still utilised, and the U.S. fire service employed a modified version of Cooper's model to improve the safety performance in this and other high-risk performance organisations (Pessemier & England, 2012). Their modifications reduced some of the reciprocity, and the assumption is that the elements appear in sequence rather than being arbitrarily reciprocal (Pessemier & England, 2012).

Clarke and Tetrick performed a meta-analysis of safety performance articles, seeking to understand the influence of safety climates on employees' behaviour; the results demonstrate a correlation between safety climate and safety performance (Clarke & Tetrick, 2006). *Safety performance* is defined by Clarke and Tetrick as '*compliance to procedures and participation*' (Clarke & Tetrick, 2006, p. p315). By studying 35 safety articles and connecting the findings between them, Clarke and Tetrick find a greater correlation, providing strong evidence that an improved safety climate and culture leads to improved safety compliance and participation. Articles included in the study address topics such as safety climate, safety culture, safety participation, safety perceptions, safety attitudes, and safety compliance. Clarke and Tetrick also demonstrate a strong correlation between safety culture and safety participation, which they define as: '*helping coworkers, promoting the safety program within the workplace, demonstrating initiative, and putting effort into improving safety in the workplace*' (Neal, Griffin, & Hart, 2000, p. p101). Since such participation relies more on a voluntary element than on compliance, this finding indicates that a safety climate engenders employees who are more engaged in safety activities and are supportive of each other. Coupled with the positive effect of management engagement with safety (Shannon et al., 1997) and the reciprocal effects between environment, context, and person (Cooper, 2000), it is postulated that there is a link between supportive organisational culture and attitudes towards procedural compliance.

H1: Supportive organisational culture significantly affects employees' attitudes toward procedural compliance.

This review also reveals that safety theory is progressing toward an understanding that organisational factors are important in comprehending employee behaviour and that behaviours are shaped by more than merely personal character. These findings establish that both

organisational and safety culture influence individual attitudes. Organisational culture determines acceptable behaviour via basic assumptions, norms, and behaviours. When such behaviours are learned by all employees, these behaviours evolve into shared beliefs and tacit assumptions applicable to situational behaviour (F. W. Guldenmund, 2000; Schein & Schein, 2017). This belief system must then include the ways that an individual is to think, feel, and behave concerning procedural and policy compliance in general.

Reason argues, in conclusion, that merely providing procedures and policies is not sufficient to produce a safer workplace, even if these procedures and policies are enforced (Reason et al., 1998).

### 2.3 Compliance

Procedures can safeguard against human factors, elements of the macro-culture, or similar obstacles that may interfere in the process (Ang, 2008; Hofstede, 1983). Reason calls this *the system approach* (Reason, 2000). However, procedures must be followed, a concept which is also known as compliance.

*Compliance* has several denotations and is linked to both conformity and adherence. Oxford Learners Dictionaries defines *compliance* as ‘*the practice of obeying rules or requests made by people in authority*’ (Oxford Learners Dictionaries, 2019). Pink explains that the definition of compliance is not the same across all industries (2015). The field of physics utilises compliance to describe the elasticity of a material, while in medicine, compliance concerns ‘*the ability of an organ to distend in response to applied pressure*’ as well as patients’ ‘*willingness to follow a prescribed course of treatment*’ (Pink, 2015, p. p66). Researchers in medicine have criticised the latter example as a limiting definition of compliance, saying that it places the patient in the passive role of a receiver who can only choose whether to comply or not (Kyngäs et al., 2000). Action has therefore been taken to include the patient’s responsibility for personal health and focus on the collaboration between the caregiver and the receiver. A more representative understanding of medical compliance is therefore: ‘*patient’s active intentional and responsible process of self-care, in which the patient works to maintain his or her health in close collaboration healthcare staff*’ (Kyngäs & Hentinen (1997), cited in Kyngäs et al (2000)). Within

the field of finance, compliance is utilised in a wider context to signify the ‘prevention, detection, and resolution of violations of law and regulations’ (Pink, 2015, p. P68). As such, compliance is a separate department in large financial organisations, complete with compliance managers and compliance staff. Yukl utilises compliance to describe the outcome of influence, such as when a person accepts the influence and will complete the task, but with minimum effort and in an apathetic manner (Yukl 2013).

Within compliance literature, a development similar to that of the medical field has occurred: movement is advancing toward a comprehensive view of compliance (Clarke & Tetrick, 2006). Neal et al. (2000) identify compliance as ‘*adhering to safety procedures and carrying out work in a safe manner*’ and safety participation as ‘*helping co-workers, promoting the safety program within the workplace, demonstrating initiative, and putting effort into improving safety in the workplace*’ (Neal et al., 2000, p. p101). Interligi (2010) argues that compliance is a process rather than a single action and that compliance should be addressed in two main interfaces; this idea correlates with compliance culture. The two compliance interfaces identified are: the interface between the organisations and external stakeholders’ expectations and the interface between employees and their organisation.

Interligi’s model considers a wider understanding of compliance than mere obedience. The model includes regulative, normative, and cognitive expectations from external stakeholders. Regulative requirements are typically the laws and rules established for the organisation by the government and other controlling bodies. This is a traditional view of compliance. Normative expectations are often implied, unlike regulative requirements, and can include the expected performance of processes or community obligations. Corporate Social Responsibility is a typical example of this: society (also known as the stakeholder) expects organisations to take responsibility for the environment and to contribute to the local community. Cognitive expectations are increasingly implicit and typically involve underlying assumptions that are considered to be facts in organisational life (Interligi, 2010).

In contrast to the first definition provided for compliance, cognitive expectations are far from a simple ‘obey those in authority’ understanding of compliance. Hence, Interligi’s model considers expectations that supersede law, regulations, and direct instructions. The organisation translates external expectations into their chosen control style and implements extrinsic and intrinsic

controls. Intrinsic controls are norms and values associated with organisational culture or climate, while extrinsic controls are internal policies, regulations, processes, and procedures. Eventually both intrinsic and extrinsic controls lead to a level of organisational compliance and build a compliance culture. Interligi (2010) argues that an organisation's compliance culture, therefore, can be characterised by assessing its control style, permeability, and legitimacy. Control style is the method employed for internal governance; this focusses on whether the organisation relies on normative controls, such as procedures, rather than on cognitive expectations, such as norms. Permeability is a measure of the flexibility or stability of the organisation; it addresses whether the organisation is open or closed to outside influences. Legitimacy addresses the influencer's authenticity; however, this measure also addresses whether the external stakeholder believes the organisation's response to expectations is legitimate (Interligi, 2010).

## 2.4 Compliance and leadership

In the 1950s and 1960s, researchers did not realise the connection between culture and management, and management was perceived to be universal (Hofstede 1983). However, in the 1970s, as some organisations grew larger and became multinational, researchers began to understand that management is not the same across nations; however, at that time, there was not a common language of multicultural understanding (Hofstede 1983).

Today there are many leadership models, and it falls outside the scope of this thesis to detail each one. However, because compliance leadership is relevant, some leadership theory is required. The focus of this thesis requires a study of transactional and transformational leadership styles (Avolio & Bass, 1994). Transactional leadership, being the traditional leadership style, is typically associated with stable organisational conditions: the leader influences workers to perform tasks in exchange for salary and other benefits (Yukl, 2013). The reward is viewed as payment for compliance. This style of leadership frequently offers punishment or withdrawal of benefits if noncompliance or deviations occur; it is usually effective and produces a reasonable level of general compliance (Kirkbride, 2006). However, if environments are turbulent or markets change and the organisation finds itself in need of transformation, then transactional leadership is less effective (Kirkbride, 2006). Transformational leadership may offer a more futurist solution in such situations (Avolio & Bass, 1994), because it involves leadership by vision and aligns the

interests of the organisation with its members. This style elicits the finer characteristics of people: commitment and involvement. Bass stresses that this method requires role models from the upper levels of an organisation down to entry-level employees as it seeks to develop a transformational leadership culture (Bass, 1999). An implicit goal of transformational leadership is to move individuals from blind compliance to ‘*identification, and to internalization of values and beliefs*’ (Bass, 1999, p. p24). This involves taking risks, being creative, and experimenting (Bass, 1999).

Because the modern market environment for many industries shifts frequently, the ability to change and adjust course quickly is a prerequisite for the majority of organisations. The difficulty for many lies in the transition from transactional leadership, with its focus on compliance, to transformational leadership when both agility and compliance are needed. Clarke (2013) addresses this contradiction in her meta-analytic review of transactional and transformational leadership styles in relation to safety behaviours. She finds that, in line with Bass’s full range of leadership styles (Bass 1999), more aspects of leadership than merely the traits that comprise either transactional or transformational styles can and should be utilised. The full-range leadership model (Bass, 1999) consists of the following: *laissez-faire* leadership, passive management by exception leadership, active management by exception leadership, contingent reward leadership, and transformational leadership. Management by exception leadership features a leader who is typically passive until problems occur. This leader acts, but not before a problem lands on his desk. However, as described above, management by exception can also be active. The manager who executes active management by exception leadership closely observes deviations and ensuing problems, acting immediately when issues arise. The difference lies in the proactive versus reactive approach. Bass explains that managers must incorporate different styles at different times and pictures the model as a set of stairs; transactional leadership is the top stair, and *laissez-faire* leadership is the bottom stair. Clarke elaborates that active management by exception leadership can be applied in conjunction with transformational leadership, declaring that this is not contradictory. Transformational leadership actively cares for employees by involving both management and other employees in the internalisation of procedures and concerns regarding safety. Clarke finds a correlation between transformational leadership and active safety participation, while active management by exception correlates with compliance to procedures and policies; therefore, Clarke recommends a combination of the two styles. Similarly, Griffin and Hu (2013) identify the conflict between elements of transformational

leadership and the need for compliance (Griffin & Hu, 2013), finding that if leaders focus on encouraging learning from mistakes combined with monitoring, then the effect on compliance is positive (Griffin & Hu, 2013). This can be linked to active management by exception (Avolio & Bass, 1994; Bass, 1999) and thus corresponds to Clarke's findings.

Regardless of the model of management chosen, employees are motivated and inspired by respectable leaders, looking to them as role models (Bass, 1999; Clarke, 2013; Schein & Schein, 2017). Employee compliance, therefore, depends on leader-depicted behaviours. Griffin and Hu (2013) further posit that inspirational safety leadership exerts a significant effect on safety participation, which results in considerable cooperation with safety compliance (Griffin & Hu, 2013). The manager's role in ensuring compliance is also referenced in a qualitative study from 2012 (Skaugrud, Dahl, & Olsen, 2012). The informants in this study indicate that managers are perceived as role models, and they need to lead by example. A manager who speaks positively concerning a particular procedure can expect enhanced compliance performance this procedure (Skaugrud et al., 2012). The manager should demonstrate that compliance is the focus, and that, especially in light of safety concerns, performing the job safely and complying with procedures is more important than completing the work on a deadline. Identifying leadership figures as role models is important to humans as much as to organisations (Skaugrud et al., 2012); Skaugrud submits that *'without a focus on compliance from the leader, it is not likely that the workers will maintain a focus either'* (Skaugrud et al., 2012, p. p6492).

From this overview, it can be postulated that procedural compliance leadership maintains a significant effect on employee attitude toward procedural compliance.

H2: The procedural compliance leadership of operations managers and team leaders maintains a significant effect on employees' attitudes toward compliance with procedures.

## 2.5 Involvement theory

*'I hear and I forget, I see and I remember, I do and I understand'* (Confucius, 551 B.C.).

Research concerning employee motivation and engagement gained momentum in the 1960s and 1970s as part of the sociotechnical development of work models (Parker, Morgeson, Johns, &

Chen, 2017). Part of this development was Herzberg's research regarding intrinsic motivation, which led to the understanding that professional motivation derives from more than simply extrinsic motivation. Herzberg realised that some extrinsic motivational factors, such as salary, could be interpreted as hygiene factors, meaning that above a certain level, salary ceases to be a motivator, and that to gain highly motivated workers, the focus must shift to intrinsic motivational factors (Herzberg, 1966; Triandis & Herzberg, 1967); this theory continues to be found valid today (Bassett-Jones & Lloyd, 2005).

One influential and frequently cited model of occupational motivation is the job characteristic model posited by Hackman and Oldham (Parker et al., 2017). Hackman and Oldham (Hackman, Oldham, Janson, & Purdy, 1975; Hackman, Oldham, & Feishman, 1975; Hackman & R. Oldham, 1976) find that certain characteristics of job design positively influence both motivation and employees' emotions regarding the work. The characteristics Hackman and Oldham identify are autonomy, job feedback, skill variety, task identity, and task significance. Autonomy describes the level of freedom provided to the employee in the task. Hackman and Oldham explain that the higher the level of autonomy, the higher the job satisfaction. Job feedback describes the need for the employee to receive evaluations on the task performance. The more comments provided, the greater job satisfaction becomes. This includes both negative and positive feedback if negative feedback is delivered constructively. Skill variety refers to the motivation that emerges when exercising talents and abilities rather than performing monotonous work that repeatedly requires the same skill. In general, the more skill required for a task, the higher the job satisfaction. Task identity alludes to the level of definition provided with the work. The clearer the definition of the scope of the undertaking, the higher the job satisfaction. In other words, a work task with no defined start and finish leads to lower job satisfaction as compared to a job with a defined start and finish. Task significance describes the level of meaning the work offers. This meaning could be important to the organisation, the individual, or maybe greater society. The important factor is that the higher the significance profile of the work, the higher the impact on job satisfaction (Hackman, Oldham, Janson, et al., 1975; Hackman & R. Oldham, 1976).

Job involvement is another characteristic that motivates workers (Dugan, 2006). This concept has travelled two courses in the history of research (Hallberg & Schaufeli, 2006): one path focusses on the concept that job involvement enhances the employee's self-esteem, and one considers the ways that the job defines an employee's identity (Hallberg & Schaufeli, 2006). Involvement in

this scenario is defined as the '*investment of psychological and physical energy in the [...] environment*' (Dugan, 2006, p. p336). Brown and Steinberg (1996) conceptualise job involvement in a meta-analysis and review of the job involvement field, revealing that active job involvement results in improved job performance. Although job involvement is linked to personal traits and individual motivation, job characteristics, such as autonomy and feedback, influence the level to which an individual chooses to become immersed in job involvement (Brown & Steinberg, 1996). Brown further finds a reciprocal effect between an employee's personal motivation and well-being and the motivation and characteristics derived from the work, explaining that a highly motivated person may influence the environment and personal perceptions to become work involved. In the same way, Brown and Steinberg (1996) postulate that predecessor elements, such as feedback, participation, and autonomy, influence job involvement and thus motivation, which is congruent with the job characteristics model (Hackman, Oldham, Janson, et al., 1975; Hackman & R. Oldham, 1976). As such, job motivation can result from both the employee and the job characteristics (Brown & Steinberg, 1996) (Parker et al., 2017). Brown's model further stipulates that the consequences of job involvement are related to effort, performance, absenteeism, turnover, general satisfaction from both worker and supervisors, and organisational commitment (Brown & Steinberg, 1996).

However, it seems that involvement must be neither complicated nor sophisticated in order to have an effect. Consistent with Cooper (2000) and Bandura's (1986) reciprocal model, involvement in campus activities has been found to improve a student's grades (Astin, 1999). Astin concludes that involved students are less likely to withdraw from school (Astin, 1999; Hernandez, Hogan, Hathaway, & Lovell, 1999). *Involvement* as defined by Astin is a student who devotes time to study, spends considerable time on campus, participates in student activities, and interacts with faculty members and students (Astin, 1999); such involvement can be both qualitative and quantitative. High qualitative involvement, including time spent attending classes, reading, and studying, results in a higher payoff, measured by an increased correlation with improved grades. However, Astin (1999) also finds that even involvement in low-quality activities, such as working on campus, living on campus, and socialising with students and faculty, correlates to enhanced grades and fewer drop-outs. Astin links this to personal growth, and his model claims that the personal traits, motivation, and attitudes students bring with them coupled with involvement in the environment results in personal growth. This process, again,



leads to improved grades. Astin criticises traditional learning strategies for reducing the student to a passive role as receiver, thereby focussing on the action rather than the individual's emotions or thoughts as a key to involvement. The similarities between the traditional learning strategies, as described by Astin, and the older definitions of compliance are apparent, demonstrating a more involved view regarding students, which is similar to the newer compliance definitions from medicine. By that, Astin understands the student as a participant rather than a receiver (Astin, 1999) and later utilises this involvement effect in management education (Astin & Astin, 2000). Astin stipulates that involvement is an inherent part of transformational leadership and focusses on intrinsic motivation. He further illustrates that involving students in education, rather than requiring them to be passive receivers, allows intrinsic motivation and involvement to work in praxis, thus improving learning effects (Astin & Astin, 2000; Dugan, 2006).

Similar to Astin's findings from student involvement, positive effects from involvement can also be found in working environments. Vredenburg finds that employee involvement is behaviourally oriented and focusses on the motivation that derives from being included in decision-making processes and feeling heard (Vredenburg, 2002). In many cases, employees are closer to the details than management, and they often contribute valid input and suggestions, resulting in an improved final product or decision (Vredenburg, 2002). The management practice of involvement has also been found to have a direct effect on safety performance in the process industry (Vinodkumar & Bhasi, 2010). Health care has seen the same effect employed by nurses because user involvement has become increasingly important (Stringer, Van Meijel, De Vree, & Van Der Bijl, 2008). This involvement improves patient well-being and self-esteem; by involving the patient in treatment decisions, health care workers find that mental health patients become more compliant with the treatment regimen (Stringer et al., 2008). Another example from health care in which involvement is found to correlate with compliance was discovered by Dubose et al. (2009). Dubose et al. involved intensive care nurses in a U.S. hospital in the development of a new glycerol control procedure. The nurses were, during relevant training, granted the opportunity to provide input regarding the new procedure through a survey (involvement treatment). The new procedure considered the nurses' input and was introduced via small group sessions for the nursing staff, clearly displaying that their input had been incorporated; the result was that the nurses accepted more responsibility (Dubose et al., 2009). Through measurement before and after the new procedure was implemented, Dubose et al. (2009)

find an improvement in blood glycerol control after implementation of the new procedure, and thus they demonstrate a correlation between nursing involvement in and compliance with the procedure (Dubose et al., 2009).

Involvement theory is also utilised within the fields of information technology and software development. In formulating Enterprise Resource Planning (ERP) systems, Sun et al. (2005) find that involvement is one of several key factors for successful ERP implementation (Sun et al., 2005). They explain that involvement in creating procedures and establishing processes is seen as devising the law; hence, breaking the law requires additional rebellion. Therefore, the involved person is more likely to influence compliance behaviour in others (Amankwa et al., 2018). The reverse finding is that lack of involvement is also a frequent factor in the failure of ERP system implementation (Bano & Zowghi, 2015).

A final note on involvement is from the Norwegian work environment. In an overview, Karen M. Olsen demonstrates that the positive effects of involvement have grown to become a fundamental component of the three-way relationship between the government, employer organisations, and employee organisations (K. M. Olsen, 2014). Through this relationship, employer and employee organisations cooperate to achieve a common goal in mutual respect. Workers understand that a healthy organisation is key to safe employment, fair terms, and acceptable salaries. Likewise, employers understand that involved and motivated workers are key to growth and sustainable business (K. M. Olsen, 2014).

In light of these findings, involvement should exert a positive effect on employees' motivation to perform the work in which they are fully engaged. Therefore, involvement in general procedure development should have a positive effect on attitude concerning compliance toward the same procedures.

H3: End-user involvement in the development of procedures has a significant effect on attitude toward compliance with procedures.

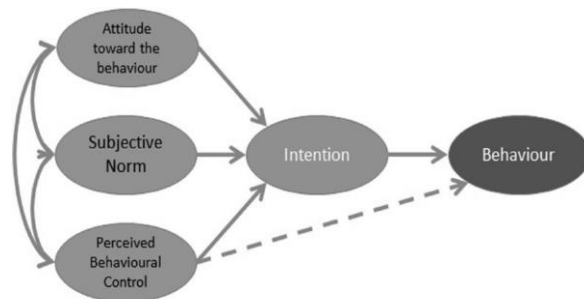
## 2.6 From attitude to behavioural intentions and procedural compliance culture

Attitudes can be infectious; therefore, a study of the way that attitudes transfer to behavioural intentions is warranted. In 1958, Kelman identified three ways that individuals change behavioural intentions: instrumental compliance, identification, and internalisation (Kelman, 1958). Instrumental compliance occurs when a person accepts influence to gain approval or a reward; inversely, instrumental compliance also occurs when an individual accepts influence to avoid punishment (Kelman, 1958). This can be as simple as obeying people in authority, as described in chapter 2.3, or in implementing transactional leadership, as explained in chapter 2.4. The negative side of such influence is that compliance does not need to include change in internal beliefs; therefore, the expected effort needed to complete the task is a minimum of the effort needed overall, regardless of whether the goal is to avoid punishment or collect reward (Yukl, 2013). A second method of influence, according to Kelman, is by personal identification. This influence emerges from a need to be liked or to gain self-esteem and often manifests by imitating another person's actions to gain approval from this person. The goal can be as simple as maintaining a relationship with an attractive person, and self-esteem is improved by being similar to a person perceived as attractive (Kelman, 1958). The third way to change behavioural intentions is by internalisation, which occurs when the proposed influence is either intrinsically rewarding or congruent with the person's value system. The person identifies with the proposed influence or influencer and accepts the influence because of that identification. The influenced person does not expect any other reward in return (Kelman, 1958).

The outcome of influences can be commitment, but it can also be compliance or resistance. Compliance in this respect transpires when a person is influenced to complete a task and chooses to do so, albeit apathetically and with minimal effort, in order to gain the reward or avoid the punishment. This outcome may be sufficient for simpler tasks (Yukl, 2013), but as discussed in chapter 2.4, when intrinsic motivation is absent, lower motivation and lower job satisfaction can be expected. Resistance in this case appears simply as the person refusing to accept the influence. Commitment, however, features a person who both internally (within the personal belief system)

and externally (with actions) accepts the influence and embraces the task with effort and enthusiasm (Yukl, 2013).

Another relevant theory that describes the relationship between attitude and intention is the theory of planned behaviour (TPB; (Ajzen & Fishbein, 1974), which was introduced after the development of the theory of reasoned action (TRA; (Ajzen & Fishbein, 1974). The TRA states that strong intentions are the primary predictor of behaviour (Ajzen & Fishbein, 1974). With the introduction of the TPB (Ajzen, 1985), which includes the TRA, Ajzen and Fishbein contribute to the research by identifying the relationship between three distinct elements towards intention, and the link between intention and attitude, as displayed in Figure 2.6.1.



*Figure 2.6.1* Ajzen and Fishbein’s Theory of Planned Behaviour model (Sussman and Gifford 2018).

*Attitude toward the behaviour* in this model describes the individual’s feelings concerning the action. This attitude can be both affective and instrumental. Affective in this context refers to the way the individual perceives the activity, which could include the individual’s enjoyment of the activity or the lack thereof. Attitude can also be affected in an instrumental fashion, which explains an individual’s perception of the outcome of the activity, such as whether the individual believes that the activity is beneficial. These two attitudes can overlap (Ajzen, 1985; Ajzen & Fishbein, 1974). *Subjective norm* in Ajzen and Fishbein’s model describes the way that the individual receives support from the environment or a significant other. This can be divided into injunctive and descriptive norms. Injunctive norms describe how other people in the person’s social group support the planned behaviour, while descriptive norms describe whether other

people are involved in similar activities or behaviours (Ajzen, 1985; Ajzen & Fishbein, 1974). The final element in Ajzen and Fishbein's model which affects intentions is perceived behavioural control. This describes how strongly the individual feels that any barriers or challenges can be overcome. This can relate to competence, but it can also refer to internal beliefs regarding whether the individual feels capable of performing the task. If all three elements of planned behaviour are induced, then the individual possesses strong intentions to complete the task; because of those intentions, the individual is more likely to complete the task or behaviour (Ajzen, 1985; Ajzen & Fishbein, 1974).

Neither TRA nor TPB are new, but they stand the test of time and have been utilised to predict behaviours including smoking, consumer decision making, weight loss, physical activity, gambling, and many more (Sheeran, 2002). Sheeran also finds that, in recent research, even though the TPB has empirically proven the intention, behavioural models account for only 28% of explained behaviour (Sheeran, 2002). Statistically, this number is regarded as a reliable indicator; however, there is room for further research, as Sheeran theorises (2002). A recent study confirming the TPB model considers driving behaviour. Elliott, Armitage, and Baughman (2003) applied the TPB to seek potential interventions to prevent speeding (Elliott, Armitage, Baughman, & Zedeck, 2003). They utilised random drivers in the UK to measure drivers' behavioural attitudes, subjective norms, and perceived behavioural controls, finding strong correlation with the model. Likewise, Sussman and Gifford (2018) examined 361 undergraduate students and reveal support for the TPB model. However, Sussman and Gifford (2018) also discovered a reciprocal effect from intentions toward attitude, behaviour, and subjective norms (Sussman & Gifford, 2018). This indicates that not only does attitude influence intention, but behavioural intention also influences attitude. From a cultural perspective, this is particularly interesting because it may indicate that not only do attitudes and behaviour influence and develop a culture, but also that culture influences attitude via behaviour and intentions.

In the field of IT development, Sipponen (2014) finds in his research a strong correlation between attitudes to IT procedure and intentions to comply with these procedures. The correlation that Sipponen's research demonstrates is this: if an individual displays a positive attitude toward compliance with IT security procedures, even while knowing that the risk of being caught in a noncompliant act is low, then this attitude has a positive effect on compliance (Sipponen et al., 2014). It is therefore reasonable to believe that such behavioural intentions as found by Sipponen

derive from commitment and the successful influence of internalisation as postulated by (Kelman, 1958).

This thesis has postulated that supportive organisational culture (H1), procedural compliance leadership (H2), and end-user involvement (H3) have a significant effect on compliance attitudes; therefore, one can, with the above-presented theories, also postulate that a strong positive attitude toward procedural compliance exerts a significantly positive effect on compliance intentions.

H4: Employees' attitudes toward general procedural compliance positively affect behavioural intentions toward procedural compliance.

Returning to the TPB and the TRA (Ajzen, 1985; Ajzen & Fishbein, 1974), both theories state that behavioural intentions are the main determinant of whether an action will be performed. Additionally, based on the culture and organisational culture theory discussed in chapter 2.1, organisational climate research typically quantitatively investigates attitudes and behaviours in relation to organisations and focusses on context (Schneider, 2000). Furthermore, Schein's model of organisational culture, with its focus on development, demonstrates reciprocity. As such, behaviours can be determined based on culture; however, culture also develops based on behaviours and shared learning (Schein & Schein, 2017). Reciprocity between climate and culture has been proven, this time by Schneider, who claims that climate causes culture and vice versa (Schneider, 2000). This finding echoes Schein's conclusion that climate is a product of culture (Schein & Schein, 2017), further emphasising that Schein's model is reciprocal.

Therefore, both intention and behaviour can be seen to have a positive effect on a procedural compliance culture.

H5: Employees' attitudes toward procedural compliance positively affect the formation of a procedural compliance culture.

H6: The behavioural intentions of employees significantly affect the formation of a procedural compliance culture.

## Theory Summary

The field of organisational culture is in development. It has moved from identifying collective traits of larger groups to diving beneath the surface and developing processes to understand what lies underneath certain behaviours. Literature has illuminated the ways that culture develops and the influences on both climate and culture. Climate and culture are found to be individual concepts, although they are closely related to or overlapping with each other. This field of research recognises that culture is a strong influence on personal behaviour.

In the field of safety culture, the debate between culture and climate was, for a period, impeding the discussion. Schein has offered an understanding between the two: climate is an expression or snapshot of culture; culture is deeper and also includes underlying assumptions. Safety culture has departed from personnel and human error to focus on system thinking (Reason 2000). The research recognises that human errors are inevitable and that the organisational system must account for human flaws in order to deliver sustainable results, thereby also recognising safety culture to be a part of such a system.

The field of compliance has also undergone development, moving from an employee-only focus, with a simple mandate of obedience to those in authority, to view compliance as encompassing the establishment of a culture and process that influences compliant behaviour by involvement.

‘When an adverse event occurs, the important issue is not who blundered, but how and why the defences failed’ (Reason, 2000).

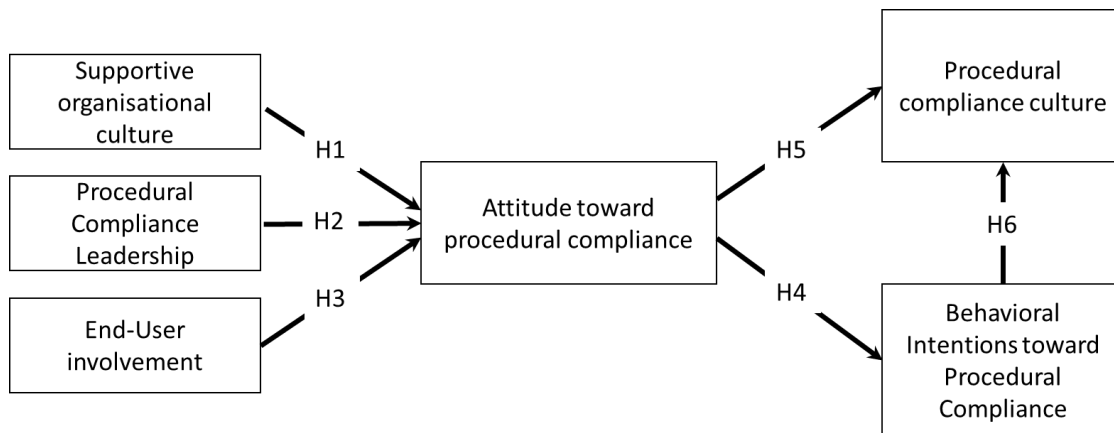


Figure 3.1 Research model

## 3. Method

### 3.1 Organisation

The organisation chosen for this study is a worldwide provider of temporary power and temperature-control equipment and projects. Equipment, projects, and kits are delivered from more than 200 locations around the globe. The northern Europe (NorEur) branch of this organisation has its main seat in Cannock, outside Birmingham in the UK. Broadly speaking, the NorEur organisation comprises sales and operations divisions. The operations division serves sales and project organisations with equipment and personnel from local depots spread around northern Europe. The NorEur division currently consists of the United Kingdom, and the Nordics countries. NorEur is further divided into five regions: North, South, and Centre for the British islands, Projects for major jobs, and Nordics for the Nordic countries. All depots have an area service manager or depot manager who reports to a regional service manager. The regional service managers report to the operations director for NorEur. There are a total of 434 employees in the organisation. The focal subject for this thesis is the NorEur operations division, which consists of approximately 190 service technicians working across local depots and the project organisation with an additional 35 support members. 22 technical managers and 28 managers in the regions are included plus a variety of resources that are shared between sales and operations, such as finance, procurement, and others. Sales are included and represented with approximately 65 sales engineers and managers.

As this corporation contracts equipment for both short-term and long-term contracts, the equipment is required to be well maintained and ready at any time for immediate transport to a customer site. Because both power and temperature-control equipment operates potentially large volumes of energy, the maintenance requirements cannot be neglected. The NorEur operations organisation has therefore developed a number of standard operating procedures (SOP) and standard work instructions (SWI) to ensure that work is performed consistently across all locations and regions. These SOP and SWI are maintained by the Quality Health Safety and Environment (QHSE) team, who serve the NorEur organisation with HSE and quality support, and competence. The SOP are currently being converted to SWI; hence this study examines both.



There are also a number of internal policies for the organisation's employees to follow. For nontechnical personnel, such as management, administration and sales, compliance toward internal policies substitutes for SOP and SWI in the study.

An example of SWI is provided in the exhibit. As one can see from this example, SWI contain a detailed description of a task, the method for completion, the tools to utilise, and the way to record any pertinent details that arise during the procedure. The procedure provided in the exhibit section was developed by a member of the QSHE team and was checked by technical staff (the electrical services manager) and approved by the national service manager.

### 3.2 Research method and design

The objective of this thesis is to understand general procedural compliance in a heavy maintenance environment and its relationship to the organisational culture elements: compliance leadership, end-user involvement, and supportive organisational culture. The method chosen to obtain this objective is an adaptation of Amankwa, Loock, and Kritzinger's 'Information Security Policy Compliance Culture' research issued in 2018 (Amankwa et al., 2018). Amankwa et.al.'s study was conducted in Pretoria, South Africa, in 2017 by issuing questionnaires to and collecting them from a number of local companies known to have IT policies. The aim of Amankwa et.al.'s study was to understand factors such as security policy compliance leadership, user involvement, and supportive organisational culture and their influence on information security policy compliance. The original research questions and theory were modified in this thesis to match the research criteria, and as such, this study is not to be considered a replica of Amankwa et.al.'s study.

Study designs can be both qualitative and quantitative, depending on the research question. Qualitative design asks respondents to answer open questions and allows the researcher to interpret the responses in search for trends and similarities. Quantitative studies are typically conducted by means of scaled responses in which participants answer questions by choosing from a list of pre-constructed answers or rating a statement on a pre-constructed scale. Both qualitative and quantitative studies can be conducted through interviews or self-reporting. However, it is common to utilise self-reporting for quantitative method design and interviews for qualitative method design. The benefits of questionnaires and self-reporting, especially in the computer age,

is the simplicity in obtaining a high number of respondents (Schein & Schein, 2017). Several respondents can answer at the same time by utilising web survey providers, and the number of respondents can easily reach the thousands and above. However, there is little room for error in the design phase, as there is no one to ask if questions are not understood by respondents or if the answers fail to match reality. Qualitative method design commonly utilises interviews, which feature some benefits over questionnaires. Both the respondent and the researcher can ask and clarify ambiguous answers and questions. Additionally, the researcher can ask follow-up questions based on responses that were not expected during the initial design. This allows opportunities for new and unexpected information (Jacobsen, 2015). One drawback is the time and resources required for conducting the interviews, and therefore, the qualitative study design is normally utilised in connection with studies that require a lower number of respondents (Jacobsen, 2015).

The design chosen for this thesis is the quantitative method with a questionnaire in which participants respond by self-reporting. The questionnaire developed consists of 19 statements related to compliance and procedures plus three questions related to job satisfaction and background. The statements were rated by the respondents on a Likert scale from 1 to 5, where 1 equals 'strongly disagree' and 5 equals 'strongly agree' (Jacobsen, 2015).

The research model of this study consists of several variables in a system (see Figure 3.1), and it is the intention of this researcher to find the potential effects the independent variables exert on the dependent variables. To complete this assignment, the model is split into parts, and some variables are applied as both independent and dependent variables, depending on which portion of the model is tested. A detailed overview of this process can be found in chapter 3.7.

### 3.3 The questionnaire

The research questions utilised in this study are based on Amankwa et.al's questionnaire, which again, was based on validated sources (Amankwa et al., 2018). Amankwa et.al's questions were modified by the author to reflect the general compliance objective of this study, rather than the IT policy objective utilised by Amankwa et.al. Extra care was taken not to eradicate the original

intention of each question. All questions, apart from those concerning background, are related to one of the variables found in the research model (see Figure 3.1).

A complete overview of the survey questions and the way that each question relates to the variables in the research model is displayed in Table 3.3.1.

*Table 3.3.1 – Questionnaire and variable identification*

| #  | Variable   | Indicator | Question/Items   | Adapted from             |
|----|--|-----------|--|--------------------------|
| 1  | <i>End-User Involvement</i>                                | USIN 1    | I am aware of the existing SOP/SWIs because I have participated in training where the content of the SOPs/SWIs were discussed. | (Amankwa et al., 2018)   |
| 2  |  | USIN 2    | I know all aspects of one or more SOP/SWIs because I was part of a workgroup that drafted the procedure.                       | (Amankwa et al., 2018)   |
| 3  |  | USIN 3    | I am likely to follow the SOP/SWIs, because concerns I have had regarding existing SOP/SWIs were addressed adequately.         | (Amankwa et al., 2018)   |
| 4  |  | USIN 4    | I consider user involvement in development of procedures, as an effective approach to encourage users to follow SOP/SWIs       | (Amankwa et al., 2018)   |
| 5  | <i>Compliance Leadership</i>                               | LEADER 1  | My manager often emphasizes the importance of compliance with SOP/SWIs   | (Amankwa et al., 2018)   |
| 6  |  | LEADER 2  | SOP/SWIs are in general given high priority because of my manager.   | (Amankwa et al., 2018)   |
| 7  |  | LEADER 3  | My manager has always demonstrated compliance with internal procedures and policies.   | (Amankwa et al., 2018)   |
| 8  |  | LEADER 4  | Training and awareness programs that emphasize the importance of compliance with SOP/SWIs exist in the organization.           | (Amankwa et al., 2018)   |
| 9  | <i>Supportive Organisational Culture</i>                   | SOC 1     | A mechanism for monitoring SOP/SWIs exists in the organization.  | (Amankwa et al., 2018)   |
| 10 |  | SOC 2     | I believe it is necessary for the Organization to have a person to monitor compliance with SOP/SWIs.                           | (Amankwa et al., 2018)   |
| 11 |  | SOC 3     | To follow SOP/SWIs is a key part of my everyday duties and responsibilities.   | (Amankwa et al., 2018)   |
| 12 | <i>Attitude toward Procedural Compliance</i>               | ATC 1     | Following SOP/SWIs is beneficial.  | (Amankwa et al., 2018)   |
| 13 |  | ATC 2     | Following SOP/SWIs is necessary.   | (Amankwa et al., 2018)   |
| 14 |  | ATC 3     | Following SOP/SWIs mitigates the risk of quality breaches.   | (Amankwa et al., 2018)   |
| 15 | <i>Behavioural Intentions toward Procedural Compliance</i> | CBI 1     | I am certain I will adhere to the relevant SOP/SWIs.   | (Amankwa et al., 2018)   |
| 16 |  | CBI 2     | It is my belief that SOP/SWIs should be complied with at all times.  | (Amankwa et al., 2018)   |
| 17 | <i>Procedural Compliance Culture</i>                       | CC 1      | I believe the existing SOP/SWIs are enough to protect the organization and myself from quality breaches.                       | (Amankwa et al., 2018)   |
| 18 |  | CC 2      | I am prepared to follow SOP/SWIs that protect the organization from quality breaches.  | (Amankwa et al., 2018)   |
| 19 |  | CC 3      | It is my responsibility to protect the organization from quality breaches.   | (Amankwa et al., 2018)   |
| 20 | <i>Job Satisfaction</i>                                    |           | How satisfied are you with your job, everything taken into consideration?  | (Kristensen, 2002)       |
| 21 | <i>Background</i>  |           | Your current position in the organization  | Developed for this study |
| 22 |  |           | Year of service with the organization:   | Developed for this study |

The variables were calculated by combining the questions or items under each variable as indicated in Table 3.3.1. This was performed by utilising the ‘compute variable’ function in the statistical software. Cronbach’s alpha was also calculated for the computed variable, checking for reliability. Additional information is available in the reliability section in chapter 3.6.

### 3.4 Data collection

After completing the writing of the questionnaire, the questions were copied into a web survey provider and sent for final review and approval to the NorEur operations director of the organisation. After the questions were approved and before the opening of the survey, the full scope of this thesis was presented to the NorEur operations management community at a quarterly regional meeting. The managers were then provided the opportunity to ask questions related to the scope of the study (not the survey questions) and thereby fully understand the potential learning for the organisation garnered from this thesis.

The survey was opened on 22 February 2018 by email to the entire NorEur organisation from the NorEur operations director, which contained a link to the survey (Appendix 2). A reminder was sent on 4 March 2018. The survey closed on 8 March 2018 with 152 responses received. The survey data was extracted from the web survey provider and imported into IBM SPSS Statistics version 25 for analyses.

### 3.5 Respondents

A total of 152 responses were collected from the survey. Of the 152, three responses were rejected due to incompleteness, thus leaving the study with a total of 149 completed web questionnaires for analyses. The survey was sent to a total of 446 recipients, which equals a response rate of 34% including the three rejected responses.

The division between respondents’ reported roles can be seen in Table 3.5.1.

*Table 3.5.1 – Detailed overview of respondents’ roles*

| Role   | <i>N</i> |
|--|----------|
| Technical staff or engineers   | 54       |
| Technical managers (manage technical staff, engineers, or processes)           | 28       |
| Nontechnical managers (manage nontechnical staff or processes)                 | 16       |
| Assistants or drivers  | 3        |
| Sales engineering staff  | 8        |
| Sales engineering managers   | 2        |
| Administration staff (planning, hire desk, logistics, cost, finance, or other) | 38       |
| Total  | 149      |

With a total of 190 service technicians in the operations division, the response rate for technical staff or engineers is 28.4 %.

### 3.6 Reliability

In order to measure a person’s height, weight, or eye colour, there is no need for complex models. However, to measure more complex theoretical models, such as social or behavioural phenomena, more complex models are needed (DeVellis, 2016; Jacobsen, 2015). By combining several questions or items into one variable, validated measurement instruments and theoretical models can be developed. It is common today to utilise factor analyses to implement items into variables and run analyses (DeVellis, 2016). However, for this thesis, the variables were computed by adding each item into the respective variable utilising SPSS and treating each variable separately as presented in Figure 3.1 (page 26). Before combining items into variables, reliability must be verified. A reliability check was conducted to validate the consistency and homogeneity of the items comprising a variable. Reliability in this study was measured utilising Cronbach’s alpha (1951). The Cronbach’s alpha coefficient ranges from 1.0 to 0.0; a high score indicates reliable numbers and a high level of consistency in the items. For the Cronbach’s alpha, the coefficient should not fall below 0.600; numbers lower than this could indicate that the reliability of the items in the variable is not consistent. However, other validity concerns can be utilised to determine the validity of the data (DeVellis, 2016).

Another method to validate data is by employing an intercorrelation matrix, which demonstrates the way that each item in the survey model correlates with other items. From this, one can

determine whether the items included in the variable correlate consistently. Correlation is an indicator that the items, to some degree, vary homogeneously.

To validate the survey data for this study, an intercorrelation matrix between all variables was developed and is displayed in Table 3.6.1.

Table 3.6.1 – Intercorrelation matrix

| Variable  | Item     | USIN 1 | USIN 2 | USIN 3 | USIN 4 | LEAD 1 | LEAD 2 | LEAD 3 | LEAD 4 | SOC 1  | SOC 2  | SOC 3  | ATC 1  | ATC 2  | ATC 3  | CBI 1  | CBI 2  | CC 1 | CC 2   | CC 3 |  |
|---|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|--------|------|--|
|   | USIN 1   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
| End-user involvement                                | USIN 2   | .278** |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
|   | USIN 3   | .338** | .374** |        |        |        |        |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
|   | USIN 4   | .07    | .06    | .13    |        |        |        |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
|   | LEADER 1 | .351** | .303** | .409** | .355** |        |        |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
| Procedural Compliance Leadership                    | LEADER 2 | .281** | .328** | .401** | .242** | .656** |        |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
|   | LEADER 3 | .302** | .167   | .281** | .359** | .565** | .538** |        |        |        |        |        |        |        |        |        |        |      |        |      |  |
|   | LEADER 4 | .249** | .229** | .405** | .200   | .453** | .541** | .375** |        |        |        |        |        |        |        |        |        |      |        |      |  |
|   | SOC 1    | 0.13   | .214** | .358** | .012   | .278** | .416** | .226** | .513** |        |        |        |        |        |        |        |        |      |        |      |  |
| Supportive Organisational Culture                   | SOC 2    | -.05   | .08    | -.03   | .383** | .05    | .011   | .06    | .06    | .11    |        |        |        |        |        |        |        |      |        |      |  |
|   | SOC 3    | .275** | .12    | .363** | .262** | .518** | .427** | .340** | .420** | .258** | -.10   |        |        |        |        |        |        |      |        |      |  |
|   | ATC 1    | .09    | .170   | .195   | .394** | .296** | .256** | .351** | .275** | .05    | .338** | .288** |        |        |        |        |        |      |        |      |  |
| Attitude toward Procedural Compliance               | ATC 2    | .12    | .07    | .186   | .303** | .264** | .242** | .275** | .289** | .12    | .395** | .225** | .647** |        |        |        |        |      |        |      |  |
|   | ATC 3    | .09    | .04    | .05    | .342** | .14    | .186   | .333** | .11    | .01    | .363** | .171   | .510** | .411** |        |        |        |      |        |      |  |
|   | CBI 1    | .352** | .223** | .348** | .205   | .418** | .438** | .381** | .485** | .286** | .255** | .462** | .582** | .538** | .450** |        |        |      |        |      |  |
| Behavioural Intentions toward Procedural Compliance | CBI 2    | .222** | .07    | .15    | .212** | .221** | .234** | .266** | .280** | .187   | .295** | .276** | .522** | .572** | .393** | .660** |        |      |        |      |  |
|   | CC 1     | .228** | .171   | .304** | -.03   | .246** | .393** | .255** | .479** | .477** | -.02   | .204   | .15    | .214   | .174   | .422** | .380** |      |        |      |  |
| Procedural Compliance Culture                       | CC 2     | .10    | .11    | .222** | .215** | .14    | .232** | .219** | .192   | .09    | .255** | .210   | .502** | .491** | .515** | .497** | .477** | .13  |        |      |  |
|   | CC 3     | .06    | .14    | .09    | .210** | .12    | .15    | .253** | .15    | .11    | .236** | .12    | .354** | .505** | .357** | .413** | .501** | .209 | .548** |      |  |

\*\*Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed).

The intercorrelation table illustrates that the within-variable questions correlate to a large degree, and the majority of within-variable correlation significance was found to be at the 0.01 significance level. However, there are some exceptions, such as USIN 4, which does not seem to correlate with USIN 1, 2, or 3. The same observation applies for SOC 2, which demonstrates poor correlation with SOC 1 and 3. Correlation for CC 1 against CC 2 and CC 3 is also weak; namely, no visible correlation exists between CC 1 and CC 2. Additionally, CC 1 correlates to CC 3 at a lower significance level.

To further investigate reliability, Cronbach’s alpha was calculated for each variable utilising SPSS. A full overview of included items, excluded items, and final Cronbach’s alphas can be found in Table 3.6.2.

*Table 3.6.2 – Computed variables, Cronbach’s alpha*

| Variable  | <i>N of Items Included</i> | <i>Items Included</i>                    | <i>Item Removed</i> | <i>Cronbach's Alpha</i> |
|---|----------------------------|--|---------------------|-------------------------|
| End-User Involvement                                | 3                          | USIN 1, USIN 2, USIN 3                   | USIN 4              | 0.586                   |
| Procedural Compliance Leadership                    | 4                          | LEADER 1, LEADER 2<br>LEADER 3, LEADER 4 |                     | 0.811                   |
| Supportive Organisational Culture                   | 2                          | SOC 1, SOC 3                             | SOC 2               | 0.409                   |
| Attitude toward Procedural Compliance               | 2                          | ATC 1, ATC 2                             | ATC 3               | 0.784                   |
| Behavioural Intentions toward Procedural Compliance | 2                          | CBI 1, CBI 2                             |                     | 0.791                   |
| Procedural Compliance Culture                       | 2                          | CC 2, CC 3                               | CC 1                | 0.704                   |

For the End-User Involvement variable, Cronbach’s alpha was calculated to 0.521 while including all four variables. The calculation, however, revealed that USIN 4 contributed to the low consistency value, thus confirming the finding from the intercorrelation matrix. The USIN 4 component was therefore removed from the variable. The recalculated Cronbach’s alpha, utilising only USIN 1, 2, and 3, improved to 0.586, with all three items contributing to the Cronbach coefficient.

For the variable Procedural Compliance Leadership, Cronbach’s alpha was calculated to 0.811, with all four items contributing to the Cronbach coefficient. Therefore, all items remain for this variable.

Cronbach’s alpha for the variable Supportive Organisational Culture was calculated to a poor 0.247, while indicating that SOC 2 was not contributing to the reliability, which again confirms the finding from the intercorrelation matrix. After removing SOC 2 from the variable, the

calculated Cronbach's alpha for Supportive Organisational Culture was computed to 0.409, utilising only SOC 1 and 3.

Attitude toward Procedural Compliance variable reliability test revealed an initial Cronbach's Alpha of .745. The analyses also showed that Item ATC 3 did not contribute to the variable and consequently removed. The final Cronbach's alpha for this variable was calculated at .784.

Reliability for the Behavioural Intentions toward Procedural Compliance variable was calculated with a Cronbach's alpha of 0.791; both items were contributing, and so both items remain for this variable.

The final variable, Procedural Compliance Culture, was found to have an initial Cronbach's alpha of 0.492; demonstrating that CC 1 was not contributing to the consistency. This was also expected based on the intercorrelation table, and CC 1 was therefore removed from the computed variable. Utilising only CC 2 and CC 3, the final computed Cronbach's alpha for the Procedural Compliance Culture variable was 0.704.

Both the Cronbach's alphas for the End-User Involvement and Supportive Organisational Culture variables are still considered to be in the poor end of the scale, as can be seen from Table 3.6.2, indicating that the reliability is reduced. An experimental level factor analysis of the data was therefore conducted to test whether the questions or items could be applied in another variable structure than originally planned. However, no other reliable system of variables was found from this factor testing, and it was therefore concluded that all variables from Table 3.6.2 should be included in the further analyses.

### 3.7 Analysis

The analysis portion of this thesis exhibits the potential utilisation of the data from the study to answer the thesis problem formed in chapter 1 and the hypotheses developed in chapter 2. The first part of the analysis provides descriptive elements of the data, such as numbers of central tendency. These numbers can be mean, median, or mode, which are all numbers of central tendency. A mean value is the same as the average in the supplied data and indicates the answer each respondent would have provided if each respondent had furnished exactly the same response. The mean considers all responses, and all responses contribute equally to the mean number. The median of a dataset is similar to the mean value, but it excludes or transforms



extreme outliers in the dataset to prevent them from influencing the mean in a negative or positive direction. A few extreme responses could move the mean, but because they are few, they do not necessarily represent the broad frequency of responses; thus, they prevent a true reflection of the responses. By comparing mean and median numbers, the distribution of the data is revealed. If mean and median values match, then the distribution of the data is balanced. There are likely no outliers to the right or left of the median influencing the mean to either side, and the dataset is likely symmetrically distributed. As for the survey in this thesis, all responses were collected utilising a fixed scale, thus eliminating the risk of extreme outliers. The third number of central tendency is mode. Mode value is the dominant response captured in the dataset. This is the response that is the most popular or most common. As with mean, mode considers all responses and identifies from them the response with the highest frequency.

In addition to the central tendency numbers, the analysis section also presents measures of spread. Measures of spread also depict the accuracy with which the mean or median represents the data. One useful measure of spread is the standard deviation, a measure that portrays the distance between the responses and the mean. If the standard deviation is small, then this indicates that the mean is a fair representation of the data; if the standard deviation is large, then the data is probably widely dispersed and may warrant a further investigation. It could be that the mean or median in such a case does not represent the numbers well, and there may be no pattern to read from the responses alone.

While measures of central tendency and spread can be interesting by providing a description of the respondents and indicating possible understanding of the individual responses, they do not demonstrate the responses' relation to each other. As presented in the research model, this thesis aims to discover whether there is an effect between some of the variables.

Therefore, the next level of data analysis is to check for possible effects between variables; testing whether change in one variable predicts change in another is achievable by utilising correlation and regression analyses.

A regression analysis compares variables by plotting the responses on an XY diagram. Utilising the plot, a potential effect between the variables can be predicted. If there is a correlation between the variables, then a pattern should emerge from the plot. With no visible pattern, there is a strong chance that there is no effect between the datasets or that there are other elements influencing the variables. When finding a pattern, one can draw a line through the data, ensuring that the line is

the same distance from all the points at the same time. This forms the model linear regression line, which represents a formula for the model. The actual data varies around this line—some on the positive side and some on the negative side—and as such, the regression line is only an estimate, while the data points are actual and accurate data. When combining all distances from the regression line to the actual data, one is left with the residuals. Residuals indicate that there are variances in the model that the model does not explain. By calculating these residuals, one arrives at a number that indicates the total error of the presented model; from that, one can determine the amount of the correlation between the datasets that can be explained by the model (George & Mallery, 2016). This thesis employs  $R^2$ . As explained by George and Mallery (2016), squaring the numbers allows estimates of distance from the regression line without the influence of a positive or negative number. In addition,  $R^2$  can be read as a percentage, and therefore an  $R^2$  of 0.32, for example, is equal to 32%, which stipulates that 32% of the correlation found in the model can be explained from the regression line. For some of the regression analyses conducted, a path analysis is utilised (Stage, Carter, & Nora, 2004). The path analysis allows the researcher to study both indirect and direct effects simultaneously. As an example for this thesis, utilising path analyses allows the researcher to bring indirect effects from the variables End-User Involvement, Procedural Compliance Leadership, and Supportive Organisational Culture together with the direct effects of Attitude toward Procedural Compliance when testing their effects on Behavioural Intentions toward Procedural Compliance (H4).

Correlation can also be determined by applying Pearson's  $r$ , which utilises the covariance between the results of each element to describe the correlation between them. A correlation coefficient of 1 is an ideal positive correlation, while a negative correlation coefficient is indicated by -1. A 0 correlation coefficient indicates no correlation at all (Befring & Timmons, 2004). There are discussions between statistics scholars regarding the constitution of a significant correlation (Johannessen, 2009): Some scholars argue that a Pearson's  $r$  of 0.2 would constitute a weak correlation. On the one hand, values between 0.30 and 0.40 would constitute a strong correlation, while values above 0.50 would constitute a very strong correlation according to Johannessen (Johannessen, 2009). Jacobsen, on the other hand, argues that values below 0.3 are a weak correlation. Values between 0.3 and 0.5 constitute a medium strong correlation in Jacobsen's view, and values over 0.5 constitute a strong correlation (Jacobsen, 2015). Between the findings of Johannessen (2009) and Jacobsen (2015), it can be argued that there is

disagreement regarding the constitution of a weak or poor correlation; however, both agree that values from 0.5 and above are considered strong correlation. For this thesis, values from 0.2 and below are considered weak correlations. Values in the 0.3 to 0.4 range are considered strong correlations, and values above 0.5 are considered very strong correlations, consistent with the findings of Johannessen (2009).

In addition to Pearson's  $r$ , one can also check whether the correlation is statistically significant. This calculation compares the correlation hypothesis to a null hypothesis. This is performed by simulating a repeated correlation test and from that, building a distribution. This study's correlation result from Pearson's  $r$  was tested against this null hypothesis, and a statistical probability was generated regarding the likelihood that the result was the product of chance. This test can be performed on both ends of the distribution tails and is then called a *two-tailed significance test*. It is common to accept values from 0.05 and below as a statistically significant correlation. For a two-tailed test, this result means that there is a 5% probability that the correlation obtained is from chance, and therefore, the null hypothesis can be rejected. It is also common to test against a 0.01 significance, proving that there is only a 1% chance that the result obtained derives from the null hypothesis.

For the study in this thesis, correlation was tested by defining one variable as dependent and testing this variable against an independent variable. Thereafter, the researcher verified whether the dependent variable changed because of the independent variable(s). As indicated in the introduction to this chapter, the research model studied in this thesis was divided into several correlation models. In some correlation models, a variable may have been utilised as an independent variable and as a dependent variable in another part of the model. This is visualised in Figures 3.7.1. through 3.7.4.

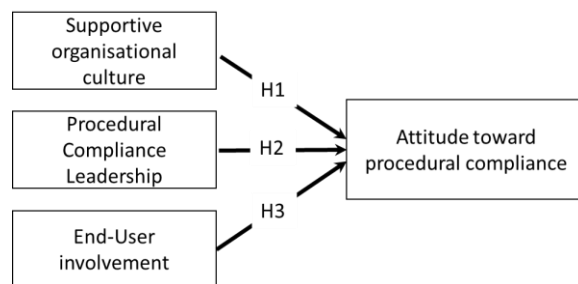
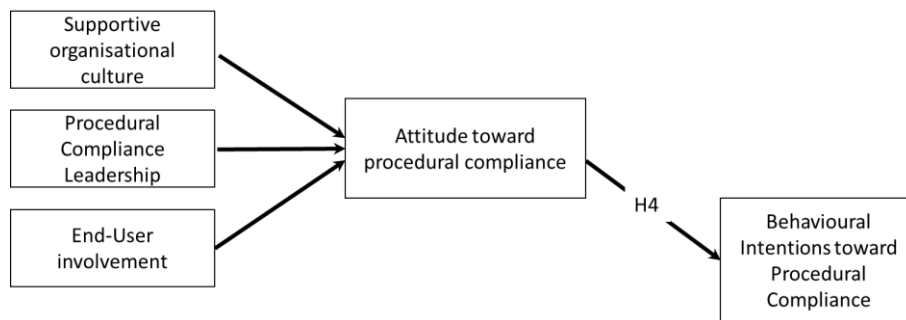


Figure 3.7.1 Model for hypotheses 1 through 3

Hypotheses 1, 2, and 3 were tested for correlation individually utilising Supportive Organisational Culture, Procedural Compliance Leadership, and End-User Involvement as the independent variables and Attitude toward Procedural Compliance as the dependent variable. Regression was also tested by utilising all three variables (Supportive Organisational Culture, Procedural Compliance Leadership, and End-User Involvement) as independent variables against Attitude toward Procedural Compliance as the dependent variable.



*Figure 3.7.2 Model for hypothesis 4*

Hypothesis 4 was tested for correlation utilising Attitude toward Procedural Compliance as the independent variable and Behavioural Intentions toward Procedural Compliance as the dependent variable.

Regression was tested by utilising all four variables—Attitude toward Procedural Compliance, Procedural Compliance Leadership, End-User Involvement, and Supportive Organisational Culture—as independent variables, while Behavioural Intentions toward Procedural Compliance was utilised as the dependent variable.

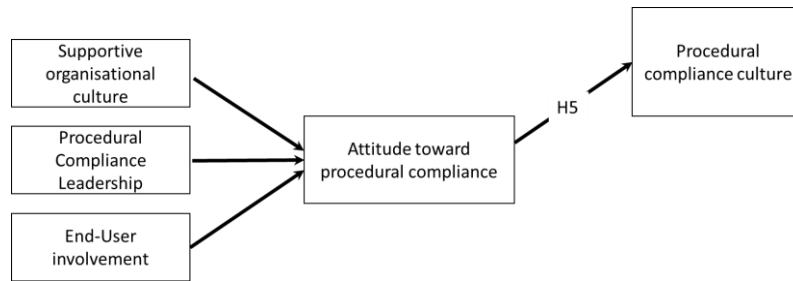


Figure 3.7.3 Model for hypothesis 5

Hypothesis 5 was tested utilising Attitude toward Procedural Compliance as the independent variable while utilising Procedural Compliance Culture as the dependent variable as displayed in Figure 3.7.3.

Regression in this model was tested by utilising all four variables—Attitude toward Procedural Compliance, Procedural Compliance Leadership, End-User Involvement, and Supportive Organisational Culture—as independent variables, while Procedural Compliance Culture was utilised as the dependent variable.

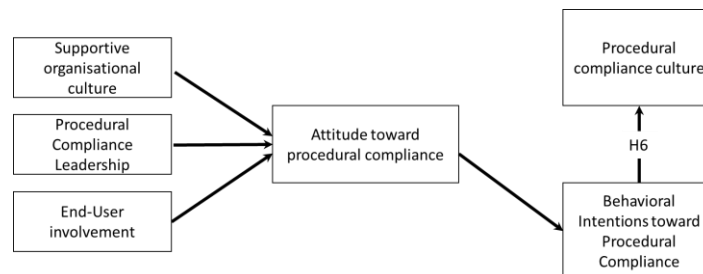


Figure 3.7.4 Model for hypothesis 6

Finally, hypothesis 6 was tested utilising Behavioural Intentions toward Procedural Compliance as the independent variable and Procedural Compliance Culture as the dependent variable as indicated by H6 in Figure 3.7.4.

Regression in this model was tested by utilising all five variables—Supportive Organisational Culture, Procedural Compliance Leadership, End-User Involvement, Attitude toward Procedural Compliance, and Behavioural Intentions toward Procedural Compliance—as independent variables, while Procedural Compliance Culture was utilised as the dependent variable.

### 3.8 Methodical limitations and ethics

An assessment of the compliance culture of the organisation under this thesis is not part of this study. The organisation is utilised to detect potential correlations found as a part of the research.

For this thesis, approval was obtained from both the managing director and the operations director in the organisation before the work with the thesis was started. In addition, to ensure that the thesis question was relevant both for the organisation and as research material, the operations director and the researcher's tutor were included in the discussion and approval of the thesis research question. Utilising an organisation for research purposes, as this thesis has done, carries the risk that research could reveal sensitive information regarding the organisation and research participants. The researcher must therefore ensure that information that is not relevant for the research or may be sensitive is not included in the report. If such sensitive information is relevant for the research, and the researcher needs to include it in the final product, then approval from the organisation should be obtained. In this thesis, no such information was revealed and therefore no additional approval was needed. Furthermore, no evaluation or research was performed on the efficiency or the financial situation of the organisation as part of this thesis.

All participants joined the survey voluntarily and anonymously. Although management of the organisation approved the thesis survey on behalf of the organisation, no employees were involuntary enrolled in the survey. No information concerning the participants, apart from the responses they provided, could be traced to its origin. In fact, a few background questions were removed after discussion with the operations director. Two background questions involving location and gender were removed, as the combination of these questions could identify individuals, and as such would breach anonymity. However, not knowing who responded to the survey could also impose a problem of credibility: From the researcher's point of view, a diagonal slice of the organisation, including groups, ages, lengths of service, genders, and professions, is preferable. Such information ensures that any findings from the survey are representative of the whole organisation and not a smaller group. If the survey is anonymous, then no such qualifications can be identified, and the researcher cannot know whether all departments or subcultures have been included in the responses. As such, this limitation applies

to the survey for this thesis. Conversely, if a proportionally large percentage of participants respond to the survey, this can ensure sample size reliability. For the survey in this thesis, a response rate of 34% was obtained.

Another potential limitation to the research is the researcher's role in the study. Both Schein and Thagaard note that the researcher can influence the research result (Schein & Schein, 2017; Thagaard, 2018). For the research conducted for this thesis, the choice to adapt Amankwa et al.'s quantitative study (Amankwa et al., 2018) influenced the results from the start. By making such a choice early in the process, the potential findings from the research are already limited. Schein argues that, for this reason, face-to-face interviews are more beneficial in cultural research, because the interviewee can, to a larger degree, influence which direction the conversation proceeds (Schein & Schein, 2017). By utilising a questionnaire, the interviewer has already set a direction and chosen a perspective (Schein & Schein, 2017). However, when utilising qualitative methods such as face-to-face interviews, Schein also states that because the interviewer is a foreign element in the group, his sheer presence inevitably influences the result (Schein & Schein, 2017). For this reason, Schein advocates that the researcher should 'live with the natives', meaning that the researcher should seek to understand the cultural elements from the inside rather than by interviewing or asking questions.

Some scholars argue that quantitative methods tend to be predisposed to reveal a safety climate rather than a safety culture because the limitations of the questionnaire prevent the revealing of underlying assumptions (F. W. Guldenmund, 2000; Schein & Schein, 2017). Another downside to quantitative methods is the lack of context from the questionnaire, the result of which is that the researcher does not know the reason for respondents' answers and may thus be ignorant of potentially important information (Guldenmund, 2018). For the survey in this thesis, a thorough introduction was written, clarifying the context and the way that the survey was to be understood. This section also included details on whom to contact if questions were unclear. No contact was initiated as a result of this introduction, leading to the conclusion that the survey was understood by the participants.

In general, researchers argue that qualitative methods, such as interviews, better reveal the underlying dimensions of culture (Guldenmund, 2018; Schein & Schein, 2017). Nevertheless, quantitative methods are simpler to utilise and provide higher numbers of respondents (Taras,

Rowney, & Steel, 2009); the number of respondents is important to ensure that the elements revealed are applicable to the group and not only to the individuals interviewed. Hofstede, one of the earlier researchers on culture, effectively conducted culture research by utilising questionnaires (Hofstede, 1980), concluding that, if they are managed correctly, then questionnaires can be successfully utilised to uncover cultural elements. A questionnaire solution was therefore chosen for this study.

To avoid some of the issues raised in this discussion, a field-proven and peer-reviewed article questionnaire was chosen (Amankwa et al., 2018). If a strategy for discovering or uncovering further elements was needed, then this could be acquired by triangulation (Denzin, 2017), a process in which interviews are utilised to confirm or deny findings from the questionnaires; this process secures stronger conclusions. Such interviews can be conducted individually or in groups, opening the survey for alternative findings not revealed by questionnaires, as suggested by Schein and Guldenmund (F. W. Guldenmund, 2000; Schein & Schein, 2017). Due to resource limitations, further interviews were not selected for this paper.

Another limitation of surveys is the risk of respondents not answering honestly. This could be influenced by the fact that the research was conducted in an organisation in which the author works and exercises a managerial position. However, the work-related role of the author is peripheral to the wider organisation and potential influence is over a limited group of people. Any possible influence would be outnumbered by the wider organisation and as such is not considered a factor in the survey. In addition, a specific text phrase was included in the invitation to the survey, specifying the importance of honest answers not based on participants' idealistic desires for the organisation (Appendix 3).

The fact that the research was conducted in one organisation alone could be a limiting factor. As the research is to be general to all work environments, completing the research in one organisation could result in questions regarding the generalisation of the findings herein. However, because the research is also meant to provide some learning value for the organisation at hand, adding another organisation to the mix could reduce the organisationally specific learning, although it could also improve the generality of the thesis.

The number of questions or items related to each of the variables could limit the validity of the survey results. As illustrated in chapter 3.6, the reliability check revealed that some elements did



not contribute to the reliability and were consequently removed. However, on other variables, some poor reliability items remained so that the entire variable would not be deleted. This could have been avoided if the survey contained more elements or questions, which would have allowed the removal of poor reliability contributors while maintaining sufficient elements to produce a strong variable.

## 4. Results

This section contains the results from the conducted survey, and empirically answers the research goal of this study which was to test the relationship between supportive organisational culture, end-user involvement, and compliance leadership toward procedural compliance culture. First, some aspects of the work environment are described, and then the descriptive statistics are presented. The final portion of this chapter tests the hypotheses 1 through 6.

### Descriptive statistics

The respondents' range in relation to length of service is displayed in Table 4.1.

*Table 4.1 – Length of service*

|          | Length of service | Number of responses | Percent |
|----------|-------------------|---------------------|---------|
|          | Less than 1 year  | 13                  | 8.7     |
|          | 1–3 years         | 35                  | 23.5    |
|          | 4–8 years         | 31                  | 20.8    |
|          | 9 or more years   | 68                  | 45.6    |
|          | Total             | 147                 | 98.7    |
| Missing* |                   | 2                   | 1.3     |
|          | Total             | 149                 | 100     |

\*Two respondents chose not to reply to this element.

The length of service statistic for the organisation is high, and nearly 46% of the respondents have been with the organisation for more than nine years. Comparing length of service with job role reveals that the mean length of service for service engineers is between four and eight years.

Job satisfaction is an indicator of the employees' well-being at work. The job satisfaction results for this study are presented in Table 4.2.

*Table 4.2 – Job satisfaction*

|                       | <i>Number of responses</i> | <i>Percent</i> |
|-----------------------|----------------------------|----------------|
| Strongly Dissatisfied | 4                          | 2.7            |
| Dissatisfied          | 14                         | 9.4            |
| Neutral               | 23                         | 15.4           |
| Satisfied             | 83                         | 55.7           |
| Strongly Satisfied    | 25                         | 16.8           |
| Total                 | 149                        | 100.00         |

A total of 72.5% of the respondents report being satisfied or strongly satisfied with their work, indicating that the majority of employees who participated in the survey are happy to work for the organisation. Comparing job satisfaction with length of service and job role exhibits no significant deviations in any of the groups.

A table showing each item in the study and their corresponding mean and standard deviation is included in table 4.3.

*Table 4.3 Item mean and standard deviation, all items.*

| <i>Variable</i>                                     | <i>Item</i>   | <i>Mean</i> | <i>Std. Deviation</i> |
|---|---|-------------|-----------------------|
| End-User Involvement                                | I am aware of the existing SOP/SWIs because I have participated in training where the content of the SOPs/SWIs were discussed. (Indicator: USIN 1)                | 3.20        | 1.11                  |
|   | I know all aspects of one or more SOP/SWIs because I was part of a workgroup that drafted the procedure. (Indicator: USIN 2)                                      | 2.30        | 1.14                  |
|   | I am likely to follow the SOP/SWIs, because concerns I have had regarding existing SOP/SWIs were addressed adequately. (Indicator: USIN 3)                        | 3.23        | 0.89                  |
|   | I consider user involvement in development of procedures, as an effective approach to encourage users to follow SOP/SWIs (Indicator: USIN 4)                      | 4.18        | 0.80                  |
| Procedural Compliance Leadership                    | My manager often emphasizes the importance of compliance with SOP/SWIs (Indicator: Leader 1)  | 3.53        | 1.04                  |
|   | SOP/SWIs are in general given high priority because of my manager. (Indicator: Leader 2)  | 3.23        | 0.93                  |
|   | My manager has always demonstrated compliance with internal procedures and policies. (Indicator: Leader 3)  | 3.95        | 0.86                  |
|   | Training and awareness programs that emphasize the importance of compliance with SOP/SWIs exist in the organization. (Indicator: Leader 4)                        | 3.15        | 1.01                  |
| Supportive Organisational Culture                   | A mechanism for monitoring SOP/SWIs exists in the organization. (Indicator: SOC 1)  | 3.04        | 0.95                  |
|   | I believe it is necessary for the Organization to have a person to monitor compliance with SOP/SWIs. (Indicator: SOC 2)   | 4.06        | 0.78                  |
|   | To follow SOP/SWIs is a key part of my everyday duties and responsibilities. (Indicator: SOC 3)   | 3.70        | 0.90                  |
| Attitude toward Procedural Compliance               | Following SOP/SWIs is beneficial. (Indicator: ATC 1)  | 4.20        | 0.59                  |
|   | Following SOP/SWIs is necessary. (Indicator: ATC 2)   | 4.19        | 0.64                  |
|   | Following SOP/SWIs mitigates the risk of quality breaches. (Indicator: ATC 3)   | 4.13        | 0.83                  |
| Behavioural Intentions toward Procedural Compliance | I am certain I will adhere to the relevant SOP/SWIs. (Indicator: CBI 1)   | 4.00        | 0.74                  |
|   | It is my belief that SOP/SWIs should be complied with at all times. It is my responsibility to protect the organization from quality breaches. (Indicator: CBI 2) | 4.10        | 0.85                  |
| Procedural Compliance Culture                       | I believe the existing SOP/SWIs are enough to protect the organization and myself from quality breaches. (Indicator: CC 1)  | 3.38        | 1.01                  |
|   | I am prepared to follow SOP/SWIs that protect the organization from quality breaches. (Indicator: CC 2)   | 4.25        | 0.60                  |
|   | It is my responsibility to protect the organization from quality breaches. (Indicator: CC 3)  | 4.26        | 0.68                  |

Table 4.3 reveals that most of the items in the variables are relatively consistent with the other items in the variable. However, some items are less consistent. Example being item 1 in the Procedural Compliance Culture variable (CC 1) being nearly 1 point lower on the Likert scale mean than the other items in the variables, indicating support of the reliability conclusions for this variable. Also item 4 in the End-User Involvement variable (USIN 4), is one point higher on the Likert scale mean than the other items in this variable, which likewise supports the conclusion presented in the reliability section for this variable.

Table 4.4. shows mean and standard deviation for the End-User involvement variable.

*Table 4.4 – End-User Involvement variable descriptive statistics*

| <i>Mean</i> | <i>Std. Deviation</i> |
|-------------|-----------------------|
| 2.91        | 0.78                  |

*N=149*

Table 4.4 illustrates that the End-User Involvement variable, comprising End-User Involvement items 1 through 3, has a combined mean of 2.91. The lowest mean between the three items is item 2, which negatively offsets the combined variable by nearly one point.

The Procedural Compliance Leadership variable descriptive statistics are exhibited in Table 4.5.

*Table 4.5 – Procedural Compliance Leadership variable descriptive statistics*

| <i>Mean</i> | <i>Std. Deviation</i> |
|-------------|-----------------------|
| 3.47        | 0.77                  |

*N=149*

The combined mean for the Procedural Compliance Leadership variable is 3.47, indicating that procedural compliance leadership behaviour can still be improved but is already on the positive side of the scale.

The Supportive Organisational Culture variable descriptive is depicted in Table 4.6.

*Table 4.6 – Supportive Organisational Culture variable descriptive statistics*

| <i>Mean</i> | <i>Std. Deviation</i> |
|-------------|-----------------------|
| 3.37        | 0.74                  |

*N=149*

The combined mean for this variable is 3.37, indicating that the survey respondents report that elements of the organisational culture are supportive to individuals. Item 3 of this variable, with a mean of 3.7, pulls the combined mean toward the positive range, indicating that in particular, participants regard following procedures as a key part of their everyday duties (Indicator: SOC 3, Table 4.3).

The descriptive for the Attitude toward Procedural Compliance variable is represented in Table 4.7.

*Table 4.7 – Attitude toward Procedural Compliance variable descriptive statistics*

| <i>Mean</i> | <i>Std. Deviation</i> |
|-------------|-----------------------|
| 4.19        | 0.56                  |

*N=149*

Table 4.7 demonstrates that the Attitude toward Procedural Compliance variable has a combined mean of 4.19, indicating that the attitude toward procedural compliance in the organisation is positive and above the ‘agree’ level on the Likert scale.

The Behavioural Intentions toward Procedural Compliance variable also exhibits a consistent distribution, as established in Table 4.8.

*Table 4.8 – Behavioural Intentions toward Procedural Compliance variable descriptive statistics*

| <i>Mean</i> | <i>Std. Deviation</i> |
|-------------|-----------------------|
| 4.05        | 0.73                  |

*N=149*

Table 4.8 states that the variable’s mean is almost exactly 4, which demonstrates that, similar to the Attitude toward Procedural Compliance variable, there is an acceptable level of behavioural intentions toward procedural compliance in the organisation.

Finally, the Procedural Compliance Culture variable descriptive statistics are depicted in Table 4.9.

*Table 4.9 – Procedural Compliance Culture variable descriptive statistics*

| <i>Mean</i> | <i>Std. Deviation</i> |
|-------------|-----------------------|
| 4.26        | 0.57                  |

*N=149*

The Procedural Compliance Culture variable has a combined mean of 4.26 with both elements contributing as expressed in Table 4.3. The items for this variable ask for the participants' views regarding procedures and the ways that procedures could protect the organisation. This indicates that there are signs of a positive intention regarding procedural compliance culture in the organisation.

To determine whether the hypotheses presented in the theory portion of this thesis can be supported, a correlation matrix was established between the variables (Table 4.10).

*Table 4.10 – Correlation matrix, all variables*

| Construct  | <i>End-User Involvement</i> | <i>Procedural Compliance Leadership</i> | <i>Supportive Organisational Culture</i> | <i>Attitude toward Procedural Compliance</i> | <i>Behavioural Intentions toward Procedural Compliance</i> |
|--|-----------------------------|---|--|--|--|
| <i>End-User Involvement</i>                                |                             |   |  |  |  |
| <i>Procedural Compliance Leadership</i>                    | .513**                      |   |  |  |  |
| <i>Supportive Organisational Culture</i>                   | .396**                      | .622**                                  |  |  |  |
| <i>Attitude toward Procedural Compliance</i>               | .198*                       | .385**                                  | .233**                                   |  |  |
| <i>Behavioural Intentions toward Procedural Compliance</i> | .325**                      | .458**                                  | .410**                                   | .668**                                       |  |
| <i>Procedural Compliance Culture</i>                       | .178*                       | .252**                                  | .184*                                    | .579**                                       | .589**   |

\*\*Correlation is significant at the 0.01 level (two-tailed). \*Correlation is significant at the 0.05 level (two-tailed).

Table 4.10 illustrates that all correlations are significant, though some appear on the weak end of the scale. For example, the End-User Involvement variable correlates with the Attitude toward Procedural Compliance variable (H3) at a Pearson's r of only .198 but is significant compared to a null hypothesis at the 0.05 level, which is considered a strong significance result. The Supportive Organisational Culture variable and the Behavioural Intentions toward Procedural Compliance variable (Hypothesis 1) correlate at .233, which is significant to a 0.001 level.

Similarly, the correlation between Procedural Compliance Leadership and Behavioural Intentions toward Procedural Compliance (Hypothesis 2) has a value of .385, the strongest amongst the three and significant to a 0.001 level.

To further understand the effect between the three variables utilised for Hypotheses 1, 2, and 3, a multiple regression analysis was conducted utilising Supportive Organisational Culture, Procedural Compliance Leadership, and End-User Involvement as the independent variables against Attitude toward Procedural Compliance as the dependent variable. The result is depicted in Table 4.11.

*Table 4.11 – Regression analysis on End-User Involvement, Procedural Compliance Leadership, and Supportive Organisational Culture*

| <i>R</i>          | <i>R</i> <sup>2</sup> | <i>Adjusted R</i> <sup>2</sup> | <i>Std. Error of the Estimate</i> |
|-------------------|-----------------------|--------------------------------|-----------------------------------|
| .385 <sup>a</sup> | 0.148                 | 0.131                          | 1.04370                           |

a. Predictors: (Constant) Supportive Organisational Culture variable, End-User Involvement variable, Procedural Compliance Leadership variable

|                                   | <i>Unstandardised Coefficients</i> |                   | <i>Standardised Coefficients Beta</i> | <i>t</i> | <i>Sig.</i> | <i>95.0% Confidence Interval for B</i> |                    |
|-----------------------------------|------------------------------------|-------------------|---------------------------------------|----------|-------------|--|--------------------|
|                                   | <i>B</i>                           | <i>Std. Error</i> |                                       |          |             | <i>Lower Bound</i>                     | <i>Upper Bound</i> |
| (Constant)                        | 6.467                              | 0.458             |                                       | 14.12    | 0.000       | 5.562                                  | 7.372              |
| End-User Involvement              | 0.001                              | 0.043             | 0                                     | 0.027    | 0.978       | -0.084                                 | 0.087              |
| Procedural Compliance Leadership  | 0.142                              | 0.038             | 0                                     | 3.702    | 0.000       | 0.066                                  | 0.217              |
| Supportive Organisational Culture | -0.008                             | 0.075             | 0                                     | -0.107   | 0.915       | -0.156                                 | 0.140              |

Dependent Variable: Attitude toward Procedural Compliance variable



The result from the regression testing on the three variables demonstrates that the End-User Involvement, Procedural Compliance Leadership, and Supportive Organisational Culture variables exhibit a strong relationship toward the Attitude toward Procedural Compliance variable. The R is equal to .385, with an adjusted R<sup>2</sup> of 0.131, which means that in this study, 13% of the change in attitude toward procedural compliance can be explained by changes in the supportive organisational culture, procedural compliance leadership, and end-user involvement. Table 4.11 depicts that only the Procedural Compliance Leadership variable contributes to the R<sup>2</sup>, due to between-variables correlations. Based on the correlations for hypothesis 1-3 and the regression results presented in Table 4.11, it is concluded that hypothesis 1 through 3 is supported by this study.

Hypothesis 4 reads: *Employees' attitudes toward general procedural compliance positively affect behavioural intentions toward procedural compliance.* The Pearson's r correlation for this hypothesis is .668 with a significance at the > 0.001 level. This is a strong correlation, indicating that Hypothesis 4 is supported. To further investigate the relationship a regression analysis was conducted applying a path analysis. Behavioural Intentions toward Procedural Compliance was the dependent variable, and Attitude toward Procedural Compliance was the independent variable together with Supportive Organisational Culture, End-User Involvement, and Procedural Compliance Leadership as indirect variables. The results of the regression analysis is displayed in Table 4.12.

Table 4.12 – Regression analysis on Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, and Procedural Compliance Leadership toward behavioural intentions toward procedural compliance

| <i>R</i>          | <i>R</i> <sup>2</sup> | <i>Adjusted R</i> <sup>2</sup> | <i>Std. Error of the Estimate</i> |
|-------------------|-----------------------|--------------------------------|-----------------------------------|
| .727 <sup>a</sup> | 0.528                 | 0.515                          | 1.013                             |

a. Predictors: (Constant) Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, and Procedural Compliance Leadership

|                                       | <i>Unstandardised Coefficients</i> |                   | <i>Standardised Coefficients Beta</i> | <i>t</i> | <i>Sig.</i> | <i>95.0% Confidence Interval for B</i> |                    |
|---------------------------------------|------------------------------------|-------------------|---------------------------------------|----------|-------------|--|--------------------|
|                                       | <i>B</i>                           | <i>Std. Error</i> |                                       |          |             | <i>Lower Bound</i>                     | <i>Upper Bound</i> |
| (Constant)                            | -0.480                             | 0.685             |                                       | -0.700   | 0.485       | -1.834                                 | 0.875              |
| End-User Involvement                  | 0.063                              | 0.042             | 0.101                                 | 1.501    | 0.136       | -0.020                                 | 0.146              |
| Procedural Compliance Leadership      | 0.029                              | 0.039             | 0.061                                 | 0.741    | 0.460       | -0.048                                 | 0.106              |
| Supportive Organisational Culture     | 0.195                              | 0.073             | 0.197                                 | 2.677    | 0.008       | 0.051                                  | 0.339              |
| Attitude toward Procedural Compliance | 0.753                              | 0.081             | 0.579                                 | 9.340    | 0.000       | 0.594                                  | 0.912              |

As illustrated in Table 4.12, the regression analysis confirms that there is a relationship between the independent and dependent variables and reveals an adjusted  $R^2$  of 0.515, indicating that 52% of the change in behavioural intentions can be explained by the change in attitude toward procedural compliance (H4). Based on the result from regression analysis and the correlation analyses, it is therefore concluded that Hypothesis 4 is supported by this study.

Hypothesis 5 reads: *Employees' attitudes toward procedural compliance positively affect the formation of a procedural compliance culture*. For this hypothesis, the Pearson's  $r$  correlation is also strong at .579 and is supported by a significance to the  $> 0.001$  level. A path regression analysis was conducted in which Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, and Procedural Compliance Leadership were

employed as independent variables. The results from this regression analysis are revealed in Table 4.13.

*Table 4.13 – Regression analysis on Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, and Procedural Compliance Leadership toward procedural compliance culture*

| <i>R</i>          | <i>R</i> <sup>2</sup> | <i>Adjusted R</i> <sup>2</sup> | <i>Std. Error of the Estimate</i> |
|-------------------|-----------------------|--------------------------------|-----------------------------------|
| .583 <sup>a</sup> | 0.340                 | 0.322                          | 0.931                             |

a. Predictors: (Constant) Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, and Procedural Compliance Leadership

|                                       | <i>Unstandardised Coefficients</i> |                   | <i>Standardised Coefficients Beta</i> | <i>t</i> | <i>Sig.</i> | <i>95.0% Confidence Interval for B</i> |                    |
|---------------------------------------|------------------------------------|-------------------|---------------------------------------|----------|-------------|--|--------------------|
|                                       | <i>B</i>                           | <i>Std. Error</i> |                                       |          |             | <i>Lower Bound</i>                     | <i>Upper Bound</i> |
| (Constant)                            | 3.354                              | 0.630             |                                       | 5.327    | 0.000       | 2.109                                  | 4.598              |
| End-User Involvement                  | 0.030                              | 0.039             | 0.061                                 | 0.770    | 0.442       | -0.046                                 | 0.106              |
| Procedural Compliance Leadership      | -0.009                             | 0.036             | -0.025                                | -0.254   | 0.800       | -0.080                                 | 0.062              |
| Supportive Organisational Culture     | 0.034                              | 0.067             | 0.044                                 | 0.501    | 0.617       | -0.099                                 | 0.166              |
| Attitude toward Procedural Compliance | 0.572                              | 0.074             | 0.566                                 | 7.718    | 0.000       | 0.425                                  | 0.718              |

The regression analysis confirms the relationship between the variables and contributes to the valuation with an adjusted  $R^2$  of 0.32, indicating that 32% of the change in the Procedural Compliance Culture variable can be explained by the change in the Attitude toward Procedural Compliance variable. The Regression analyses, correlation, and significance combined support the confirmation of Hypothesis 5.

The final hypothesis of this study is Hypothesis 6, which reads: *The behavioural intentions of employees significantly affect the formation of a procedural compliance culture.* This hypothesis is supported by a Pearson's *r* correlation .589 significant to the .001 level. A path regression analysis was conducted in which Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, Procedural Compliance Leadership, and Behavioural Intentions toward Procedural Compliance were utilised as independent variables. The results from this regression analysis are presented in Table 4.14.

*Table 4.14 – Regression analysis on Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, Procedural Compliance Leadership, and Behavioural Intentions toward Procedural Compliance toward procedural compliance culture*

| <i>R</i>          | <i>R</i> <sup>2</sup> | <i>Adjusted R</i> <sup>2</sup> | <i>Std. Error of the Estimate</i> |
|-------------------|-----------------------|--------------------------------|-----------------------------------|
| .642 <sup>a</sup> | 0.412                 | 0.391                          | 0.882                             |

a. Predictors: (Constant) Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, Procedural Compliance Leadership, and Behavioural Intentions toward Procedural Compliance.

|   | <i>Unstandardised Coefficients</i> |                   | <i>Standardised Coefficients Beta</i> | <i>t</i> | <i>Sig.</i> | <i>95.0% Confidence Interval for B</i> |                    |
|---|------------------------------------|-------------------|---------------------------------------|----------|-------------|--|--------------------|
|   | <i>B</i>                           | <i>Std. Error</i> |                                       |          |             | <i>Lower Bound</i>                     | <i>Upper Bound</i> |
| (Constant)  | 3.499                              | 0.598             |                                       | 5.856    | 0.000       | 2.318                                  | 4.680              |
| End-User Involvement                                | 0.011                              | 0.037             | 0.022                                 | 0.289    | 0.773       | -0.062                                 | 0.083              |
| Procedural Compliance Leadership                    | -0.018                             | 0.034             | -0.049                                | -0.525   | 0.600       | -0.085                                 | 0.049              |
| Supportive Organisational Culture                   | -0.025                             | 0.065             | -0.033                                | -0.392   | 0.695       | -0.154                                 | 0.103              |
| Attitude toward Procedural Compliance               | 0.344                              | 0.089             | 0.340                                 | 3.865    | 0.000       | 0.168                                  | 0.520              |
| Behavioural Intentions toward Procedural Compliance | 0.303                              | 0.073             | 0.390                                 | 4.174    | 0.000       | 0.159                                  | 0.446              |

The adjusted  $R^2$  is calculated at 0.391, indicating that the analysis depicts that 39% of the change in the Procedural Compliance Culture variable can be explained by the change in the Attitude toward Procedural Compliance, Supportive Organisational Culture, End-User Involvement, Procedural Compliance Leadership, and Behavioural Intentions toward Procedural Compliance variables.

Due to the strong correlation, significance, and regression analyses, it is concluded that Hypothesis 6 is supported by this study.

The conclusions from this section is summarised into the research model and presented in Figure 4.7.

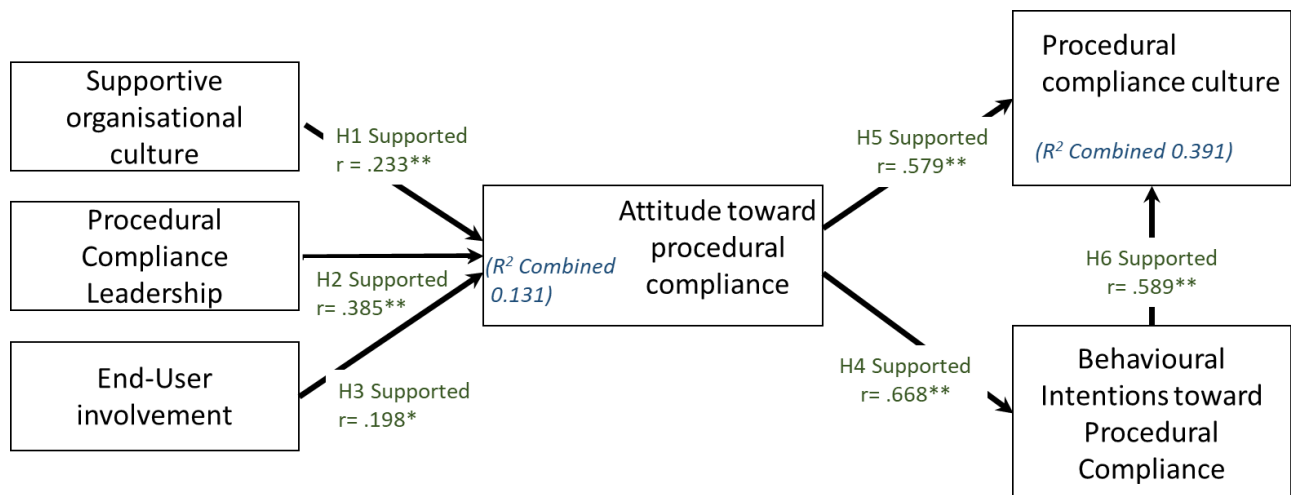


Figure 4.7 Research model and hypotheses results

## 5. Discussion

The intention of this thesis is to obtain additional knowledge regarding the relationship between a supportive organisational culture, end-user involvement, and procedural compliance leadership toward a procedural compliance culture. Based on the literature review, six hypotheses were developed to further understand this relationship. These hypotheses were then tested by employing an adapted, self-reported online questionnaire within the northern Europe operations division of a power and temperature-control equipment rental company. The results illustrate that there are significant correlations between supportive organisational culture, end-user involvement, and procedural compliance leadership and the attitude toward procedural compliance. This same attitude toward procedural compliance is then found to have significant correlation with behavioural intentions toward procedural compliance, and together, both attitude toward procedural compliance and behavioural intentions toward procedural compliance are found to have significant correlations with the formation of a compliance culture. In fact, 39% of the change in compliance culture can be explained from the model developed for this thesis. The findings support an understanding of compliance culture as something that can be influenced by focussing on activities that improve employees' attitudes toward procedural compliance. The findings furthermore promote an understanding that safety performance-related literature concerning compliance can be applied as grounds for understanding the wider formation of a general procedural compliance culture.

The first hypothesis developed is: '*Supportive organisational culture significantly affects employees' attitudes toward procedural compliance*'. The results from the study suggest that this hypothesis can be supported by a significant correlation between the variables. The findings indicate that employees are affected by the environment they work in; specifically, employees' attitudes toward compliance are affected by the manner in which they experience the support of such behaviour in the organisation. This finding is congruent with Cooper's reciprocal safety model, which postulates that the internal psychological components of humans are influenced by factors of context—namely, behavioural contexts—from the organisational culture elements of the employer (Cooper, 2000). Cooper built his model on Bandura's model of reciprocity (Bandura, 1986), which indicates that even though individuals influence the context that they are a part of, they are also affected by the behaviour of others and the situation. This means that

culture influences the attitudes of employees, and appropriate behaviours in the culture of the organisation influence the attitudes of employees positively. This finding proposes that noncompliant behaviour is not necessarily connected solely to personal traits or the attitudes that individuals bring to work. As such, organisations may need to review cultural elements as well as employees' personal traits to understand their behaviour. This further implies that organisations must focus on the culture they are building and ensure that it aligns with expectations of procedural compliance. In addition to the research results, the author also finds support in Schein's theory of culture for this reasoning. Schein's theory focusses on group learning: the shared learning of the group becomes the 'theory in use'—a part of unconscious behaviour—after the practice or behaviour has proven itself useful for a while. Thereafter, this forms a portion of the organisational culture and is eventually passed on to newcomers (Schein & Schein, 2017). The findings of this hypothesis verify that a culture in which employees help each other, look after each other, and assist each other in compliant behaviour produces an increasingly positive attitude toward compliance. Clarke and Tetrick's research on safety performance further strengthens this conclusion. Clarke and Tetrick find that safety performance, which they define as '*compliance to procedures and participation*', improved as a direct consequence of improvements to safety culture and climate. This is an important insight for organisations and can be actively applied. By focussing on building a supportive organisational culture which includes helping each other and assisting others in compliant behaviour, organisations can gain improvements in attitude toward procedural compliance behaviours.

The second hypothesis is linked to the influence role modelling exerts on employees' attitudes toward compliance and reads: '*The procedural compliance leadership of operations managers and team leaders maintains a significant effect on employees' attitudes toward compliance with procedures*'. The conducted study demonstrates a significant correlation between the two variables in this hypothesis. This hypothesis provides the strongest correlation found between the three independent variables, which suggests support for hypothesis 2. This finding indicates that employees view their managers as role models and that employees are influenced by managers' positive compliance behaviour; this influence is expressed in improved attitudes toward procedural compliance. This finding supports Skaugrud et al.'s findings from 2012, which state that a manager who speaks favourably regarding a procedure or policy can expect improved compliance performance (Skaugrud et al., 2012). It can therefore be argued that it is important for

managers to be aware of their compliance behaviours, because behaviour influences actions equally to their managerial instructions. Such an argument is further supported by research performed by Griffin and Hu, which finds a clear link between leader-depicted behaviours and employee compliance (Griffin & Hu, 2013). However, Griffin and Hu are not alone in this claim, and researchers including Bass, Schein, and Clarke, to mention a few, all stress the fact that employees view leaders as role models (Bass, 1999; Clarke, 2013; Schein & Schein, 2017). For managers who are aware of this influence, their chosen style of management should not be left to chance. Inspiration, motivation, support, and role modelling are all activities that are attached to transformational leadership styles (Bass, 1999). Although traditionally, transactional leadership styles are linked more closely with compliance (Clarke, 2013), the findings of this thesis suggest that intrinsically motivated management activities positively influence attitudes toward compliance. Because this variable is relatively easily measured in organisations, it may be an ideal point to begin improvement of compliance culture. Managers' compliance behaviours can easily be measured by utilising quantitative measuring tools such as questionnaires. If an organisation finds potential to improve their managers' scores concerning compliance leadership, then training of managers can be utilised as a tool, as suggested by (Sheehan et al., 2016). Sheehan et al. tested this for safety indicators, including compliance, and their findings also support this thesis: improving managers' procedural compliance leadership exerts a positive effect on employees' attitudes toward procedural compliance.

The third hypothesis developed for this research relates to involvement of the end-user of the procedure and reads: *'End-user involvement in the development of procedures has a significant effect on attitude toward compliance with procedures.'* This hypothesis is again supported by a significant correlation, this time between the variables End-User Involvement and Attitude toward Procedural Compliance. Such a correlation is congruent with Astin's theory of involvement, which claims that any minor involvement in university activities, even non-class specific activities, improves attitudes and grades (Astin, 1999). It can also be argued that the results for this hypothesis as well as Astin's research align well with Cooper's and Bandura's safety culture model of reciprocity as previously described (Bandura, 1986; Cooper, 2000). Both Bandura and Cooper argue that environment and context influence employees' feelings and thoughts, and thereby their attitudes, which is similar to Astin's argument that involvement in university activities ensures individuals' connections with the university by being part of an



environment. For organisations, such findings indicate that it is insufficient to provide a procedure and expect the organisation to conform. When implementing a procedure, end-user involvement could be employed as a strategy to gain improved attitudes toward compliance. A simple way to improve involvement is by utilising feedback opportunities on implemented procedures. By providing such feedback, employees are involved in improving procedures and thus are involved in improving the organisation. Such behaviour also improves work satisfaction, joining employees more closely with the organisation by extending opportunities for them to influence their own work and increasing their involvement (Hackman, Oldham, Janson, et al., 1975). However, such direct procedural feedback must produce responses by the organisation within a reasonable time frame, and any relevant suggestions must be evaluated and implemented for the involvement to be understood as real and existing by employees.

Another way to engage employees is by exercising more direct involvement at the beginning of development or when revising a procedure, as suggested by Dubose (2009). By requesting user input at an early stage, the organisation benefits from applying the valuable insights of the people who are close to the problems. (Vredenburg, 2002). This early involvement is also known to allow employees to feel involved in the decision-making process, which may cause them to sense that they are included with the lawmakers, thus, they are more averse to breaking those rules (Amankwa et al., 2018).

Hypothesis 4 aimed to reveal the effect between attitude and behaviour; this hypothesis reads: *'Employees' attitudes toward general procedural compliance positively affect behavioural intentions toward procedural compliance'*. The results from the study confirm a strong correlation between the variables related to hypothesis 4, suggesting that the hypothesis is supported. This result correspondingly finds support in the theory of planned behaviour (TPB), which also suggests a strong correlation between attitude and behavioural intention (Ajzen, 1985). The TPB stipulates that attitude is one of three variables that can be utilised to predict behavioural intentions. This theory has predicted consumer behaviours, smoking inclinations, exercise tendencies, and more (Sheeran, 2002), and as such, this result is not unexpected. However, in a procedural compliance context, the finding remains interesting. It demonstrates that the behavioural intentions, specifically in relation to procedural compliance, cannot be neglected. Expecting particular behavioural intentions without aligning attitudes toward that behaviour may not produce desired results. As long as attitude is such a strong indicator of

behaviour, organisations should focus on building sound attitudes for compliance within the workforce to amplify compliant behaviours. The first three hypotheses established that supportive organisational culture, compliance leadership and end-user involvement positively affect compliance attitudes. However, this thesis does not provide an exhaustive list of variables that can influence compliance behaviours, and as such, it is expected that there are additional variables. One variable in particular is worth mentioning. Sussman and Gifford find that Ajzen's TPB is coupled with elements of reciprocity, concluding that not only does attitude influence behavioural intentions, but behavioural intentions also influence attitude (Sussman & Gifford, 2018), which suggests that behavioural intention is a variable that can predict attitude. Consequently, there are additional factors that influence attitude, and each organisation should determine the indicator that suits their values and goals. Because procedures can improve reliability of products, service, safety, and security in organisations, improving attitudes toward compliance should therefore become a clear focus in any organisation in need of improvements in compliance behaviours.

Hypotheses 5 and 6 are the final hypotheses developed for this thesis, and therefore mark the final stages of the model. Both hypotheses are related to variables that influence compliance culture.

The first of the two hypotheses is hypothesis 5, which stipulates that *'Employees' attitudes toward procedural compliance positively affect the formation of a procedural compliance culture'*. This hypothesis was developed based on the literature review, which proposes that culture forms by learning from the environment in which employees work. The results from the organisation studied suggest that this hypothesis is supported. This finding is further supported by the culture research. From Schein as well as Guldenmund's support of Schein's findings, one can learn that culture forms as a part of shared learning and shared history (F. W. Guldenmund, 2000; Schein & Schein, 2017). Attitudes are, as such, part of the greater shared learning in any organisation. The confirmation of this hypothesis further receives support from Cooper's model of reciprocity (Cooper, 2000), which states that context, including behaviours (Frank W. Guldenmund, 2007), are influences, and that contexts are influenced by people and their psychological factors. With this knowledge, it is important to note that the above process is applicable to any attitude, not merely to positive ones. Individuals with negative attitudes toward procedural compliance can also influence the culture negatively rather than the individual being

positively influenced by the culture. It is likely that the outcome of this mutual influence depends on the strength between the individuals' influences and the strength of the cultural influence. However, because organisations grow and change, it is utopian to think that organisations will consist of employees with only compliant attitudes at any point in time. Organisations should therefore build systems to uncover noncompliant behaviours, while concurrently constructing strong compliance cultures to influence noncompliant attitudes toward compliance. It can therefore be argued that it is important for any organisation to closely monitor the development of procedural compliance attitudes in the work environment, as this has strong correlations with the formation of a compliance culture.

The sixth and final hypothesis reads: *'The behavioural intentions of employees significantly affect the formation of a procedural compliance culture'*. This hypothesis is also supported with a strong correlation from the study results, suggesting that behavioural intentions are another strong indicator of compliance culture formation. Returning to the thesis research problem, the goal of this thesis was to understand elements that influence procedurally compliant culture. As revealed in the literature review, there has been a shift in compliance literature from compliance as relating to obedience to compliance as an employee-involved and -influenced concept (Clarke & Tetrick, 2006; Neal et al., 2000). This is visible within medicine: patients' medicine and treatment compliance is now seen as an activity the patient must be involved in, rather than something that the patient must submit to (Kyngäs et al., 2000). For the organisational theorist, a similar shift is observed. Within safety management, a similar move has occurred. Previously, the safety goal was simply to separate man from machine (Shannon et al., 1997); while current methods understand employees to be contributors in safety performance improvements by their involvement and focus on culture (Mearns & Flin, 1999; Shannon et al., 1997).

The compliance model developed by Interligi effectively demonstrates the shift in compliance by focussing on the usage of intrinsic controls, such as norms, as possible tools for controlling compliance and introducing expectations into compliance understanding (Interligi, 2010). Interligi's model also claims that the control style is a manifestation of the organisation's compliance culture (Interligi, 2010); therefore, it also points to the management style of the organisation. This shift from obedience to intrinsic motivation as a part of compliance also has implications for the understanding of behaviour and culture. It can be argued from a historical perspective, utilising the obedience version of compliance, that behavioural intentions were not

important, because according to this definition of compliance, employees must obey regardless of their intentions. However, with the increased attention on intrinsic motivation, behavioural intentions are, with the finding in this hypothesis, found to be a potentially important variable in understanding the formation of organisational culture. Thus, this finding indicates that behavioural intentions are an important parameter for organisations to measure, as they indicate the level at which the formation of a compliance culture is progressing.

The overall research model presents another final argument based on overlapping literature and research. The study under this thesis is adapted from the field of IT policy compliance (Amankwa et al., 2018); however, as the search for general compliance literature revealed directly relevant literature to be limited, this thesis has utilised elements of literature from other fields of research, mainly organisational culture and safety culture. The literature concerning organisational culture is broad and does not apply to one particular field of industry or research alone; hence, its usage in this thesis is arguably correct. However, the usage of safety-related culture research and safety performance and compliance research may not have been precise.

After reviewing the results of the research, the researcher believes that this study has certified that safety-related research concerning safety compliance, safety performance, and safety culture can be applied to understand and explain general procedurally compliant culture and compliance processes. The study conducted posed non-safety-specific questions, while safety-related literature was employed simultaneously to explain the potential mechanisms. All the hypotheses are now confirmed, utilising non-safety-related questions, while applying safety compliance and culture research as possible methods to explain general procedural compliance. It can therefore be argued that dynamic interplay between context and person (E. Olsen, 2009)—as defined for safety—and Reason's system approach, which indicates that the safety system and not the human is the reason for failure, also functions for understanding general procedurally compliant culture. As such, these findings further imply that personal traits are not the only reason for not following procedures, as questioned in the introduction to this thesis, by pointing toward elements of the culture as strong indicators of compliance attitude.

## 5.1 Conclusion and managerial implications

With the conclusions regarding the hypotheses, it is suggested that there is a relationship between organisational culture and compliance performance. Any organisation that plans to implement procedures or is in general need of improving procedurally compliant culture should therefore consider the effect from the organisational culture and establish activities to improve said culture.

Together with the increased focus on both climate and culture, the ‘softer’ elements of work life have gained a stronger emphasis. Many organisations concentrate on transformational leadership, or at least include elements of transformational leadership in their management style (Bass, 1999), which can be envisaged as symbol of both organisations and employees becoming more focussed on intrinsic values. This same development is found within compliance management and safety management, where the shift has been from demanding compliance to involving employees in compliance. Coupled with this shift, the manner in which employers address compliance is also changing. The study conducted for this thesis confirms that compliant behaviours from employees are not solely dependent on the individual’s personal traits. Elements of organisational culture are found to influence the decision to comply, and 39% of the change in compliance culture formation can be explained through the model developed for this thesis.

A striking result revealed during the literature review, which was further confirmed by this study, is the transition from blind compliance—almost militaristic in its expectations—to a management style whereby elements such as involvement, role modelling, and intrinsic motivation are an important part of compliance thinking. This shift can be difficult for employers to balance, because this balance must consider the national macro-culture, the needs of the organisation, the organisation’s culture, and personal preferences. An aircraft pilot in any part of the world must blindly comply with the checklists of the particular aircraft and airline, not to mention the flight controls. However, the same individual may have other motivational factors in play when assessing the organisation’s dress codes, which are dependent on both macro-culture and organisational culture. To the organisation, the downside of strict compliance is the possible lack of intrinsic motivation that may be produced by such blind obedience (Yukl, 2013). According to Yukl, there is a risk that employers may receive from the employee only the minimum effort needed to achieve compliance to obtain a reward or avoid a penalty (Yukl, 2013). However, from a safety and procedural or policy point of view, full transformational leadership also presents

shortcomings to the employer. Creativity, experimentation, and risk taking are all inherent elements of transformational leadership (Avolio & Bass, 1994), and in some industries, such actions are not at all acceptable. For example, in nuclear power plants or aeronautical industries, conformity to procedures is mandatory to ensure safe execution of all work, and experimentation cannot be tolerated. This likewise applies to organisations that require compliance for other reasons, such as health or high-quality production facilities.

Managers must therefore carefully balance both the legitimacy of and need for compliance with the need to motivate or demand compliance. The disparity between items in the End-User Involvement variable reveals, for the organisation studied in this thesis, a potential expression of such a divide. The respondents expressed in the three first items for this variable that the historical usage of involvement in the organisation is relatively low; compare that finding with the positive aspirations from the same respondents to become more involved, as expressed in the final item of the End-User Involvement variable. This item asked: '*I consider user involvement in development of procedures, as an effective approach to encourage users to follow SOP/SWIs*'. It can therefore be argued that this may reveal a discrepancy between expectation and implementation of end-user involvement. However, this argument is based on a limited number of items.

The findings in this study does contain implications for management. If an organisation intends to foster a more reliable compliance culture, then the management style chosen should not be overlooked or dependent on personal preferences. Managers should carefully observe the formation of the compliance culture and balance the management style needed for the organisation based on the industry of the organisation and the level of compliance needed. Fortunately for the key-performance-indicator-focussed manager, all of the variables examined in this thesis are quantitatively easily measured and therefore easily monitored. The questions from the questionnaire utilised in this thesis can be borrowed, or similar questions can easily be developed for organisations to measure on their own. This ease of measurement implies that the active-management-by-exception-style manager (Bass, 1999) can closely monitor the situation and intervene when necessary.

## 5.2 Limitations of the study and suggestions for future research

In addition to the limitations identified prior to conducting the study, some limitations emerged during the analyses of the results. These limitations could influence the results, thus they are important to highlight to the reader.

From contemplating the combined effect of the three independent variables of this study (hypotheses 1, 2, and 3), one discovers that all three variables depicting hypotheses 1-3 have significant correlations in the direction of attitude toward procedural compliance. However, the Pearson's  $r$  results for these hypotheses were significantly weaker than the other correlations found in the study. As mentioned in the previous discussion, there are likely more influencers toward attitude than those listed in this thesis. Therefore, establishing a model that could explain a 13% change in attitude toward procedural compliance has potential to deliver interesting results. Nevertheless, compared to the adapted study of Amankwa et al. (2018), the results in this thesis are significantly weaker. The original study was able to explain 54.8% of the change in attitude through the three variables. Some of the differences in described variance can be explained from difference in method, but it cannot explain the full variance and requires exploration. Focussing on hypothesis 3, which expresses the weakest correlation (*'End-user involvement in the development of procedures has a significant effect on attitude toward compliance with procedures'*), possible explanations are found in the questionnaire and the organisation studied. No treatment was added in this study, and the organisation reports a relatively low score on the historical usage of end-user involvement. From this, it can be argued that a strong correlation with attitude toward compliance was not to be expected, and it could furthermore question the correlation found. However, it can likewise be argued that the organisation has utilised some end-user involvement, because it is reasonable to surmise that the variable mean would have been even weaker if this was not the case. Alternatively or additionally, it can also be argued that the involvement as measured could derive from macro culture. As found by Olsen (2014) Norwegian work culture encompass involvement at a higher macro level, thus some level of involvement can be underlying and not espoused in the organisation. Therefore, it is concluded that the significant correlation found is likely to originate from respondents who were included in end-user involvement at one point in time, which contributes to the explanation of the correlation.

Furthermore, the four questions originally intended to comprise the End-User Involvement variable are different in nature. Questions 1, 2, and 3 query the degree to which the organisation has utilised end-user involvement in the past. However, question 4 asks for the respondents' thoughts or opinions regarding the utilisation of user involvement and therefore don't match question 1, 2, and 3. This finding could explain the poor reliability between these items whereby question 4 was found to be a non-contributor to the variable and was eventually removed.

Another explanation for the weak correlation found in hypotheses 1 through 3 may be the difference in population between this study and Amankwa et al.'s original study (2018). The original study tested the listed effects between a range of organisations, hence finding a correlation is more likely when compared to only one organisation. It can be argued that researchers are more likely to learn that some of the organisations studied would have actively utilised end-user involvement as an implementation strategy. In comparison, the organisation studied in this thesis has, according to the results, historically not utilised end-user involvement actively as a strategy. Therefore, these results cannot be employed to reject the hypotheses either, because one cannot attempt to discover correlations from end-user involvement in an organisation that has not, to any great extent, utilised end-user involvement as a strategy.

Another important discussion is the researcher's influence on the result. It can be argued that, in line with Schein's predictions (Schein & Schein, 2017), the researcher limited the findings of this thesis by choices enacted early in the process. The previous discussion implies some weaknesses of the original study that were not foreseen. The first is that the number of questions somewhat limited the ability to gain sufficient elements to calculate a reliable variable. The other is that the nature of the questions were seen to influence the result. Considering the End-User Involvement variable again and examining the intercorrelation matrix reveals that question 4, which was omitted from the variable, could have been treated as an attitude question instead. This question reads: *'I consider user involvement in development of procedures, as an effective approach to encourage users to follow SOP/SWIs'*. This argument is strengthened by the strong and significant correlation this element has to every item within the Attitude toward Procedural Compliance variable. As such, if this research is to be repeated, then it is recommended that the questions comprising the variables are closely checked for consistency before the study commences.



The literature review reveals a strong history of safety culture and safety compliance. The same tendency can be found within finance for compliance research and for patient compliance with medicine. However, as far as researchers are aware, there is limited research on general procedure and policy compliance culture without connecting or limiting such research to safety, medicine, or any other specific profession. The general industry would benefit from understanding the influence of organisational culture or climate upon procedural compliance in organisations. Research as described should also attempt to ascertain more relevant items that may influence attitude and are relevant for industry and general work life. As such, the author calls for extended research concerning general procedural compliance culture formation.

A second suggestion for further research is to work toward a common compliance culture questionnaire, similar to that which exists within safety performance. Such a tool would be beneficial to the wider industry for benchmarking and understanding compliance culture on a broader scale.

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## Appendix 1, example SWI

This appendix contains a copy of a SWI from the organisation studied under this thesis. Company name and logos have been removed.


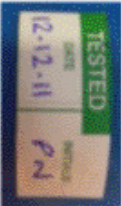
|  |  |                      |  |
|--|--|----------------------|--|
| <b>Standard Work Instruction</b>   |  | <b>Name</b>          |  |
| <b>Doc. Type:</b>  |  | <b>Standard Time</b> |  |
| <b>Doc. Title:</b>   |  | <b>Doc. No.</b>      |  |
| <b>Testing of Three Phase Extension Leads</b>  |  | P06200064            |  |
| <b>Scope:</b>  |  | <b>Rev. No.</b>      |  |
| This document is applicable to all Three Phase Extension Leads   |  | A                    |  |
| <b>Purpose:</b>  |  | <b>Issue Date:</b>   |  |
| NOTE: the engineer completing this service should be trained and competent at carrying out all the tasks contained within this document. |  | 13/11/2017           |  |
| <b>Related Docs.</b>   |  |                      |  |

| Step No. / Responsibility | Main Steps  | Detailed Steps  | Key Points  | Photos / Comments   |
|---------------------------|---|---|---|---|
| 1. Engineer               | Carry out Dynamic Risk Assessment   | <ul style="list-style-type: none"> <li>Assess all risks and hazards in the working area and record on the relevant forms</li> </ul>   | STOP! THINK! ACT! REVIEW!<br>If any test fails, stop and seek advice  |   |
| 2. Engineer               | Prepare Personal Protective Equipment (PPE), tools and consumables required for the task. | <p>Tools required to complete the task:</p> <ul style="list-style-type: none"> <li>Insulation Tester MAT320 with crocodile clips</li> <li>Socket Tester - LAP MS9880E</li> <li>Adaptor leads –</li> <li>32 to 16 Amp single phase</li> <li>32 to 16 Amp 3 phase</li> <li>63 to 32 Amp 3 phase</li> </ul> <p>Parts Required:</p> <ul style="list-style-type: none"> <li>Cable identification tape</li> <li>Tested label</li> </ul>   | Wear general PPE as a minimum for all tasks unless the site or task requirements differ i.e. bump cap, coveralls, shoes with steel toe cap protection, gloves and safety glasses    |    |
| 3. Engineer               | Overall Visual of cable   | <ul style="list-style-type: none"> <li>Inspection of cable by looking along the length</li> <li>Where possible using hands to feel any obvious signs of damage</li> <li>Any old tape / location markers removed</li> <li>If needed label up with correct cable identification tape</li> </ul>   | Ensure cable is relatively clean before inspection, if not send to be cleaned.  |    |
| 4. Engineer               | Integrity of the Plug and Socket  | <ul style="list-style-type: none"> <li>Ensure Plug and Socket are compatible to the size of the cable</li> <li>Plug and Socket glands to be physically moved to check connection with cable and that no bare wires are exposed</li> <li>Plug to be checked for alignment of pins or loose terminals</li> <li>Socket lid to be lifted and holes to be looked at for signs of corrosion or burning</li> <li>Check overall condition of both plug and socket no cracks or chips</li> </ul> | Look for obvious signs of overheating – smelt / discoloration.<br>Look for water ingress.<br>Lid on socket to be moveable.  |    |
| 5. Engineer               | Insulation Resistance Test  | <ul style="list-style-type: none"> <li>Switch on the Insulation Tester and set to 1000V (1kV)</li> <li>Black lead is the negative.</li> <li>Put the black crocodile clip onto the Earth and the red onto the Neutral</li> <li>Leave the black on the Earth and move the Red to phase 1, 2 then 3</li> <li>Move the black to the Neutral and put the red on Phase 1, 2 then 3</li> </ul>   | Test Insulation Tester is working by connecting the red and black crocodile clips together, a reading of 0 identifies correct operation<br>Minimum acceptable level is 200 Megaohms |   |

Equipment Packed:  
CP – Control Panel  
LH – Left Side  
RH – Right Side

Key Points:  
Safety  
Environmental  
Quality



| Step No. / Responsibility | Main Steps                        | Detailed Steps  | Key Points  | Photos / Comments   |
|---------------------------|-----------------------------------|---|---|---|
| 6. Engineer               | Phase Rotation test.              | <ul style="list-style-type: none"> <li>Attach appropriate adaptor lead</li> <li>Connect up the Socket leads – Mainframe PC/IS</li> <li>Motor will have 2 static lights to prove continuity and existence of neutral and earth</li> <li>The other lights will rotate in sequence to prove phase</li> </ul> | <p>Cross reference to the meters instructions, or call the picture. By reassurance of correct rotation, if the lights differ from the instruction book, advise</p> <p>ES/amp will need 2 adaptor leads - 22 to 16 Amp and 23 to 22 Amp 3 phase.</p> |   |
| 7. Engineer               | Completion of a satisfactory test | <ul style="list-style-type: none"> <li>On completion of a satisfactory test of an extension lead</li> <li>Disconnect the adaptor from firstly the mains supply, then the distribution board</li> <li>A test label should be signed, dated and fixed to the socket end of the lead.</li> </ul>             | <p>Ensure all old labels are removed</p>  |   |

**REVISION HISTORY**

| Rev. No. | Rev. Date  | Details of Changes | Prepared By | Reviewed By | Approved By |
|----------|------------|--------------------|-------------|-------------|-------------|
| A        | 13/11/2017 | New Document       | Name Name   | Name Name   | Name Name   |

Add Row

Delete Row

## Appendix 2, survey invitation letter

This appendix contains the survey invitation letter.

Company name has been removed.

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### Internal Announcement

*Sent on behalf of XX, Operations & Hire Director – Northern Europe*

#### **Action required: Operations Survey Completion**

Folks,

Stig Kaspersen, the Regional Service Manager for Nordics, is doing an MBA. As part of this study he must complete a piece of research.

He has chosen to focus on the subject of how people, organisational culture and procedures / Standard Work Instructions combine to affect quality. XX will benefit from this research as Stig is sharing the results. This study will help us Be Dynamic and improve our business.

We would be grateful if you could take 5 minutes to answer a very short anonymous survey on this subject **by Friday 8 March**. All the answers are multi-choice so there is no need to type anything.

Thank you for participating.

Link: <https://www.surveymonkey.co.uk/r/PRDQYZN>

Kind Regards

**XX**  
**Operations & Hire Director - Northern Europe**

## Appendix 3, survey motivation letter

This appendix contains the survey motivational letter.

Company name has been removed.

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### **Survey on use of procedures, NoEur operation.**

Thank you for taking part in this short survey.

The survey aims to understand how we think about, and how we work with procedures in (name) NoEur, Operations. The results will form part of a Master Thesis on the same subject and feed back to management for potential improvements.

Focus for this survey is the Standard Operating Procedures (SOP) or Standard Work Instructions (SWI).  
(info: SOPs are in the process of being changed to SWIs)

If you are administrative personnel or a non-technical manager, please answer the questionnaire by relating your answers to your most central and mandatory work procedure, or policy, instead of SOP/SWI.

All answers are of course treated anonymously.

### **Task.**

Please rate the statements below according to whether you Strongly disagree, Disagree, Neutral, Agree, or Strongly agree.

It is important that you answer as accurate as possible, according to how you understand the situation today, and not how you ideally think it should be, or want it to be.

Definition of quality breach: Failure to meet internal (name), customer or statutory standards and expectations.

Thank you for your participation.