ADOPTION OF COMPETITIVE INTELLIGENCE ETHICS IN THE ICT INDUSTRY OF SOUTH AFRICA

by

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I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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SIGNATURE DATE

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ABSTRACT

There are ethical concerns on how competitive intelligence (CI) is practiced. CI is mainly confused with industrial espionage or sometimes smeared with harmful unethical conduct. The assumptions have negative implications for the full recognition of CI as a profession and the reputation of the practice on, industries or firms and performance. In an attempt to address these concerns, the Strategic and Competitive Intelligence Professionals (SCIP) developed a CI code of ethics. However, critics of CI claim that the CI code of ethics has not been adopted by CI professionals, firms and industries. Moreover, there is very little evidence, if any, on how ethical theory influence the adoption of CI.

In response to the critics, this study aimed at developing a CI Ethics Adoption Model (CIEAM) that will be the premise for analysing factors that positively or negatively influence the adoption of a CI code of ethics. This study followed interpretive structural modelling to identify core determinants of CI ethics adoption. Based on extracts from literature, a web-based questionnaire was designed, validated by CI experts and empirically/quantitatively tested by 184 South African ICT firms.

The results reveal that South African ICT firms have adopted CI ethics to an absolute extent and utilises different CI ethics enforcement methods. The results also reveal that organisational and stakeholders' factors, business ethics and ethical theories, decision-making factors, CI practice factors, raising CI ethics awareness, and CI ethics challenges are the core determinants for the adoption of CI ethics and are components of the CIEAM.

In practice, the CIEAM may minimise unethical conduct by some CI professionals, and the confusion of CI with espionage, whilst improving the credibility and recognition of the CI profession. The model may also serve as a valuable tool for practitioners and scholars who need to measure the adoption of CI ethics across different business sectors. Theoretically, it may serve as input to the development of CI policies and CI ISO standards in the ICT industry and related industries. Recommendations are made towards the application of the model in other industries.

KEY TERMS:

Competitive intelligence; Competitive intelligence ethics; Competitive intelligence ethics adoption; Information and communication technology; Competitive intelligence ethics adoption model; Competitive intelligence code of ethics; Adoption of competitive intelligence ethics respect; Adoption of competitive intelligence ethics promotion; Competitive intelligence ethics enforcement methods; Determinants of competitive intelligence ethics adoption.

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GLOSSARY OF ACRONYMS

AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of Moment Structure
ANOVA	Analysis of Variance
CEOs	Chief Executive Officers
CFI	Comparative Fit Index
CI	Competitive Intelligence
CIEAM	Competitive Intelligence Ethics Adoption Model
CR	Critical Ratio
CSR	Corporate Social Responsibility
DoC	Department of Communications
DRI	Department of Research and Information
ECA	Electronic Communications Act
EFA	Exploratory Factor Analysis
GDP	Gross Domestic Products
GFI	Goodness of Fit Index
H_0	Null Hypothesis
H_a	Alternative Hypothesis
ICASA	Independent Communications Authority of South Africa
ICT	Information Communications and Technology
IE	Information Ethics
IFI	Incremental Fit Index
IMs	Information Managers
ISM	Interpretive Structural Modelling
ISO	International Organisation for Standardisation
KMO	Kaiser-Meyer-Olkin
KMs	Knowledge Managers
MMs	Marketing Managers
NEMISA	National Electronic Media Institute of South Africa
NNFI	Non-Normed Fit Index
NGOs	Non-Government Organisations
NSA	National Security Agency

OECD	Organisation for Economic Cooperation and Development
OTT	Over-The-Top
PAF	Principal Axis Factoring
PAJA	Promotion of Administration Justice Act
PCA	Principal Components Analysis
PCFI	Parsimony Comparative Fit Index
PClOSE	P of Close Fit
PNFI	Parsimony Normed Fit Index
RMSEA	Root Mean Square Error of Approximation
RSA	Rivest, Shamir and Adleman
SABC	South African Broadcasting Corporation
SAPO	South African Post Office
SCIP	Strategic and Competitive Intelligence Professionals
SE	Standard Errors
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Sciences
SRMR	Standardised Root Mean squared Residual
SRS	Simple Random Sampling
TLI	Tucker-Lewis Index
US	United States
USAASA	Universal Service and Access Agency of South Africa

CHAPTER 1: INTRODUCTION TO THE STUDY

This chapter provides an overview of the literature reviewed in the South African Information Communications and Technology (ICT) industry, and the central issue of competitive intelligence (CI) and ethics. The chapter also outlines the research problem, research aim, research objectives and research questions. Following the outline is a preview of the research methodology, hypothesis, research design, delimitation, limitations, and value added by the research. The chapter ends with description of chapters' layout and conclusion.

1.1 Brief overview of South African ICT industry and CI practices

Having realised the need to establish its competitive position in the global market, South African government continues to look to the ICT industry for direct and indirect benefits. Directly, ICT accounts for 10.1% of the South African gross domestic products (GDP) (DRI, 2017); hence, indirect benefits include, but are not limited to: better service delivery, skills development, better productivity, and economic development and growth (Kyobe, 2011). According to Lotriet, Matthee & Alexander (2010), the ICT industry in South Africa remains the major contributor of job creation; with forecasted growth and predictions of 250 billion by 2020 (Naidoo, 2011). However, the industry is not without challenges, and some are in the use of CI, the lifeblood of its sustainability and growth.

With global competition intensifying, ICT firms' successes increasingly depend on good understanding of competitive activities, and on using this understanding to make strategic decisions, identify warning signs and to continuously improve (Johns & Van Doren, 2010; Nasri, 2011). Moreover, the dramatic increase and acceleration in volume of information, poses challenges for day-to-day management of all kinds of enterprises (Jucevičius & Galbuogienė, 2012). This makes it difficult for enterprises to maintain their competitive advantage (Shi, Mou & Wan, 2009). The challenge propelled enterprises to seek special information which is beyond the information gained through ordinary analysis (Bartes, 2012). Consequently, many enterprises,

public or private, are initiating their own CI service, to advise their decision-makers (Bose, 2008). More so, in South Africa, a developing country whose ICT industry's growth is critical and relies heavily on CI practices (Saayman, Pienaar, De Pelsmacker, Viviers, Cuyvers, Muller and Jegers, 2008). Although CI helps enterprises to gain and maintain competitive advantage (Shih, Liu & Hsu, 2010), there exists a variety of associated ethical issues that are still unresolved (Horowits, 2011; Oubrich, 2011). A critical concern for CI practices involves reconciling unsettled ethical norms and lagging legislation in the use of technology for competitive advantage. The diverse nature of ethical concerns in CI practices within the ICT industry include the use of satellite enabled surveillance for real time information, direct or indirect wearable monitoring technologies, 'soft wars' such as cyberwar and hacktivisim, intellectual property, data access and privacy (Businesstech, 2015; Finklea, Christensen, Fischer, Lawrence & Theohary, 2015; Paganini, 2012). These concerns often present ICT industries with a conflicting ethical and legal dilemma.

An example of such is the 2016 intellectual property case of Oracle against Google, over the use of Java in Adroid, posed a legal and ethical dilemma between the two global ICT giants (The Guardian, 2016). Although Java was a legal open free source, the collection of its intellectual information, copyright, and use thereof for profit and competitive advantage by Google was considered unethical by Oracle. The definitive line between ethical norms and lagging legislature created blurred lines that warrant urgent attention from both ICT CI practitioners and scholars. Although expressed differently, previous scholars warn of the complexity and perplexity of such blurred lines, and if unresolved, risk to underscore the legitimacy and recognition of the CI profession, and will diminish its reputation in the eyes of key stakeholders (Rittenburg, Valentine & Faircloth, 2007).

Thus, there is a consensus and need for research to pursue the adoption of ethical standards, in order to combat the concerns, prevent future criticism and create a hallmark of excellence for the CI profession (Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Trevino & Weaver, 1997; Okorie & Lazarus, 2015; Köseoglua, Rossc & Okumus, 2016). Despite the ethical concerns raised about CI, critics continue to demonstrate the lack of ethical CI adoption and/or scientific research in the ICT industry (Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Okorie &

Lazarus, 2015; Köseoglua, Rossc & Okumus, 2016). The following section provides a pertinent insight about current status of CI ethics in the ICT industry.

1.1.1 Current status of CI ethics in the ICT industry

CI has become a global phenomenon, with almost all companies actively practising – including ICT manufactures (electronic components, computers, peripheral equipment, communications, and magnetic and optimal media); ICT trade industries (wholesalers of computer hardware/software, components); to ICT service industries (software publishing, telecommunications, computer programming, data processing and hosting, and repairs) (Johns & Van Doren, 2010). What attracts ICT companies to CI is the visibility and insights that underpins the strategic growth and sustainability of the sector, described differently as: better decision-making, competitive advantage, cost reductions, quality information design and process improvements, new product introductions, product mix choices, business innovation, threats and opportunity response, differentiation, cohesive marketing plans, pre-selling, consumer buying patterns, and credibility building tactics (Maune, 2014; Bourret, 2012; Hesford, 2008; Muller, 2007a; Johns & Van Doren, 2010; Du Toit & Sewdass, 2014; Du Toit, 2013).

Despite these potential benefits, CI has been extensively criticized for staggering ethical and legal concerns (Santos & Correia, 2010; Casali, 2011; Yap, Zabid & Rashid, 2011; Trevino & Weaver, 1997). In an attempt to advance CI, the Strategic and Competitive Intelligence Professionals (SCIP) developed a CI code of ethics, but more calls are made towards the actual adoption of the code. The major bone of contention is the unethical and illegal CI practices, especially, in the pursuit of competitive advantage (Köseoglua, Rossc & Okumus, 2016). Köseoglua *et al*. (2016) and Wulf and Zarnekow (2011) argue that this is so because of weaker barriers to enter the ICT industry, high innovation and fierce competition. Also, there is very little evidence, if any, on how ethical theory influence the adoption of CI. Consistently, scholars, legislators, and practitioners report of ICT firms that collect, sort, capture, store, and analyse information and disseminate actionable intelligence in an unethical and illegal manner (Yap & Rashid, 2011). Recent cases and lawsuits in the ICT service industry, include that of Apple's alleged interference with customers' text systems in an effort to dissuade iPhone customers from switching to Samsung (AppleInsider,

2014). Other ICT manufacturing giants caught in the act in February 2016, are that of National Security Agency (NSA) surveillance and RSA Security with their encryption access to protected intelligence (Castro & McQuinn, 2016). In South Africa, two ICT service giants in the telecommunication space waged war with Over-The-Top (OTT) services such as WhatsApp over allegedly unfair competition (AllAfrica, 2016). Whilst all these cases are separate incidents in different ICT sectors, their commonalities and scale heightens a looming need for ethical CI practices and a strong regulatory framework. Although several scholars, practitioners, and legislators provide a background of CI ethics and practices in ICT industries, little is known about the factors that underpin the adoption of CI ethics. There is no comprehensive model that integrates literature and industry/experts' insight to assist scholars and practitioners in understanding and measuring CI ethics adoption (Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Okorie & Lazarus, 2015; Köseoglua, Rossc & Okumus, 2016).

This study argues that the model could serve as the basis for analysing adoption, understanding compliance, and as a moderating factor minimising some of the concerns raised by critics of CI. In support of this argument, the following section of this study presents previous research and gaps observed in CI ethics in the ICT industry.

1.1.2 Previous research on CI ethics and CI practices

CI studies can be traced back to the 1970s, with some literature and practices observed in the early 1950s (Porter, 1980; Juhari & Stephens, 2006; Deng & Luo, 2010; Nasri & Zarai, 2013). It was developed as a complement to the competitive view in different fields and sectors from economics, marketing, military theory, information science and library and strategic management (Deng & Luo, 2010; Garcia-Alsina, Cobarsí-Morales & Ortoll, 2016; Juhari & Stephens, 2006; Nasri & Zarai, 2013; Fleisher, 2004; Barrett, 2010). Scholars such as Porter (1980), Fuld (1985), Gilad and Gilad (1988), and Fleisher and Bensoussan (2003, 2007) are some of CI's original proponents, with its intelligence view on the: competitive, strategy, and security paradigms. Being positioned counter to this view, CI explicitly focuses on the intelligence that produces and disseminates critical information in an ethical and legal

procedure, especially, about the internal and external competitive environment (Pellissier & Nenzhelele, 2013). As CI proponents indicate, its explicit focus does not replace the competitive view; but rather serves to complement it (Porter, 1980; Fleisher & Bensoussan, 2007; Juhari & Stephens, 2006; Deng & Luo, 2010; Nasri & Zarai, 2013).

Along with its complementary and significant purpose, CI has received extensive ethical and legal concerns (Trevino & Weaver, 1997; Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Bartes, 2014a; Gheysari, 2015; Reinmoeller & Ansari, 2015). Some of the critics indirectly and directly label CI as industrial espionage (Köseoglua, Rossc & Okumus, 2016). There are also vitriolic critics of the CI profession and its reputation (Bartes, 2014a; Gheysari, 2015; Reinmoeller & Ansari, 2015). In this context, the critiques of Trevino and Weaver (1997), Santos and Correia (2010), Yap and Rashid (2011), and Casali (2011) critiques are widely known. Several scholars with interest in advancing CI offered several contributions (see table 1.1 for summary), but mainly focusing on its invaluable role; rather than ethical adoption for CI. In this respect, the important role of CI in decision-making received massive recognition from different scholars (Nasri, 2011; Garret, 2011; Van Riel, Semeijn, Hammedi & Henseler, 2011; Schiavone, 2011; Jung, 2013; Sewdass & Du Toit, 2014; Fatoki, 2014).

Along with its role in decision-making, the value of CI as a complement to competiveness and sustainable advantage was extensively published in the past decades (Maune, 2014; Santos & Correia, 2010; Heppes & Du Toit, 2009; Louw & Venter, 2008; Juhari & Stephens, 2006). Other scholars paid much attention to its positioning and definitive meaning in different fields of study (Weiss & Naylor, 2010; Brody, 2008; Fleisher and Wright, 2009; Haddadi, Dousset and Berrada, 2010; Nenzhelele and Pellissier, 2013). Along this positioning line, some pursued its evolution and theory (Juhari & Stephens, 2006; Deng & Luo, 2010; Nasri & Zarai, 2013; Fleisher, 2004; Barrett, 2010; Heppes & Du Toit, 2009; Muller 2006). Whilst the overwhelming majority of CI studies focus on the realisation of CI for performance and growth in different countries and fields of study for both formal and informal markets, there is lack of studies on CI ethics, particularly CI ethics adoption (Adidam, Banerjee

& Shukla, 2012; De Pelsmacker, *et al.,* 2005; Sewdass & Du Toit, 2014). Table 1.1 summarises previous research and contributions on CI practice and CI ethics.

Table 1.1: Summary of previous research and contributions on CI practice and CI ethics

Author(s) Year	Content/context	Relation	Rationale
Porter, 1980; Juhari & Stephens, 2006; Deng & Luo, 2010; Nasri & Zarai, 2013	The evolution of CI	There have been ethical concerns ever since the inception of CI.	To provide background on how CI has been practised since its inception
Porter, 1980; Fliesher & Bensoussan, 2007; Juhari & Stephens, 2006; Deng & Luo, 2010; Nasri & Zarai, 2013	CI as a compliment	The adoption of CI ethics may enhance the complimentary value of CI.	To indicate the benefits of CI ethics adoption.
Nenzhelele & Pellissier, 2013; Weiss & Naylor, 2010; Brody, 2008; Fleisher & Wright, 2009; Haddadi, Dousset & Berrada, 2010	CI definition, borders and position	Any practice that is outside of the borders of CI may be unethical and may threaten the adoption of CI ethics.	To differentiate CI from other practices
Trevino & Weaver**,** 1997; Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Bartes, 2014a; Gheysari, 2015; Reinmoeller & Ansari, 2015	Ethical and legal concerns	Lack of CI ethics adoption may lead to ethical and legal concerns.	To reveal that there are ethical and legal concerns in CI practice.
Bartes, 2014b; Gheysari, 2015; Reinmoeller & Ansari, 2015; Trevino & Weaver 1997, Santos & Correia, 2010, Casali, 2011, Yap & Rashid, 2011	Threat to the CI profession and its reputation	Lack of CI ethics adoption has an impact on the reputation and professionalism of CI.	To indicate the importance of CI ethics adoption.
Köseoglua, Rossc & Okumus, 2016	CI labelled as industrial espionage	Lack of CI ethics adoption may lead to CI being labelled industrial espionage	To reveal the challenge of lack of CI ethics adoption.
De Pelsmacker *et al*., 2005; Maune, 2014; Santos & Correia, 2010; Heppes & Du Toit, 2009; Louw & Venter, 2008; Juhari & Stephens, 2006 ; Nasri, 2011; Garret, 2011; Van Riel *et al*., 2011; Schiavone, 2011; Adidam *et al*., 2012; Jung, 2013; Van Riel *et al*., 2011; Sewdass & Du Toit, 2014; Fatoki, 2014	Role of CI in decision-making, competitiveness, competitive advantage, performance and growth	CI offers benefits to firms if practised ethically and legally.	To indicate the importance of ethical and legal practice of CI to firms.

These previous studies undoubtedly offer an important content analysis, platform, and background of CI, but with very little attempts towards alleviating ethical adoption concerns, especially in ICT, where CI is a make-or-break component for the sector. An exception is that of the SCIP, in its development of code of ethics (Louw & Venter,

2008). However, the lack of research on factors that influence the adoption of CI ethics and/or lack of International Organisation for Standardisation (ISO) requirements/certification for monitoring and fostering adoption, undermines the valuable CI code of ethics. Moreover, little if any, research links ethical theories to factors that influence the adoption of CI ethics. It is within this context that CI received criticism towards CI practices and its profession. These findings and observation demonstrate a research problem and a gap in literature towards addressing the bane of CI practices and the profession. In the following section, the observed problem statement emerging from the literature discussed above is outlined.

1.2 Research problem

Although CI practices and profession have been subject to their fair share of ethical sneering, this study views the concerns as destructive and frustrating to their growth and sustainability especially in the ICT industry of South Africa, where it is desperately needed for growth and sustainability of the sector, and ultimately that of the country. An important observation from literature is that, the critics show a research problem and a gap where attention CI ethics and their development are required if CI practices and the profession is to be sustained.

This study argues that CI can withstand these critics and concerns, provided the factors that positively and negatively influence CI ethics adoption are more clearly specified and known. The development of CI practices and the profession hinges in the consideration of these factors as a moderating tool that demarcate what are and what are not triggers of CI ethics adoption. Clearly, few attempts have been made towards alleviating CI ethical adoption concerns from the literature reviewed.

The limitation observed from literature, is that, the process of CI ethics adoption and measurement are silent, inclining scholars, practitioners, and legislators to view CI from the eyes of its critics; rather than in terms of its useful application. To arrive at a better conceptualisation of CI practices and profession, it is critical to explicitly distinguish the negative factors from positive of CI ethics adoption. Both the negative and positive factors should be perceived as moderators that allow ICT companies to

adopt CI ethics, but at the same time, constrain them. This study follows an interpretive structural modelling methodology for extracting key factors from literature to develop a Competitive Intelligence Ethics Adoption Model (CIEAM) for the South African ICT industry. The main aim of this study is to validate the factors with ICT industry experts and develop a model that may serve as the premise for measuring adoption and moderate the concerns for the benefits of the ICT industry and academia.

1.3 Research aim

The aim of this study is to develop a CIEAM for the South African ICT industry.

1.4 Research objectives

The following are the research objectives of this study:

1) To establish the extent to which firms in the South African information and communication technology industry have adopted competitive intelligence ethics.
2) To establish and assess the generic/existing methods in use by information communication technology firms in an attempt to enforce CI ethics.
3) To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African information communication technology industry.

1.5 Research questions

The following research questions are formulated from the research aim:

1) To what extent have firms in the South African information and communication technology industry adopted competitive intelligence ethics?
2) What are the generic/existing methods used by firms in the South African information and communication technology industry in an attempt to enforce the competitive intelligence ethics?

3) What are the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African information and communication technology industry?

1.6 Definitions of key terms

CI: Garcia-Alsina *et al*. (2016) conclude that there are many definitions of CI. According to Köseoglua *et al*. (2016), some of these definitions have some aspects in common while some lack ethicality. Brody (2008) and Roitner (2008) point out that some definitions refer to CI as a product, while some treat it as a process. Some definitions of CI differ simply because of use of synonyms (Brody, 2008). Haddadi, Dousset and Berrada (2010) recommend that a universal definition be established to eliminate confusion among scholars and CI practitioners. According to Haliso and Aina (2012), a universal definition of CI will create borders around CI and ensure that CI is differentiated from industrial espionage. This study understands that CI is defined differently by scholars and adopts a comprehensive definition that synthesizes 50 definitions of CI by Pellissier and Nenzhelele (2013) and define CI as: a process or practice that produces and disseminates actionable intelligence by planning, ethically and legally collecting, processing and analysing information from and about the internal and external or competitive environment, in order to help decision-makers in decision-making, and to provide a competitive advantage to the enterprise.

Ethics: Though there are many definitions of ethics in the literature (Brunk, 2012; Berg, Pooley & Queenan, 2011; Tseng, Duan, Tung & Kung, 2010; Baum, 2010; Thiroux & Krasemann, 2007), they emphasise belief, welfare, humanness, and justice (Manson, 1995; Tseng *et al*., 2010). CI ethics refers to the right or wrong about CI practices. It refers to the CI practiced according to the CI code of ethics (Louw & Venter, 2008). Adoption of CI ethics refers to a stage in which CI ethics are used by firms when practicing CI (Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011). Thus, firms that have adopted CI ethics follow a code of ethics when practicing CI (Rittenburg *et al*., 2007). Just like CI and ethics, ICT has many definitions. The commonalities amongst these definitions are that ICT includes the role of telecommunication, the convergence of new technology and the transmission of

information (Bazini, Ilia & Qarri, 2011; Mbatha & Ocholla, 2011; Singh, 2010; Moabelo, 2008; Beckinsale & Ram, 2006; Jimenez, 2006; Ngenge, 2003; Cohen, Salomon & Nijkamp, 2002). These definitions allude to ICT, including all forms of devices that aid in the transmission of data and information (Jimenez, 2006; Singh, 2010).

The ICT industry: The ICT industry is defined by the Organisation for Economic Cooperation and Development (OECD) (OECD, 2001), as a combination of manufacturing and services industries that capture, transmit and display data and information electronically. According to OECD's (2001) definition, the ICT industry is made up of manufacturing, goods-related and intangible services which include manufacturing of office, accounting and computing machinery; manufacture of insulated wire and cable; manufacturing of electronic valves and tubes and other electronic components; manufacturing of television and radio transmitters and apparatus for line telephony and line telegraphy apparatus, and associated goods; manufacturing of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods; manufacturing of instruments and appliances for measuring, checking, testing, navigating and other purpose, except industrial process control equipment; manufacturing of industrial process control equipment; wholesale of machinery, equipment and supplies; renting of office machinery and equipment (including computers); telecommunications; and computer and related activities.

1.7 Preview of research methodology

The study followed a quantitative approach which is considered most appropriate for examining, analysing, and interpreting a phenomenon for the purpose of discovering underlying meanings and patterns of relationships (Rugg & Petre, 2007; Lyons & Doueck, 2010). Interpretive structural modelling (ISM) was followed to establish possible constructs for the CIEAM from the literature. This study assesses the relationships between different factors and the adoption of CI ethics. Because the study assesses the influence of positive and negative factors on the adoption of CI ethics, a survey was used to collect data from firms in the South African ICT industry. Surveys are popularly used to uncover relationships between different factors

(Dhawan, 2010). The survey questionnaire was directed to CI professionals or Information Managers (IMs) or Knowledge Managers (KMs) or Marketing Managers (MMs) or Chief Executive Officers (CEOs) or owners of these ICT firms as they are practitioners of CI (Nasri, 2011).

1.8 Hypotheses

There are several definitions of hypothesis. Though they may differ, all similarly emphasise assumption or supposition to be proved or tested (Marczyk, DeMatteo & Festinger, 2005; VanderStoep & Johnson, 2009; Dhawan, 2010). According to Lyons and Doueck (2010), a hypothesis should be clear, unambiguous, concise, and meaningful. Moreover, a hypothesis should also describe testable relationships between two or more variables. There are two types of hypotheses, namely null and alternative hypotheses. Null hypotheses indicate that there is no relationship between two or more variables, whereas alternative hypotheses indicate a positive/negative relationship between two or more variables (Lyons & Doueck, 2010). Table 1.2 contains the hypotheses that are tested in this study. These hypotheses are linked to objective 3. Objective 1 and 2 establish the extent of CI ethics adoption and generic/existing methods in use by South African ICT firms to enforce CI ethics and do not have corresponding hypotheses.

Table 1.2: Null and alternative hypothesis (part 1)

	Null hypothesis	Alternative hypothesis	Objective
Hypothesis 1	**H_{01}**: There is no significant correlation between *industrial factors* and *the adoption of CI ethics*.	**H_{a1}:** There is a significant correlation between *industrial factors* and *the adoption of CI ethics*.	**Objective 3:** To assess the factors that positively and negatively influence the adoption of Competitive Intelligence ethics by firms in the South African Information Communication Technology industry.
Hypothesis 2	**H_{02}:** There is no significant correlation between *decision-making factors* and *the adoption of CI ethics*.	**H_{a2}:** There is a significant correlation between *decision-making factors* and *the adoption of CI ethics*.	
Hypothesis 3	**$H_0$3:** There is no significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics*.	**H_a3:** There is a significant correlation between *business* ethics and ethical *theories* and *the adoption of CI ethics*.	

Table 1.2: Null and alternative hypothesis (part 2)

Hypothesis 4	**H_{04}:** There is no significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics*.	**H_{a4}:** There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics*.	**Objective 3:** To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information communication technology industry.
Hypothesis 5	**H_{05}:** There is no significant correlation between *organisational and stakeholder factors* and *the adoption of CI ethics*.	**H_{a5}:** There is a significant correlation between *organisational and stakeholder factors* and *the adoption of CI ethics*.	
Hypothesis 6	**H_{06}:** There is no significant correlation between *CI practice factors* and *the adoption of CI ethics*.	**H_{a6}:** There is a significant correlation between *CI practice factors* and *the adoption of CI ethics*.	
Hypothesis 7	**H_{07}:** There is no significant correlation between *economic, political and social factors* and *the adoption of CI ethics*.	**H_{a7}:** There is a significant correlation between *CI practice factors* and *the adoption of CI ethics*.	
Hypothesis 8	**H_{08}:** There is no significant correlation between *CI ethics challenges* and *the adoption of CI ethics*.	**H_{a8}** There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics*.	

1.9 Research methodology

Research is defined as a scientific and systematic search for pertinent information on a specific topic (Dhawan, 2010). Research is a project and should be planned for (Tustin, Ligthelm, Martins & Van Wyk, 2005; Krishnaswami, 2010). A research design or plan is the arrangement of conditions for collections and analysis of data in a manner that enables combining relevance to the research purpose with economy in procedure (Dhawan, 2010). Moreover, research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. Singh (2006) defines research design as an investigator's choice of components of his project and development of certain components of the design.

The primary research design of this study will follow a quantitative approach. This is because the research study is intended to establish and assess the relationship between different factors and the adoption of CI ethics. Moreover, the research was intended to develop a CIEAM which is empirically tested through quantity of responses. According to Krishnaswami (2010), quantitative research design is the most appropriate design for this type of research. This study followed a positivist research paradigm as it is quantitative in nature, it uses large sample, is concerned

with hypothesis testing, collects specific data, has high reliability and low validity, and its generalisation is from sample to population (Hussey & Hussey, 1997). The study followed probability sampling, specifically Simple Random Sampling (SRS). The study followed a deductive approach as it tested the validity of the hypothesis (Bryman & Bell, 2007).

1.9.1 Population and sampling

There are many definitions for population (Singh, 2006; Sachdeva, 2009; Krishnaswami, 2010). The common factor in these definitions is that population as the units, groups or observations to be researched or studied. The target population for this research are firms in the South African ICT industry. This is because firms in the ICT industry of South Africa are practising CI and there are reported cases of unethical behaviours within this industry (Saayman *et al*., 2008). It is also the enabler of other industries in South Africa (Paterson, 2011). According to Easyinfo (2014), Brabys (2014), Bizcommunity (2014) and Rainbownation (2014), there are approximately 5000 registered ICT firms in South Africa. This research randomly sampled 385 ICT firms from this population because it is considered a representative sample (Krishnaswami, 2010). Moreover, a sample size of 385 would achieve 95% confidence on the results and accept 10% error at a low budget. These percentages are frequently used and considered acceptable (Sachdeva, 2009).

There are two categories of sampling methods, namely probability and non-probability (Rubin & Babbie, 2011). This research considered and used the probability sampling category. There are four methods of probability sampling, namely SRS, stratified sampling, cluster sampling, and systematic sampling (Singh, 2006). SRS was used in this study as it gives all members of the population a known chance of being selected for inclusion in the sample whereas the chance of being selected for inclusion is not known in non-probability (Sachdeva, 2009). Moreover, SRS eliminates bias, ensures validity of the results and it is the most widely used sampling method (Singh, 2006).

Easyinfo (2014), Brabys (2014), Bizcommunity (2014) and Rainbownation (2014) were the sample frame for this research. These are considered the leading online

directories in South Africa (Radipere, 2012). According to Sachdeva (2009), a sample frame is a list of accessible population from which to draw the sample.

1.9.2 Data collection method

Data are facts, and other relevant materials, past and present, serving as bases for study and analyses (Krishnaswami, 2010). There are two types of data, namely, primary and secondary data. Primary data is data collected afresh and for the first time, and is original in character, whereas secondary data is data that has previously been collected by someone else and has already been passed through the statistical process (Dhawan, 2010). Secondary data for this research was collected from books, journal articles, conference papers and proceedings, dissertations and theses, and websites. Care was given to only collect secondary data from academic sources. Although there are many methods of collecting primary data such as focus groups, observations, survey and interviews (Lyons & Doueck, 2010), this study uses survey questionnaire. This is because the study aimed at the development of a model requires a large sample of data and a survey questionnaire is used for this purpose. Moreover, survey is the most appropriate, most successful and oldest method of collecting data for quantitative study (Sachdeva, 2009; Rubin & Babbie, 2011). A web-based questionnaire was used to collect data from ICT firms. The ICT industry uses ICT daily and web-based questionnaires are popular and receive as high a response rate as posted or hand delivered questionnaires (Greenlaw & Brown-Welty, 2009). The web-based questionnaire was accompanied by a motivation letter to increase the response rate (Rubin & Babbie, 2011). Singh (2006) defines questionnaire as a form which is prepared and distributed for the purpose of securing responses.

1.9.3 Questionnaire design

Both open-ended and closed-ended questions were incorporated in the questionnaire. Open-ended questions provide a space for the respondents to write answers whereas closed-ended questions consist of a question or a statement to which a respondent responds by selecting one or more options (Singh, 2006). Likert scales were used to establish the level of agreement and disagreement of respondents to variables.

According to Cooper and Schindler (2008), a Likert scale is the most frequently used variation of summated rating scales. The necessary instructions for each question were provided above each question.

1.9.4 Ethical considerations

Before conducting any research, researchers must consider research ethics (Cone & Foster, 2006; Rubin & Babbie, 2011). Anastas and MacDonald (1994) define research ethics as a special set of principles and rules, written and unwritten, that place particular parameters on the relationship between the researcher and the people who participate in or who may be affected by the research. These people include those who are being studied, fellow researchers, and those who may encounter or make use of the products of the research. This study considered the Unisa's Research Ethics Policy and the following ethical principles by Cone and Foster (2006):

- Evaluate the ethical acceptability of the research.
- Asses the degree of risk involved for participants.
- Ensure the ethical conduct of the research by you and others involved in it.
- Obtain a clear, fair, informed and voluntary agreement by participants to participate. Avoid deception and concealment unless absolutely necessary and justifiable.
- Respect the participant's right to decline or withdraw from participation at any time.
- Protect the participant from any physical harm, danger or discomfort possibly associated with the research procedures.
- Protect the participant from any emotional harm, danger or discomfort possibly associated with the research procedures.
- Debrief the participant after the data collection has been completed.
- Correct any undesirable consequences to individual participants that result from them participating in the study.
- Maintain strict confidentiality of any information collected about a participant during the research in accordance with agreements reached with the participant while obtaining informed consent.

1.9.5 Validity and reliability

Validity determines whether the research truly measures what it was intended to measure or how truthful the research results are (Bashir, Afzal & Azeem, 2008; Marczyk *et al*., 2005). According to Marczyk *et al*. (2005), validity increases the accuracy and usefulness of findings by eliminating or controlling as many confounding variables as possible, which allows for greater confidence in the findings of a given study. To ensure validity of the study, experts in the field of ICT, CI and CI ethics will be consulted to make judgements about whether the measure covers the universe of facets that make up the concept. This is called internal validity (Rubin & Babbie, 2011).

A pilot study was conducted before finalisation of the questionnaire. The purpose of the pilot study was to pre-test the questionnaire before it was distributed to the respondents (Cone & Foster, 2006). A pilot study provides a trial run for the questionnaire, which involves testing the wording of the question, identifying ambiguous questions, testing the technique that you use to collect the data, and measuring the effectiveness of the standard invitation to respondents (Naoum, 2007). For the purpose of this study, a purposive sample of 22 experts in the field of CI and CI ethics was drawn to participate in the pilot study. According to Lyons and Doueck (2010), a purposive sample of 22 experts is a justifiable size. The experts were to determine the time taken to complete the questionnaire, check for any error, spelling mistakes, problems, confusion and misunderstanding, relevance of questions, level of difficulty of questions, and clarity of questions. They also established that all aims, research questions and objectives are accomplished by the questionnaire (see Appendix B for the initial questionnaire before validation and Appendix A for final questionnaire).

Exploratory Factor Analysis (EFA) was conducted to ensure construct validity. EFA establishes whether data is suitable for factor analysis and it is commonly used to develop models (Fabrigar & Wegener, 2011). Construct validity ensures that the test measures what it claims to measure (Williams, Onsman & Brown, 2010). To ensure content validity, a thorough literature review was conducted to cover all aspects of CI ethics in the South African ICT industry. Content validity refers to the extent to which

a measure represents all facets of a given construct (Rubin & Babbie, 2011). The outcome of the model test will be compared to existing structural equation modelling (SEM) indices to ensure criterion validity. Criterion validity is the extent to which a measure is related to an outcome (Harrington, 2009). SEM tests proposed models to ensure that they fit the collected data (Barrett, 2007).

An approach to measurement is reliable if it assesses the characteristics of interest in a consistent fashion (Marczyk *et al*., 2005). Rubin and Babbie (2011) define reliability as a matter of whether a particular technique, applied repeatedly to the same object, would yield the same result each time. Cronbach's alpha is the most common way of assessing reliability (VanderStoep & Johnson, 2009). Cronbach's alpha is an average of all the possible split-half reliability estimates of an instrument (DeVellis, 2006). This coefficient varies from 0 to 1 and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability (Malhotra, 2004). For the purpose of this study, the Crobach's alpha will be used to measure internal consistency reliability. This is done to assess whether the various items that make up the measure are internally consistent (Rubin & Babbie, 2011).

1.9.6 Data editing, coding, capturing and analysis

Each completed questionnaire will be scrutinised to determine the acceptability of the data and to prepare for analysis. The web-based questionnaires are automatically captured when they are completed by the respondents. Completed and captured questionnaires were downloaded and exported to the statistical package for social sciences (SPSS) to produce tables.

Analysis begins after editing, coding and capturing of the data. Due to the study's aim of developing CIEAM and assessing the relationship between dependent and independent variables, several statistics techniques key to the exploration of relationship were used e.g. median, standard deviation and correlation (Krishnaswami, 2010; Marczyk *et al*., 2005). The SEM is used in this research to test the validity of the proposed model (Barrett, 2007).

1.10 Delimitation

The study was delimited to firms in the South African ICT industry. This is because the ICT industry practises CI and it is one of the most vulnerable industry for CI ethics concerns due to easy entry and rapid change (Louw & Venter, 2008; Brown, 2009; Naidoo, 2011). The study is also delimited to the following individuals who practice CI within the ICT firms: CI professionals; IMs; KMs; MMs; CEO; business owners.

1.11 Limitations

The ICT industry changes rapidly, and it will be difficult to completely cover all aspects of the industry in the literature. Since little research had been done in ethics pertaining to CI, there is limited scope of literature. CI professionals are constantly busy and might not find time to respond to the survey. The results of this study are limited to ICT firms in South Africa, and may not be generalised to other countries.

1.12 Value added by this research study

The CIEAM may serve as input to the development of CI policies, ISO standards and educational curriculum in the ICT industry and related industries. The model may minimise unethical conducts by some CI professionals and reduce the confusion between CI and industrial espionage. It may lead to full recognition of the CI profession and building up a good reputation. The model may assist firms in the South African ICT industry in strengthening factors that positively influence the adoption of CI ethics and weakening the factors that negatively influence the adoption of CI ethics. It may assist firms in the South African ICT industry to adopt CI ethics. The CIEAM may be assessed for usability in other industries.

1.13 Chapter layout

The chapter layout of the study is as follows:

Chapter 1: **Introduction to the study.** This chapter provides an overview, introduction and background to the study. It outlines the problem, methodology, hypotheses, limitations and value added by the study.

Chapter 2: Literature review. This chapter provides a thorough literature review relevant for this study. It describes the South African ICT industry and its importance, ethics and theories of ethics, CI and CI ethics, and the factors that positively and negatively influence the adoption of CI ethics. The chapter proposes the conceptual CIEAM.

Chapter 3: Research methodology. It discusses in detail the research methodology used in this study. It further describes the research design, research method, research instrument, population, reliability, validation, limitations and ethical considerations of the study.

Chapter 4: Data analysis. This chapter reports the research results of this study. It discusses the validity and reliability of the data. It further analyses and interprets the descriptive statistics, correlations and hypothesis tests. Moreover, the chapter analyses and interprets the results of SEM.

Chapter 5: Research findings and discussions. This chapter describes and discusses the research findings of this study.

Chapter 6: Conclusions and recommendations. It discusses the conclusions, recommendations, limitations, and value added by the study.

1.14 Chapter summary

The South African ICT industry is the enabler of other industries. Firms in the South Africa ICT industry depend on CI for business sustainability, competitive advantage and the development of quality products and/or services. However, due to unethical conducts by some CI professional, CI has been confused with industrial espionage leading to the loss of the reputation of the CI practice and lack of full recognition of CI profession. This led the SCIP to develop CI code of ethics to regain the credibility,

reputation and recognition of the CI profession. However, there are claims that the CI code of ethics has not been adopted leading to calls for studies to investigate the adoption of CI ethics. This study aimed to address this gap, particularly in the ICT industry as it is reported to be the industry that practices CI in South Africa. This chapter highlighted the problem, purpose, aims, questions, and objectives of this study. It also outlined the research methodology, research design, ethical concerns, limitations, delimitations and value added by the study. Chapter 2 provides a detailed review of the literature.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a detailed discussion of the major themes from the investigation of CI ethics in the South African ICT industry. This chapter expands on the themes introduced in chapter 1. It provides an in-depth literature of CI, ethics, theory of ethics, business ethics, CI ethics, the importance of CI ethics, CI code of ethics, and the conceptual CI ethics adoption model.

2.1 The importance of ICT and CI

Although a country relies on different industries for its success and economic growth, the ability of a country to compete globally has a very strong correlation to the state of its ICT industry (Wesso, 2010; Ngcaba, 2012; De Villiers, Johnson & Cremer, 2012; Carrim, 2014). ICT is increasingly becoming essential for firms to compete and prosper. ICT is part of everyday life and the skills needed are quickly becoming a prerequisite for daily life (De Villiers *et al*., 2012). De Villiers *et al*. (2012) also state that ICT makes an immense contribution to the growth of the South African economy, but that the shortage of ICT skills is impeding this growth. Any breakdown of the ICT industry will lead to severe economic and reputational crises (Ngcaba, 2012). Thus, ICT access and usage are key enablers of countries' overall technological readiness (Information Economy Report, 2011; Rohman, 2013; The Global Competitiveness Report, 2013–2014). Therefore, a country must have the ability to facilitate and grow the ICT industry to meet the needs of its citizens for affordable and accessible broadband. Scholars have identified benefits of ICT presented in table 2.1 below.

Table 2.1: Generic benefits of ICT

Cohort of authors	Generic benefits
Breitenbach, Aderibigbe & Muzungu, 2005; Jiyane & Mostert, 2010; Singh & Raja, 2010; Millbery & Stuart, 2010; Wesso, 2010; Kyobe, 2011; Bazini, Qarri & Ilia, 2011; Mbata & Ocholla, 2011; Lehohla, 2012; Carrim, 2014	• Catalyst for positive socio-economic change in developing countries; • Demolishes the barriers created by time and distance; • Integrates world economies; • Influences economic, scientific, academic and cultural; • Makes it possible to access, analyse, evaluate, integrate, present and disseminate information; • Speeds up production processes within enterprises; • Enables networking between individuals, enterprises, governments and countries; • Transforms national economies, enterprises and global economy; • Reduces cost and time of doing business; • Increases the rate of business growth and revolutionises the way information is gathered, communicated and analysed; and • Fosters national building, social cohesion, local, national and regional integration.

Subsequent to these benefits, the Government promotes ICT industry development, by allocating enough money on the national budget (Kyobe, 2011). The ICT industry of South Africa contributes to development goals of South Africa and of the whole African continent (Information Economy Report, 2011; Rohman, 2013). The South African Government is trusting ICT to address unemployment, poverty and social development challenges (Hanna, 2010; Jiyane & Mostert, 2010). ICT plays a transformative role in national economies, enterprises and global economy (Singh & Raja, 2010). Although the South African ICT industry is challenged by an ICT skills shortage, the Department of Communications (DoC) has come up with initiatives such as Meraka e-Skilling Institute to address this challenge (Wesso, 2010). The South African ICT industry is ranked 3rd in Africa behind Mauritius and Seychelles and 65th in the world (Measuring the Information Society Report, 2015; Global Information Technology Report, 2016).

The high rating relates to the contributions of the ICT industry to the economy, business, and human development, which are thoroughly documented. However, some of the critical issues that challenge its sustainability remain unexplored (Louw & Venter, 2008; Heppes & Du Toit, 2009; Pellissier & Nenzhelele, 2013; Maune, 2014;

Okorie & Lazarus, 2015; Köseoglua *et al*., 2016). Governments ICT, marketing departments, libraries and strategists rely on CI to provide actionable intelligence for quality decision-making and competitive advantage (Fleisher, 2004; Barrett, 2010; Deng & Luo, 2010, Nasri & Zarai, 2013). CI helps firms in the ICT industry to survive in the midst of fierce global competition and to not to be inward looking but to observe the external environment (Adidam *et al*., 2012; Pellissier & Nenzhelele, 2013; Du Toit & Sewdass, 2014). CI helps ICT firms to improve competitiveness, predicts competitors' actions, customers' requirements and political influence, support strategic decision-making, reveals opportunities and threats, produce knowledge and insights on competitors, and solve problems and decrease reaction time (Muller, 2005; Liu & Oppenheim, 2006; Muller, 2007a; Peltoniemi & Vuori, 2008; Cucui, 2009; Wright, Eid & Fleisher, 2009; Johns & Van Doren, 2010, Pranjic, 2011). In South Africa, the ICT industry is the "number one" industry that practices CI (De Pelsmacker *et al*., 2005; Murphy, 2006). Thus, CI is the make-or-break of the ICT industry. The South African ICT industry practises CI in order to successfully contribute to the Gross Domestic Product (GDP) of the country (Murphy, 2006; Louw & Venter, 2008; Naidoo, 2011). However, CI practices in the ICT industry is clouded by unethical and espionage concerns (Bulley, Baku & Allan, 2014). Given the absence of the International Organisation for Standardisation (ISO) standard for CI practice, Strategic and Competitive Intelligence Professionals (SCIP) developed the CI code of ethics to reduce and finally eliminate those unethical behaviours (SCIP, 1999).

However, unethical and espionage concerns are still reported in the ICT industry with the existence of the CI code of ethics. For example, the United States (US) National Security Agency (NSA) broke the security access of Rivest, Shamir and Adleman (RSA) Security to access protected intelligence (ITIF, 2016). Datacentrix employees stole sensitive information from Business Connexion in 2012 (Moneyweb, 2012). It is these kinds of cases that have led scholars such as Trevino and Weaver (1997), Rittenburg *et al*. (2007), Santos and Correia (2010), Casali (2011), Yap and Rashid (2011), Okorie and Lazarus (2015), and Köseoglua *et al*. (2016) to conclude that firms have not adopted CI code of ethics and recommend that they should adopt the CI code of ethics. Thus, they are not collecting Information for CI legally and ethically following ethics policies and CI code of ethics from external personal sources (e.g. customers; competitors; business and professional associates), external impersonal

sources (e.g. newspapers and periodicals), internal personal sources (e.g. superior and board members; peer colleagues and subordinates); internal impersonal sources (e.g. memoranda, reports and circulars) (Melo & Medeiros, 2007; Hesford, 2008; Wright *et al*., 2009; Johns & Van Doren, 2010; Yap & Rashid, 2011). Köseoglua *et al*. (2016) and Wulf and Zarnekow (2011) argue that this is so because of weaker barriers to enter the ICT industry, high innovation and fierce competition. For adoption of CI ethics, Okorie and Lazarus (2015) recommend enforcement. Hence the quest for this research to develop a CI ethics adoption model for CI practitioners and scholars alike.

2.2 Ethics theories and CI code of ethics

Like other professions such as legal practice, medical practice and accounting practice, CI is guided by ethical theories, code of ethics and business ethics (Fleisher & Wright, 2008; Stiglitz, 2010; Bones, 2011). Ethical theories, code of ethics and business ethics help to prevent and reduce unethical behaviours which are reported to have grown out of control (Stiglitz, 2010; Woiceshyn, 2011; Burnes & By, 2012). Unethical behaviours cost firms a lot of money on lawsuits and rebuilding of dented or lost reputation (Clark, 2008; Bones, 2011). For example, MTN was sued billions of dollars by Turkcell for paying bribe to secure contract in Iran (EWN, 2017). CI professionals are therefore encouraged to observe, uphold and enforce ethical theories and code of ethics when conducting any CI activity. Thus, they must consider the wrongness or rightness of their actions, and the badness or goodness of the consequences of their actions (Baggini & Fosl, 2007; Burnes, 2009; Yukl, 2010; Stiglitz, 2010; Bones, 2011). Ethics theories, CI code of ethics and business ethics are discussed in the sub-sections that follow.

2.2.1 Ethics theories

CI professionals arrive at different ethical decisions due to ethical theory they considered when making decisions (Manson, 1995; Fubara, McMillan-Capehart & Richard, 2008). Accordingly, ethical theories create an ethical decision-making style of each CI professional by directing his/her behaviours and helping him/her to determine right and wrong, acceptable and unacceptable decisions, actions and

consequences (Casali, 2011; Brunk, 2012). It is for this reason that ethical theories play a pivotal role in influencing the adoption of CI ethics and underpin this study. Thus, ethical theories are the base for morals, norms, virtue and values, when making cultural, political, economic and social judgment (Casali, 2011). Moreover, ethical theories focus on the action, the actor, the intention or the consequences (Woiceshyn, 2011). Casali (2011) concludes that ethical theories help to diminish the possibility of business scandals. According to Pettit (2003), and Rossman and Rallis (2010), ethical theories fall into two categories, namely, consequentialism (teleology) and non-consequentialism (deontology).

2.2.1.1 Consequentialism

The consequentialism theory holds that the value of an action derives from the value of its consequences (Blackburn, 2008). Consequentialist is outcome-based and focuses on the good or bad results of the decision (Brunk, 2012). According to consequentialism, individuals' initiatives are judged by the consequences they produce rather than their intentions (Bleichrodt & Quiggin, 2013). According to consequentialism, leaders are not judged by their characters, but the consequences of the actions they take (O'Gorman, Macken, Cullen, Dunne & Higgins, 2013). Leaders of enterprises must take decisions that do not only benefit themselves, but all stakeholders (Baum, 2010). According to consequentialist view, the right decision is the one that results in good outcomes and elimination of bad ones (Ott, 2013). In consequentialism, an act is considered a moral based on the relative benefits it produces (Berg *et al*., 2011). The end justifies the means (Ott, 2013). Consequentialism consider an action good if it results in a good outcome (Govers, 2013). Consequentialism choose decisions that maximise happiness (O'Gorman *et al*., 2013). The following are the consequentialism theories:

a) Altruism: Altruism takes place when the decision-maker sacrifices personal interest in favour of others (Lung, 2012). In altruism, there are no self-interests such as pleasure, power or honour, or avoidance of pain (McElwee, 2011). Altruistic consequentialism maintains that an action is ethically right, if it maximises the beneficial consequences for everyone other than the instigator

(Burnes & By, 2011). Under altruistic consequentialism, the role of leaders would be to act in the best interests of everyone (Plaisance & Reydon, 2012).

b) Egoism: In egoism, the decision-maker takes the option that produces results that are beneficial to him/herself, and any harm to other should be incidental rather than intentional (Lung, 2012). Egoism maintains that an action is ethically right if it maximises the beneficial consequences for the instigator (Burnes & By, 2011). In business, egoism means maximisation of shareholder wealth at all costs (Racelis, 2013). Although some people view egoism as unethical, it is widely accepted as an ethical theory (Ditlev-Simonsen & Wenstøp, 2011). According to egoism, an action is morally wrong if it fails to produce the best results for the instigator (Kahn, 2012).

c) Utilitarianism: Utilitarianism is the best known type of consequentialist theory (Rossman & Rallis, 2010). Utilitarianism is a theory that focuses on the consequences of the action instead of the action itself (Govers, 2013). The objective of utilitarianism is to achieve the greatest good to greatest number of people (Ott, 2013). Utilitarianism compels the decision-maker to care about others when making decisions (O'Gorman, Macken, Cullen, Dunne & Higgins, 2013). Therefore, the role of the decision-makers is to act in the best interests of everyone, including themselves (Siddiqui, Civaner & Elci, 2013). The utilitarianism ethical theory helps decision-makers in making social, business and economic decisions (Govers, 2013). Given certain options, a utilitarianism would not choose an option that benefits the minority at the expense of the majority (Lowry & Peterson, 2011). As a result, this theory may lead to actions that harm the minority (Berg, Pooley & Queenan, 2011).

2.2.1.2 Non-consequentialism

Opposite to consequentialism, non-consequentialism deny that the rightness or wrongness of behaviour is determined by the goodness or badness of its consequences (Berg *et al*., 2011). Non-consequentialism/deontology is a rule/principle-based theory. It maintains that the intention behind the action or the rules to which the intention conforms, define the ethicality, not the consequences (Baum, 2010). According to Bossman and Rallis (2010), non-consequentialism behaviours are guided by universal moral standards. Berg *et al*. (2011) maintain that some actions

are wrong, no matter what the cost may be (e.g. it is wrong to steal). Bossman and Rallis (2010) conclude that deontology is the foundation of the principles of respect for persons, beneficence and justice. According to Cubitt, Drouvelis, Gachter and Kabalin (2010), moral status is derived from intrinsic properties. In support, Piazza and Sousa (2013) argue that the right or wrongness of an action is based on its consistency with, or deviation from, a universal moral rule, or as a function of the act itself, irrespective of the act's overall consequences. According to O'Gorman *et al*. (2013), deontologists believe that in any given situation, some actions are ethically and morally wrong and not acceptable, even if they are supposed to lead to the desired outcome. Deontology is duty-based and measures the justness of the action (O'Gorman *et al*., 2013). According to deontologists, decision-makers must make decisions that prevent harm to innocent victims (Dellink, Den Elzen, Aiking, Bergsma, Berkhout, Dekker & Gupta, 2009). Greve (2011) states that it is morally wrong to treat people in a certain way irrespective of the consequences of doing so. According to Siddiqui, Civaner and Elci (2013), deontology holds that the end result is irrelevant to the actions which one took to get there, especially if the methods involved tactics that undermined the rights and autonomy of an individual. According to Brunk (2012), an individual evaluates an action as right or wrong by referring to higher moral duty, norms, or the law. The following are the non-consequentialism theories:

a) Virtue ethics: Virtue ethics focus on the character of a person performing an act, rather than the action itself (Murphy, 1999; Govers, 2013). Schaffer (2009) defines virtues as strengths of character that contribute to a flourishing life or well-being for individuals and communities. Racelis (2013) defines virtue as an enduring trait, which places it in good condition and enables it to carry out its distinctive work well. Some of the virtues that ethical decision-makers have include: integrity, honesty, humility, compassion, courage or self-control, wisdom, generosity, loyalty and justice (Wood & Hilton, 2012). According to Baum (2010), virtue ethics frameworks emphasise what people should be, instead of what they should do.
b) Theory of justice: Justice is defined by Crane and Matton (2007) as the simultaneous fair treatment of individuals in a given situation, with the result that everybody gets what they deserve. The theory of justice is aimed at preserving social justice and individual liberty (Berg, Pooley & Queenan, 2011).

Justice theory claims moral conduct to be ‘fairness, equality and distribution of wealth’ (Berg, Pooley & Queenan, 2011). According to Govers (2013), justice arises from common understanding, or is specified in rights, rules and laws. Bossman and Rallis (2010) argue that the ethics of justice judge actions by their respect for a person’s rights, not by the actions’ outcomes or consequences. Moreover, the ethics of justice espouses principles of fairness and equity as criteria for judging the soundness of actions. In addition, justice aims to ensure that everyone is better off.

c) Ethics of care: The ethics of care is based on the fact of human dependency and the consequent need for care, and it addresses the moral dimensions of the relationships that arise from this form of human connectedness (Kittay, 2011). Ethical decisions must be made in caring and this is the core of ethics of care (Bossman & Rallis, 2010). The ethics of care insists that judgements that are partial to particular individuals are appropriate (Vanlaere & Gastmans, 2011). According to the ethics of care, individuals are dependent on each other and have to think about each other when making decisions (Green, 2012). The ethics of care emerges from the caregiver and a care for inherent unequal relationship (Ciulla, 2009). The decision-maker must take decisions in a caring manner for those who are dependent on the decision (Kittay, 2011). Comprehensively, the ethics of care acknowledges the importance of establishing and maintaining practices that help people to meet their needs, develop and protect basic capabilities for problem solving, emotional functioning, and social interaction, and avoid pain and suffering (Ward & Salmon, 2011). The ethics of care argues that we are always already embedded in relationships with others, and that the attentive caring for others is a crucial and fundamental aspect of morality (Robinson, 2011).

Table 2.2 summarises the sub-categories of these two categories of ethics theories. These ethics theories paved the way for CI code of ethics, aimed at enforcing ethical practice of CI.

Table 2.2: Ethics theories

Ethics theory category	Sub-category	Keywords	Content/Context	Authors/Scholars
Consequentialism	Altruism	• Selfless • Benefits everyone • Interests of others	The decision-maker avoids selfish interest and act in the best interest of others.	Burnes & By, 2011; McElwee, 2011; Plaisance & Reydon, 2012; Lung, 2012; Clavien & Chapuisat, 2013
	Egoism	• Self-interests • Benefits to self	The decision-makers makes decisions that benefits him/herself and any harm to others should be incidental rather than intentional.	Lung, 2012; Burnes & By, 2011; Ditlev-Simonsen & Wenstøp, 2011; Kahn, 2012; Racelis, 2013
	Utilitarianism	• Benefits many • Care for others • Majority	The decision-maker makes decisions that achieve the greatest good to greatest number of people including him/herself.	Rossman & Rallis, 2010; Lowry & Peterson, 2011; Berg *et al*., 2011; Govers, 2013; Ott, 2013; O'Gorman *et al*., 2013; Siddiqui *et al*., 2013
Non-consequentialism	Virtue ethics	• Character of a person • Being • Integrity • Honesty • Humility • Compassion • Self-control	Virtue ethics focus on the character of a person performing an act (e.g. integrity, honesty, humility, compassion, courage or self-control, wisdom, generosity, loyalty and justice), rather than the action itself.	Murphy, 1999; Schaffer, 2009; Baum, 2010; Wood & Hilton, 2012; Govers, 2013; Racelis, 2013
	Theory of justice	• Justice • Social justice • Liberty • Fairness • Equality • Rules and laws • Rights	Theory of justice preserves social justice and individual liberty through simultaneous fair treatment of individuals in a given situation, with the result that everybody gets what they deserve.	Crane & Matton, 2007; Bossman & Rallis, 2010; Berg *et al*., 2011; Govers, 2013
	Ethics of care	• Care • Relationship	The decision-maker makes decision in a caring manner for those who are dependent on the decision.	Ciulla, 2009; Bossman & Rallis, 2010; Kittay, 2011; Vanlaere & Gastmans, 2011; Ward & Salmon, 2011; Robinson, 2011; Green, 2012

Ethical theories are the backbone of all policies, standards and codes of ethics (O'Gorman *et al*., 2013). The development of the CI code of ethics, which is discussed in the next sub-section, was guided by these ethical theories (Govers, 2013). Having guided the development of the CI code of ethics, ethics theories have an influence on ethical CI practice. Thus, firms are influenced by ethical theories in their adoption of CI ethics (Rittenburg *et al*., 2007).

2.2.2 CI code of ethics

To prevent, avoid and reduce unethical behaviours and their consequences, firms should adopt, observe and uphold a code of ethics (Rodriguez-Dominguez, Gallego-Alvarez & Gracia-Sanchez, 2009; Gilley, Robertson & Mazur, 2010). A code of ethics provides competitive advantage to a firm (Helin & Sandström, 2010). A code of ethics is created, based on different ethics theories (Govers, 2013). Moreover, the code of ethics includes legal and regulatory counsel (Helin & Sandström, 2010; Pedraza, 2012). The code of ethics should be educational and motivational in nature and be linked to the firm's strategy (Kenning, 2008; Gilley *et al*., 2010; Helin & Sandström, 2010; Pedraza, 2012). Every profession should adopt a code of ethics in order to get its work recognised and verified by the society (Rodriguez-Dominguez *et al*., 2009; Pedraza, 2012).

Due to reported unethical behaviour in CI practice and CI being confused with industrial espionage, the SCIP developed the CI code of ethics (SCIP, 1999; Louw & Venter, 2008). The CI code of ethics is aimed at ensuring that CI is practiced ethically and legally (Trevino & Weaver, 1997; Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Bartes, 2014b; Gheysari, 2015; Reinmoeller & Ansari, 2015). It is aimed at eliminating deceit and misrepresentation, bribery aimed at getting access to confidential information and covert surveillance (Sexton, 2007; Garrett, 2011). Moreover, it is aimed at ensuring that CI is recognised as a profession and to regain lost reputation of CI practice (Trevino & Weaver, 1997; Casali, 2011; Köseoglua *et al*., 2016). The CI code of ethics should be adopted in order to avoid, prevent and reduce unethical behaviours in CI practice (Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011). However, there still are some cases of unethical behaviours reported in the ICT industry of South Africa hence this research is conducted to establish the

extent of CI ethics adoption and factors that influence the adoption of CI ethics in this industry. The CI code of ethics developed by SCIP contains the following principles which must be observed, enforced and upheld by CI professionals (SCIP, 1999):

- To strive continually to increase the recognition and respect of the profession
- To comply with all the applicable laws, domestic and international
- To disclose accurately all relevant information, including one's identify and enterprise, prior to all interviews
- To fully respect all requests for confidentiality of information
- To avoid conflicts of interest in fulfilling one's duties
- To provide honest and realistic recommendations and conclusions in the execution of one's duties
- To promote this code of ethics within one's enterprise, with third-party contractors and within the entire profession
- To adhere faithfully to and abide by one's enterprise's policies, objectives and guidelines

Firms that practise CI should enforce the CI code of ethics (Fuld+Company, 2014). Thus, they should ensure that CI is practiced in line with the CI code of ethics (Casali, 2011; Bartes, 2014a; Gheysari, 2015; Reinmoeller & Ansari, 2015). Table 2.3 summarises the CI enforcement methods.

Table 2.3: CI ethics enforcement methods

Method	Author (s)/Scholar (s)	Content/Context
Ethics roundtables	Kullberg, 1988; Frederick, 1988; Henderson, 1988	To organise ethics experts to facilitate questions and answers sessions about ethics, code of ethics and ethics policies.
Workshops, seminars, conferences, meetings, and speeches	Smith *et al*., 2010; Nasri, 2011	To reach as many people as possible at once; to teach them about ethics, code of ethics and ethics policies.
Education and Training	Henderson, 1988; Smith *et al*., 2010	To formally teach, train and educate CI professionals about ethics, code of ethics and ethics policies
Rewards for compliance and Punishment for noncompliance	Brown & Trevino, 2006	Offering of rewards to employees who comply with the CI code of ethics and punish those who do not comply.

2.2.3 Business ethics

CI professionals should observe, uphold and enforce different categories of business ethics (Köseoglua *et al*., 2016). Doing so will ensure ethical behavior, protect the reputation of the firm, and secure recognition and respect of CI profession (McGonagle & Misner-Elias, 2016; Calof, 2017). Moreover, it will assist in the adoption of CI ethics (McGonagle & Misner-Elias, 2016). According to Goby and Nickerson (2012), the following are the categories of ethics in business:

a) Ethical decision-making: Enterprises are increasingly becoming considerate of their management decisions and the consequences thereof. They are striving to be ethical in all their decision-making (Lee, 2012). This is because ethical decisions are just, fair and non-discriminatory. They do not discriminate people based on their gender, race, origin, social status or ethnicity (Robbins & Trabichet, 2009). Hosmer (2008) defines ethical decision-making as any decision that may benefit or harm others, or that exercises the rights of some while denying the rights of others. Although ethical decision-making is a complicated and sophisticated psychological process, enterprises adhere because they want to have a good relationship with all their stakeholders (Ho, 2012). Ethical decision-making is grounded in ethical theories. Decision-makers are therefore guided by ethical principles and values when making decisions (d'Anjou, 2011). Ethical decision-making models have been developed to assist decision-makers to make ethical decisions. Although some of these models are behavioural-based, they consider ethical theories or principles (Hayibor & Wasieleski, 2009). Enterprises are compiling policies that encourage management to make ethical decisions (Ruighaver, Maynard & Warren, 2010). Ruighaver *et al*. (2010) also state that policies which encourage ethical decision-making create a culture of ethics within the enterprise.
b) Ethical leadership: Enterprises prefer employees who are ethical leaders, to prevent scandals associated with unethical behaviours (Brown *et al.*, 2005). According to Brown and Trevino (2006), ethical leaders are honest and trustworthy. Moreover, they are fair and principled decision-makers and care about people and the broader society. Kalshoven, Den Hartog and De Hoogh (2013) argue that ethical leaders are role models. They behave this way

because of their integrity, ethical standards and fairness (Brown *et al.*, 2005). According to Brown et al. (2005), ethical leadership captures the dimensions of the leader both as a moral person and as moral manager. Piccolo, Greenbaum, Den Hartog and Folger (2010) argue that ethical leadership increases follower loyalty. According to Trevino and Brown (2007), ethical leaders are expected to set ethical standards and expectation and communicate these standards and expectation to their followers. Ethical leaders use rewards, punishment, communication, and modelling to influence the ethical behaviour of their followers (Brown & Trevino, 2006). Ethical leadership elevates ethical climate within an enterprise (Brown & Mitchell, 2010). According to Piccolo *et al*. (2010), ethical leadership has an effect on behaviour and performance of employees.

c) Corporate social responsibility (CSR): Beyond their purpose of making profit for shareholders, enterprises strive to be socially responsible for the community they operate in. This requires the enterprises to relate with communities, other enterprises, government, customers, suppliers, non-government organisations (NGOs) (Shamir, 2010). Maignan and Ferrell (2004) argue that enterprises have moral and social responsibility towards all their stakeholders. This has been termed Corporate Social Responsibility (CSR) (Fukukawa, Balmer & Gray, 2007). According to Jo and Harjoto (2011), CSR involves ensuring business sustainability through sound business practices that promote accountability and transparency. CSR considers that enterprises are influenced by, and influences different stakeholders and convert these influences into objectives and policies (Vilanova, Lozano & Arenas, 2009). Therefore, enterprises must create a good relationship and engage with all stakeholders to convince them to support enterprise goals and strategies (Lindgreen & Swaen, 2010). Galbreath (2010) argues that CSR is multifunctional in nature and requires inputs from all business functions. CSR has been associated with corporate governance, business ethics, corporate citizenship and sustainable development (Bolton, Kim & O'Gorman, 2011).

d) Corporate governance: It is believed that economic crises such as recessions are a result of lack of good corporate governance. Moreover, the downfall of world financial institutions is a result of lack of corporate governance (Haspeslagh, 2010). Enterprises that want to achieve global recognition embrace corporate governance (West, 2009). Corporate governance is moral

and morals are all over the world (West, 2009). Corporate governance is both ethical and legal (Letza, Kirkbride, Sun & Smallman, 2008). Ostrosky, Leinicke, Digenan and Rexroad (2009) argue that the tone of the top management, codes of conduct, ethics programmes and fraud prevention efforts are critical components of corporate governance. According to Herath and Freeman (2012), poor corporate governance practices have ruined many public corporations across the globe, sent top managers to jail, and destroyed a global accounting firm and threatened many economies and governments, and above all jeopardised the public trust. The primary aim of corporate governance to ensure return on their investment, profit increase and that business meets its social responsibilities (Letza, Kirkbride, Sun & Smallman, 2008). Corporate governance is defined as the way a corporation is directed, administered or controlled, including relationships amongst many stakeholders involved (i.e. shareholders, management, employees, customers, creditors, suppliers, regulators, the community at large) (Isaev, 2010).

e) Sustainable development: In a competitive environment, enterprises are doing whatever it takes to become and remain profitable. Being profitable involves meeting the needs of customers. However, you cannot blindly satisfy the needs of people who live now, without radically changing the conditions for the people to come (Hall, Daneke & Lenox, 2010). This is because human actions will always produce desirable and undesirable changes (Mogensena & Schnack, 2010). Enterprises must strive to avoid undesirable changes such as unavailability of resources. They must place social and environmental objectives on equal footing with economic objectives. Enterprises should use renewable resources wherever possible, and spare non-renewable resources to extend their availability for generations to come. Therefore, enterprises must develop themselves in a sustainable way. According to Ciegis, Ramanauskiene and Martinkus (2009), sustainable development involves three equivalent components: environmental, economic, and social development, as well as three dimensions of wellbeing, (i.e. economic, ecological, and social). Put differently, sustainable development suggests a confluence of diverse social, environment, and economic objectives and raises a number of important questions (Hall *et al*, 2010). Sustainable development is no longer an option, but a key guiding principle for public and private enterprises (Too & Earl, 2010).

f) Information ethics: The rapid change in information technology (IT) has a significant influence on economy, politics, culture, life style, norms and human behaviour (Chang, 2011). Notably, whilst it provides considerable convenience for individuals, the internet also generates a number of new ethical issues (Ocholla, Onyancha & Britz, 2010). This is because human emotions lead to unethical behaviours that can cost enterprises dearly (Chang, 2011). Enterprises need to be guided by ethical principles and values, which should inform them as to who should use information, what information should be used, where information should be used, and when information should be used (Dadzie, 2011; Britz & Buchanan, 2009). According to Chang (2011), the 2008 global financial crisis was caused by unethical behaviours. Enterprises must value information ethics (IE) in order to reap full benefits of IT (Ge & Thomas, 2008). IE provides IT professionals with point of reference when dealing with ethical issues (Chang, 2011). Moreover, IE is aimed at developing and sustaining an information society (Dadzie, 2011). Therefore, it would be disastrous for any enterprise to operate while ignoring IE (Martinsons, 2009).

These categories of business ethics are summarized in table 2.4 below. There is yet to be a study, which explored the influence of these business ethics on adoption of CI ethics in the South African ICT industry. The following section provides an in-depth review of the state of CI ethics in the ICT industry.

Table 2.4: Categories of business ethics

Business ethics category	Author (s)/Scholar (s)	Content/Context
Ethical decision-making	Hosmer, 2008; Robbins & Trabichet, 2009; Ruighaver, Maynard & Warren, 2010; D'Anjou, 2011; Ho, 2012; Lee, 2012	CI professionals should make decisions that are ethical. They should consider the consequences of their decisions. They should make decisions that are fair, just and policy-based.
Ethical leadership	Brown *et al*., 2005; Brown & Trevino, 2006; Trevino & Brown, 2007; Brown & Mitchell, 2010; Piccolo, Greenbaum, Den Hartog & Folger, 2010; Kalshoven, Den Hartog & De Hoogh, 2013	CI professionals should be honest and trustworthy in leading CI. They should exercise fairness, care and integrity when practising CI.
Corporate social responsibility	Maignan & Ferrell, 2004; Fukukawa, Balmer & Gray, 2007; Vilanova, Lozano & Arenas, 2009; Lindgreen & Swaen, 2010; Galbreath, 2010; Shamir, 2010; Bolton, Kim & O'Gorman, 2011; Jo & Harjoto, 2011	CI professionals should consider the social impact of their decisions and actions when practising CI. Thus, they should be accountable and transparent to stakeholders such as communities, other enterprises, government, customers, suppliers, non-government organisations. They should create good relationship with all stakeholders.
Corporate governance	Letza, Kirkbride, Sun & Smallman, 2008; Ostrosky, Leinicke, Digenan & Rexroad, 2009; West, 2009; Haspeslagh, 2010; Isaev, 2010; Herath & Freeman, 2012	CI professionals should be accountable and responsible to shareholders and stakeholders by observing and considering rules, regulations, principles, code of conduct, policies, morals, values, and corporate culture when practising CI. They should not jeopardise public trust and dent the reputation of the firm during CI practice.
Sustainable development	Ciegis, Ramanauskiene & Martinkus, 2009; Hall, Daneke & Lenox, 2010; Mogensena & Schnack, 2010; Too & Earl, 2010	CI professionals should make decisions and act in a way that benefits both the current and future generations. They should sustain resources when practising CI.
Information ethics	Ge & Thomas, 2008; Britz & Buchanan, 2009; Martinsons, 2009; Ocholla, Onyancha & Britz, 2010; Chang, 2011; Dadzie, 2011	CI professionals should generate, gather, organise, store, retrieve, and use information in an ethical and legal manner. They should respect privacy, security, access to information, intellectual freedom, quality and integrity of information when practising CI.

2.3 CI code of ethics in the ICT industry

The ICT industry is the most vibrant, dynamic and competitive industry in the world. It is the primary creator of jobs and an enabler of economic growth (Lehohla, 2012; Lotriet *et al*., 2010). It is characterised by weak barriers to entry and high innovation making it very competitive (Wulf & Zarnekow, 2011). To thrive and gain competitive advantage in the ICT industry, firms all over the world practice CI (Waithaka, 2016; Harrison & Cupman, 2017). However, there are ethical concerns in the practice of CI within the ICT industry (Collins & Schultz, 1996; Fitzpatrick & Burke, 2003). ICT firms do not comply with the CI code of ethics when practicing CI (Trevino & Weaver, 1997; Smith *et al*., 2010). Singh (2011) discovered that ICT firms practice CI aggressively and that one cannot write off unethical behaviour from this industry. Thus, their aggressiveness in collecting information from their competitors may trigger unethical behaviours. Rittenburg *et al*. (2007) and Mukwevho (2015) conclude that ICT firms have technologies to engage in unethical behaviour while practicing CI. For example, some ICT firms install hidden cameras on the premises of their competitors. Moreover, some ICT firms hack into information systems of their competitors.

Some large international ICT firms sue each other for unethical CI practice. For example, HP sued an ex-employee for joining Oracle and utilising their information in information technology projects (Pepitone, 2010). Uber was sued by Alphabet for stealing trade secrets about self-driving vehicles (Prigg, 2017). Oracle spied on Microsoft to collect information about funding of public-interest groups. Avant was sued by Cadence Design Systems for stealing code, copyright infringement, conspiracy, and other improprieties. IBM was sued by Hitachi for stealing designs and technical secrets (Therichest, 2015). Similar cases involving South African ICT firms have been reported and are outlined in section 2.3.1 below. These cases indicate that some firms are not adopting, complying, observing, upholding, and enforcing the CI code of ethics when practising CI. Thus, there is a need to establish the extent of CI ethics adoption and the factors that positively and negatively influence the adoption of CI ethics, hence this study.

2.3.1 CI Code of ethics in the South African ICT industry

The vision of South Africa as a country is “to create a vibrant ICT sector that ensures that all South Africans have access to robust, reliable, affordable and secure ICT services in order to advance socio-economic development goals, and support the African agenda and contribute to building a better world” (DoC, 2013-2018). This vision reveals that the South African ICT industry is an important component of the national economy (Lehohla, 2012). The South African ICT industry is important for the country for the following reasons: it creates jobs; boosts efficiency and productivity; enables innovation and entrepreneurship, increases investor confidence; and shortens products development life cycle (Scheepers, 2008; Paterson & Roodt, 2008; Hanna, 2010; DoC, 2012-2017; Lotriet *et al*., 2010).

South African ICT firms are spread across the nine provinces, namely Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, and Western Cape (South Africa Info, 2017). Majority of the South African ICT firms are located in the Gauteng Province which is the economic hub of the country (Easyinfo, 2017; Brand South Africa, 2014). Although other provinces have good ICT infrastructure, the ICT infrastructure in the Gauteng Province is excellent, giving the ICT firms in Gauteng and added advantage (Mybroadband, 2016).

South African ICT firms fall under three sub-industries, namely, manufacturing, goods-related service and intangible services (DoC, 2013). These sub-industries are summarised in table 2.5. The majority of the ICT firms are hosted in the intangible services sub-industry (Esselaar, Gillwald, Moyo & Naidoo, 2010). Regardless of which provinces and sub-industry the firms operate in, the South African ICT industry is very dynamic and competitive (Lotriet *et al*., 2010). The competition is even more intense as South African ICT firms compete with both local and international firms. For example, ICT manufactures competes compete with international firms that exports their products to South Africa. South African ICT firms are very competitive globally in pre-payment, revenue management and fraud prevention systems (DoC, 2013).

Table 2.5: ICT sub-industries

ICT sub-industry	Author(s)/Scholar(s)	Content/Context
Manufacturing	OECD, 2007; Esselaar *et al*., 2010; DoC, 2013	Manufacturing of electronics and hardware
Goods-related service		Sales of digital devices, repairs and shipping of devices
Intangible services		Telecommunication services, maintenance, logistical support, data warehousing, network support, web hosting, web design, software development, debugging and storage

The competition in the South African ICT industry is also intensified by rapid change in technology, demolition of international trade barriers post-apartheid, high innovation, and general weak barriers to entry (Engelbrecht, 2008; Mophatlane, 2008; Wulf & Zarnekow, 2011). To survive and gain competitive advantage in this very competitive industry firms are practicing CI (Mcilhone, 2014; Sewdass & Du Toit, 2014). When practicing CI, South African ICT firms should comply with the CI code of ethics in addition to the acts, rules and regulations that governs the ICT industry (James, Esselaar & Miller, 2012; Mcilhone, 2014).

The South African ICT industry is regulated by Independent Communications Authority of South Africa (ICASA), in line with the following Acts: Constitution of the Republic of South Africa; Broadcasting Act of 2002; Independent Communications Authority of South Africa Act, of 2006 (ICASA Amendment Act); Electronic Communications Act, No 36 of 2005 (ECA); Competition Act of 1998; Promotion of Administration Justice Act, No 3 of 2000 (PAJA); Postal Services Act, No 124 of 1998 (Dube, 2007; Ayogu & Bayat, 2010; James *et al*., 2012). ICASA is granted the mandate to regulate the ICT industry by DoC, whose mandate is “to create a vibrant ICT industry that ensures that all South Africans have access to robust, reliable, affordable and secure ICT services in order to advance socio-economic development goals and support the Africa agenda and contribute to building a better world (DoC, 2017).” DoC develops ICT policies and legislation that creates conditions for an accelerated and shared growth of the South African economy, which positively impacts on the well-being of all our people and is sustainable (DoC, 2017).

DoC has six state-owned companies and one shareholding that help in the fulfilment of its mandates. Telkom is the shareholding company. The state-owned companies, namely ICASA, Universal Service and Access Agency of South Africa (USAASA), South African Broadcasting Corporation (SABC), South African Post Office (SAPO), Sentech, and National Electronic Media Institute of South Africa (NEMISA) function function as service delivery arm of government, and ensures that there is an accelerated socio-economic development growth and development of the ICT industry and promote access to ICT tools (DoC, 2017). The purpose of each of these state-owned companies is summarised in table 2.6 below.

Table 2.6: ICT state-owned companies

Company	Purpose
ICASA	To make regulations and issues communication licences in terms of the Electronic Communications Act (2005) and Postal Service Act (1998).
USAASA	To manage universal service fund in the promotion of universal service and universal access to electronic communications services, electronic communications networks, and broadcasting services.
SABC	To provide broadcasting services to all South Africans in all the official languages.
SAPO	To conduct postal services in the country and offer financial services through Postbank.
Sentech	To provide broadcasting signal distribution for broadcasting licenses.
NEMISA	To train previously disadvantaged individuals, particularly women, to equip them with the necessary skills to play significant roles in the constantly changing broadcasting environment.

Source: DoC (2017)

DoC also has six programmes aimed at fulfilling its mandate (DoC, 2017). These are summarised in table 2.7 below.

Table 2.7: Programmes for fulfilling DoC mandate

Programme	Purpose
Governance and administration	To provide strategic support to the ministry and overall management of the DoC.
ICT international affairs and trade	To ensure alignment between South Africa's international activities and agreements in the field of ICTs with South Africa's foreign policy.
ICT policy development	To develop ICT policy, legislation and strategies that support the development of an ICT industry that creates conditions for the accelerated and shared growth of the economy.
Finance and ICT enterprise development	To oversee and manage government's shareholding interest in public entities and facilitate growth and development of SMMEs in the ICT industry.
ICT infrastructure development	To promote investment in robust, reliable, secure and affordable ICT infrastructure that supports the provision of a multiplicity of applications and services.
Presidential National Commission	To facilitate the development of all-inclusive information society by promoting the uptake and usage of ICTs for improved socio-economic development and research.

Source: DoC (2017)

The combination of the CI code of ethics together with Acts, Rules and Regulations that govern the South African ICT industry should help the CI professionals to practice CI ethically and legally (Calof & Viviers, 2005; Pellissier & Nenzhelele, 2013; Doc, 2017). However, unethical behaviours in CI practice are evident in the South African ICT industry (Evans, 2015; Mukwevho, 2015). Some South African ICT firms install hidden cameras and recording devices in the premises of their competitors, thus, making the competitors to be victims of unethical CI practice (Mukwevho, 2013; Evans, 2015). There are cases of unethical behaviours reported in the South African ICT industry and they are causes of concern for CI profession and worth noting (Groenewald, 2016). Here are some cases of unethical CI practice by some South African ICT firms: Datacentrix employees stole sensitive information from Business Connexion in 2012; Telkom and Multi-Links sued Blue Label for misrepresentation in 2010; MTN was sued billions of dollars by Turkcell for paying a bribe to secure contracts in Iran (Moneyweb, 2012; ITWeb, 2013; EWN, 2017) These cases contravene the CI code of ethics and rules and regulations that governs the ICT industry. They further dent the reputation of the CI profession. Hence the call for full adoption of a CI code of ethics (Okorie & Lazarus, 2015; Köseoglua *et al*., 2016).

2.4 Interpretive structural modelling: key CI ethics adoption variables

This section outlines and discusses the key CI ethics adoption variables and their links to categories of ethical theories. Thus, the factors that may positively and negatively influence the adoption of CI code of ethics by the South African ICT industry are outlined and discussed. Interpretive structural modelling (ISM) is followed to identify the key CI ethics adoption variables. ISM helps identify independent and dependent variables to construct a conceptual model. In addition, the ISM summarises causal and influential relationship between variables (Warfield, 1976; Sharma & Garg, 2010; Lin, Lin & Yu, 2011). Moreover, ISM is complementary to structural equation modelling (SEM) which will be used to statistically test the conceptual model (Azevedo, Carvalho & Cruz-Machado, 2013). According to Dubey and Ali (2014), ISM explores the existing literature to create or construct missing variables in the literature. Since there is no existing literature that constructed variables that positively or negatively influence the adoption of CI ethics, ISM is followed to construct these variables. The key CI ethics adoption variables and their links to categories of ethical theories are summarised in table 2.8 and discussed hereafter.

The adoption of CI ethics by South African ICT firms will ensure that CI is recognised as a profession (Rittenburg *et al*., 2007). It will minimise and subsequently eliminate the grey area between industrial espionage and CI (Oubrich, 2011; Yap & Rashid, 2011). The adoption of CI ethics will save ICT firms money spent on reviving a dented reputation caused by unethical behaviours (Trevino & Weaver, 1997).

Table 2.8: Key CI ethics adoption variables (part 1)

Variables	Sub-variables	Content/Context	Link to ethical theories	Author (s)/Scholar (s)
Industrial factors	The role of established bodies	ICASA regulates the ICT industry on behalf of DoC BITF promotes credibility with the ICT industry The BEE Charter aims to do the right things with the ICT industry	Non-consequentialism: theory of justice	James *et al*., 2012; Ayogu & Bayat, 2010; Code of Good Practice on Broad-Based Black Economic Empowerment 2012; Wesso, 2010
	ICT codes of good practice	Promotes fairness and justice	Non-consequentialism: theory of justice	Code of Good Practice on Broad-Based Black Economic Empowerment, 2012
	Collaboration	Enables easy access to information Promotes ethical behaviours	Non-consequentialism: ethics of care	McCoy, 2012; Rittenburg *et al*., 2007; Vilanova *et al*., 2009; IST-Africa Consortium 2012
	South African ICT policies	Promotes competition Address previous shortcoming Aligned with international policies Positively ensure the well-being of people Promotes ethics and governance Address all challenges in the industry	Non-consequentialism: theory of justice	Dube, 2007; James *et al*., 2012; Ayogu & Bayat, 2010; Pule, 2012
	Exposure to international forces	Comply with international ICT standards Resourceful Qualified personnel Implementation of corporate governance and code of ethics	Non-consequentialism: theory of justice	Kyobe, 2011; Corrales & Westhoff, 2006; Akhtar, Khan & Mujtaba, 2013;
	Government spending on infrastructure and growing investor confidence	Requires governance Enforces ethics	Non-consequentialism: theory of justice and ethics of care	Green, 2011; Stats SA, 2012; DoC, 2016; Telecommunications Sector Performance Review Market Report, 2014; Mkhize, 2015; Measuring the Information Society Report, 2015; Lotriet *et al*., 2010; DoC, 2017; Mophatlane, 2008

Table 2.8: Key CI ethics adoption variables (part 2)

Variables	Sub-variables	Content/Context	Link to ethical theories	Author (s)/Scholar (s)
Competitive intelligence practice factors	Clear CI needs	Are ethical in nature Encourage ethical and legal information collection They are strategic in nature Come from decision-makers	Non-consequentialism: theory of justice; ethics of care; and virtue ethics	Nasri & Zarai, 2013; Nasri, 2011; Căpăţînă & Vanderlinden, 2012; Bartes, 2014a; Yassine, 2014
	Communication between decision-makers and CI practitioners/professionals	Encourages ethical behaviours Reemphasise ethical CI practice	Non-consequentialism: ethics of care	McGonagle & Misner-Elias, 2016; Barnea, 2014; Lin & Yan-Zhang, 2015; Arcos, 2013; Yassine, 2014
	CI quality assurance	Promotes excellence Promotes integrity, honesty, fairness and justice Encourages ethical and legal CI practice	Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Bartes, 2011; Mojarad, Zangeneh & Azad, 2014; Fleisher & Wright, 2010; Haataja, 2011; Shih *et al*., 2010; Gurses & Kunday, 2014; Jin & Ju 2014; Nasri, 2011; Bartes, 2014a
	Availability of resources for CI	Enables CI ethics awareness Trains CI professionals on ethics Rewards ethical behaviours Punish unethical behaviours	Consequentialism: altruism and utilitarianism Non-consequentialism: ethics of care	Saayman *et al*., 2008; Maune, 2014; Du Toit & Sewdass, 2014; Pellissier & Nenzhelele, 2013; Nasri & Zarai, 2013
	Skilled CI professionals	Have CI ethics skills and experience Practice CI ethically and legally Aware of CI code of ethics	Non-consequentialism: virtue ethics and theory of justice	Hoppe, 2015; Degerstedt, 2015; Hemmatfar, Salehi, & Bayat, 2010; Salguero & Quintero, 2016; McGonagle & Vella, 2012
	Formalisation of CI process	Follows an ethical and legal CI process Appoints qualified CI professionals Have CI resources	Non-consequentialism: virtue ethics and theory of justice	Yap & Rashid, 2011; Nikolaos, 2012; Nasri & Zarai, 2013; Bulley *et al*., 2014; Momeni & Mehrafzoon, 2013; Gatsoris, 2012; McGonagle & Vella, 2012; Lin & Yan-zhang, 2015; Nasri & Zarai, 2013
	Being a member of SCIP	Aware of CI code of ethics Practice CI ethically and legally	Non-consequentialism: theory of justice and ethics of care	SCIP, 1999; Yassine, 2014; Louw & Venter, 2008; Gurses & Kunday, 2014
Economic, political and social factors	Low interest and inflation rate	Ease access to CI resources Less pressure to behave unethically	Non-consequentialism: theory of justice and ethics of care	Engelbrecht, 2008
	Global economic growth	Compliance to international policies, laws and regulations Less pressure to behave unethically	Non-consequentialism: theory of justice	Lotriet, Matthee & Alexander, 2011
	Ethical political leaders	Promote ethical culture Ethical role modelling Ethical behaviours publication	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Loi, Lam & Chan, 2012

Table 2.8: Key CI ethics adoption variables (part 3)

Variables	Sub-variables	Content/Context	Link to ethical theories	Author (s)/Scholar (s)
Organisational and stakeholders' factors	Organisational awareness and culture	Enforces CI code of ethics Clears misconception	Non-consequentialism: theory of justice and ethics of care	Strauss & Du Toit, 2010; Nasri, 2011; Saayman *et al*., 2008
	Organisational policies, code of ethics and approaches/standards	Promotes ethical decision-making Promotes compliance	Non-consequentialism: theory of justice	Rittenburg *et al*., 2007; Brown & Trevino, 2006
	Government laws/regulations	Encourages legal CI practice Punish unethical behaviours	Non-consequentialism: theory of justice	DoC, 2017; Rittenburg *et al*., 2007
	Established societal/industry/business norms	Encourages morals Promotes ethics Clarify right or wrong	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Rittenburg *et al*., 2007; Pule, 2012; Esselaar *et al*., 2010; James *et al*., 2012; Dube, 2007; Roche & Blaine, 2015
	Perceived potential for customer backlash	Discourages unethical behaviours	Non-consequentialism: ethics of care	Rittenburg *et al*., 2007
	Stakeholders	Influences ethical behaviours of firms Requires trust and integrity	Non-consequentialism: ethics of care and virtue ethics	Maignan & Ferrell, 2004; Turker, 2009; Babiak & Lova, 2011; Lindgreen & Swaen, 2010
Raising CI ethics awareness	Management support, participation and visibility	Encourages ethical CI practice Provides resources to promote ethics Lead by example Champion code of ethics	Non-consequentialism: ethics of care and virtue ethics	Barnea, 2014; Bulley *et al*., 2014; Fatti & Du Toit, 2013; Nasri, 2011; Hesford, 2008
	Raising ethics awareness through education and training	Raises awareness of CI code of ethics Equip employees with ethics skills Qualifies CI professionals	Non-consequentialism: ethics of care and virtue ethics	Smith *et al*., 2010; Paterson, 2011
	Raising ethics awareness through workshops, seminars, speeches, meetings and conferences	Connects ethics champions Revive ethical behaviours Awakes conscience	Non-consequentialism: ethics of care and virtue ethics	Smith *et al*., 2010
	Raising ethics awareness through ethics roundtables	Promotes ethics through role models Enforces a culture of ethics Revives ethical behaviours Answers ethics questions Creates ethics understanding	Non-consequentialism: ethics of care and virtue ethics	Kullberg, 1988; Henderson, 1988
Decision-making factors	Competence of the decision-makers	Ensures ethical decision-making Encourages ethical leadership Promotes integrity, honesty, fairness, and justice	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Afsar, 2011; Steptoe-Warren, Howat & Hume, 2011; Garavan & McGuire, 2001; Brown &Trevino, 2006;
	Decisions taken at strategic level	Encourages ethical behaviours Promotes ethical role modelling Enforce governance, policies and code of ethics	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Van Riel *et al*., 2011; Nicolas, 2004
	Decisions taken at functional level	Implements code of ethics Champion ethics	Non-consequentialism: virtue ethics	Pavic, 2011; Jung, 2013; Van Riel *et al*., 2011;
	Decisions taken at operational level	Observes ethical behaviours Punish unethical behaviours Reward ethical behaviours	Consequentialism: altruism; utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Jung, 2013; Schiavone, 2011; Van Riel *et al*., 2011

Table 2.8: Key CI ethics adoption variables (part 4)

Variables	Sub-variables	Content/Context	Link to ethical theories	Author (s)/Scholar (s)
Business ethics and ethical theories	Ethical leaders, managers and decision-makers	Promotes integrity, honesty, humility, compassion, courage or self-control, wisdom, generosity, loyalty and justice Encourages ethical decision-making Champion ethics	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Wood & Hilton, 2012; Brown *et al*., 2005; Bossman & Rallis, 2010; Kalshoven *et al*., 2013; Trevino & Brown, 2007
	Rewards for compliance and punishments for non-compliance	Encourages ethical behaviours Discourages unethical behaviours	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Brown & Mitchell, 2010; Trevino *et al*., 2000; Brown & Trevino, 2006
	Business ethics	Creates ethical culture Encourages ethical behaviours	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Fukukawa *et al*., 2007; Lindgreen & Swaen, 2010; Chang, 2011; Muwandi, 2010; Hall *et al*., 2010
	Virtues/good characters:	Lead to ethical behaviours Promotes ethical conducts Promotes virtue	Non-consequentialism: virtue ethics	Govers, 2013; Wood & Hilton, 2012; Racelis, 2013
	Ensuring that justice prevails	Encourages respect for others Fair treatment of others Justice is encouraged Equal treatment of people	Non-consequentialism: theory of justice	Crane & Matton, 2007; Miller, 2012; Berg *et al*., 2011; Bossman & Rallis, 2010
	Bad and good consequences of one's actions	Encourages ethical behaviours	Consequentialism: altruism; egoism; and utilitarianism	Rossman & Rallis, 2010; Brunk, 2012; Rossman & Rallis, 2013
	Consideration of all organisational stakeholders' interests	Encourages ethical behaviours Promotes integrity Encourages good governance	Consequentialism: altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	McElwee, 2011; Plaisance & Reydon, 2012; Govers, 2013
	Considerations of rules and principles that govern the community	Creates ethical culture Encourages right and discourages wrong	Non-consequentialism: theory of justice	Baum, 2010; Govers, 2013; Plaisance & Reydon, 2012
	Respect for all organisational stakeholders	Encourages integrity, fairness and justice Ensures ethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Kalshoven, Den Hartog & De Hoogh, 2011; Rossman & Rallis, 2010; Gainor & Bouthillier, 2014

Table 2.8: Key CI ethics adoption variables (part 5)

Variables	Sub-variables	Content/Context	Link to ethical theories	Author (s)/Scholar (s)
CI ethics challenges	CI budgetary constraint	Lead to informal CI practice No resources to raise CI ethics awareness CI practiced by unqualified personnel Lead to unethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Muller, 2007b; Bulley *et al*., 2014; Smith *et al*., 2010; Yap & Rashid, 2011; Gainor & Bouthillier, 2014
	Outsourcing of CI	Contractor may not be ethical in CI practice Less control of ethical behaviours of CI contractor	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Pargaonkar, 2016; Cantonnet, Aldasoro & Cilleruelo, 2014; Sewdass & Du Toit, 2015; Glitman, 2007; Wunderlin, 2007
	Informal CI process	Unqualified CI personnel Lack of awareness of CI ethics Lead to unethical behaviours CI practiced haphazardly	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Nenzhelele, 2012; Mohammed & Çiçek, 2015; Roche & Blaine, 2015; Muller, 2007a; Muller, 2007b; Fatti & Du Toit, 2013; Eriksson & Motte, 2013; Degerstedt, 2015; Pargaonkar, 2016
	Lack of CI expertise and experience	Lack of CI ethics awareness Informal CI practice Lead to unethical behaviours	Non-consequentialism: virtue ethics and theory of justice	Hoppe, 2015; Pargaonkar, 2016; Herring, 2010; Oubrich, 2011; Rittenburg *et al*., 2007; Jin & Ju, 2014
	Global economic slowdown/recession	Pressurises firms to do whatever it takes to survive It's survival of the fittest May lead to unethical behaviours	Non-consequentialism: theory of justice	Haspeslagh, 2010; Chen *et al*., 2009; Bruno & Claessens, 2010; Strauss & Du Toit, 2010; Nasri & Zarai, 2013; Bulley *et al*., 2014; Mojarad *et al*., 2014
	High interest and inflation rates	Lack of resources for CI Cutting of CI budget No funds to raise CI ethics awareness Pressurise unethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Hinterhuber, 2013; Rittenburg *et al*., 2007; Moneyweb, 2014; Reinmoeller & Ansari, 2015
	Poverty	An excuse for unethical behaviours Pressurise unethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Jiyane & Mostert, 2010; Hanna, 2010; Kyobe, 2011; Stats SA, 2011; Economist, 2014; Reinmoeller & Ansari, 2015
	Poor education system	Lack of ethics teaching and learning Lack of CI ethics awareness Fewer qualified CI personnel Lead to unethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	James *et al*., 2012; Biermann & Jordaan, 2013; Finnie & Norrie, 2013; Global Competitiveness report 2015/2016; Hoppe, 2015; Pargaonkar, 2016; Rittenburg *et al*., 2007
	Constant publication of business scandals, corruption and fraud	Creates a culture of unethical behaviours Promotes unethical behaviours Justification for unethical behaviours	Consequentialism: altruism; egoism; and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Gilley *et al*., 2010; Mukwevho, 2015; Rittenburg *et al*., 2007; Bartes, 2014b; Gheysari, 2015; Reinmoeller & Ansari, 2015; Pule, 2012
	Self-interests and lack of care for others	Pollutes integrity, fairness and justice Careless decision-making Lead to unethical behaviours	Consequentialism: egoism; altruism and utilitarianism Non-consequentialism: virtue ethics; theory of justice; and ethics of care	Clavien & Chapuisat, 2013; Plaisance & Reydon, 2012; Lung, 2012; Burnes & By, 2011; McElwee, 2011

Table 2.8: Key CI ethics adoption variables (part 6)

Variables	Sub-variables	Content/Context	Link to ethical theories	Author (s)/Scholar (s)
CI ethics challenges	Weak barrier to entry and high competition in the ICT industry	Too much pressure to gain competitive advantage Survival of the fittest Pressure for unethical behaviour	Non-consequentialism: theory of justice	Wulf & Zarnekow, 2011; Mophatlane, 2008; Jiyane & Mostert, 2010; Akhtar *et al*., 2013; Moneyweb, 2014; Mukwevho, 2015
	Lack of resources or infrastructure in the ICT industry	Competition for limited resources Bribery paid to obtain resources Lead to unethical behaviours	Consequentialism: egoism Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Engelbrecht, 2008; James *et al*., 2012; Mophatlane, 2008; Moneyweb, 2014; Pule, 2012
	High telecommunication costs	Price fixing Lead to unethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Pule, 2012; DoC, 2017; Morris, 2006; Pule, 2012; Biermann & Jordaan, 2013; Gainor & Bouthillier, 2014; Saayman *et al*., 2008; Rittenburg *et al*., 2007
	ICT skills shortage	Fewer qualified ICT personnel Lack of training in ethics Lead to unethical behaviours	Non-consequentialism: ethics of care; virtue ethics; and theory of justice	Paterson, 2011; Biermann & Jordaan, 2013; Wesso, 2010; Lotriet *et al*., 2010; Biermann & Jordaan, 2013; Cantonnet *et al*., 2014; Yassine, 2014

Although an in-depth review of literature points towards these variables as key factors that may positively or negatively influence CI ethics adoption, there is no study that have explored the interrelationship and tested its validity with CI practitioners within the ICT industry. It is for the latter reason, that this study constructed a questionnaire to test and validate the interrelationship between these identified variables. These variables are discussed in-depth in sub-sections below.

2.4.1 Industrial factors

These are factors that exist within the ICT industry of South Africa. Firms usually have less influence on these factors. Some of these factors are controlled by the institutions that govern the industry. These factors include the following:

2.4.1.1 The role of established bodies

Established bodies within the ICT industry play a crucial role in enforcing compliance to laws/regulations and code of ethics. ICASA regulates the ICT industry by developing policies. ICASA also issue operation licenses to firms that operate within the ICT industry. Firms that do not comply with the terms and conditions of operation risk losing their licenses. ICASA is also mandated by government to design policies that will reduce the cost of communicating (James *et al*., 2012). Reduction in cost of communication increases the demand of ICT services and makes the ICT industry very competitive. ICASA also ensures that the South African ICT industry complies with international laws/regulations (Ayogu & Bayat, 2010). BITF and Black Economic Empowerment Charter for ICT promote fairness and justice by driving black individuals into the mainstream of ICT industry. They empower previously disadvantaged individuals with skills, experience and opportunities they require to be the best in the ICT industry. Thus, they are made aware codes of ethics such as CI code of ethics (Code of Good Practice on Broad-Based Black Economic Empowerment 2012; Wesso, 2010).

2.4.1.2 ICT codes of good practice

The ICT codes of good practice was initiated and developed by all the ICT sector stakeholders comprising of the Broadcasting, Electronics, and ICT sub-sectors; together with participants from the social partners, namely, Government, labour, community, and ICASA. It is aimed at promoting fairness and justice in distribution of wealth within the ICT industry. It does so by ensuring that there is transformation within the ICT industry. Thus, previously disadvantaged people such as blacks, women and the disabled are given preference in ICT opportunities. This code of good practice is binding on all firms that operate in the ICT industry. Compliance to this code of good practice may help firms to comply with other code of ethics such as CI code of ethics. The ICT code of good practice encourages firms to spend part of their profit on improving the lives of communities around them. The culture of caring cultivate ethical behaviours from employees (Code of Good Practice on Broad-Based Black Economic Empowerment, 2012).

2.4.1.3 Collaboration

ICT firms collaborate with stakeholders such as customers and suppliers to obtain information and complementary resources (McCoy, 2012). Collaboration is a source of competitive advantage. Some firms form strategic alliances in order to gather intelligence and share it amongst themselves to gain competitive advantage over the non-participating firms (Rittenburg *et al*., 2007). Thus, collaboration enables easy access to information. Therefore, The CI professionals gather information that is publicly available to them and from partnering stakeholders (Vilanova *et al*., 2009). Collaborative partners such as universities, government, research institutions and other enterprises promote legal and ethical practice of CI. Firms that are in collaboration exercise care when making decisions. They exercise integrity, honesty, fairness and justice. Their CI professionals practice CI ethically and legally (IST-Africa Consortium 2012).

2.4.1.4 South African ICT policies

DoC and ICASA are mandated by the South African government to develop policies that governs the ICT industry (Dube, 2007). These policies are aimed at ensuring that the government achieve its ICT needs and goals. These policies are ICT firms that must comply with the ICT policies developed by DoC and ICASA (James *et al*., 2012). These policies are legal and binding on any firm that operates in the ICT industry. The ICT policies encourage competition within the ICT industry to ensure reduction in ICT services cost and improved quality service (Ayogu & Bayat, 2010). The South African ICT policies are aligned with international ICT policies ensuring corporate governance. They address all challenges faced by the South African ICT industry. They address the imbalances of the past such as equity, unemployment and poverty to ensure the wellbeing of everyone. Operation license are withdrawn from ICT firms that do not comply with the ICT policies. Thus, the policies ensure that ICT firms are ethical and legal in their business conducts (Pule, 2012).

2.4.1.5 Exposure to international forces

ICT has demolished international business borders and its rapid change has led to an increase in competition. ICT firms that operate their businesses in telecommunication compete with international firms for clients (Kyobe, 2011). These firms must meet international standards in order to remain relevant and competitive (Corrales & Westhoff, 2006). They invest resources to ensure that their infrastructure is top notch. Also, these firms employ highly qualified employees to ensure they have sustainable competitive advantage over their local and international rivals (Akhtar *et al*., 2013). Thus, international forces help raise the standard of business operations. They ensure that businesses implement corporate governance and codes of ethics (Kyobe, 2011).

2.4.1.6 Government spending on infrastructure and growing investor confidence

South African government increases spending on ICT every year to ensure that the infrastructure is world class (Green, 2011). The spending amounts to billions of rand (Stats SA, 2012). Most of the money is spent on upgrading the telecommunication

network (Green, 2011). The aim is to ensure that everyone is able to access the Internet and information. This is because Internet access has been declared a human right (DoC, 2016). Most public places now have internet access through Wi-Fi (Telecommunications Sector Performance Review Market Report, 2014). This increases demand for ICT services and accelerates the growth of the ICT industry (Mkhize, 2015). Moreover, it has led to an increase in webhosting and web designing firms. It has further led to an increase in the number of internet service providers (Measuring the Information Society Report, 2015). The spending is also on infrastructure such as electricity, buildings, roads and networks. It is aimed at reducing or eliminating power outage and network shutdown thus ensuring uninterrupted operation of the ICT industry (Lotriet *et al*., 2010). Moreover, it ensures the development of robust, reliable, secure and affordable ICT infrastructure that supports and enables the provision of a multiplicity of applications and services, to meet the needs of the country and its people (DoC, 2017). With more spending on ICT infrastructure, investors are confident that their investment will grow. Consequently, investors invest more money in the ICT industry. To protect resource spent on the ICT infrastructure, government require ICT firms to comply with policies, codes of good conducts, codes of ethics, acts, rules and regulation. Government require ICT firms to be ethical and legal in their conduct (Mophatlane, 2008).

Table 2.8 (part 1) and the discussion of industrial factors indicate that these factors are rooted in non-consequentialist theories. These factors emphasises compliance enforced by established bodies within the government of South Africa. Hence, they are guided by theory of justice and ethics of care.

2.4.2 Organisational and stakeholders' factors

These are factors that the firms have control over. Firms are able to change or react to these factors. They include the following sub-factors:

2.4.2.1 Organisational awareness and culture

Firms that raises CI awareness creates a culture of information sharing and competitiveness. This culture stops employees from sharing information with

competitors and potential competitors. Thus, all employees become part of the CI process. Moreover, employees become aware of the rights and wrongs about CI practice. Thus, employees are made aware of the CI code of ethics. They are also made aware of the consequences of unethical and illegal CI practice (Strauss & Du Toit, 2010). Firms even reward employees who practice CI ethically and legally and punish those who engage in unethical and illegal CI practise (Nasri, 2011). Thus, they enforce CI code of ethics and clear out any misconception (Saayman *et al*., 2008).

2.4.2.2 Organisational policies, code of ethics and approaches/standards

Firms have policies, code of ethics and standards which employees have to comply with (Rittenburg *et al*., 2007). Firms enforce these policies, code of ethics and standards using rewards and punishments (Brown & Trevino, 2006). Employees that comply are rewarded and those that fail are punished. This may positively influence the adoption of CI ethics.

2.4.2.3 Government laws/regulations

Firms are required to comply with all government laws/regulations (DoC, 2017). These laws/regulations are legally binding, and failure by firms to comply with government laws/regulations may lead to a fine or imprisonment. For example, firms are required to register as formal entities. They are required to submit tax returns and pay tax. Moreover, they are required to comply with all acts that affect the ICT industry. They are required to comply with the constitution of the country. Thus, ICT firms should conduct all activities of their business ethically and legally (Rittenburg *et al*., 2007).

2.4.2.4 Established societal/industry/business norms

Firms are part of the society they operate in. Employees of firms are part of the society. Society is guided by norms. These are rights and wrongs about the existence of people and their behaviours (Rittenburg *et al*., 2007). The ICT industry has norms that guide how firms should conduct their business (Pule, 2012). The South African ICT industry requires that ICT firms comply with policies, acts, codes of good conducts, rules and regulations (Esselaar *et al*., 2010). Moreover, ICT firms should exercise fairness and

justice through transformation. The South African ICT industry rewards compliance and punishes non-compliance. Thus, the South African ICT industry promotes integrity, honesty, fairness and justice (James *et al*., 2012). Firms use policies; procedures, corporate governance, and code of ethics to create norms. They raise awareness of these norms throughout the firm to ensure compliance (Dube, 2007). This leads to ethical and legal conduct of business activities including CI (Roche & Blaine, 2015).

2.4.2.5 Perceived potential for customer backlash

Unethical and illegal CI practice cost customers money. Firms with a dented reputation raise funds from prices for their services to rebuild their reputation. Customers may react to the dented reputation and increased prices of products and services by changing their service providers. When firms perceive that customer may react negatively to reports of unethical behaviours, they choose to be ethical and legal in their conducts (Rittenburg *et al*., 2007).

2.4.2.6 Stakeholders

Stakeholders have an influence on how a firm does its business (Maignan & Ferrell, 2004). Firms should not ignore their stakeholders. Stakeholders include shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors (Turker, 2009; Babiak & Lova, 2011). Stakeholders are affected by the decisions and actions taken by firms (Lindgreen & Swaen, 2010). For example, shareholders may withdraw their investment if management of a firm is bringing a firm into disrepute (Zhu, Hang, Liu & Lai, 2012). Customers may not want to be associated with a firm that engages in unethical behaviours. Creditors lend money to firms with good credentials. Therefore, firms may behave ethically to ensure that all stakeholders are happy (Lindgreen & Swaen, 2010).

The discussion of organisational and stakeholders' factors and table 2.8 (part 3) indicate that all these factors are rooted in non-consequentialism theories of ethics. Their focus is on enforcement and promotion of ethics hence most of them are guided by theory of justice and ethics of care. The factor shareholder is guided by ethics of

care as firms have to care about the shareholders. Established societal/industry/business norms are guided by both consequentialism and non-consequentialism, particularly altruism, utilitarianism, virtue ethics, theory of justice, and ethics of care.

2.4.3 Raising CI ethics awareness

These factors concern how firms go about raising awareness about CI and CI ethics. Firms that continually raise awareness of CI and CI ethics tend to produce quality CI. These factors include:

2.4.3.1 Management support, participation and visibility

Management support is a critical success factor of CI (Barnea, 2014). When management supports and participates in CI, they invest money in it (Bulley *et al*., 2014). The funds are used to appoint qualified and experienced CI professionals. Qualified and experienced CI professionals are aware of CI code of ethics, and practise CI ethically and legally. Management support and visibility lead to formalisation CI (Fatti & Du Toit, 2013). It also ensures CI and CI ethics awareness which leads to ethical and legal practise of CI (Nasri, 2012). Managers who support CI practice champion CI ethics, earn respect and influence others to follow suit (Hesford, 2008).

2.4.3.2 Raising ethics awareness through education and training

Education and training are amongst the best methods of raising CI awareness (Smith *et al*., 2010). Most employees of firms become aware of ethics and code of ethics through education and training. They learn about ethics different subjects offered in the qualifications they register for. There has been an increase in demand for incorporation of ethics and business ethics courses in most qualifications. This ensures that graduates exit the university with some knowledge about ethics. As a result, they behave ethically and legal in their conduct of business activities (Paterson, 2011).

2.4.3.3 Raising ethics awareness through workshops, seminars, speeches, meetings and conferences

These methods are mostly used by firms to raise ethics awareness. These methods have the ability to reach many people at ones. They are able to create debates and dialogue wherein people can ask questions and get answers about ethics. Moreover, ethics experts and role models are invited to speak and present. These methods enable connection between academics, industry experts and consultant ensuring sharing of information about ethics and code of ethics. Consequently, CI code of ethics is enforced and complied with (Smith *et al*., 2010).

2.4.3.4 Raising ethics awareness through ethics roundtables

The aim of ethics roundtable is to organise meetings where people can ask questions about ethics (Kullberg, 1988). These meetings have a chairperson who facilitates the questions and answers session. In firms, ethics roundtables help employees to understand ethics, codes of ethics and business ethics. This helps to improve ethical behaviours of employees (Henderson, 1988).

Table 2.8 (part 3) and the discussion of raising the CI ethics awareness factor point out that the factors are rooted in non-consequentialism theories of ethics. These factors are aimed at ensuring that staff members are aware of CI ethics in order for them to be ethical in conduct, thus, shaping their characters. Hence, they are guided by ethics of care and virtue ethics.

2.4.4 Decision-making factors

Success and failure of business depends on the decisions taken. CI is aimed at helping decision-makers to make quality decisions. Decision-making factors concern aspects around the decision-making process. These factors include the following:

2.4.4.1 Competence of the decision-makers

The competence of the decision-makers play a critical role in the decision-making process (Afsar, 2011). Decision-makers possess technical skills, management skills, people skills, attitude skills, values and mental skills. Decision-makers with ethical decision-making and ethical leadership skills and virtue make ethical and legal decisions (Steptoe-Warren *et al*., 2011). They consider the consequences of their decisions before making any decision (Garavan & McGuire, 2001). They are aware of what is right and wrong (Brown & Trevino, 2006).

2.4.4.2 Decisions taken at strategic level

The strategic level is the highest level of decision-making (Van Riel *et al*., 2011). These decisions are taken by top management who are responsible for the future growth of the firms. These are role models of the firms and employees look up to them. Decision made at strategic level enforces governance, policies and code of ethical (Nicolas, 2004). Thus, they ensure ethical and legal conducts by management and employees (Nicolas, 2004).

2.4.4.3 Decisions taken at functional level

These are middle level decisions which are taken by functional managers such as marketing managers, human resources managers, financial managers, purchasing managers, public relations managers, and CI (Pavic, 2011). These managers should make decisions which support those of strategic managers (Jung, 2013). Decisions made at this level implement codes of ethics. The decision-makers champion code of ethics. They are role models of supervisors and should lead by examples (Van Riel *et al*., 2011).

2.4.4.4 Decisions taken at operational level

These are lower level decisions which are made by lower level managers (Jung, 2013). These managers are usually referred to as supervisors. The majority of the employees in firms report to operational managers. They should make ethical

decisions to encourage employees to do the same, because of their direct contact with majority of the employees (Schiavone, 2011). Decisions at these level are aimed at observing, rewarding ethical and legal conducts and punishing unethical and illegal conducts (Van Riel *et al*., 2011).

Competence of the decision-makers and decisions taken at operational level are rooted in both consequentialism and non-consequentialism theories of ethics (see table 2.8, part 3). Decision-makers are expected to think about the consequences of their actions and make decisions that benefits the organisation and its stakeholders. Decisions taken at operational level enforce ethical behaviours through rewards or punishment. Hence, these two sub-factors are guided by altruism, utilitarianism, virtue ethics, theory of justice and ethics of care. Decisions taken at strategic level and functional level are rooted in non-consequentialism as they are about compliance, care and character of the decision-maker. Thus, they are guided by theory of justice, ethics of care and virtue ethics (see table 2.8, part 3).

2.4.5 Competitive intelligence practice factors

These are factors concerning how the firms practise CI. The way firms practise CI may have an influence on the adoption of CI ethics. The following are the possible influential sub-factors:

2.4.5.1 Clear CI needs

Clear CI needs explains clearly what intelligence is required by the decision-makers. They are clear of any form of confusion. They are unambiguous and easy to understand (Nasri & Zarai, 2013). Clear CI needs ensure CI quality and sustainable competitive advantage (Nasri, 2011). They come from decision-makers and are strategic in nature. Clear CI needs are ethical in nature (Căpăţînă & Vanderlinden, 2012; Bartes, 2014a). Clear CI needs enhance ethical and legal behaviours of CI professionals (Yassine, 2014).

2.4.5.2 Communication between decision-makers and CI practitioners/professionals

McGonagle and Misner-Elias (2016) recommend that CI professionals should be in constant communication with decision-makers. This ensures that CI needs are clear and up to date. Moreover, it ensures quality CI (Barnea, 2014). Constant communication between CI professionals and decision-makers ensure that there is no diversion from the CI needs (Lin & Yan-Zhang, 2015). It ensures that CI professionals are proactive instead of being reactive, since they are up to date with the changing needs of decision-makers (Arcos, 2013). It reduces the chances of CI professionals being involved in unethical and illegal CI practises (Yassine, 2014). Good communication between decision-makers and CI professionals may ensure that CI professionals practise CI ethically and legally (Yassine, 2014).

2.4.5.3 CI quality assurance

Quality is the critical success factor of CI (Bartes, 2011). It is quality CI that offers competitive advantage, helping in making quality decisions, improving the quality of products or services, and improving the overall quality of life (Mojarad *et al*., 2014). Quality CI ensures decision-makers do not avoid responsibility (Fleisher & Wright, 2010). Quality CI helps to produce quality strategic plans (Haataja, 2011). Firms stop investing in CI when CI produced, lacks quality (Shih *et al*., 2010). Therefore, quality should be the ultimate goal of CI practice (Bartes, 2011). Quality CI is produced by qualified and experienced CI professionals (Gurses & Kunday, 2014; Jin & Ju 2014). Quality CI is produced through formalised CI (Bartes, 2014b). Quality CI is produced when there are quality checks throughout the CI process. Quality assurance of CI ensures excellence in CI practice. It promotes integrity, honesty, fairness and justice. CI quality assurance ensures that CI is produced from information that is collected ethically and legally (Nasri, 2011; Bartes, 2014b).

2.4.5.4 Availability of resources for CI

The success of CI depends on the availability of resources (Saayman *et al*., 2008). With funds, the CI units are able to acquire CI systems, raise CI and CI ethics

awareness and train CI professionals (Maune, 2014; Du Toit & Sewdass, 2014). Moreover, they are able to organise CI workshops, conferences and roundtables. Firms that make resources available for CI are able to create a formal CI function (Saayman *et al*., 2008). They appoint qualified and experienced CI professionals (Pellissier & Nenzhelele, 2013). They are able to raise awareness of CI throughout the firm (Maune, 2014). They practice CI ethically and legally (Nasri & Zarai, 2013).

2.4.5.5 Skilled CI professionals

Skilled CI professionals have formal training in CI. Some of them have hands-on experience in CI practice. They are change agents and think-tanks for firms (Hoppe, 2015). Moreover, they possess analytical skills and they should pay special attention to details (Degerstedt, 2015). They are able to utilise the latest information technology to practise CI (Degerstedt, 2015). They are aware of CI code of ethics (Hemmatfar *et al*., 2010). They uphold and respect the CI code of ethics (Salguero & Quintero, 2016). Consequently, they practice CI ethically and legally (McGonagle & Vella, 2012).

2.4.5.6 Formalisation of CI process

Firms should practise CI formally (Yap & Rashid, 2011). Formalisation is critical for the success of CI (Nikolaos, 2012). A formal CI infrastructure is a requirement for effective CI that earns Return on Investment (ROI) (Nasri & Zarai, 2013). While large firms tend to practise CI formally, smaller firms are more likely to do so informally (Bulley *et al*., 2014). Firms that practise CI formally raises CI and CI ethics awareness (Momeni & Mehrafzoon, 2013). They train their CI personnel in the latest CI practices (Gatsoris, 2012). They appoint qualified and experience CI professionals (McGonagle & Vella, 2012). They utilise the latest information technology such as search engines, web browsers and social media to practise CI (Matei & Radu, 2012). Thus, their CI is systematised (Lin & Yan-zhang, 2015). The formalisation of CI ensures ethically and legal practice of CI (Nasri & Zarai, 2013).

2.4.5.7 Being a member of SCIP

SCIP exists to provide education and networking opportunities for firms and individuals who are actively involved in strategic and competitive intelligence (SCIP, 1999). SCIP came up with the CI code of ethics (SCIP, 1999). SCIP raises awareness about CI code of ethics (SCIP, 1999). They do so through chapters in several countries around the world (Yassine, 2014). By being a member of SCIP, firms gain more knowledge about CI and CI ethics (Louw & Venter, 2008). CI professionals who are members of SCIP keep up to date with the latest CI practices (Gurses & Kunday, 2014). This may help firms to better understand ethics and ethical behaviour.

The discussion of competitive intelligence practice factors and table 2.8 (part 2) indicate that the majority of these factors are underpinned by non-consequentialist theories of ethics. The focus of these factors is on correct practice of CI. Thus, they are guided by theory of justice, ethics of care and virtue ethics. Availability of resources for CI is however underpinned by both consequentialism and non-consequentialism. This factor is an enabler of correct CI practice. Thus, it is guided by altruism, utilitarianism, ethics of care, virtue ethics and theory of justice.

2.4.6 Economic, political and social factors

These factors concern the economic, political and social well-being of the society. The economic, political and social aspects of a country affect how firms do business. These factors include:

2.4.6.1 Low interest and inflation rate

During low interest and inflation rate periods, firms are able to access funds from financial institutions. Some of these funds are invested in CI units. When the CI unit is resourced, it is able to appoint qualified and experienced CI professionals. Moreover, firms that have funds formalise their CI practice. They raise CI and CI ethics awareness and train their CI personal to keep up with the latest CI practices. Firms have less pressure to engage in unethical behaviours. Consequently, CI is practised ethically and legally (Engelbrecht, 2008).

2.4.6.2 Global economic growth

Global economic growth encourages firms to conduct business internationally. It also attracts international investors, making sure that firms have funds to invest in different functions, including CI. Firms that do business internationally have to comply with corporate governance to protect investors' money. They also have to comply with international laws and regulations. This creates a culture of integrity, honesty, fairness and justice. It also increases the number of customers firms have to service. Firms become profitable and competitive (Lotriet *et al*., 2011). Consequently, they are able to appoint qualified CI professionals who practise CI ethically and legally.

2.4.6.3 Ethical political leaders

Ethical political leaders are role models to many. They have the power to influence the behaviours of their followers. The decisions, actions and lives are constantly reported on radios, television, newspapers and magazines. Thus, they create a culture of ethics and moral values. Their ethical decisions and behaviours may influence employees of many firms (Loi *et al*., 2012).

Table 2.8 (part 2) and the discussion of economic, political and social factors indicate that low interest and inflation rate and global economic growth are guided by non-consequentialism theories of ethics. These factors focus compliance and social wellbeing of the country and the world at large, hence they are guided by theory of justice and ethics of care. Ethical political leaders are underpinned by both consequentialism and non-consequentialism theories of ethics. They have to possess character and think about the consequences of their decisions and actions. Thus, they are guided by altruism, utilitarianism, virtue ethics, theory of justice and ethics of care.

2.4.7 Business ethics and ethical theories

Different business ethics may have a positive influence on the adoption of code of ethics. Most codes of ethics are guided by ethical theories. The following sub-factors may positively influence the adoption of CI ethics:

2.4.7.1 Ethical leaders, managers and decision-makers

These individuals possess integrity, honesty, humility, compassion, courage or self-control, wisdom, generosity, loyalty and justice (Wood & Hilton, 2012). Furthermore, they are good role models for those who report to them. Furthermore, they instil discipline in their subordinates. They are guided by ethical principles in their decisions and actions (Brown *et al*., 2005). Enterprises prefer employees who are ethical leaders, to prevent scandals associated with unethical behaviour (Brown *et al*., 2005). Ethical leaders and decision-makers are fair and principled decision-makers and care about people and the broader society (Bossman & Rallis, 2010; Kalshoven *et al*., 2013). They are expected to set ethical standards and expectation and communicate these standards and expectation to their followers (Trevino & Brown, 2007).

2.4.7.2 Rewards for compliance and punishments for non-compliance

Ethical leaders hold employees accountable for their ethical conduct (Brown & Mitchell, 2010). They use rewards and punishment to influence the ethical behaviour of their followers (Trevino *et al*., 2000). They reward those who comply, and punish those who do not comply with policies, standards and codes of ethics (Brown & Trevino, 2006).

2.4.7.3 Business ethics

Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development may influence firms to adopt CI ethics (Fukukawa *et al*., 2007). Business ethics instil discipline in the way firms conduct their business. For example, corporate social responsibility ensures that firms take decision and actions that are accountable to the social lives of the community around them (Lindgreen & Swaen, 2010). Sustainable development makes firms use resources sparingly for sustainability of the environment. Information ethics prevents employees from information and intellectual property theft (Chang, 2011). Corporate governance protects shareholders' investment from corruption and fraud (Muwandi, 2010). The culture of caring for the community and environment influences firms to be ethical in their conduct (Hall *et al*., 2010).

2.4.7.4 Virtues/good characters

Good character of leaders and employees lead to ethical behaviours (Govers, 2013). These virtues include integrity, honesty and humility, compassion, courage or self-control, wisdom, generosity, loyalty and justice (Wood & Hilton, 2012). The majority of people with these kinds of characteristics tend to be ethical in their conduct (Racelis, 2013).

2.4.7.5 Ensuring that justice prevails

Leaders and employees should treat all stakeholders fairly (Crane & Matton, 2007). They should ensure that justice prevails in all decisions and actions taken (Miller, 2012). They should treat everyone equally, regardless of their race, gender, religion, nationality or tribe. They should respect the rights of all stakeholders (Berg *et al*., 2011). Ensuring justice positively influences the adoption of CI ethics (Bossman & Rallis, 2010).

2.4.7.6 Bad and good consequences of one's actions

For every decision or action taken, there are consequences (Rossman & Rallis, 2010). Leaders and employees may be positively influenced by consequences when choosing to act ethically or unethically (Brunk, 2012). When they foresee bad or good consequences of the action or decision, they choose to be ethical (Rossman & Rallis, 2013).

2.4.7.7 Consideration of all organisational stakeholders' interests

Firms that consider the interest of all stakeholders when making decisions may be ethical in their conducts (McElwee, 2011). They will not make decisions that harm others for the benefits of others. They make decisions with the best interest of all stakeholders in mind (Plaisance & Reydon, 2012). This encourages ethical and legal conduct in business activities (Govers, 2013).

2.4.7.8 Considerations of rules and principles that govern the community

Firms should consider the rules and principles that govern the community when making decisions or taking actions (Baum, 2010). All stakeholders come from a community that is governed by rules and principles. These community rules and principles address what is right and wrong (Govers, 2013). These rules and principles influence ethical and legal practice of CI (Plaisance & Reydon, 2012).

2.4.7.9 Respect for all organisational stakeholders

Firms that respect all their stakeholders tend to be ethical in their conduct. They make decisions that show respect for the stakeholders (Kalshoven *et al*., 2011). They are aware that stakeholders are affected by corporate decisions and actions (Rossman & Rallis, 2010). Respect for all stakeholders has a positive influence on the adoption of CI ethics (Gainor & Bouthillier, 2014).

The discussion of business ethics and ethical theories and table 2.8 (part 4) indicate that ethical leaders, managers and decision-makers, rewards for compliance and punishments for non-compliance; business ethics, and consideration of all organisational stakeholders' interests are rooted in both consequentialism and con-consequentialism theories of ethics. These factors focus on promoting ethical behaviours, compliance and good character. They are guided by altruism, utilitarianism, virtue ethics, theory of justice, and ethics of care. The factor *bad and good consequences* of one's actions is underpinned by non-consequentialism theories of ethics as the rewards or punishes outcomes. It is guided by altruism, egoism and utilitarianism. The factors *virtues/good character*; ensure that justice prevails. Considerations of rules and principles that govern the community, and respect for all organisational stakeholders are underpinned by non-consequentialism theories of ethics as they promote virtue, ethical culture and fairness. Thus, they are guided by theory of justice, ethics of care and virtue ethics.

2.4.8 CI ethics challenges

CI ethics challenges hinder or discourage employees from adopting CI ethics. Firms within the ICT industry should continually observe and try to minimise the existence of these factors, or devise strategies to adopt CI ethics in the midst of their existence. The following are the CI ethics challenges:

2.4.8.1 CI budgetary constraint

Budgetary constraint has been identified as one of the major challenges of practising CI (Muller, 2007b). CI is not prioritised when firms prepare their budgets (Bulley *et al*., 2014). CI functions hardly have funds to raise CI ethics awareness and train CI personnel on latest practices (Smith *et al*., 2010). Because of budgetary constraints, some firms practice CI informally (Yap & Rashid, 2011). They do not appoint qualified and experienced CI professionals (Muller, 2007b). Consequently, unethical and illegal behaviour become evident in CI practice (Gainor & Bouthillier, 2014).

2.4.8.2 Outsourcing of CI

Some firms outsource part of their CI activities, while others outsource all CI activities to contractors (Pargaonkar, 2016). Larger firms outsource CI more than smaller firms (Cantonnet *et al*., 2014). South African firms outsource CI to consultants and consulting firms (Sewdass & Du Toit, 2015). They do so to ensure ethical and legal practice of CI. Firms that outsource CI do not have full control of CI practice. Some CI contractors engage in unethical and illegal CI practice regarding the contracting firm's intellectual property and industrial espionage lawsuits arise. Moreover, some contractors share the intelligence with competitors (Glitman, 2007; Wunderlin, 2007).

2.4.8.3 Informal CI process

Informal CI practice may not observe all CI ethics principles (Nenzhelele, 2012). It does not use advance and the latest CI analytical tools (Mohammed & Çiçek, 2015; Roche & Blaine, 2015). It does not have enough CI resources (Muller, 2007a). There are no funds to raise CI ethics awareness and train CI personnel. It is associated with

budgetary constraints (Muller, 2007b; Fatti & Du Toit, 2013). As a result, CI is not quality assured and there is no guarantee of its ethicality and legality (Eriksson & Motte, 2013). Moreover, CI personnel are not qualified and may engage in unethical and illegal CI practice (Degerstedt, 2015; Pargaonkar, 2016).

2.4.8.4 Lack of CI expertise and experience

CI personnel that lack expertise and experience may not be aware of CI ethics (Hoppe, 2015). They may not have training in CI practice (Pargaonkar, 2016). They may not be aware of ethical and legal sources of information for CI (Herring, 2010). They may confuse CI with industrial or corporate espionage (Oubrich, 2011). They may consciously or unconsciously practise CI unethically. They may not know what is right or wrong about CI practice (Rittenburg *et al*., 2007). They may be tempted to spy on their competitors. This behaviour is both unlawful and unethical (Jin & Ju, 2014).

2.4.8.5 Global economic slowdown/recession

The global economic meltdown of 2008/9 has been associated with unethical behaviour of many leaders of firms (Haspeslagh, 2010). In a slow economic growth, it is survival of the fittest (Chen *et al*., 2009). Firms strive to obtain sustainable competitive advantage. Firms are under pressure to flourish in the midst of an unfavourable economy. Some engage in unethical behaviour such as paying bribery to secure contracts (Bruno & Claessens, 2010). Firms struggle to access funds to formalise CI, quality-assure CI, raise CI ethics awareness, train CI personnel and appoint qualified CI professionals. Consequently, unethical behaviour in CI practice may be evident (Strauss & Du Toit, 2010; Nasri & Zarai, 2013; Bulley *et al*., 2014; Mojarad *et al*., 2014).

2.4.8.6 High interest and inflation rates

High interest and inflation rates make it difficult for firms to access funding. Firms pay more for the funds they borrow from the bank. Thus, their progress towards profitability is slower (Hinterhuber, 2013). Firms put measures in place to fast-track profitability. Some of these measures may be illegal and unethical (Rittenburg *et al*., 2007). Some

ICT firms engage in corruption to obtain information and secure contracts (Moneyweb, 2014). This behaviour dent the reputation of the firm making it difficult to be profitable and sustainable again, leading to further unethical behaviour (Rittenburg *et al*., 2007; Reinmoeller & Ansari, 2015).

2.4.8.7 Poverty

The government of South Africa is relying on the ICT industry to eradicate poverty (Jiyane & Mostert, 2010; Hanna, 2010). Poverty is given as an excuse for many occurrences of unethical behaviours, e.g. theft, corruption and espionage (Kyobe, 2011; Stats SA, 2011). Many who have engaged in unethical and illegal activities have given poverty as a reason (Economist, 2014). In South Africa, millions of people are living in poverty. Some of the people living in poverty, or who has a poverty background engage in unethical behaviour with the hope of getting out of poverty (Reinmoeller & Ansari, 2015).

2.4.8.8 Poor education system

The education system of South Africa is very poor (James *et al*., 2012). This is evident in that South Africa is ranked 138th in the world in terms of the quality of education. It has low primary and tertiary education enrolment. Out of 140 countries, South Africa is ranked last in terms of the quality of mathematics and science education. This means that few students will qualify for scarce-skills qualifications or for most formal qualifications, as mathematics and science are the requirements (Biermann & Jordaan, 2013; Finnie & Norrie, 2013; Global Competitiveness Report 2015/2016). ICT firms struggle to find qualified personnel. Thus, some of the personnel of ICT firms may not be aware of CI ethics (Hoppe, 2015). They may not have received formal training in CI practice (Pargaonkar, 2016). These employees may consciously or unconsciously engage in illegal and unethical behaviours (Rittenburg *et al*., 2007).

2.4.8.9 Constant publication of business scandals, corruption and fraud

South Africa is characterised by frequent publication of business scandals, corruption and fraud in online platforms, in newspapers, magazines, through radios and television

channels (Gilley *et al*., 2010; Mukwevho, 2015). Some of these publications are about high-profile ICT firms (Mukwevho, 2015). It may create a culture of unethical and illegal behaviour. The publications may be used as justification for unethical behaviour (Rittenburg *et al*., 2007). It promotes unethical role models (Bartes, 2014a; Gheysari, 2015; Reinmoeller & Ansari, 2015). The constant reading, hearing and watching of scandals, corruption and fraud may influence some individuals to engage in unethical behaviour (Pule, 2012).

2.4.8.10 Self-interests and lack of care for others

Firms that are selfish, may engage in unethical behaviour (Clavien & Chapuisat, 2013). They only care about what is in it for them, and not for others. Selfish motives drive unethical behaviour (Plaisance & Reydon, 2012). Moreover, selfishness pollutes integrity, fairness and justice (Lung, 2012). In addition, it is the root cause of greed which drives unethical behaviours. It leads to unethical decision-making (Burnes & By, 2011). Decisions and actions are taken without consideration of others (McElwee, 2011).

2.4.8.11 Weak barrier to entry and high competition in the ICT industry

The ICT industry is characterised by weaker entry barriers (Wulf & Zarnekow, 2011). It is cheaper to enter the ICT industry than other industries. There are no strict laws that restrict entry into the ICT industry, and the world is striving to ensure that everyone has access to ICT services (Mophatlane, 2008). As a result, there are many firms operating in the ICT industry, and competition is therefore very high (Jiyane & Mostert, 2010). To survive in this very competitive industry, firms do whatever it takes. They strive to find sustainable competitive advantage (Akhtar *et al*., 2013). Only the fittest firms survive in the South African ICT industry. Some firms engage in unethical behaviour in order to survive. Some firms steal trade secrets from other firms (Moneyweb, 2012). Some pay bribes to secure contracts (Moneyweb, 2014). Some intentionally employ employees of their main competitors to gain sensitive information (Mukwevho, 2015).

2.4.8.12 Lack of resources or infrastructure in the ICT industry

Though attempts are put in place to improve, the South African ICT industry has been characterised by lack of ICT infrastructure (Engelbrecht, 2008). Thus, South African ICT firms compete for the utilisation of the limited resources available in the industry (James *et al*., 2012). There are reports of some firms that engage in unethical behaviour to secure these resources and infrastructure (Mophatlane, 2008). For example, some ICT firms bribe officials to secure ICT contracts (Moneyweb, 2014). Some firms steal intellectual property to gain competitive advantage over their competitors. This behaviour contravene the CI code of ethics (Pule, 2012).

2.4.8.13 High telecommunication costs

Although the South African government is investing more funds to upgrade the telecommunication infrastructure, the process will take years to reach full functionality (Pule, 2012; DoC, 2017). In the meantime, the cost of telecommunication is still very high (Morris, 2006). Telecommunication is a large part of the budget of ICT firms (Pule, 2012). To make matters worse, some Internet service providers engage in price fixing of telecommunication, making it difficult for other Internet service providers to compete. Price fixing is in itself unethical (Biermann & Jordaan, 2013). With high telecommunication costs, ICT firms are left with fewer funds to spend on functions such as CI (Gainor & Bouthillier, 2014). They may struggle to train CI personnel and raise CI ethics awareness (Saayman *et al*., 2008). As a result, CI personnel my consciously or unconsciously practice CI unethically and illegally (Rittenburg *et al*., 2007).

2.4.8.14 ICT skills shortage

There is a shortage of ICT skills in South Africa (Paterson, 2011; Biermann & Jordaan, 2013). Although the South African government is e-skilling through leanership and internship, the programmes are not producing enough qualified individuals as required by the ICT industry (Wesso, 2010; Paterson, 2011). The status is made worse because fewer students matriculate with the necessary requirements to do formal qualifications in computer science and information systems (Lotriet *et al*., 2010). This

means that there are fewer graduates with computer science and information systems qualifications (Biermann & Jordaan, 2013). As a result, firms in the ICT industry may appoint people without ICT skills (Lotriet *et al*., 2010). Some of these individuals find themselves practicing CI. Some of them are not aware of CI ethics. As a result, they engage in unethical and illegal collection of information for CI, putting their firms and the ICT industry in disrepute (Cantonnet *et al*., 2014; Yassine, 2014).

The majority of CI-ethics challenges as discussed and summarised in table 2.8 (part 5 and 6) are rooted in non-consequentialism theories of ethics. They are associated with lack of resources, unfavourable economic conditions and lack of CI expertise. They are underpinned by theory of justice, virtue ethics and ethics of care. Constant publication of business scandals, corruption and fraud, constant publication of business scandals, corruption and fraud, and lack of resources or infrastructure in the ICT industry are entrenched in both consequentialism and non-consequentialism theories of ethics. They emphasise unethical behaviours, unjust and careless behaviours. Altruism, egoism, utilitarianism, virtue ethics, theory of justice, and ethics of care guide these factors.

2.5 Conceptual CI ethics adoption model

The ISM outlined in section 2.4 led to the construction of the conceptual CI ethics adoption model depicted in figure 2.1 below. Firms adopt CI ethics when they observe, enforce, implement, uphold, and respect the CI code of ethics (McGonagle & Misner-Elias, 2016; Pargaonkar, 2016; Salguero & Quintero, 2016). The adoption of the CI code of ethics will ensure that CI is recognised as a profession, will eliminate the confusion of CI and industrial espionage, and will enhance the reputation of the CI profession (Trevino & Weaver, 1997; Casali, 2011; Köseoglua *et al*., 2016). The CI ethics adoption (i.e. the enforcement or implementation of CI code of ethics elements) is the dependent/constant variable. The independent variables are as follows: industrial factors; decision-making factors; business ethics and ethical theories; raising CI ethics awareness; organisational and stakeholders' factors; CI practice factors; economic, political and social factors; and CI ethics challenges. The arrowed lines indicate the direction of the influence. Although some of the factors and sub-factors

that positively and negatively influence the adoption of CI ethics are entrenched in both consequentialism and non-consequentialism theories of ethics, the majority are rooted in non-consequentialism. Thus, the majority of the factors that positively and negatively influence the adoption of CI ethics are guided by theory of justice, virtue ethics and ethics of care.

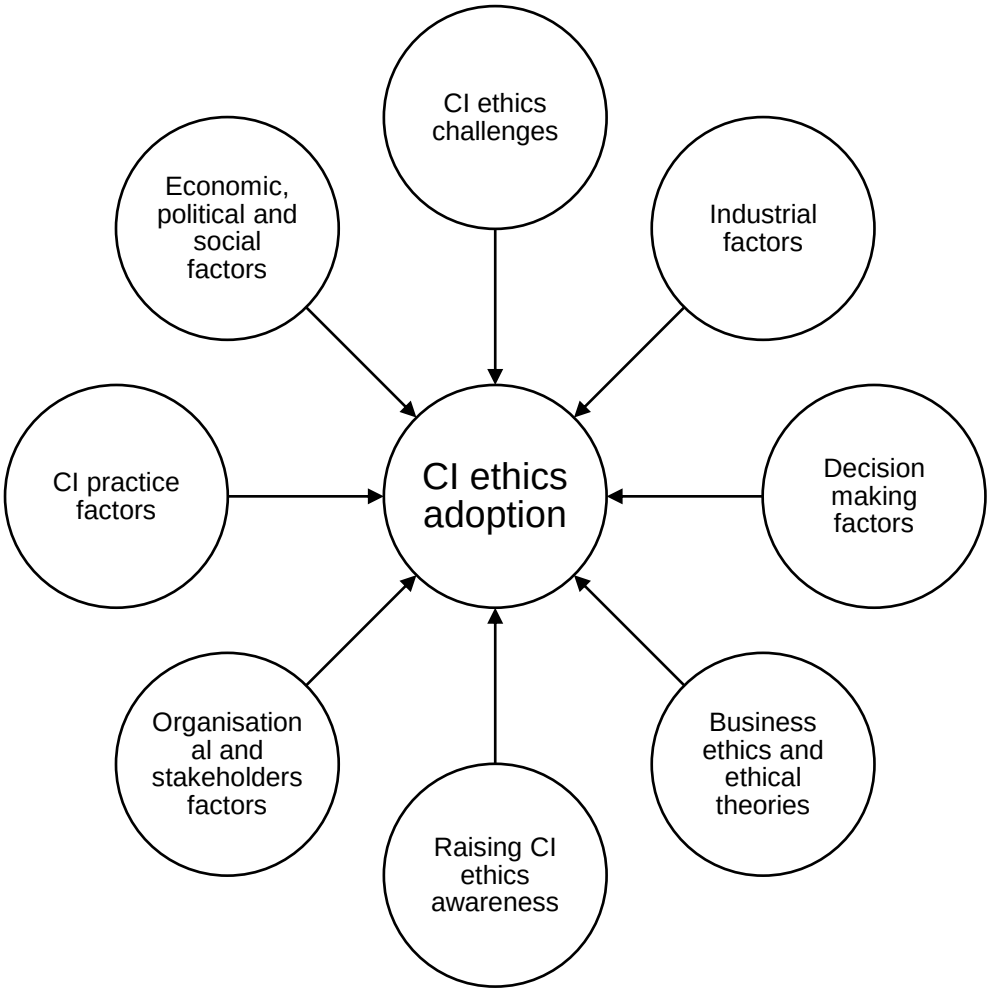

Figure 2.1: Conceptual competitive intelligence ethics adoption model

2.6 Chapter summary

This chapter discussed the literature review relevant to the study. It discussed the theoretical background to the importance of ICT and CI. This was followed by the discussion of the different ethics theory and the CI code of ethics. The chapter also discussed the CI code of ethics in the ICT industry and in particular the South African ICT industry. The ISM was outlined and discussed to construct the CI ethics adoption model. The methodology of this study is discussed in the chapter that follows (Chapter 3).

CHAPTER 3: RESEARCH METHODOLOGY

This chapter discusses the research methodology followed in this study. It outlines, describes and discusses the research aim and questions, research design, research method, research instrument, population sample, data collection, reliability and validity of the study. The chapter also outlines and discusses the ethical considerations.

3.1 Research aim

The aim of this study is to develop a Competitive Intelligence Ethics Adoption Model (CIEAM) for the South African ICT industry.

3.2 Research questions

To achieve the aim of the study, the following research questions were constructed and answered by the respondents:

1) To what extent have firms in the South African Information and Communication Technology industry adopted Competitive Intelligence ethics?
2) What are the generic/existing methods used by firms in the South African Information and Communication Technology industry in an attempt to enforce the Competitive Intelligence ethics?
3) What are the factors that positively and negatively influence the adoption of Competitive Intelligence ethics by firms in the South African Information and Communication Technology industry?

3.3 Research design

Research is defined as a scientific and systematic process of defining and redefining problems; formulating hypotheses or suggested assumptions; collecting, organising and evaluating data; making deductions and reaching conclusions; and carefully testing the conclusions to determine whether they fit the formulated hypotheses (Kline, 2005; Rugg & Petre, 2007; Dhawan, 2010; Dhawan, 2011; Creswell, 2014). All

researches follow a research paradigm, which is a framework of beliefs, values and method that guide how research is conducted (Hussey & Hussey, 1997; Remenyi, Williams, Money & Swartz, 1998; Saunders, Lewis & Thornhill, 2012). Research paradigms include ontology, epistemology, axiology and doxology (Mkansi & Acheampong, 2012). Research paradigms are guided by research philosophies, namely positivism, constructivist/interpretive, pragmatism, subjectivism, and critical. This study used reliable and valid tools to measure the reality of CI ethics adoption in the South African ICT industry hence it followed epistemology paradigm (Saunders *et al*., 2012). Epistemology paradigm focuses on perceived relationship with nature of knowledge. It is a way of understanding and explaining how what is known, is known (Saunders *et al*., 2012). The study used a large sample, was concerned with hypothesis testing, collected specific data, had high reliability and low validity, and its generalisation is from sample to population, hence it was guided by positivism philosophy (Hussey & Hussey, 1997; Remenyi *et al*., 1998; Saunders, Lewis & Thornhill, 2015). Positivism philosophy focuses on establishing general laws and cause-effect relationships by rational means (Saunders *et al*., 2015).

3.4 Research approach

Research approach is the master plan that is followed to realise the research objectives or hypotheses (Tustin *et al*., 2005; Rugg & Petre, 2007). There are three research approaches, namely qualitative, quantitative and mixed methods (Mkansi & Acheampong, 2012). Qualitative research seeks to explore phenomena by using instruments that are more flexible, with an iterative style of eliciting and categorising responses to questions (Saunders *et al*., 2015). It uses semi-structured methods such as in-depth interviews, focus groups and participant observation etc. Quantitative seeks to confirm hypotheses about phenomena by using instruments that are more rigid in style for eliciting and categorising responses to questions. It uses highly structured methods such as questionnaires, surveys and structured observation (Tustin *et al*., 2005; Creswell, 2014; Saunders *et al*., 2015). A mixed method approach uses both the qualitative and quantitative approaches (Creswell, 2014; Saunders *et al*., 2015). This study followed a quantitative approach as it used quantity of responses to test hypotheses between key CI adoption variables and the adoption of CI ethics.

The study also assessed the factors that positively and negatively influence the adoption of CI ethics hence the quantitative approach.

3.5 Research strategy

Research strategy provides the overall direction of the research and it is the process through which research is conducted (Dhawan, 2010). Research strategy includes case studies, observation, surveys, experiments, and analysis of literature. This study uses survey strategy under descriptive study, specifically using the questionnaire instrument to collect data from South African ICT firms. A survey is a very old research strategy under descriptive study used to find out how widespread things are (Rugg & Petre, 2007; Dhawan, 2010; Rubin & Babbie, 2011).

3.5.1 Data collection instrument

Survey uses many instruments to collect data, namely observation, interviews, questionnaires, schedules, warranty cards, distributor audits, pantry audits, consumer panels, mechanical devices, projective techniques, in-depth interviews and content analysis (Dhawan, 2010). From these instruments, the questionnaire is the most popular, cost effective and recommended (Rubin & Babbie, 2011) hence, it is used in this study. A structured, self-designed, web-based questionnaire hosted by SurveyMonkey - an online survey-development cloud-based software (SurveyMonkey, 2015) and administered through e-mails - is used to collect the primary data for this study. Web-based questionnaires are becoming very popular, preferred by respondents over mail questionnaires, yielding high response rate, and saving both money and time (Fraze, Hardin, Brshears, Haygood & Smith, 2003; Kiernan, Kiernan, Oyler & Gilles, 2005; Greenlaw & Brown-Welty, 2009; Dillman, Phelps, Tortora, Swift, Kohrell & Berck, 2009).

The questionnaire was compiled using Microsoft Word and exported to a web-based questionnaire. The questionnaire was designed with the inputs gathered from the literature review. The web-based questionnaire was designed and divided into six pages with ten questions as follows:

- **Page 1:** This page introduced the survey to the respondents. The respondents were welcomed to the survey. The introductory page outlined the purpose of the survey and defined competitive intelligence (CI), based on the existing literature. Moreover, it indicates to the respondents that the survey is completely anonymous and that the information collected will be kept confidential. In addition, the consent letter indicating that participation was voluntary was attached to the invitation e-mail. The page also reveals to the respondents that it takes at most 15 minutes to complete the survey. It indicates that majority of the questions in the survey require agreement or disagreement on a Likert scale of 1 to 5, where 1 indicates “strongly disagree” and 5 indicates “strongly agree”. Moreover, the page indicates that the survey also collects demographic information. Page 1 ends with a sentence appreciating the respondents in advance in anticipation of their responses.
- **Page 2:** This page includes questions 1 and 2. Question 1 establishes the extent to which ICT firms observe and comply with the code of ethics when practising CI. A Likert scale of 1 to 4 was used, where 1 indicates “not at all” and 4 indicates “to a greater extent”. To a small extent and some extent is considered the same hence a Likert scale of 1 to 4 is used in this question (Saunders *et al*., 2015). Question 2 establishes the level of agreement regarding the application of the different elements of the CI code of ethics. A Likert scale of 1 to 5 was used where 1 indicates “strongly disagree” and 5 indicates “strongly agree”.
- **Page 3:** This page includes question 3, which establishes the methods used to implement or enforce the CI code of ethic with ICT firms. A Likert scale of 1 to 5 was used where 1 indicates “strongly disagree” and 5 indicates “strongly agree”. The question gave the respondents an option to specify other methods of implementing or enforcing the code of ethics.
- **Page 4:** This contains question 4, which establishes the factors that positively influence the adoption of the CI code of ethics in the ICT industry. A Likert scale of 1 to 5 was used where 1 indicates “strongly disagree” and 5 indicates “strongly agree”. The question gave the respondents an option to specify other

factors that positively influence the adoption of the CI code of ethics in the ICT industry.

- **Page 5:** This contains question 5, which establishes the factors that negatively influence the adoption of the CI code of ethics in the ICT industry. A Likert scale of 1 to 5 was used where 1 indicates “strongly disagree” and 5 indicates “strongly agree”. The question gave the respondents an option to specify other factors that negatively influence the adoption of the CI code of ethics in the ICT industry.
- **Page 6:** This page includes questions 6 to 10. Questions in this page collect demographic information of the ICT firms. Question 6 establishes the province in which the ICT firms operates. The options to choose from include all nine provinces in South Africa. Question 7 establishes the ICT sub-industry in which the ICT firms operate. The question allows respondents to specify other sub-industries. Question 8 establishes the number of employees the ICT firms have. It provides the respondents with different ranges of the number of employees to choose from. Question 9 establishes the number of years the ICT firm has been in operation or existence. It provides the respondents with different ranges of years to choose from. Question 10 establishes the position held by the respondents in the ICT firms. It provides respondents with different options of positions to choose from. Moreover, the question allows the respondents to specify other positions, which they occupy.

The survey is written in English. A progress bar was included at the top of each of the pages of the web-based questionnaire. The aim of the progress bar is to encourage the respondents to finish the survey by indicating how close they are towards finishing the survey. A “Next” button is included at the bottom of pages 1 to 5. By clicking on the “Next” button, the respondent is taken to the next page. A “Previous” button is included at the bottom of pages 2 to 6. By clicking on the “Previous” button, the respondent is taken to the previous page. A “Done” button is included at the bottom of page 6. By clicking on the “Done” button, the survey is completed, submitted and captured. By closing the browser before clicking on the button “Done”, the respondents withdrew from participating in the survey.

The web-based questionnaire consisted of both open-ended questions and closed-ended questions. Clear and necessary instructions for each question were provided above the question. Likert scale and multiple-choice questions were used for the closed-ended and open-ended questions. According to Cooper and Schindler (2008), a Likert scale is the most frequently-used variation of summated rating scales. Table 3.1 shows the different types of questions covered in the web-based questionnaire.

Table 3.1: Types of survey questions

Types of questions	List of questions	Objective(s) addressed by question
Closed-ended questions: These are questions that do not give respondents an opportunity to add their own inputs.	Indicate the extent to which your enterprise observes and comply with a code of ethics when practicing CI.	To establish the extent to which firms in the South African Information and Communication Technology industry have adopted competitive intelligence ethics.
	Indicate your level of agreement regarding your enterprise's application of the following elements of the CI ethics code in your enterprise.	To establish the extent to which firms in the South African Information and Communication Technology industry have adopted competitive intelligence ethics.
	Please indicate the province in which your business is primarily based.	• To establish the extent to which firms in the South African Information and Communication Technology industry have adopted Competitive Intelligence ethics. • To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics. • To assess the factors that positively and negatively influences the adoption of Competitive Intelligence ethics by firms in the South African Information Communication Technology industry.
	Please indicate the number of employees in your organisation	
	Indicate the number of years your business has been in operation	
Open-ended questions: space was provided so that the respondents could fill in their answers.	Indicate which of the following methods helped you to implement CI code of ethics in your enterprise.	To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics.
	Indicate your level of agreement regarding which of the following factors have a positive influence on the adoption of CI ethics code in your enterprise.	To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information Communication Technology industry.
	Indicate your level of agreement regarding which of the following factors have a negative influence on the adoption of CI ethics code in your enterprise.	To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information Communication Technology industry.
	Please indicate the ICT sub-industry you primarily operate in.	• To establish the extent to which firms in the South African Information and Communication Technology industry have adopted Competitive Intelligence ethics.
	Indicate the position you hold in your organisation.	

		• To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics. • To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information Communication Technology industry.
Closed-ended or structured questions		
Multiple-choice questions: A list of options was provided from which the respondents could choose one.	Please indicate the province in which your business is primarily based.	• To establish the extent to which firms in the South African Information and Communication Technology industry have adopted Competitive Intelligence ethics. • To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics. • To assess the factors that positively and negatively influence the adoption of Competitive Intelligence ethics by firms in the South African Information Communication Technology industry.
	Please indicate the number of employees in your organisation.	
	Indicate the number of years your business has been in operation.	
Rating questions: The respondents were asked to rate variables based on a Likert scale from "Strongly disagree" to "Strongly agree" and from "Not at all" to "To a greater extent".	Indicate the extent to which your enterprise observes and complies with a code of ethics when practising CI.	To establish the extent to which firms in the South African Information and Communication Technology industry have adopted competitive intelligence ethics.
	Indicate your level of agreement regarding your enterprise's application of the following elements of the CI ethics code in your enterprise.	To establish the extent to which firms in the South African Information and Communication Technology industry have adopted competitive intelligence ethics.
Open-ended questions		
Rating questions: The respondents were asked to rate variables based on a Likert scale from "Strongly disagree" to "Strongly agree" and/or specify	Indicate which of the following methods helped you to implement CI code of ethics in your enterprise.	To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics.
	Indicate your level of agreement regarding which of the following factors have a positive influence on the adoption of CI ethics code in your enterprise.	To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information Communication Technology industry.
	Indicate your level of agreement regarding which of the following factors have a negative influence on the adoption of CI ethics code in your enterprise.	To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information Communication Technology industry.
Multiple-choice questions: A list of options was	Please indicate the ICT sub-industry you primarily operate in.	• To establish the extent to which firms in the South African Information and

provided from which the respondents could choose one and/or specify	Indicate the position you hold in your organisation.	Communication Technology industry have adopted Competitive Intelligence ethics. • To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics. • To assess the factors that positively and negatively influence the adoption of Competitive Intelligence ethics by firms in the South African Information Communication Technology industry.

3.6 Population and sample

Population is similarly defined and emphasised by many authors as all people, organisations, objects, units or items from which a sample is drawn to answer the research questions (Tustin *et al*., 2005; Singh, 2006; Sachdeva, 2009; Cooper & Schindler, 2008; Saunders *et al*., 2015). ICT firms in South Africa are selected as the population for this study as they practice CI and have experienced some ethical dilemmas. There are approximately 5 000 ICT firms in South Africa. Table 3.2 indicates that the majority of these firms are located in the Gauteng Province, which is the economic hub of the country (Easyinfo, 2014).

3.6.1 The sampling method

It is not always possible to collect data from a universe or population; therefore, a researcher should select a manageable sample from the population (Burns, Duffett, Kho, Meade, Adhikari, Sinuff & Cook, 2008). A sample is a subset of a population (Tustin *et al*., 2005). A sampling method is the process of selecting a proportion of the population to represent the entire population; it is a critical aspect of design in quantitative research, and especially in survey research (Lohr, 1999).

There are two methods/categories of sampling, namely probability and non-probability. A probability sample is a sample in which everyone in the target population has a known probability of being randomly selected in the survey sample whereas the probability of being selected is not known in a non-probability sample (Tustin *et al*., 2005). Probability sampling, specifically simple random sampling, is used in this study

as it offers an unbiased estimate of the population, and it can therefore be generalised (Kakinami & Conner, 2010; Krishnaswami, 2010; Sadler, Lee, Lim & Fullerton, 2010). The names of the ICT firms were arranged in a table in Microsoft Word, printed and cut into pieces, which were placed in a basket for a lottery draw. The contact details of the sampled ICT firms were then sourced from the original database. Thus, simple random sampling was suited for this study, rather than other probability sampling techniques such as stratified random sampling, systematic random sampling and cluster random sampling.

3.6.2 The sample frame

A sample frame is a complete list of all members of the population, which the researcher wishes to study (DiGaetano, 2013). It is a critical component of sampling design as it avoids overlaps beyond target population, reduces costs and improves the quality of the survey (Menza, Caldow, Jeffrey & Monaco, 2007; Zhengdong, 2011). A quality sample frame is complete, accurate and up-to-date (DiGaetano, 2013). For the purpose of this study, the following active and up to date databases are used to source South African ICT firms: Easyinfo, Brabys, Bizcommunity and Rainbownation. Because some databases only store information of firms in selected areas, an internet search was done to source ICT firms in different provinces. This was done to ensure that all provinces were represented in the sample frame. A total of 5 714 ICT firms in manufacturing, goods-related services and intangible services were included in the sample frame. In order to identify and eliminate duplicates in the sample frame, ICT firms were sorted in ascending order. Efforts were exercised to ensure that only ICT firms were included in the sample frame. Any firm that was deemed to be providing other services than ICT was eliminated. The sample frame excluded ICT firms whose contact details were not available on the internet or the above-mentioned databases. Table 3.2 shows the ICT firms per province.

Table 3.2: ICT industry sample frame

Province	Number of ICT firms
Eastern Cape	151
Free State	161
Gauteng	2958
KwaZulu-Natal	792
Limpopo	120
Mpumalanga	145
Northern Cape	66
North West	97
Western Cape	1224
TOTAL ICT FIMRS	**5714**

3.6.3 The sample size

A sample size is the number of items to be selected from the population to constitute a sample (Dhawan, 2010). The calculation of the appropriate sample size depends upon a number of factors such as (Sachdeva, 2009): accuracy; level of confidence; and the available budget. Hair, Anderson, Tatham and Black (1998) advise researchers to avoid small sample size, as it neglects the power of statistical tests of significance. However, Cooper and Schindler (2008) argue that large sample size is costly. This study aimed to achieve a 95% confidence and accept 10% error at a low budget. According to Sachdeva (2009), 95% confidence is frequently used and acceptable. Considering a sample frame of 5 714 ICT firms, the aim of achieving a 95% confidence, an acceptance of 10% error at a low budget, and the formula below provided by Sachdeva (2009), a sample size of 385 ICT firms was randomly drawn for the purpose of this study.

$$\boldsymbol{s} = (\frac{\boldsymbol{z}}{\boldsymbol{e}})^{\mathbf{2}}$$

Where:

s = the sample size

z = degree of confidence (z is normal variate) and the z is 2.58 for 99% confidence, 1.96 for 95% confidence, 1.64 for 90% confidence and 1.28 for 80% confidence.

e = the error one is prepared to accept

Therefore, the sample size for the purpose of this study is calculated as follows:

$s = (1.96/0.1)^2$

$s = 384.16$

The 384.16 is rounded to a sample size of 385 ICT firms.

3.6.4 The sample elements

The ICT firms' competitive/business intelligence professionals, owner(s)/managers, marketing/sales managers, information/knowledge managers, and chief executive officers were the sample elements for this study. This is because any of these individuals within a firm would either practise CI or be knowledgeable about the firm's CI practice.

3.7 Validity of the data

Validity is similarly emphasised by Bashir, Afzal and Azeem (2008) and Kimberlin and Winterstein (2008) as the determination of how truly the research measures what it aimed to measure. Validity is determined through questioning others, experiences and literature review (Joppe, 2000; Bashir *et al*., 2008). To validate the questionnaire for this study, a pilot study was conducted. The purpose of a pilot study was to pre-test the questionnaire before it was distributed to the primary participants (Cone & Foster, 2006). The pilot study was conducted in two phases. The first phase triggered the second phase. These two phases are explained below.

3.7.1 Pilot study: phase 1

In order to ensure that the questionnaire collects data that fulfils the purpose of the study, the questionnaire was sent via e-mail to twenty-two (22) South African established CI researchers, who published papers in conference proceedings, books and articles in journals in South African context. Their contact details were sourced from their publications. Their publications were sourced from libraries and academic databases accessible via different search engines. Five CI researchers consented and

participated in the pilot study. One CI researcher was too busy to participate in the pilot study and the rest of the CI researchers did not respond.

The CI researchers completed the questionnaire to determine time required to complete the questionnaire. The majority of the CI researchers determined that it took 30 or more minutes to complete the questionnaire, and recommended that it be restructured to reduce the size and to increase response rate. It was indicated that ICT professionals may be too busy to complete a questionnaire that takes a minimum of 30 minutes. The questionnaire was restructured to reduce its size. Related variables were merged and repeating ones deleted.

The pilot study also established grammar errors in the introductory letter to the respondents, and were addressed. It was established that some of the acronyms in the introductory letter were not described. Subsequently, all acronyms were then described to make the introductory letter self-explanatory. It was also found that some of the questions were unclear and ambiguous, and needed to be rectified. These questions were therefore rephrased to be easy for respondents.

It was suggested that some ranges of options to questions be expanded for easy analysis of data, and this was addressed. Moreover, it was suggested that instructions to each question be made clearer for easy understanding by respondents (i.e. to reduce the time to answer questions and increase response rate). Furthermore, it was suggested that questions on ethical theories be written in plain language to be easily understandable to respondents. It was suggested that possible CI ethics adoption influential factors be grouped together, rather than being put in different categories. Additionally, it was emphasised that related questions should be sequentially placed in the questionnaire. Moreover, it was suggested that questions that do not add value to the study be eliminated to reduce the size of the questionnaire. Appendix A and B indicate the questionnaire before and after validation.

3.7.2 Pilot study: phase 2

Ethical clearance was obtained before conducting this phase. Although it was concluded in the literature that the South African ICT industry practise CI, it was suggested by one of the CI researchers who participated in Phase 1 of the pilot study that it be re-confirmed that they really do. This led to the second phase of the pilot study with conveniently sampled South African ICT firms. Their contact details were publicly sourced from the internet. The ICT firms were sampled on the basis that their contact details were easily accessible. A web-based questionnaire was designed for establishing CI practice and the implementation of CI code of ethics, by the South African ICT industry. An e-mail with the link to the web survey was sent to the sampled ICT firms. It was indicated that by completing the survey, the firms consent that their information be used for the purpose of this study. Table 3.3 below indicates number of sampled ICT firms per province.

Table 3.3: Pilot study sample

Province	Number of firms
Eastern Cape	2
Free State	1
Gauteng	6
KwaZulu-Natal	2
Limpopo	1
Mpumalanga	3
North West	1
Northern Cape	2
Western Cape	2
TOTAL	**20**

Only eleven (11) ICT firms responded, leading to a response rate of 55%. All the respondents indicated that they practise CI in their organisation. All the respondents indicated that they practise CI ethically. Table 3.4 indicates the awareness of CI code of ethics by the sampled ICT firms. On a Likert scale ranging from Strongly Disagree to Strongly Agree, the majority of the respondents indicated that they are aware of the CI code of ethics.

Table 3.4: The awareness of the CI code of ethics by the South African ICT industry

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Rating Average	Response Count
We are aware of the competitive intelligence code of ethics	0	1	1	9	0	3.73	11

Table 3.5 indicates the level of agreement regarding the implementation of the different elements of the CI code of ethics by the sampled ICT firms. The majority of the respondents agreed that they implement the elements of the CI code of ethics when practising CI. A mean of 4.04 confirms that the majority of sampled ICT firms implement the CI code of ethics elements.

Table 3.5: The implementation of CI code of ethics elements by the South African ICT industry

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Rating Average	Response Count
We strive to continually increase the recognition of the competitive intelligence profession	0	1	1	5	4	4.09	11
We respect the competitive intelligence profession	0	1	2	7	1	3.73	11
We comply with all the applicable laws, domestic and international	0	2	1	4	4	3.91	11
We disclose accurately all relevant information, including one's identify and enterprise, prior to all interviews	0	2	2	4	3	3.73	11
We fully respect all requests for confidentiality of information	0	0	2	5	4	4.18	11
We avoid conflicts of interest in fulfilling our duties	0	0	2	8	1	3.91	11
We provide honest recommendations in the execution of our duties	0	0	0	9	2	4.18	11
We promote the competitive intelligence code of ethics within our enterprise	0	1	1	7	2	3.91	11
We promote the competitive intelligence code of ethics to our third-party contractors	0	1	1	6	3	4.00	11
We promote the competitive intelligence code of ethics within the entire profession	0	1	0	6	4	4.18	11
We adhere to our enterprise's policies, objectives and guidelines	0	0	0	4	7	4.64	11

The above results confirm that the sampled ICT firms not only practise CI but do so ethically. Moreover, the sampled ICT firms are aware of the CI code of ethics and implement the different elements of the CI code of ethics. Having validated the questionnaire and having re-confirm that the South Africa ICT industry practise CI, the pilot study was complete.

3.8 Reliability of the data

Although there are many definitions of reliability, authors similarly emphasise that reliability measures the consistency, stability and accuracy of results repeated over time (Kirk & Miller, 1986; Joppe, 2000; Babbie, 2007; Kimberlin & Winterstein, 2008; Sachdeva, 2009). This study uses Cronbach's coefficient alpha to test reliability of the data. It is the most widely used measure of internal consistency reliability. Cronbach's coefficient alpha is an average of all the possible split-half reliability estimates of an instrument (Henson, 2001). It is a reliability coefficient that measures inter-item reliability or the degree of internal consistency or homogeneity between variables measuring one construct or concept (i.e. the degree to which different items measuring the same variable attain consistent results). This coefficient varies from 0 to 1 and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability (Malhotra, 2004). According to O'Leary-Kelly and Vokurka (1998), coefficients equal to or greater than 0.70 indicate high reliability of the measuring instrument.

3.9 Data analytical plan

Interpretive structural modelling (ISM) that used existing literature (Lin, Lin & Yu, 2011) is used to establish factors that positively and negatively influence the adoption of CI ethics. Interpretive Structural Modelling involves summarising content by counting various aspects of the content (Hsieh & Shannon, 2005). The library, academic databases and search engines are used in this study to identify relevant literature. A review of reference lists was done to identify further relevant literature (Azevedo, Carvalho & Cruz-Machado, 2013). This study uses keywords to identify relevant literature (Dubey & Ali, 2014). The following keywords were used to identify literature containing information on factors that may influence the adoption of CI ethics: *"competitive intelligence"*; *"competitive intelligence ethics"; "critical success factors of competitive intelligence"; "competitive intelligence code of ethics"; "ethics theories"; "code of ethics"; "decision-making"; "competitive intelligence awareness"; "competitive intelligence challenges"; "South African ICT industry"; "unethical behaviour"; "ethical behaviour";* and *"business ethics"*. Sources analysed included books; journal articles; conference proceedings; conference papers; and websites. To ensure reliability, peer-

reviewed sources were preferred. ISM identified themes regarding the factors that may influence the adoption of CI ethics. Over 800 sources were analysed and eight (8) factors that influence the adoption of CI ethics were identified. These factors are discussed in Chapter 2 of this thesis. Data collected through the web-based questionnaire was analysed using Statistical Package for Social Science (SPSS). The major statistical techniques that are relevant to the aims and objectives of the study are used and are discussed in sub-sections below.

3.9.1 Descriptive statistics

Descriptive statistics summarises the characteristics of the sample. They describe the central tendency and measure of dispersion. Descriptive statistics include the following: mean, mode, median (central tendency) and standard deviation, skewness and kurtosis. This study uses all these descriptive statistics. The mean is the average score of the sample. Mode is the most frequent score in a data set. Median is the middle score for a data set that is arranged in order of magnitude. Standard deviation describes how spread out the data is (Tustin *et al*., 2005). Skewness measures the degree of symmetry in the variable distribution (Sheskin, 2011). Kurtosis measures the degree of tail or “tailedness” of the variable distribution (Westfall, 2014).

3.9.2 Inferential statistics

Unlike descriptive statistics, which describe the sample, inferential statistics infers properties about the population from the sample. Inferential statistics are used to test hypotheses. They include correlation, t-test, Chi-square and Analysis of Variance (ANOVA). This study uses correlation to test the hypotheses.

3.9.2.1 Correlation coefficient

Correlation coefficient analysis is a statistical test conducted to establish if one variable changes when another one changes (Larson, 2008). According to Larson (2008), correlation coefficient establishes how close the data points are, to the line of best fit. Put differently, correlation coefficient measures the strength and the direction of a linear relationship between two variables (Pellissier, 2007). Larson (2008) concludes that when the correlation coefficient is multiplied by itself, it produces a value that tells the percentage variation between two variables compared. The closer the value to 1 (100%), the closer the values are to the line of best fit. There are several correlation estimators, namely Pearson, Spearman, and Kendall (Croux & Dehon, 2010). These correlation estimators fall into two categories, namely parametric and non-parametric. Parametric correlation estimators are statistical tests with known assumptions, fixed parameters and based on statistical distribution. Non-parametric correlation estimators do not have known assumptions; parameters and are based on statistical arbitrary. Parametric tests use interval or ratio measurement level whereas non-parametric tests use nominal or ordinal. Pearson is a parametric test whereas Spearmen and Kendall are non-parametric tests. This study uses the Pearson's estimator, as it is the most widely used, due to its robustness and resistance to outlying observations (Croux & Dehon, 2010). Moreover, the study has known assumptions/hypotheses. The correlation coefficient varies between -1 to +1 and it is significant at *p* value of 0.05 and 0.10 (Knott & Bolton, 2009). Knott and Bolton (2009) conclude that a positive *r* indicates a positive correlation – an upward sloping line of best fit, and vice versa. Positive values of *r* indicate a relationship between *x* (independent/predictor variable) and *y* (dependent/constant variable) wherein when the values of *x* increase, values of *y* increases. Negative values of *r* indicate a relationship between *x* and *y,* wherein when the values of *x* increases, values of *y* decreases. There is no correlation when *r* is equal to 0 (Rumsey, 2016). Evans (1996) and Campbell (2006) conclude that when the *r* value is close to:

- -1,it indicates a perfect linear negative relationship
- -0.80 to -0.99, it indicates a very strong linear negative relationship
- -0.60 to -0.79, it indicates a strong linear negative relationship

- -0.40 to -0.59, it indicates a moderate linear negative relationship
- -0.20 to -0.39, it indicates a weak linear negative relationship
- ≤-0.19, it indicates a very weak linear negative relationship
- 0.0, it indicates no linear relationship
- ≤0.19, it indicates a very weak linear positive relationship
- 0.20 to 0.39, it indicates a weak linear positive relationship
- 0.40 to 0.59, it indicates a moderate linear positive relationship
- 0.60 to 0.79, it indicates a strong linear positive relationship
- 0.80 to 0.99, it indicates a very strong linear positive relationship
- 1, it indicates a perfect linear positive relationship

This study only discusses correlations between predictor variables and constant variables.

3.9.2.2 Hypothesis testing

A hypothesis testing tests a hypothesis or proposition about the population using data from a sample (Davis & Mukamal, 2006). There are four steps to hypothesis testing. These four steps are followed in this study (Navalgund, 2015):

Step 1: State the hypotheses. Hypotheses are declared in this step. There are two types of hypotheses, namely, null hypothesis (H_0) and alternative hypothesis (H_1). The null hypothesis is a statement about the population parameter that is assumed to be true. The alternative hypothesis is a statement that directly contradicts the null hypothesis by indicating that the population parameter is false. Table 3.6 indicates the hypotheses for this study and the corresponding statistical methods.

Table 3.6: Hypotheses and statistical methods

	Null hypothesis	Alternative hypothesis	Statistical method
Hypothesis 1	**H_{01}**: There is no significant correlation between *industrial factors* and *the adoption of CI ethics*.	**H_{a1}:** There is a significant correlation between *industrial factors* and *the adoption of CI ethics*.	Correlations
Hypothesis 2	**H_{02}:** There is no significant correlation between *decision-making factors* and *the adoption of CI ethics*.	**H_{a2}:** There is a significant correlation between *decision-making factors* and *the adoption of CI ethics*.	
Hypothesis 3	**$H_0$3:** There is no significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics*.	**H_a3:** There is a significant correlation between *business* ethics and ethical *theories* and *the adoption of CI ethics*.	
Hypothesis 4	**$H_0$4:** There is no significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics*.	**H_a4:** There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics*.	
Hypothesis 5	**$H_0$5:** There is no significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics*.	**H_a5:** There is a significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics*.	
Hypothesis 6	**$H_0$6:** There is no significant correlation between *CI practice factors* and *the adoption of CI ethics*.	**H_a6:** There is a significant correlation between *CI practice factors* and *the adoption of CI ethics*.	
Hypothesis 7	**$H_0$7:** There is no significant correlation between *economic, political and social factors* and *the adoption of CI ethics*.	**H_a7:** There is a significant correlation between *CI practice factors* and *the adoption of CI ethics*.	
Hypothesis 8	**$H_0$8:** There is no significant correlation between *CI ethics challenges* and *the adoption of CI ethics*.	**H_a8:** There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics*.	

Step 2: Set the criteria for a decision. The level of significance is declared in this step. The level of significance refers to a criterion of judgement upon which a decision is made regarding the value stated in a null hypothesis. In general, the level of significance is set at 5%. A null hypothesis is rejected when the probability of obtaining a sample mean is less than 5%.

Step 3: Compute the test statistic. Test statistic is the mathematical formula used to determine the likelihood of obtaining sample outcomes if the null hypothesis was true. A decision to accept or reject a null hypothesis is based on the result of the test statistic.

Step 4: Make a decision. The value of the test statistic is compared with the criteria set out in step 2 to make decision about null hypothesis. The null hypothesis is rejected if the probability of obtaining a sample mean is less than 5% when the null hypothesis

is true. The null hypothesis is retained/accepted if the probability of obtaining a sample mean is greater than 5% when the null hypothesis is true. The value of the test statistic is known as the *p* value. The *p* value denotes the probability of obtaining a sample mean, given that the value stated in the null hypothesis is true. The *p* value varies between 0 and 1 and can never be less than 0. Significance is reached when the null hypothesis is rejected. There is no significance when the null hypothesis is retained. The null hypothesis is rejected when the *p* value is less than or equals to 5% ($p \leq 0.05$). The null hypothesis is accepted when the *p* value is greater than 5% ($p > 0.05$). There are four possible decisions about null hypothesis:

- the decision to retain the null hypothesis could be correct
- the decision to retain the null hypothesis could be incorrect
- the decision to reject the null hypothesis could be correct
- the decision to reject the null hypothesis could be incorrect

Retaining a false null hypothesis is called Type II error and rejecting a true null hypothesis is called Type I error. Type I error must be controlled by stating a level of significance. This level is called the alpha level (α) and it is the largest probability of committing a Type I error, which will lead to rejection of the null hypothesis. The alpha level is set at 0.05 ($\alpha = 0.05$) and it is compared to the *p* value. A null hypothesis is rejected when the probability of a Type I error is less than 5% ($p < 0.05$), otherwise it is retained.

3.9.3 Exploratory factor analysis

Cudeck (2000) defines Exploratory Factor Analysis (EFA) as a collection of methods for explaining the correlation among variables in terms of more fundamental entities called factors. The aim of EFA is to identify relationships between variables, which are being, measured in this case the key CI ethics adoption variables and the adoption of CI ethics. It has been used in social sciences research for over 100 years (Fabrigar & Wegener, 2011). It is commonly used when developing scales, and it identifies latent constructs of the measured variables (Williams, Onsman & Brown, 2010). According to Fabrigar and Wegener (2011), EFA establishes correlation, covariation and variation between variables. There are two types of variance, namely, common

variance, which is accounted by latent factors; and unique variance, which is a mixture of indicator-specific reliable variance and random error (Harrington, 2009).

Williams *et al*. (2010) propose a five-step EFA protocol to follow. These steps are followed in this research and are described below:

3.9.3.1 Step 1: Is the data suitable for factor analysis?

Sample size, factorability of the correlation matrix, and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy/Bartlet's Test of Sphericity are used to determine the suitability of data for factor analysis. Hair *et al*. (1998) suggest that a sample of 100 or more is suitable. This study had a sample of 184, which is considered suitable. The factorability of the correlation matrix displays the relationship between variables (Hair *et al*., 1998). Hair *et al*. (1998) provide the following guidelines: ±0.3=minimal, ±0.4=important, and ±0.5=practically significant. All variables in this study produced a commonality of more than 0.5 warranting factor analysis. The KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis (Williams *et al*., 2010). The Bartlett's Test of Sphericity should be significant ($p<0.05$) for factor analysis to be suitable (Hair *et al*., 1998; Tabachnick & Fidell, 2007). The results of the KMO index and the Bartlett's Test of Sphericity are presented in chapter 6 of this thesis.

3.9.3.2 Step 2: Factors extraction

There are several ways of extracting factors, namely Principal Components Analysis (PCA), Principal Axis Factoring (PAF), maximum likelihood, unweighted least square, generalised least squares, alpha factoring, and image factoring (Thompson, 2004; Tabachnick & Fidell, 2007). PCA and PAF are the commonly used methods in published literature (Thompson, 2004; Tabachnick & Fidell, 2007). The difference between the two methods is insignificant when the variable reliability is high and there are more than 30 variables (Thompson, 2004; Tabachnick & Fidell, 2007). Due to it being the default method in most statistical programs, PCA is the commonly used method (Thompson, 2004). For this reason, PCA is used in this study and the results are presented in chapter 4 of this thesis.

3.9.3.3 Step 3: Factor extraction criteria

The aim of data extraction is to reduce the number of factors (Williams *et al*., 2010). It is recommended that multiple criteria be used to extract factors (Costello & Osborne, 2005). There are several factor extraction criteria, namely Kaiser's criteria (Eigenvalue>1 rule), the Scree test, the cumulative percentage of the variance extracted, and parallel analysis. The Eigenvalue>1 Rule and the Scree test are commonly used (Williams *et al*., 2010). For this reason, these two criteria are used in this study and the results are presented in chapter 6 of this thesis. Although no fixed threshold exists, certain percentages are suggested for cumulative percentage of variance and Eigenvalue>1 Rule. In natural sciences, factors should be stopped when at least 95% of the variance is explained. An explained variance of as low as 50-60% is considered for humanities (Hair *et al*., 1998; Pett, Lackey & Sullivan, 2003). According to Williams *et al*. (2010), inspecting and interpretation of a Scree plot involves two steps:

1. Draw a straight line through the smaller Eigenvalues where a departure from the line occurs. This point will highlight where the debris or break occurs.
2. The point above this debris or break (not including the break itself) indicates the number of factors to be retained.

3.9.3.4 Step 4: Rotational method selection

Rotational method establishes whether one variable relates to multiple variables (Williams *et al*., 2010). It helps in deciding how many variables should be analysed. According to Williams *et al*. (2010), rotation maximises high item loadings and minimises low item loadings. There are two rotation methods, namely, orthogonal varimax/quartimax and oblique olbimin/promax. The orthogonal varimax produces factor structures that are uncorrelated, and oblique olbimin produces factors that are correlated (Thompson, 2004). This study uses orthogonal varimax because it is commonly used and the results are presented in chapter 6 of this thesis.

3.9.3.5 Step 5: Interpretation

This step examines which variables are related to a factor and naming that factor (Williams *et al*., 2010). The naming of the factor is subjective, theoretical and inductive, and depends on the researcher (Pett *et al*., 2003; Henson & Roberts, 2006). This fulfils the aim of factor analysis, which is to find those factors that together explain the majority of the responses (Williams *et al*., 2010). The interpretation is presented in chapter 6 of this thesis.

3.9.4 Structural equation modelling

Structural equation modelling (SEM) is a statistical technique of choice that is very popular and powerful. SEM has been used in social sciences for decades and recently in business and public administration (De Carvalho & Chima, 2014). Though it is difficult and time consuming, SEM is extremely useful and the best statistical technique for testing conceptual models empirically (Barrett, 2007). According to Barrett (2007), SEM tests proposed models to ensure that they fit the collected data. SEM tests the fitting of and relationship between variables (independent and dependent) to the model (Bollen & Noble, 2011). Although there are many definitions of SEM, the authors similarly emphasise that it is a statistical modelling technique that uses multiple equations to analyse multiple dependent and independent variables (Byrne, 1998; Hair, Black, Babin & Anderson, 2010; Bollen & Noble, 2011). SEM is process that follows predetermined steps. These steps which are followed in this study are namely, model specification, data collection, model estimation and model evaluation (Lei & Wu, 2007; De Carvalho & Chima, 2014). These steps are discussed below.

3.9.4.1 Model specification

During this step the model is stated by establishing parameters which are free or fixed (De Carvalho & Chima, 2011). The existing literature is explored to establish dependent and independent variables (Hair *et al*., 2010). Variables explored from the literature are conceptualised and communicated in a figure or graph. Variables are connected with arrowed lines to indicate the direction of causal relationship. Arrows pointed at dependent variables, to indicate the influence of independent variables (Lei

& Wu, 2007). This study explored factors that may influence the adoption of CI ethics in the South African ICT industry and conceptualise them in a model.

3.9.4.2 Data collection

The purpose of data collection is to have at least one unique solution for each parameter estimate in the model from observed data (De Carvalho & Chima, 2011). Data must be collected from a reasonable sample size (Barrett, 2007). The sample size depends on the population size. Sample size for a larger population would be large and for smaller population would be small (De Carvalho & Chima, 2014). Sample size also depends on the model size. Larger models will require larger sample size and smaller models will require smaller sample size (Hair *et al*., 2010). Ding, Velicer and Harlow (1995) and Kline (2005) recommend a minimum sample size of 100, 150 or 200 for SEM. The sample size for this study was 184 and it was therefore acceptable according to Ding *et al*. (1995) and Kline (2005).

3.9.4.3 Model estimation

During this step the model parameters are estimated (De Carvalho & Chima, 2014). SEM software program does the estimation of model parameters. There are many software programs available to estimate model parameters (Hair *et al*., 2010). For the purpose of this study, Analysis of Moment Structure (AMOS) is used. Model estimation produces values that reveal the fitness of the model to the collected data, and how strong the hypothesised relationships between variables are (Bentler & Yaun, 1999). Parameters estimates must be unbiased, efficient and consistent (Tomarken & Waller, 2005).

3.9.4.4 Model evaluation

This is the most critical step of SEM (Bentler & Yaun, 1999). The hypothesised model is statistically tested to establish the extent to which the model is consistent with the sample data, the fitness of the model as a whole and the fitness of the individual parameters. According to Rubin and Babbie (2011), this step involves the examination of parameter estimates, standard errors and significance of the parameter estimates,

squared multiple-correlation coefficients for the equations, the fit statistics, standardised residuals and modification indices. Model fit indices are used to determine the fit of the proposed model. Some model fit indices are more popular than others. According to De Carvalho and Chima (2014), Chi-square (x^2) and goodness of fit indices are very popular. It is advisable that several model fit indices be used to determine the fit of the model (Hair *et al*., 2010). Other model fit indices include the following: goodness of fit index (GFI); adjusted goodness of fit index (AGFI); comparative fit index (CFI); standardised root mean squared residual (SRMR); root mean square error of approximation (RMSEA); Tucker-Lewis index (TLI); incremental fit index (IFI); relative fit index (RFI); parsimony normed fit index (PNFI) and parsimony comparative fit index (PCFI). These indices are individually described below.

a) Chi-square: The chi-square evaluates the magnitude of discrepancy between the sample and fitted covariance matrices (Hu & Bentler, 1999). Hu and Bentler (1999) argue that the chi-square evaluates the overall model fit. It is referred to as badness of fit because a good model fit should provide an insignificant result at smaller or equal to 0.05 (Kline, 2005; Barrett, 2007). Models are acceptable when the ratio of the chi-square to degree of freedom (chi-square/degree of freedom) is less or equal to 2 or 3 (Kline, 2005).
b) Root mean square error of approximation: The RMSEA indicates how well the model fit the population covariance matrix, with unknown but optimally chosen parameter estimates (Byrne, 1998). RMSEA is sensitive to the number of estimated parameters in the model, and choose the model with the lesser number of parameters (Hooper, Coughlam & Mullen, 2008). The cut-off for RMSEA has changed from decade to decade. In the nineties, RMSEA ranging from 0.05 to 0.1 was considered fair fit and values above 0.1 were considered poor fit, and RMSEA ranging from 0.08 to 0.1 was considered mediocre fit and values below 0.08 were considered good fit (MacCallum, Browne, & Sugawara, 1996). In the twenties, values less or equal to 0.07 were considered good fit (Steiger, 2007). Hooper *et al*. (2008) recommend lower limit of 0 and an upper limit less than 0.08 as a good fit.
c) Goodness of fit index: GFI is considered an alternative to the chi-square. It calculates the proportion of variance that is accounted for by the estimated population covariance (Tabachnick & Fidell, 2007). It shows how closely the

model comes to replicating the observed covariance matrix (Diamantopoulos & Siguaw, 2000). The recommended cut off for GFI is values less or equal to 0.95 (Miles & Shevlin, 1998). This index has become less popular and has been recommended not to be used.

d) Adjusted goodness of fit index: AGFI adjust the GFI based on degree of freedom with more saturated models reducing fit (Tabachnick & Fidell, 2007). Values of AGFI range from 0 to 1 and values of 0.90 or greater indicate good fit (Hooper *et al*., 2008).

e) Standardised root mean square residual: SRMR is the square root of the difference between the residuals of the sample covariance matrix and the hypothesised covariance model (Hooper *et al*., 2008). Values of SRMR range from 0 to 1 and values less or equal to 0.05, are considered good fit (Byrne, 1998). Values as high as 0.08 are also considered acceptable as good fit (Hu & Bentler, 1999).

f) Normed fit index: NFI assesses the model by comparing the chi-square value of the model to the chi-square of the null model (Hooper *et al*., 2008). The value for NFI ranges from 0 to 1 and value greater than 0.90 is considered good fit (Bentler & Bonnet, 1980). Hu and Bentler (1999) recommend a cut-off of less or equal to 0.95. The NFI is sensitive to sample size and underestimate fit for sample less than 200 and not recommended to be solely relied on (Bentler, 1990; Kline, 2005).

g) Tucker-Lewis index: This index is also known as non-normed fit index (NNFI) and was aimed at addressing the drawback of NFI. This index prefers simpler models (Hooper *et al*., 2008). The NNFI can indicate poor fit despite other indices pointing towards good fit when the sample is smaller. Moreover, values of NNFI may go above 1, making it difficult to interpret (Byrne, 1998). Bentler and Hu (1999) recommend a cut off-of values greater than or equal to 0.95.

h) Comparative fit index: CFI takes into account sample size and performs well even when sample size is small. It is a revised NFI (Byrne, 1998; Tabachnick & Fidell, 2007). It assumes that all latent variables are uncorrelated and compares the sample covariance matrix with the null model. Values of CFI range from 0 to 1 with values closer to 1, indicating a good fit (Hooper *et al*., 2008). Values less or equal to 0.95 are recommended as good fit (Hu & Bentler, 1999).

i) Parsimony normed fit index and parsimony comparative fit index: The PNFI and PCFI are used as an adjustment NFI and CFI. They are ratio of degrees of freedom with reference to the total degrees of freedom available for the estimation (Marsh & Hau, 1996). They relate model fit to model complexity. Their values range from 0 to 1 with values greater or equal to 0.90 considered good fit (Marsh & Hau, 1996).

j) Relative fit index: The RFI compare the chi-square for the model tested to one from the null/baseline model. The values of RFI range from 0 to 1 with values greater or equal to 0.90 considered good fit (Marsh & Hau, 1996).

k) Incremental fit index: The IFI is also known as Bollen's IFI and it is insensitive to sample size (Miles & Shevlin, 2007). It is computed by getting the difference between the chi-square of the independent model, and the chi-square of the target model, the difference between the chi-square of the target model and the degree of freedom for the target model and gets the ratio of these two values (McDonald & Ho, 2002). Values larger than 0.90 are considered good fit (Hu & Bentler, 1999).

l) PCLOSE: Tests the null hypothesis that RMSEA is not greater than 0.05. If the PCLOSE is less than 0.05, we reject the null hypothesis and conclude that the computed RMSEA is greater than 0.05, indicating lack of a close fit (Field, 2009).

The indices summarised in table 3.7 are used to evaluate the goodness of fit of models in this study as they are commonly used to test SEM.

Table 3.7: Summary of structural equation modelling goodness of fit indices

Index	Recommended value	Source(s)
Chi-square (CMIN)	≥0.05	Kline, 2005
Chi-square/degree of freedom ratio (CMIN/DF)	<2 or <3	Kline, 2005
RFI	≥0.90	Marsh & Hau, 1996
NFI	≥0.90	Bentler & Bonnet, 1980; Bentler, 1990; Hu & Bentler, 1999; Kline, 2005
TLI	≥0.90	Byrne, 1998; Bentler & Hu, 1999
CFI	≥0.95	Hu & Bentler, 1999; Hooper *et al*., 2008
IFI	≥0.95	Bentler & Hu, 1999
RMSEA	≤0.08	MacCallum *et al*., 1996; Steiger, 2007; Hooper *et al*., 2008
PNFI	≥0.90	Marsh & Hau, 1996
PCFI	≥0.90	Marsh & Hau, 1996
PCLOSE	≤0.05	Field, 2009

3.10 Data collection

A self-administered structured web-based questionnaire was designed and used to collect data from the respondents. Data collection began with an e-mail sent to the sampled respondents introducing the researcher and the purpose of the study. The e-mail indicated that a further e-mail will follow including a hyperlink to the web-based questionnaire. It also indicated that ethical clearance (see Appendix D) to conduct the research was obtained from the College of Economic and Management Science at Unisa.

A further e-mail with the link to the web-based questionnaire was sent to the sampled respondents, inviting them to participate in the survey. The e-mail outlined why the ICT firms were chosen to participate in the survey. The e-mail also pointed out the importance of the ICT firms participating in the survey. Moreover, CI was defined in the e-mail and the introductory part of the web-based questionnaire, for clear understanding by all respondents. It was indicated in the e-mail and the introductory part of the web-based questionnaire that participation in the study was voluntary, and that the information collected will be kept confidential and anonymous. It was also indicated in the e-mail and introductory part of the web-based questionnaire that by completing the survey, the respondents consent that their responses will be used for

the purpose of this study. The e-mail also indicated the individuals within the sampled ICT firms, who would be suitable to complete the questionnaire.

In order to encourage the participants to complete the questionnaire, the e-mail indicated the time required to complete the questionnaire. The time was determined to be 15 minutes after following the suggestions from the pilot study. The e-mail also thanked the participants in anticipation of their response to the survey. Data was collected over a period of nine months between February and October 2015. Data was automatically captured upon clicking the submit button on the web-based questionnaire. Therefore, there was no need for manual capturing of collected responses. This is an advantage of web-based questionnaires.

Eighty-nine (89) automatic reply e-mails were received from the sampled respondents. Some of these e-mails indicated that the e-mail with the survey hyperlink was received and attention was given to it. Other automatic replies indicated that the e-mail address was no longer in use, and provided alternative e-mail addresses which were used in follow-up e-mails. Automatic replies were confirmation that the e-mail addresses work and that the ICT firms existed.

Eight (8) e-mails were received from the sampled respondents requesting to be removed from the e-mail list. Some firms indicated that they were too small and too busy to complete questionnaires. Some just indicated that they do not want to participate in the survey without providing the reason. All ICT firms that requested to be removed from the e-mail list were removed for the purpose of follow up. These ICT firms were not replaced in the sample and are therefore possibly among the non-responding firms. Twenty-one (21) out-of-office replies were received from the sampled respondents. The majority of the out-of-office replies indicated that the representative of the ICT firm was out of office for some days, and will attend to the e-mail upon return. The out of office replies confirmed that the e-mail addresses worked and that the firms existed. Five (5) e-mails received from the sampled respondents indicated that they either have completed or submitted the survey or they will complete the survey.

Twenty-six (26) undeliverable e-mail notifications were received. An alternative e-mail address of the relevant ICT firm was sourced, to replace the e-mail address that sent an undeliverable notification. Alternative e-mail addresses were sourced from the website of the firms, databases and directly from a representative of the firm through telephone calls. The undeliverable e-mail notifications had the following messages:

- “A communication failure occurred during the delivery of this message. Please try resending the message later. If the problem continues, contact your helpdesk.”
- “A problem occurred while delivering this message to this e-mail address. Try sending this message again. If the problem continues, please contact your helpdesk. The following organisation rejected your message:”
- “The e-mail address you entered couldn't be found. Please check the recipient's e-mail address and try to resend the message. If the problem continues, please contact your helpdesk. The following organisation rejected your message:”
- “Your message wasn't delivered due to a permission or security issue. It may have been rejected by a moderator, the address may only accept e-mail from certain senders, or another restriction may be preventing delivery. The following organisation rejected your message:”
- “This message was rejected by the recipient e-mail system. Please check the recipient's e-mail address and try resending this message, or contact the recipient directly.”

Two hundred and nine (209) ICT firms responded to the web-based questionnaire. Twenty-five (25) questionnaires were incomplete and were therefore not considered for analysis purposes. Therefore, only hundred and eighty-four (184) were usable and were analysed for the purpose of this study.

Collected data was exported from a web-based questionnaire to Microsoft Excel for coding. Codes were allocated to responses as depicted in table 3.8. Coded data was further exported to SPSS for analysis purpose.

Table 3.8: Data coding

	Responses	Code allocated	Affected questions
Likert scale: "Strongly Disagree" to "Strongly Agree"	Strongly Disagree	1	Questions 2, 3, 4 and 5
	Disagree	2	
	Neither Agree nor Disagree	3	
	Agree	4	
	Strongly Agree	5	
Likert scale: "Not at all" to "To a greater extent"	Not at all	1	Question 1
	To some extent	2	
	Absolutely	3	
	To a greater extent	4	
South African provinces	Eastern Cape	1	Question 6
	Free State	2	
	Gauteng	3	
	KwaZulu-Natal	4	
	Limpopo	5	
	Mpumalanga	6	
	North West	7	
	Northern Cape	8	
	Western Cape	9	
ICT sub-industry	Manufacturing	1	Question 7
	Goods-related services (e.g. sales of digital devices, repairs, shipping of devices)	2	
	Intangible services (e.g. web hosting, web design, software development, debugging, storage)	3	
	Both goods related services and intangible services	4	
Number of employees in ICT firms	1 to 5	1	Question 8
	6 to 10	2	
	11 to 20	3	
	21 to 50	4	
	51 to 200	5	
	201 or more	6	
Years of operation	Less than 1 year	1	Question 9
	1 to 5 years	2	
	6 to 10 years	3	
	11 or more years	4	
Position held by the respondent	Business owner	1	Question 10
	General manager	2	
	Sales/Marketing Manager	3	
	Information/Knowledge Manager	4	
	Competitive Intelligence Professional/Practitioner	5	
	Chief Executive Officer	6	

3.11 Response rate

Deutskens, De Ruyter, Wetzels and Oosterveld (2004) define response rate as the percentage of the contacted sample that has answered and returned/submitted the questionnaire. According to Sax, Gilmarting and Bryant (2003), response rate is more dependent on the type of population sampled than anything other than factor. Rubin and Babbie (2011) argue that if a high response rate is achieved, there is less chance of significant response bias, than if a low rate is achieved. Nulty (2008) posits that a response rate of 50%, 60% and 70% is desirable and achievable, but a response rate between 60% and 70% would be difficult and expensive to achieve. Accordingly, Rubin and Babbie (2011) conclude that a response rate of at least 50% is adequate for analysis and reporting. Greenlaw and Brown-Welty (2009) posit that web-based surveys are becoming popular and can produce a response rate of more than 50%. This study achieved a response rate of 47.79%. The study received 184 usable responses out of a sample size of 385.

Deutskens *et al*. (2004) point out that follow-up; incentives, short survey, and respondent-friendly survey design increase the response rate. In order to increase response rate in this study, follow-up e-mails were sent to respondents. Attempts were made to ensure that the survey was as short as possible by eliminating questions that do not add value to the study and merging-related questions. The questionnaire was designed to be respondents-friendly, by ensuring that the questions and instructions are clear, unbiased and unambiguous. Moreover, a progress bar was included in the survey to indicate to the respondents, how close they are to completing the survey. Towards the end of data collection, a final follow-up e-mail thanking those who responded, and encouraging those who have not responded was sent to the sampled respondents. The e-mail also indicated the deadline to data collection. This e-mail led to additional responses. A total of seven (7) follow-up e-mails were sent out to sampled respondents. Telephone calls were made to some of the respondents to encourage them to participate.

3.12 Ethical considerations

Research must be conducted in an ethically sensitive manner (Cone & Foster, 2006). Anastas and MacDonald (1994) define research ethics as a special set of principles and rules, written and unwritten, that place particular parameters on the relationship between the researcher and the people, who participate in or may be affected by the research. Moreover, these people include those who are being studied, fellow researchers, and those who may encounter or make use of the products of the research. This study was conducted in line with Policy Research Ethics 2014 and Research and Innovation Policy 2012 of Unisa. The study was approved by the colloquium committee of the Unisa Department of Business Management (see Appendix C). An ethics clearance certificate was obtained from the College of Economic and Management Science at Unisa before conducting this study (see Appendix D).

Participants were informed that their participation is voluntary, and that they could withdraw from participating in the survey at any given time. Participants were informed that by completing the web-based questionnaire, they consent that their inputs will be used for the purpose of this study. An informed consent was attached to the e-mailed distributed to the respondent for them to complete (see Appendix E). Participation information sheet was also attached to the invitation e-mail for the respondents to read and familiarise themselves with the study (see Appendix E). Moreover, participants were informed about the purpose of the study. Participants were informed that ethical clearance was obtained from the University (see Appendix D). Moreover, participants were informed that the survey is completely anonymous, and that their information will be kept strictly confidential. The participants were informed that it would be impossible to identify the participants, due to its anonymity.

The participants were notified that no harm of participants is anticipated, and that in case anything beyond the control of the researcher happens a written apology will be issued. Furthermore, participants were informed that information will be analysed on group level, instead of individual level. Participants were notified that records will be

kept for five years for publication purposes, and thereafter it will be permanently destroyed. Moreover, participants were notified about the value added by the study. The following ethical principles and standards identified by Cone and Foster (2006), were also observed throughout this study:

- Evaluate the ethical acceptability of the research.
- Asses the degree of risk involved for participants.
- Ensure the ethical conduct of the research by you and others involved in it.
- Obtain a clear, fair, informed and voluntary agreement by participants to participate.
- Avoid deception and concealment unless absolutely necessary and justifiable.
- Respect the participant's right to decline or withdraw from participation at any time.
- Protect the participant from any physical harm, danger or discomfort possibly associated with the research procedures.
- Protect the participant from any emotional harm, danger or discomfort possibly associated with the research procedures.
- Debrief the participant after the data collection has been completed.
- Correct any undesirable consequences to individual participants that result from them participating in the study.
- Maintain strict confidentiality of any information collected about a participant during the research, in accordance with agreements reached with the participant while obtaining informed consent.

3.13 Time dimension

The time dimension is the time in which a particular investigation is undertaken or data becomes available to researchers (Anderson, 2006). According to Cooper and Schindler (2008), there are two types of time dimension research designs: cross-sectional studies and longitudinal studies. A cross-sectional study is undertaken once, and the information is gathered about an area of interest at a particular point in time (Indupalli & Sirwar, 2011). A longitudinal study is any type of research that is undertaken over a long period of time (Paul, Elam & Verhulst, 2007). This study is

cross-sectional as it establishes the adoption of CI ethics in the South African ICT industry at this point in time.

3.14 Chapter summary

This chapter explained how the research was conducted. Attempts were made to ensure that the chapter is non-technical and easy for everyone to understand. It explained how data was collected, validated and tested for reliability and analysed. A pilot study was conducted in two phases to validate the questionnaire. Comments and suggestions received from CI scholars during pilot study were addressed, to ensure validity of the questionnaire. A pilot study was conducted conveniently with sample ICT firms, to reconfirm that the ICT industry practises CI. The results revealed that they do practise CI.

This chapter discussed how the web-based questionnaire was designed and administered. It discussed some of the challenges that were experienced during data collection process, and how these challenges were addressed. It discussed the response rate and the time taken to collect the data. The chapter further discussed how the collected data was analysed. It discussed ethical consideration and time dimension. The next chapter (chapter 4) reports and analyses the results of this study.

CHAPTER 4: DATA ANALYSIS

This chapter provides the analysis of the collected data. The chapter begins with the analysis of the demographics of the enterprises that participated in the study. This is followed by data validity, using exploratory factor analysis. The chapter then analyses the reliability of the data. This is followed by analyses of descriptive statistics of the valid and reliable variables. The chapter ends with the analysis of hypothesis test results using correlation analysis and analysis of the structured equation models.

4.1 Frequency distribution on demographics

The aims of questions 6 to 10 were to describe the characteristics of ICT firms that participated in this study. These questions establish how ICT firms of different characters responded to questions that answer the main objectives of the study.

4.1.1 Province

The aim of question 6 was to establish the province in which each ICT firm was based (see Appendix A). The results indicate that seventeen (17) ICT firms were based in Eastern Cape, thirteen (13) in Free State, sixty-four (64) in Gauteng, twenty-five (25) in KwaZulu-Natal, eleven (11) in Limpopo, seven (7) in Mpumalanga, eleven (11) in North West, eight (8) in Northern Cape, and twenty-eight (28) in Western Cape. The results indicate that a highest number of the responding ICT firms were from Gauteng. Figure 4.1 shows the spread of ICT firms across the nine provinces of South Africa.

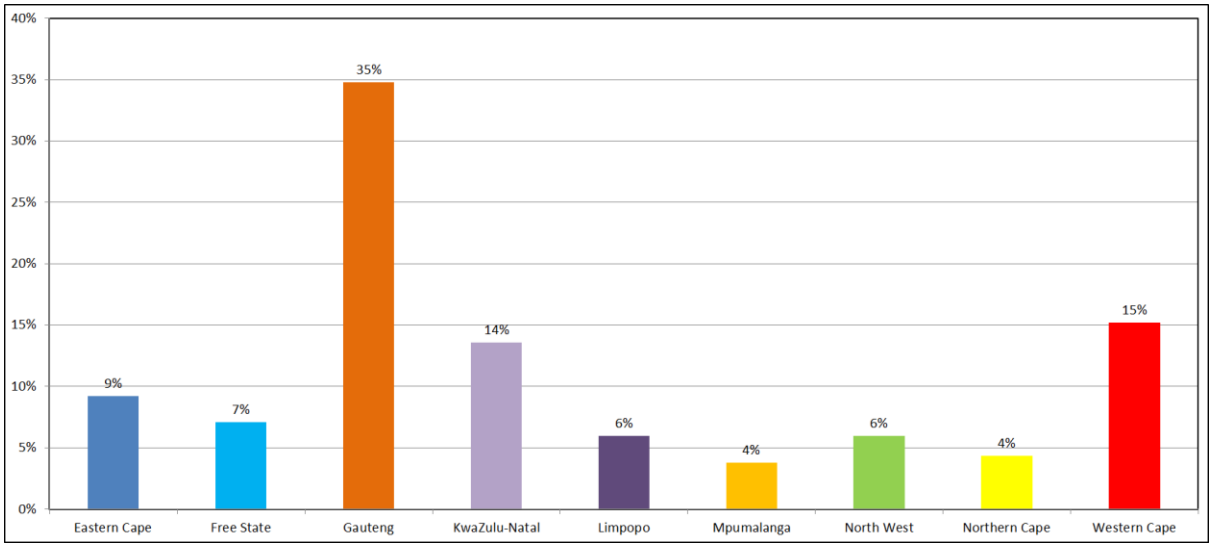

Figure 4.1: ICT firms in difference provinces

4.1.2 ICT sub-industry

The aim of question 7 was to establish the sub-industry each ICT firm operated in (see Appendix A). The results indicate that only two (2) ICT firms were in manufacturing, seventy-one (71) in goods-related services (For example, sales of digital devices, repairs, shipping of devices), eighty-two (82) in intangible services (e.g. web hosting, web design, software development, debugging, storage), and twenty-nine (29) were both goods-related services and intangible services. Thus, the highest number of the ICT firms were operating in the intangible services sub-industry. Figure 4.2 depicts the spread of responses regarding the ICT sub-industries.

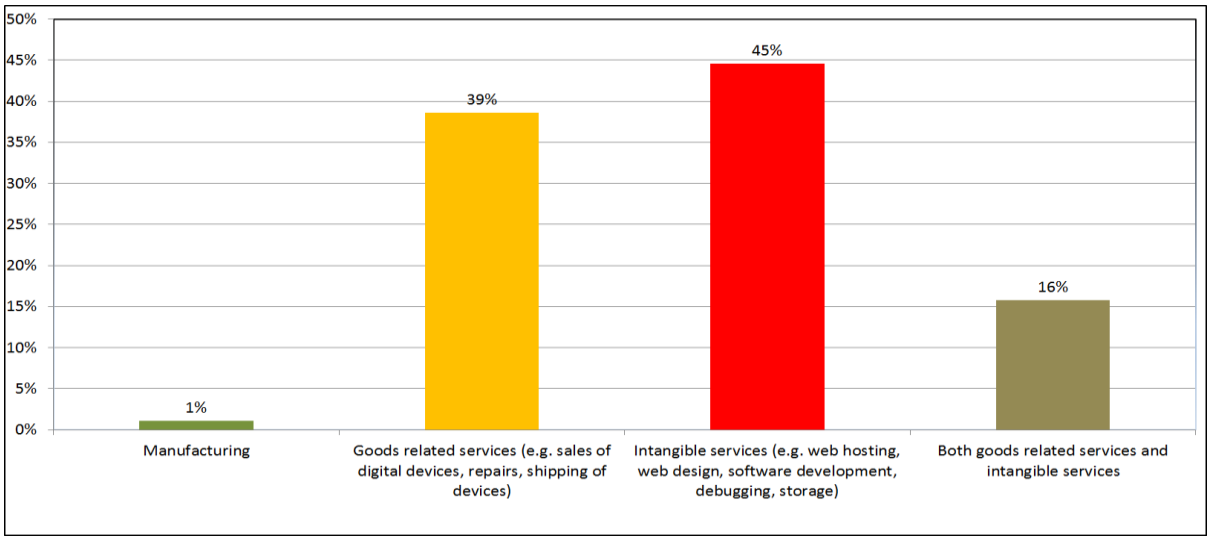

Figure 4.2: ICT sub-industries

4.1.3 Number of employees

The aim of question 8 was to establish the number of employees each ICT firm had (see Appendix A). Six scales were used: 1 to 5, 6 to 10, 11 to 20, 21 to 50, 51 to 200, and 201 or more. The results indicate that twenty-nine (29) ICT firms had 1 to 5 employees, fifty-one (51) had 6 to 10 employees, fifty-three (53) had 11 to 20 employees, twenty-eight (28) had 21 to 50 employees, nineteen (19) had 51 to 200 employees, and four (4) had 201 or more employees. Thus, the highest number of the ICT firms had 11 to 20 employees. Figure 4.3 reveals the spread of responses regarding the number of employees each ICT firm had.

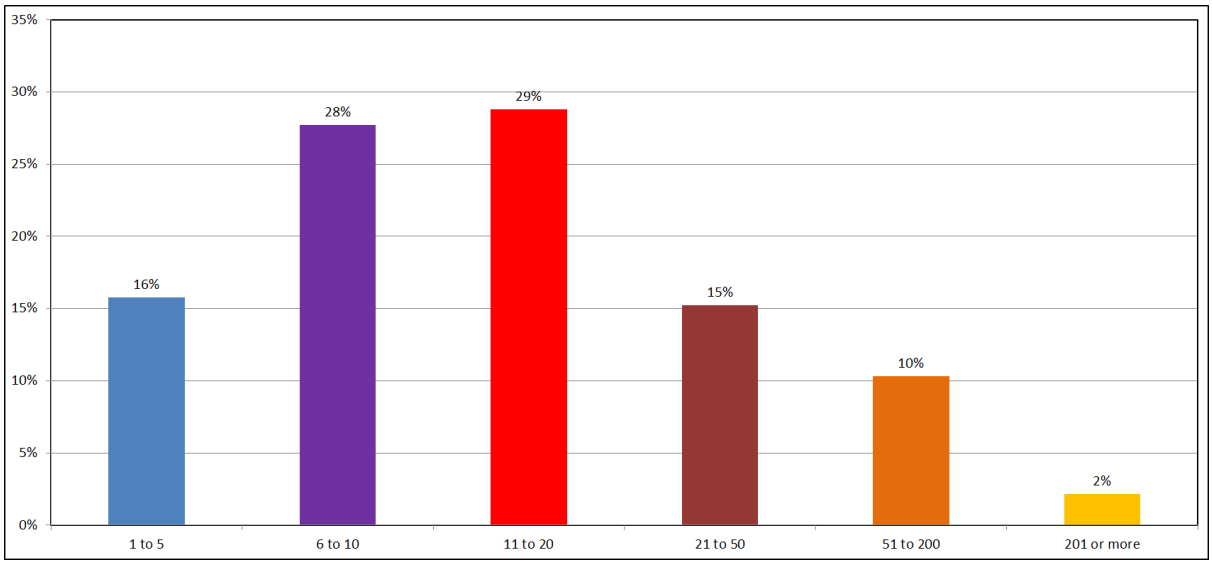

Figure 4.3: Number of employees

4.1.4 Years of business operation

Question 9 aimed to establish the years each ICT firm has been in business operation (see Appendix A). Four scales were used: less than 1 year, 1 to 5 years, 6 to 10 years and 11 or more years. The results indicate that twenty-nine (21) ICT firms have been in business operation for 1 to 5 years, seventy-nine (79) for 6 to 10 years and seventy-six (76) for 11 or more years. None of the ICT firms have been in business operation for less than 1 year. Thus, the highest number of ICT firms have been in business operation for 6 to 10 years. Figure 4.4 indicates the spread of responses regarding the years of business operation.

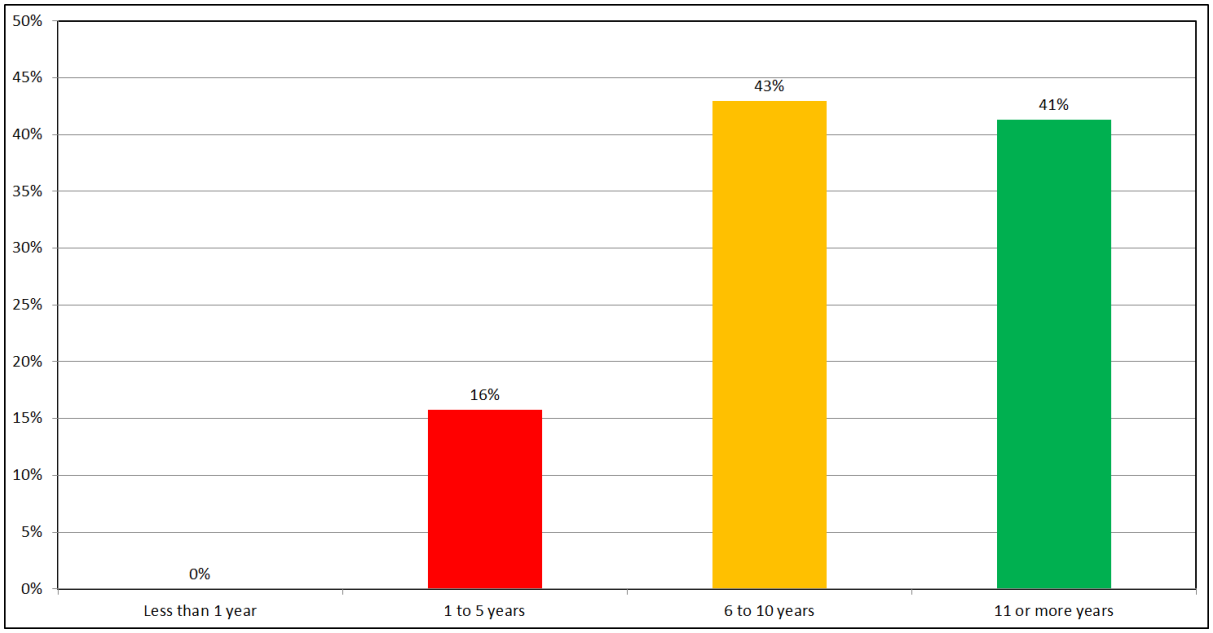

Figure 4.4: Years of business operation

4.1.5 Position held by the respondents

The aim of question 10 was to establish the position held by the CI practitioner who completed the web-based question on behalf of the ICT firm (see Appendix A). Six options of positions were made available for the respondents to choose from. The options included the following: business owner, general manager, sales or marketing manager, information or knowledge manager, CI professional or practitioner and chief executive officer. The results indicate that sixty (60) respondents were business owners, thirty-eight (38) were general managers, sixty-seven (67) sales or marketing managers, three (3) were information or knowledge managers and sixteen (16) were chief executive officers. None of the respondents had the job title CI professionals or practitioners. Thus, the highest number of the respondents were sales or marketing managers. Figure 4.5 depicts the spread of responses across different positions.

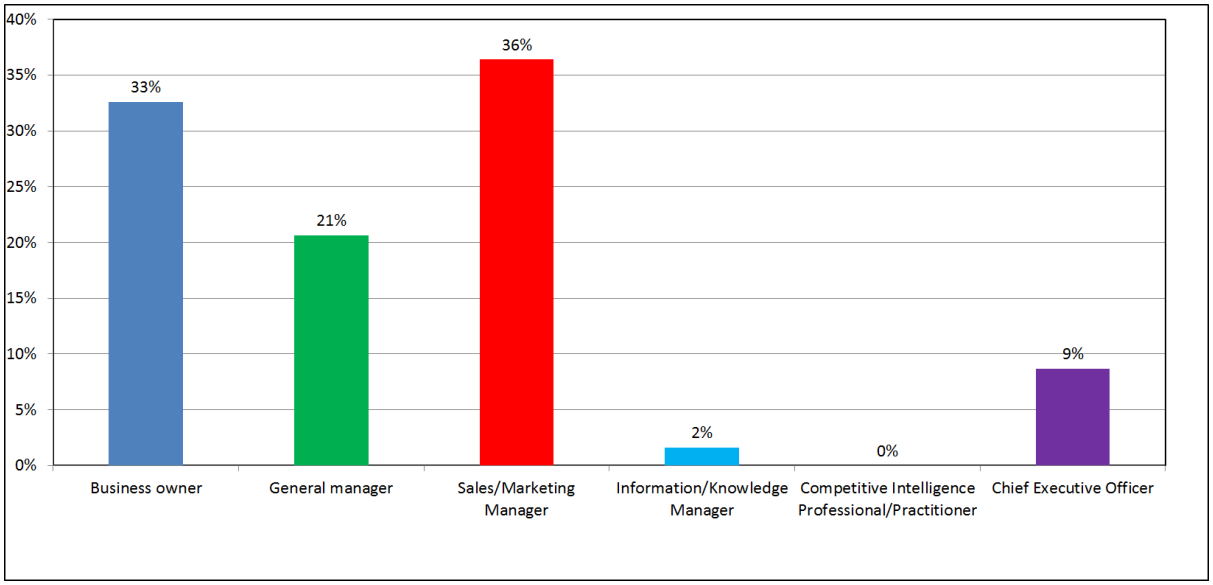

Figure 4.5: Position of the respondents

4.2 Data validity: exploratory factor analysis

This section analyses the validity of collected data. Exploratory Factor Analysis (EFA) is used in this study to test the validity of the collected data. As indicated in chapter 3, exploratory factor analysis is one of the approaches of factor analysis popularly used to analyse and validate interrelationships among a set of variables. This statistical technique was used in this study for its strength in producing a smaller number of linear combinations of original factors that may positively and negatively influence the adoption of CI ethics in a manner that accounts for most of the variability in the data correlations, towards the CIEAM to fully address the main aim and objective 3 of this study (Garson, 2009; Lewis-Beck, Bryman & Liao, 2004). The exploratory factor analysis also tests the validity of the methods used to enforce CI ethics in ICT firms, thus achieving objective 2 of the study. Questions 2 to 5 were aimed at collected data to achieve objectives 2 and 3. The analysis follows the data analysis plan outlined in chapter 3.

4.2.1 Suitability of data for factor analysis

Tabacnnick and Fidell (2007) advocates for a safety sample size of 300 cases, and a minimum of at least 150 cases. This study achieved a sample size of 184, which is considered suitable for factor analysis (Hair *et al*., 1998). The Kaiser-Meyer-Olkin

(KMO) index was used to establish the commonality between the variables. The values of the KMO index vary between 0 and 1, with 0.50 or more considered suitable for factor analysis. This study achieved a KMO index of 0.843 and it is considered adequate for factor analysis. The Bartlett's Test of Sphericity was also used to test significance. This study achieved a Bartlett's Test of Sphericity of $p \leq 0.000$, which is considered significant ($p<0.05$) and data matrix has sufficient correlation to factor analysis. Table 4.1 indicates the KMO and Bartlett's Test of Sphericity. Overall, the data is suitable for factor analysis.

Table 4.1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.843
Bartlett's Test of Sphericity	Approx. Chi-Square	9073.637
	df	2278
	Sig.	.000

4.2.2 Extraction of factors

This study uses Principal Components Analysis (PCA) to extract factors that positively and negatively influence the adoption of CI ethics in the South African ICT. Three criteria are used in this study to extract valid factors that positively and negatively influence the adoption of CI ethics and methods for enforcing CI ethics, namely Kaiser's criteria (Eigenvalue>1 rule), the Scree test and rotation method. These criteria are the most commonly used for extraction valid factors (Williams, 2010). Table 4.2 (see Appendix F for the original table) indicates fifteen (15) strong factors with an Eigenvalue greater than 1. These factors qualify for extraction according to the Eigenvalue>1 rule. However, Linacre (2005) advises that factors with an Eigenvalue greater than 1.4 are valid in PCA, to maintain the strongest variables, avoid noise or random errors. Following Linacre's (2005) advice, this study used a cut-off point of 1.4.

Table 4.2: Factor extraction using Principle Component Analysis (PCA)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.551	25.810	25.810	17.551	25.810	25.810	7.127	10.481	10.481
2	7.195	10.581	36.391	7.195	10.581	36.391	6.730	9.898	20.379
3	3.955	5.817	42.208	3.955	5.817	42.208	4.542	6.679	27.058
4	3.558	5.232	47.440	3.558	5.232	47.440	4.121	6.060	33.118
5	2.460	3.618	51.058	2.460	3.618	51.058	3.851	5.663	38.781
6	1.884	2.771	53.829	1.884	2.771	53.829	3.700	5.442	44.223
7	1.819	2.674	56.503	1.819	2.674	56.503	3.612	5.312	49.536
8	1.572	2.312	58.816	1.572	2.312	58.816	2.692	3.958	53.494
9	1.512	2.224	61.039	1.512	2.224	61.039	2.277	3.348	56.842
10	1.343	1.975	63.015	1.343	1.975	63.015	1.983	2.916	59.758
11	1.245	1.831	64.845	1.245	1.831	64.845	1.876	2.759	62.517
12	1.238	1.821	66.667	1.238	1.821	66.667	1.696	2.494	65.011
13	1.153	1.695	68.362	1.153	1.695	68.362	1.511	2.222	67.233
14	1.131	1.663	70.024	1.131	1.663	70.024	1.510	2.220	69.454
15	1.019	1.498	71.522	1.019	1.498	71.522	1.407	2.069	71.522

Extraction Method: Principal Component Analysis.

The Scree plot in figure 4.6 below shows all the factors in this study. The Scree plot shows fifteen debris (factors) above the Eigenvalue of 1. These factors were established by examining the graph, with the aim of determining a natural bend or break point and the flattening out of the curve. These factors qualify to be retained for further analysis.

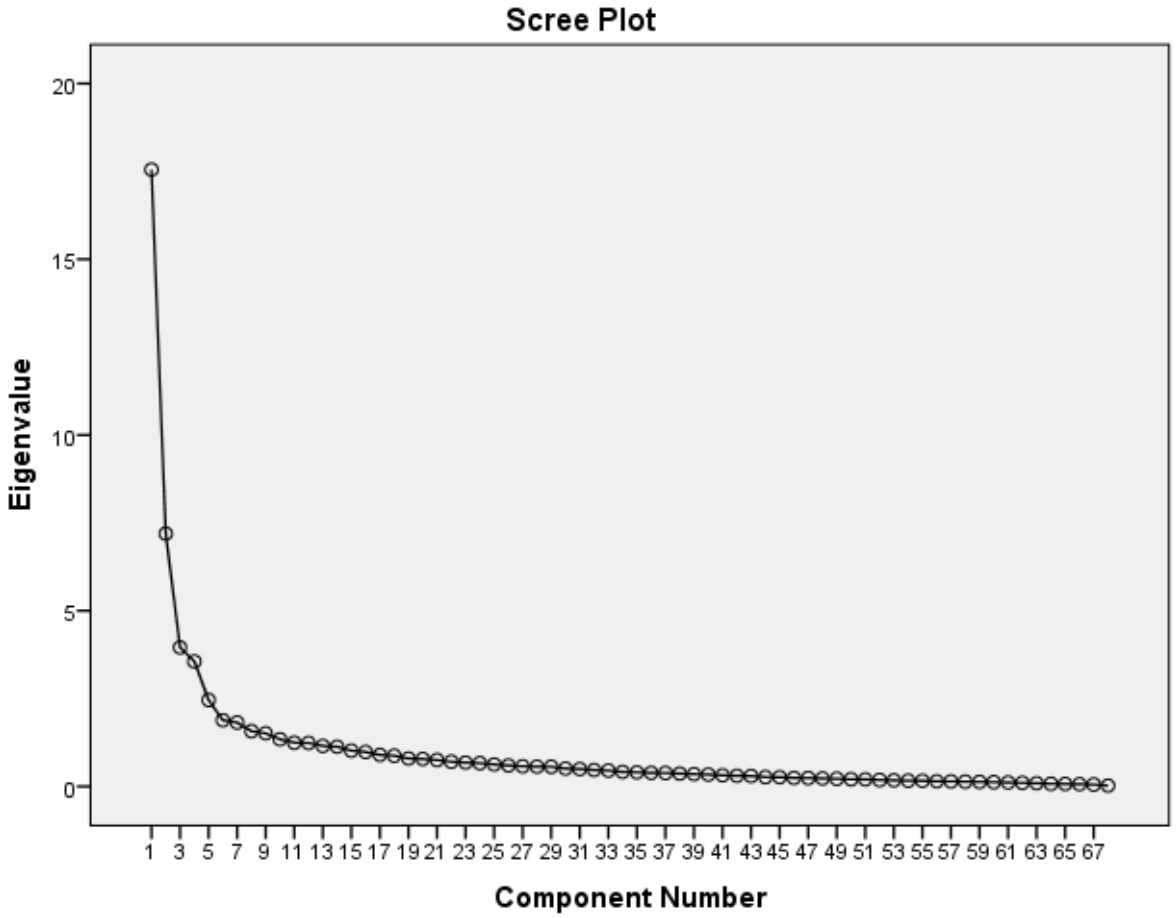

Figure 4.6: Scree plot for factor retention

Following Costello and Osborne's (2005) advice of using multiple criteria to extract valid factors, the orthogonal varimax rotational method opposed to oblique rotation was used in this study as it is the most commonly used and it produces few factors with large loadings and many factors with few loadings. Also, orthogonal varimax rotation assumes that the variables are not correlated whereas oblique rotation assumes that the variables are correlated (Costello & Osborne, 2005). This study hypothesised that the variables are not correlated.

This study aimed to retain factors with more variables loading, and eliminate factors with fewer variables loading. The rule of thumb is to retain factors that load at a minimum of 0.3 and eliminate those factors that load below 0.3 (Tabachnick & Fidell, 2007). Costello and Osborne (2005) conclude that factors with fewer than three (3) items loading are weak and unstable. To ensure that only the factors that are stronger, stable and yielding most interpretable results are retained, this study considered

factors with an Eigenvalue≥1.4 and have a minimum of 3 items loading at 0.4. Consequently, only 9 factors were extracted and retained for further analysis in this study. The Eigenvalue of the 9 extracted and retained factors ranges between 17.551 and 1.512. The percentage of variance accounted for these factors ranges between 25.810 and 2.224. The 9 extracted and retained factors for further analysis in this study account for 61.04% of the total variance. Table 4.3 indicates the items loading per factor (see Appendix G for rejected factors).

Table 4.3: Item loading per factor (part 1)

Rotated Component Matrix[a]									
	Component								
	1	2	3	4	5	6	7	8	9
We strive to continually increase the recognition of the competitive intelligence profession				.669					
We respect the competitive intelligence profession				.744					
We comply with all the applicable laws, domestic and international				.747					
We disclose accurately all relevant information, including one's identity and enterprise, prior to all interviews				.769					
We fully respect all requests for confidentiality of information				.708					
We avoid conflicts of interest in fulfilling our duties				.751					
We provide honest recommendations in the execution of our duties				.761					
We promote the competitive intelligence code of ethics within our enterprise						.732			
We promote the competitive intelligence code of ethics to our third-party contractors						.745			
We promote the competitive intelligence code of ethics within the entire profession						.762			
We adhere to our enterprise's policies, objectives and guidelines						.706			
Ethics roundtables									.617
Workshops; Seminars; Conferences; Meetings and Speeches									.612
Education and Training									.604
Rewards for compliance and Punishment for non-compliance									.619
Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development		.409							
Virtues/good characters of employees e.g. integrity, honesty and humility		.744							
Ensuring that justice prevail in all decisions taken		.669							
Bad and good consequences of one's actions		.620							
Consideration of all organisational stakeholders' interests		.763							
Consideration of rules and principles that govern the community		.617							
Respect for all organisational stakeholders		.752							
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.									
a. Rotation converged in 11 iterations.									

Table 4.3: Item loading per factor (part 2)

Rotated Component Matrix[a]									
	Component								
	1	2	3	4	5	6	7	8	9
Clear competitive intelligence needs					.606				
Communication between decision-makers and competitive intelligence practitioners/professionals					.600				
Competitive Intelligence quality assurance					.682				
Availability of resources for competitive intelligence					.605				
Skilled competitive intelligence professionals					.672				
The role of stakeholders e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors	.534								
Organisational awareness and culture	.524								
Organisational policies, code of ethics and approaches/standards	.537								
Government laws/regulations	.518								
Established societal/industry/business norms	.504								
Perceived potential for customer backlash							.602		
Management support, participation and visibility							.607		
Raising ethics awareness through ethics roundtables							.633		
Raising ethics awareness through workshops, seminars, speeches, meetings and conferences							.622		
Raising ethics awareness through education and training							.628		
The competence of the decision-makers			.778						
Decisions taken at strategic level			.787						
Decisions taken at functional level			.896						
Decisions taken at operational level			.886						
Weak barrier to entry and high competition in the ICT industry								.716	
Lack of resources or infrastructure in the ICT industry								.727	
High telecommunication costs								.724	
ICT skills shortage								.750	
Self-interests and lack of care for others								.714	
Competitive intelligence budgetary constraints								.710	

4.2.3 Factor coding

This section discusses the naming of extracted factors. It also codes the items grouped in each factors. This section should be read with reference to table 4.3 above. The items are coded according to the question numbers on the questionnaire (see Appendix A).

4.2.3.1 Factor 1: Organisational and stakeholders' factors

This factor consists of five (5) items discussed under organisational and stakeholders' factors in section 2.4.2 of chapter 2 of this thesis. For this reason, the name organisational and stakeholders' factors refers to this factor and its items. Table 4.4 indicates the items and item codes of organisational and stakeholders' factors.

Table 4.4: Items and item codes of organisational and stakeholders' factors

Item code	Item description
Q4.23	The role of stakeholders (e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors)
Q4.24	Organisational awareness and culture
Q4.25	Organisational policies, code of ethics and approaches/standards
Q4.26	Government laws/regulations
Q4.27	Established societal/industry/business norms

4.2.3.2 Factor 2: Business ethics and ethical theories

This factor consists of seven items discussed under business ethics and ethical theories in section 2.4.7 in chapter 2 of this thesis. There are no items that moved from one factor to this factor. For these reasons, the name business ethics and ethical theories is maintained and used to refer to these items. Table 4.5 indicates the items and item codes for business ethics and ethical theories.

Table 4.5: Items and item codes of business ethics and ethical theories

Item code	Item description
Q4.9	Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development
Q4.10	Virtues/good characters of employees (e.g. integrity, honesty and humility)
Q4.11	Ensuring that justice prevail in all decisions taken
Q4.12	Bad and good consequences of one's actions
Q4.13	Consideration of all organisational stakeholders' interests
Q4.14	Consideration of rules and principles that govern the community
Q4.15	Respect for all organisational stakeholders

4.2.3.3 Factor 3: Decision-making factors

This factor consists of four items discussed under decision-making factors in section 2.4.4 in chapter 2 of this thesis. There are no items that moved from one factor to this factor. For these reasons, the name decision-making factors is maintained and used to refer to these items. Table 4.6 indicates the items and item codes for decision-making factors.

Table 4.6: Items and item codes of decision-making factors

Item code	Item description
Q4.33	The competence of the decision-makers
Q4.34	Decisions taken at strategic level
Q4.35	Decisions taken at functional level
Q4.36	Decisions taken at operational level

4.2.3.4 Factor 4: Adoption of CI ethics respect

This factor consists of seven items discussed in section 2.2.2 in chapter 2 in this thesis. It consists of some of the elements of the CI code of ethics. What is common about these items/elements is respect of the CI profession and compliance to laws. Because respect leads to compliance, this factor is named adoption of CI ethics respect. No items moved from other factors to this factor. Table 4.7 indicates the items and item codes for CI code of ethics respect.

Table 4.7: The items and item codes of CI code of ethics respect

Item code	Item description
Q2.1	We strive to continually increase the recognition of the competitive intelligence profession
Q2.2	We respect the competitive intelligence profession
Q2.3	We comply with all the applicable laws, domestic and international
Q2.4	We disclose accurately all relevant information, including one's identity and enterprise, prior to all interviews
Q2.5	We fully respect all requests for confidentiality of information
Q2.6	We avoid conflicts of interest in fulfilling our duties
Q2.7	We provide honest recommendations in the execution of our duties

4.2.3.5 Factor 5: CI practice factors

This factor consists of five items discussed under CI practice factors in section 2.4.5 in chapter 2 of this thesis. No items moved from other factors to this factor. For these reasons, the name CI practice factors is maintained and used to refer to these items. Table 4.8 indicates the items and item codes for CI practice factors.

Table 4.8: Items and item codes for CI practice factors

Item code	Item description
Q4.16	Clear CI needs
Q4.17	Communication between decision-makers and CI practitioners/professionals
Q4.18	CI quality assurance
Q4.19	Availability of resources for CI
Q4.20	Skilled CI professionals

4.2.3.6 Factor 6: Adoption of CI ethics promotion

This factor consists of four items discussed under section 2.2.2 in chapter 2 of this thesis. It consists of some of the elements of the CI code of ethics. What is common about these items is the promotion of CI code of ethics. For this reason, this factor is named adoption of CI code of ethics promotion. No items moved from other factors to this factor. Table 4.9 indicates the items and item codes of CI code of ethics promotion.

Table 4.9: Items and item code of CI ethics promotion

Item code	Item description
Q2.8	We promote the CI code of ethics within our enterprise
Q2.9	We promote the CI code of ethics to our third-party contractors
Q2.10	We promote the CI code of ethics within the entire profession
Q2.11	We adhere to our enterprise's policies, objectives and guidelines

4.2.3.7 Factor 7: Raising CI ethics awareness

This factor consists of five items discussed in section 2.4.3 of chapter 2 of this thesis under raising CI ethics awareness and organisational and stakeholders' factors. Only one item moved from organisational and stakeholders' factors, to join four items for raising CI ethics awareness. Firms may raise CI ethics in expectation of potential customer backlash. For this reason, the name raising CI ethics awareness is used to refer to these items. Table 4.10 indicates the items and item codes of raising CI ethics awareness.

Table 4.10: Items and item codes of raising CI ethics awareness

Item code	Item description
Q4.28	Perceived potential for customer backlash
Q4.29	Management support, participation and visibility
Q4.30	Raising ethics awareness through ethics roundtables
Q4.31	Raising ethics awareness through workshops, seminars, speeches, meetings and conferences
Q4.32	Raising ethics awareness through education and training

4.2.3.8 Factor 8: CI ethics challenges: industrial, ethical and CI practice

This factor consists of six items discussed under factors that negatively influence the adoption of CI ethics in section 2.4.8 of chapter 2 of this thesis. No items moved from other factors to this factor. These items are a combination of industrial, ethical theories and CI practice. For this reason, this factor is named CI ethics challenges: industrial, ethical and CI practice. Table 4.11 indicates the items and item codes of CI ethics challenges: industrial, ethical and CI practice.

Table 4.11: Items and item codes of CI ethics challenges: industrial, ethical and CI practice

Item code	Item description
Q5.1	Weak barrier to entry and high competition in the ICT industry
Q5.2	Lack of resources or infrastructure in the ICT industry
Q5.3	High telecommunication costs
Q5.4	ICT skills shortage
Q5.5	Self-interests and lack of care for others
Q5.6	CI budgetary constraints

4.2.3.9 Factor 9: CI ethics enforcement methods

This factor consists of four items discussed under CI ethics enforcement methods in section 2.2.2 in chapter 2 of this thesis. No items moved from other factors to this factor. The name CI ethics enforcement methods is maintained and used to refer to these items. Table 4.12 indicates the items and item codes of CI ethics enforcement methods.

Table 4.12: Items and item codes of CI ethics enforcement methods

Item code	Item description
Q3.1	Ethics roundtables
Q3.2	Workshops; Seminars; Conferences; Meetings and Speeches
Q3.3	Education and Training
Q3.4	Rewards for compliance and punishment for non-compliance

4.3 Reliability analysis

This section analyses the results of the internal consistency reliability of the extracted variables. The Cronbach's coefficient alpha is used to test the internal consistency, because it is the most common and widely used method (DeVellis, 2006). The coefficient ranges from between 0 and 1, and a value that is equal or less than 0.6 indicates unsatisfactory internal consistency reliability (Malhotra, 2004). According to O'Leary-Kelly and Vokurka (1998), coefficients equal to or greater than 0.70 indicate high reliability of the measuring instrument. The following three criteria for judging Cronbach's alpha results proposed by DeVellis (1991) are used in this study:

- Reliability is considered good when the Cronbach's alpha is above 0.8.

- Reliability is considered acceptable when the Cronbach's alpha is between 0.6 and 0.8.
- Reliability is considered unacceptable when the Cronbach's alpha is below 0.6.

Table 4.13 summarises the reliability results of the extracted factors. It indicates the Cronbach's alpha of each factor and the number of items each factor consists of.

Table 4.13: Summary of reliability test results for all the factors

Factor	Cronbach's alpha	Number of items
Factor 1: Organisational and stakeholders' factors	0.833	5
Factor 2: Business ethics and ethical theories	0.869	7
Factor 3: Decision-making factors	0.906	4
Factor 4: Adoption of CI ethics respect	0.787	7
Factor 5: CI practice factors	0.874	5
Factor 6: Adoption of CI ethics promotion	0.767	4
Factor 7: Raising CI ethics awareness	0.731	5
Factor 8: CI ethics challenges: industrial, ethical and CI practice	0.830	6
Factor 9: CI ethics enforcement methods	0.676	4

4.3.1 Reliability of organisational and stakeholders' factors

This factor consists of five items. The Cronbach's alpha for these items ranges between 0.777 and 0.817. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.833 and considered acceptable for further analysis. None of the item Cronbach's alpha is greater than the overall Cronbach's alpha. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha, if any item is deleted, are indicated in table 4.14 below. The overall mean, variance and standard deviation for the five items are indicated in table 4.15 below.

Table 4.14: Item total statistics for organisational and stakeholders' factors

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The role of stakeholders (e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors)	16.69	3.483	.614	.805
Organisational awareness and culture	16.67	3.696	.570	.817
Organisational policies, code of ethics and approaches/standards	16.54	3.528	.646	.798
Government laws/regulations	16.53	2.994	.654	.799
Established societal/industry/business norms	16.61	3.158	.707	.777

Table 4.15: Scale statistics for organisational and stakeholders' factors

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
20.76	5.057	2.249	5

4.3.2 Reliability of business ethics and ethical theories

This factor consists of seven items. The Cronbach's alpha for these items ranges between 0.839 and 0.868. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.869 and considered acceptable for further analysis. None of the item Cronbach's alpha is greater than the overall Cronbach's alpha. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.16 below. The overall mean, variance and standard deviation for the seven items are indicated in table 4.17 below.

Table 4.16: Item total statistics for business ethics and ethical theories

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development	25.38	7.002	.515	.868
Virtues/good characters of employees (e.g. integrity, honesty and humility)	25.28	6.739	.727	.840
Ensuring that justice prevail in all decisions taken	25.23	6.694	.656	.848
Bad and good consequences of one's actions	25.49	6.907	.553	.863
Consideration of all organisational stakeholders' interests	25.33	6.702	.707	.842
Considerations of rules and principles that govern the community	25.39	6.927	.653	.849
Respect for all organisational stakeholders	25.29	6.678	.725	.839

Table 4.17: Scale statistics for business ethics and ethical theories

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
29.57	9.067	3.011	7

4.3.3 Reliability of decision-making factors

This factor consists of four items. The Cronbach's alpha for these items ranges between 0.836 and 0.925. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.906 and considered acceptable for further analysis. Although there is one item with Cronbach's alpha greater than the overall Cronbach's alpha, namely, the competence of the decision-makers, with Cronbach's alpha of 0.925, deleting it will lead to a minor change to the overall Cronbach's alpha of this factor Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.18 below. The overall mean, variance and standard deviation for the four items are indicated in table 4.19 below.

Table 4.18: Item total statistics for decision-making factors

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The competence of the decision-makers	10.85	6.632	.646	.925
Decisions taken at strategic level	10.93	6.247	.741	.896
Decisions taken at functional level	11.17	5.303	.888	.841
Decisions taken at operational level	11.20	5.011	.902	.836

Table 4.19: Scale statistics for decision-making factors

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
14.72	9.996	3.162	4

4.3.4 Reliability of adoption of CI ethics respect

This factor consists of seven items. The Cronbach's alpha for these items ranges between 0.736 and 0.850. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.787 and considered acceptable for further analysis. Although there is one item with Cronbach's alpha greater than the overall Cronbach's alpha, namely, we strive to continually increase the recognition of the CI profession, with Cronbach's alpha of 0.850, deleting it will lead to a minor change to the overall Cronbach's alpha of this factor. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.20 below. The overall mean, variance and standard deviation for the seven items are indicated in table 4.21 below.

Table 4.20: Item total statistics for adoption of CI ethics respect

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
We strive to continually increase the recognition of the CI profession	25.48	7.169	.225	.850
We respect the CI profession	25.00	7.180	.575	.750
We comply with all the applicable laws, domestic and international	24.70	6.978	.573	.749
We disclose accurately all relevant information, including one's identity and enterprise, prior to all interviews	24.94	6.592	.626	.736
We fully respect all requests for confidentiality of information	24.81	7.051	.627	.742
We avoid conflicts of interest in fulfilling our duties	24.82	7.175	.572	.751
We provide honest recommendations in the execution of our duties	24.84	7.044	.662	.737

Table 4.21: Scale statistics for adoption of CI ethics respect

Scale Statistics			
Mean	Variance	Std. Deviation	No of Items
29.10	9.236	3.039	7

4.3.5 Reliability of CI practice factors

This factor consists of five items. The Cronbach's alpha for these items ranges between 0.830 and 0.861. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.874 and considered acceptable for further analysis. None of the item Cronbach's alpha is greater than the overall Cronbach's alpha. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.22 below. The overall mean, variance and standard deviation for the five items are indicated in table 4.23 below.

Table 4.22: Item total statistics for CI practice factors

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Clear CI needs	15.91	4.834	.645	.861
Communication between decision-makers and CI practitioners/professionals	15.94	4.669	.653	.859
CI quality assurance	16.04	4.113	.774	.830
Availability of resources for CI	16.07	4.367	.710	.846
Skilled CI professionals	15.93	4.433	.739	.839

Table 4.23: Scale statistics for CI practice factors

Scale Statistics			
Mean	Variance	Std. Deviation	No of Items
19.97	6.792	2.606	5

4.3.6 Reliability of adoption of CI ethics promotion

This factor consists of four items. The Cronbach's alpha for these items ranges between 0.592 and 0.845. Although the item "we promote the CI code of ethics within the entire profession" has a Cronbach's alpha which is less than 0.6, Su and Yang (2010) advise and justify the consideration of factors or items with a Cronbach's alpha of ≥ 0.5. Since these two items have Cronbach's alpha of 0.592, it is retained for further analysis. The overall Cronbach's alpha for this factor was 0.767 and considered acceptable for further analysis. Although there is one item with Cronbach's alpha greater than the overall Cronbach's alpha, namely, "we adhere to our enterprise's policies, objectives and guidelines, with Cronbach's alpha of 0.845, deleting it will lead to a minor change to the overall Cronbach's alpha of this factor. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.24 below. The overall mean, variance and standard deviation for the four items are indicated in table 4.25 below.

Table 4.24: Item total statistics for adoption of CI ethics promotion

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
We promote the CI code of ethics within our enterprise	11.10	4.930	.708	.637
We promote the CI code of ethics to our third-party contractors	11.64	4.089	.648	.677
We promote the CI code of ethics within the entire profession	11.36	4.298	.764	.592
We adhere to our enterprise's policies, objectives and guidelines	10.54	7.714	.208	.845

Table 4.25: Scale statistics for adoption of CI ethics promotion

Scale Statistics			
Mean	Variance	Std. Deviation	No of Items
14.88	8.674	2.945	4

4.3.7 Reliability of raising CI ethics awareness

This factor consists of five items. The Cronbach's alpha for these items ranges between 0.634 and 0.815. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.731 and considered acceptable for further analysis. Although there is one item with Cronbach's alpha greater than the overall Cronbach's alpha, namely, perceived potential for customer backlash, with Cronbach's alpha of 0,815, deleting it will lead to a minor change to the overall Cronbach's alpha of this factor. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.26 below. The overall mean, variance and standard deviation for the five items are indicated in table 4.27 below.

Table 4.26: Item total statistics for raising CI ethics awareness

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived potential for customer backlash	16.07	3.235	.294	.815
Management support, participation and visibility	15.61	3.693	.611	.661
Raising ethics awareness through ethics roundtables	15.81	3.248	.525	.672
Raising ethics awareness through workshops, seminars, speeches, meetings and conferences	15.64	3.477	.677	.634
Raising ethics awareness through education and training	15.65	3.496	.592	.654

Table 4.27: Scale statistics for raising CI ethics awareness

Scale Statistics			
Mean	Variance	Std. Deviation	No of Items
19.70	5.022	2.241	5

4.3.8 Reliability of CI ethics challenges: industrial, ethical and CI practice

This factor consists of four items. The Cronbach's alpha for these items ranges between 0.629 and 0.684. All items have a Cronbach's alpha greater than 0.6 and are therefore acceptable for further analysis. The overall Cronbach's alpha for this factor was 0.718 and considered acceptable for further analysis. None of the item Cronbach's alpha is greater than the overall Cronbach's alpha. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.28 below. The overall mean, variance and standard deviation for the four items are indicated in table 4.29 below.

Table 4.28: Item total statistics for CI ethics challenges: industrial, ethical and CI practice

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Exposure to international forces	11.47	3.813	.548	.630
Government spending on infrastructure and growing investor confidence	11.48	3.847	.549	.629
Ethical leaders, managers and decision-makers	10.92	5.087	.470	.684
Rewards for compliance and punishments for non-compliance	11.11	4.513	.484	.668

Table 4.29: Scale statistics for CI ethics challenges: industrial, ethical and CI practice

Scale Statistics			
Mean	Variance	Std. Deviation	No of Items
14.99	7.011	2.648	4

4.3.9 Reliability of CI ethics enforcement methods

This factor consists of four items. The Cronbach's alpha for these items ranges between 0.582 and 0.640. Although the items ethics roundtables and rewards for compliance and punishment for non-compliance have Cronbach's alpha which is less than 0.6, Su and Yang (2010) advise and justify the consideration of factors or items with a Cronbach's alpha of ≥ 0.5. Since these two items have Cronbach's alpha of 0.586 and 0.582 respectively, they are retained for further analysis. The overall Cronbach's alpha for this factor was 0.676 and considered acceptable for further analysis. None of the item Cronbach's alpha is greater than the overall Cronbach's alpha. Therefore, no item is deleted to increase the overall Cronbach's alpha. The scale mean, scale variance and Cronbach's alpha if any item is deleted are indicated in table 4.30 below. The overall mean, variance and standard deviation for the four items are indicated in table 4.31 below.

Table 4.30: Item total statistics for CI ethics enforcement methods

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Ethics roundtables	11.67	4.146	.499	.586
Workshops; Seminars; Conferences; Meetings and Speeches	10.90	6.056	.454	.640
Education and Training	11.25	5.041	.446	.617
Rewards for compliance and Punishment for non-compliance	11.65	4.217	.502	.582

Table 4.31: Scale statistics for CI ethics enforcement methods

Scale Statistics			
Mean	Variance	Std. Deviation	No of Items
15.16	7.806	2.794	4

4.4 Descriptive statistics

This section analyses the central tendencies of CI ethics adoption, factors that positively and negatively influence the adoption of CI ethic, the extent of CI ethics adoption, and the methods used to enforce CI ethics. This analysis provides answers to question 1 to 5 and fulfils objectives 1, 2 and 3.

4.4.1 Descriptive statistics of CI ethics adoption

This section analyses the descriptive statistics of CI ethics adoption. The aim of question 2 (Appendix A) was to establish the adoption of CI ethics and fulfil objective 3 of this study. A Likert scale ranging from “Strongly Disagree” (1) to Strongly Agree (5) was used to establish the level of agreement by ICT firms to CI ethics adoption (see Appendix A). The exploratory factor analysis divided CI ethics into two dependent variables, namely adoption of CI ethics respect and adoption of CI ethics promotion.

4.4.1.1 Adoption of CI ethics respect

Table 4.32 and figure 4.7 reveal the descriptive statistics and spread of responses for the adoption of CI ethics respect, respectively. Seven items of the dependent factor adoption

of CI ethics respect are valid and reliable. Their central tendencies are analysed hereunder.

We strive to continually increase the recognition of the CI profession: The standard deviation, skewness and kurtosis for this element are 0.957, -1.087 and 0.687 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.61, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that majority of the ICT firms strive to continually increase the recognition of the CI profession.

We respect the CI profession: The standard deviation, skewness and kurtosis for this element are 0.564, -1.085 and 6.229 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.10, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms respect the CI profession.

We comply with all the applicable laws, domestic and international: The standard deviation, skewness and kurtosis for this element are 0.620, -1.225 and 4.456 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.40, respectively. The mode indicates

that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms comply with all the applicable laws, domestic and international.

We disclose accurately all relevant information, including one’s identity and enterprise, prior to all interviews: The standard deviation, skewness and kurtosis for this element are 0.679, -1.157 and 3.574 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.16, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms disclose accurately all relevant information, including one’s identity and enterprise, prior to all interviews.

We fully respect all requests for confidentiality of information: The standard deviation, skewness and kurtosis for this element are 0.562, -0.975 and 6.200 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.29, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms fully respect all requests for confidentiality of information.

We avoid conflict of interest in fulfilling our duties: The standard deviation, skewness and kurtosis for this element are 0.567, -0.965 and 5.906 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are

4, 4 and 4.28, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms avoid conflict of interest in fulfilling their duties.

We provide honest recommendations in the execution of our duties: The standard deviation, skewness and kurtosis for this element are 0.541, -0.739 and 6.032 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.26, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms provide honest recommendations in the execution of their duties.

Table 4.32: Adoption of CI ethics respect descriptive statistics

Items	**Mode**	**Median**	**Mean**	**Standard Deviation**	**Skewness**	**Kurtosis**	**Response Count**
We strive to continually increase the recognition of the CI profession	4	4	3.61	.957	-1.087	0.687	184
We respect the CI profession	4	4	4.10	.564	-1.085	6.229	184
We comply with all the applicable laws, domestic and international	4	4	4.40	.620	-1.225	4.456	184
We disclose accurately all relevant information, including one’s identity and enterprise, prior to all interviews	4	4	4.16	.679	-1.157	3.574	184
We fully respect all requests for confidentiality of information	4	4	4.29	.562	-0.975	6.200	184
We avoid conflict of interest in fulfilling our duties	4	4	4.28	.567	-0.965	5.906	184
We provide honest recommendations in the execution of our duties	4	4	4.26	.541	-0.739	6.032	184

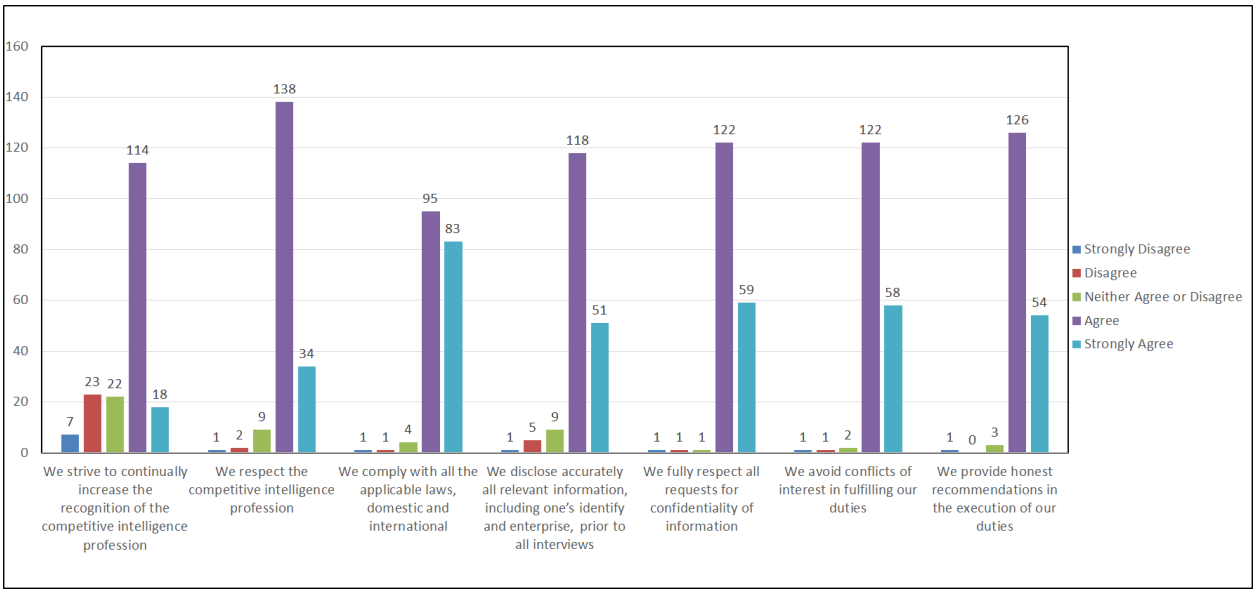

Figure 4.7: Adoption of CI ethics respect spread of responses

4.4.1.2 Adoption of CI ethics promotion

Table 4.33 and figure 4.8 reveal their descriptive statistics and spread of responses for the adoption of CI ethics, respectively. Four items of the dependent factor adoption of CI ethics promotion are valid and reliable. Their central tendencies are analysed hereunder.

We promote the CI code of ethics within our enterprise: The standard deviation, skewness and kurtosis for this element are 0.921, -1.165 and 1.280 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.78, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms promote the CI code of ethics within their enterprise.

We promote the CI code of ethics to our third-party contractors: The standard deviation, skewness and kurtosis for this element are 0.921, -1.491 and -0.876 respectively. A higher standard deviation indicates that there is a wide spread of responses to this

element. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this element. The mode, median and mean for this element are 4, 4 and 3.24, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms promote the CI code of ethics to their third-party contractors.

We promote the CI code of ethics within the entire profession: The standard deviation, skewness and kurtosis for this element are 1.040, -0.663 and -0.425 respectively. A higher standard deviation indicates that there is a wide spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this element. The mode, median and mean for this element are 4, 4 and 3.52, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms promote the CI code of ethics within the entire profession.

We adhere to our enterprise’s policies, objectives and guidelines: The standard deviation, skewness and kurtosis for this element are 0.560, -0.860 and 5.296 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.34, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms adhere to their enterprise’s policies, objectives and guidelines.

Table 4.33: Adoption of CI ethics promotion descriptive statistics

Items	Mode	Median	Mean	Standard Deviation	Skewness	Kurtosis	Response Count
We promote the CI code of ethics within our enterprise	4	4	3.78	.921	-1.165	1.280	184
We promote the CI code of ethics to our third-party contractors	4	4	3.24	1.200	-0.491	-0.876	184
We promote the CI code of ethics within the entire profession	4	4	3.52	1.040	-0.663	-0.425	184
We adhere to our enterprise's policies, objectives and guidelines	4	4	4.34	.560	-0.860	5.296	184

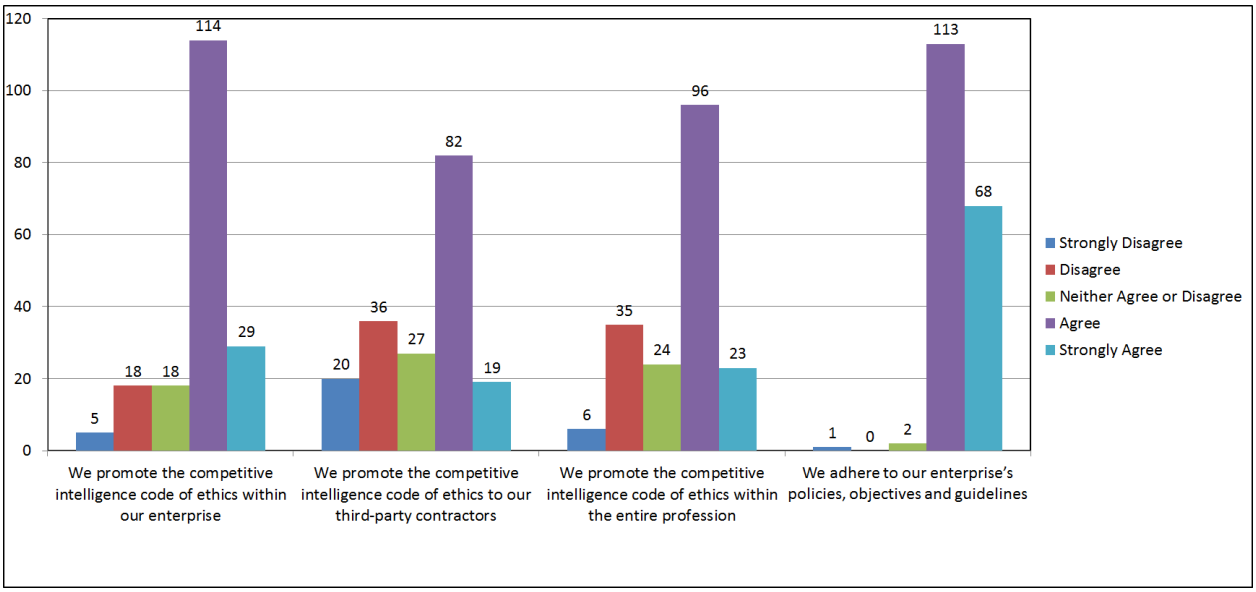

Figure 4.8: Adoption of CI ethics promotion spread of responses

4.4.2 Descriptive statistics of factors that positively influence CI ethics adoption

This section analyses the descriptive statistics of factors that positively influence the adoption of CI ethics. The aim of question 4 (see Appendix A) was to establish the factors that positively influence the adoption of CI ethics and to fulfil objective 3 of this study. A Likert scale ranging from "Strongly Disagree" (1) to Strongly Agree (5) was used to

establish the level of agreement by ICT firms to the factors that positively influence the adoption of CI ethics (see Appendix A).

4.4.2.1 Organisational and stakeholders' factors descriptive statistics

Table 4.34 and figure 4.9 reveal their descriptive statistics and spread of responses for organisational and stakeholders' factors, respectively. Five items of this factor are valid and reliable and their central tendencies are analysed hereunder.

The role of stakeholders (e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors: The standard deviation, skewness and kurtosis for this element are 0.554, -1.334 and 7.465 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.07, respectively. The mode indicates that the most selected answer to this element was "agree". Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by the role of stakeholders (e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors) when adopting CI ethics.

Organisational awareness and culture: The standard deviation, skewness and kurtosis for this element are 0.505, -1.130 and 9.051 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.09, respectively. The mode indicates that the most selected answer to this element was "agree". Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by organisational awareness and culture when adopting CI ethics.

Organisational policies, code of ethics and approaches/standards: The standard deviation, skewness and kurtosis for this element are 0.519, -0.713 and 7.164 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.22, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by organisational policies, code of ethics and approaches/standards when adopting CI ethics.

Government laws/regulations: The standard deviation, skewness and kurtosis for this element are 0.697, -1.528 and 5.862 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.23, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by government laws/regulations when adopting CI ethics.

Established societal/industry/business norms: The standard deviation, skewness and kurtosis for this element are 0.608, -1.412 and 7.399 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.15, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT

firms are positively influenced by established societal/industry/business norms when adopting CI ethics.

Table 4.34: Organisational and stakeholder factors descriptive statistics

Items	Mode	Median	Mean	Standard Deviation	Skewness	Kurtosis	Response Count
The role of stakeholders (e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees and auditors)	4	4	4.07	.554	-1.334	7.465	184
Organisational awareness and culture	4	4	4.09	.505	-1.130	9.051	184
Organisational policies, code of ethics and approaches/standards	4	4	4.22	.519	-0.713	7.164	184
Government laws/regulations	4	4	4.23	.697	-1.528	5.862	184
Established societal/industry/business norms	4	4	4.15	.608	-1.412	7.399	184

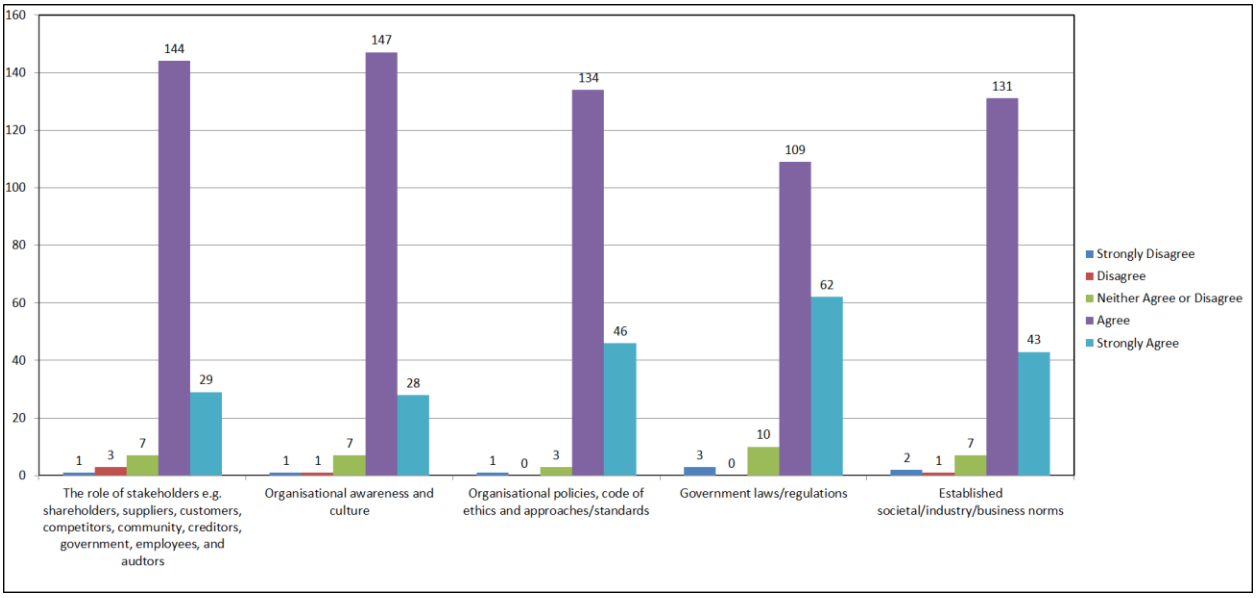

Figure 4.9: Organisational and stakeholder factors spread of responses

4.4.2.2 Business ethics and ethical theories descriptive statistics

Table 4.35 and figure 4.10 reveal their descriptive statistics and spread of responses for the factor business ethics and ethical theories, respectively. Seven items of this factor are valid and reliable and their central tendencies are analysed hereunder.

Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development: The standard deviation, skewness and kurtosis for this element are 0.617, -1.405 and 7.132 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.18, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development when adopting CI ethics.

Virtues/good character of employees (e.g. integrity, honesty and humility): The standard deviation, skewness and kurtosis for this element are 0.540, -0.750 and 6.095 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.18, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by virtues/good character of employees (e.g. integrity, honesty and humility) when adopting CI ethics.

Ensuring that justice prevails in all decisions taken: The standard deviation, skewness and kurtosis for this element are 0.595, -1.053 and 4.939 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.33, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by ensuring that justice prevails in all decisions taken when adopting CI ethics.

Bad and good consequences of one's actions: The standard deviation, skewness and kurtosis for this element are 0.614, -1.477 and 7.074 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.08, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by bad and good consequences of one's actions when adopting CI ethics.

Consideration of all organisational stakeholders' interests: The standard deviation, skewness and kurtosis for this element are 0.560, -0.745 and 5.101 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.24, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT

firms are positively influenced by consideration of all organisational stakeholders' interests when adopting CI ethics.

Considerations of rules and principles that govern the community: The standard deviation, skewness and kurtosis for this element are 0.539, -0.941 and 7.129 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.18, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by considerations of rules and principles that govern the community when adopting CI ethics.

Respect for all organisational stakeholders: The standard deviation, skewness and kurtosis for this element are 0.555, -0.764 and 5.373 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.27, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by respect for all organisational stakeholders when adopting CI ethics.

Table 4.35: Business ethics and ethical theories descriptive statistics

Items	Mode	Median	Mean	Standard Deviation	Skewness	Kurtosis	Response Count
Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development	4	4	4.18	.617	-1.405	7.132	184
Virtues/good character of employees (e.g. integrity, honesty and humility)	4	4	4.28	.540	-0.750	6.095	184
Ensuring that justice prevail in all decisions taken	4	4	4.33	.595	-1.053	4.939	184
Bad and good consequences of one's actions	4	4	4.08	.614	-1.477	7.074	184
Consideration of all organisational stakeholders' interests	4	4	4.24	.560	-0.745	5.101	184
Considerations of rules and principles that governs the community	4	4	4.18	.539	-0.941	7.129	184
Respect for all organisational stakeholders	4	4	4.27	.555	-0.764	5.373	184

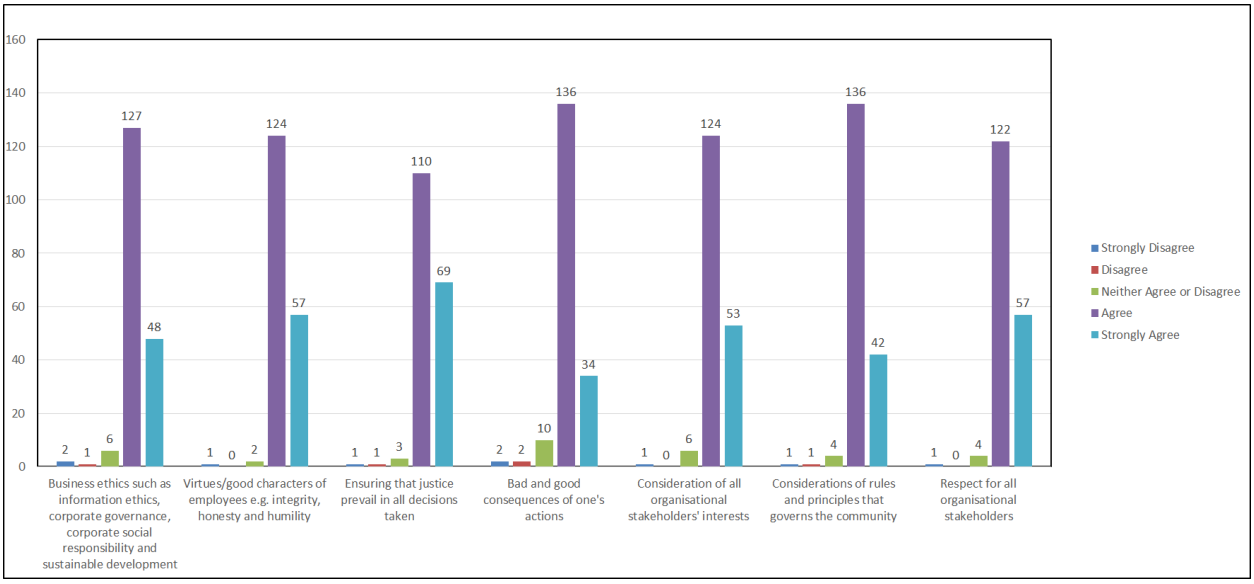

Figure 4.10: Business ethics and ethical theories spread of responses

4.4.2.3 Decision-making factors descriptive statistics

Table 4.36 and figure 4.11 reveal their descriptive statistics and spread of responses of decision-making factors. Four items of this factors are valid and reliable and their central tendencies are analysed below.

The competence of the decision-makers: The standard deviation, skewness and kurtosis for this element are 0.813, -1.176 and 1.817 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.87, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by the competence of the decision-makers when adopting CI ethics.

Decisions taken at strategic level: The standard deviation, skewness and kurtosis for this element are 0.827, -1.856 and 4.086 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.87, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by decisions taken at strategic level when adopting CI ethics.

Decisions taken at functional level: The standard deviation, skewness and kurtosis for this element are 0.934, -1.206 and 0.790 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.54, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by decisions taken at functional level when adopting CI ethics.

Decisions taken at operational level: The standard deviation, skewness and kurtosis for this element are 0.992, -1.268 and 0.908 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.52, respectively. The mode indicates that the most selected answer to this element was "agree". Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by decisions taken at operational level when adopting CI ethics.

Table 4.36: Decision-making factors descriptive statistics

Items	**Mode**	**Median**	**Mean**	**Standard Deviation**	**Skewness**	**Kurtosis**	**Response Count**
The competence of the decision-makers	4	4	3.87	.813	-1.176	1.817	184
Decisions taken at strategic level	4	4	3.78	.827	-1.856	4.086	184
Decisions taken at functional level	4	4	3.54	.934	-1.206	0.790	184
Decisions taken at operational level	4	4	3.52	.992	-1.268	0.908	184

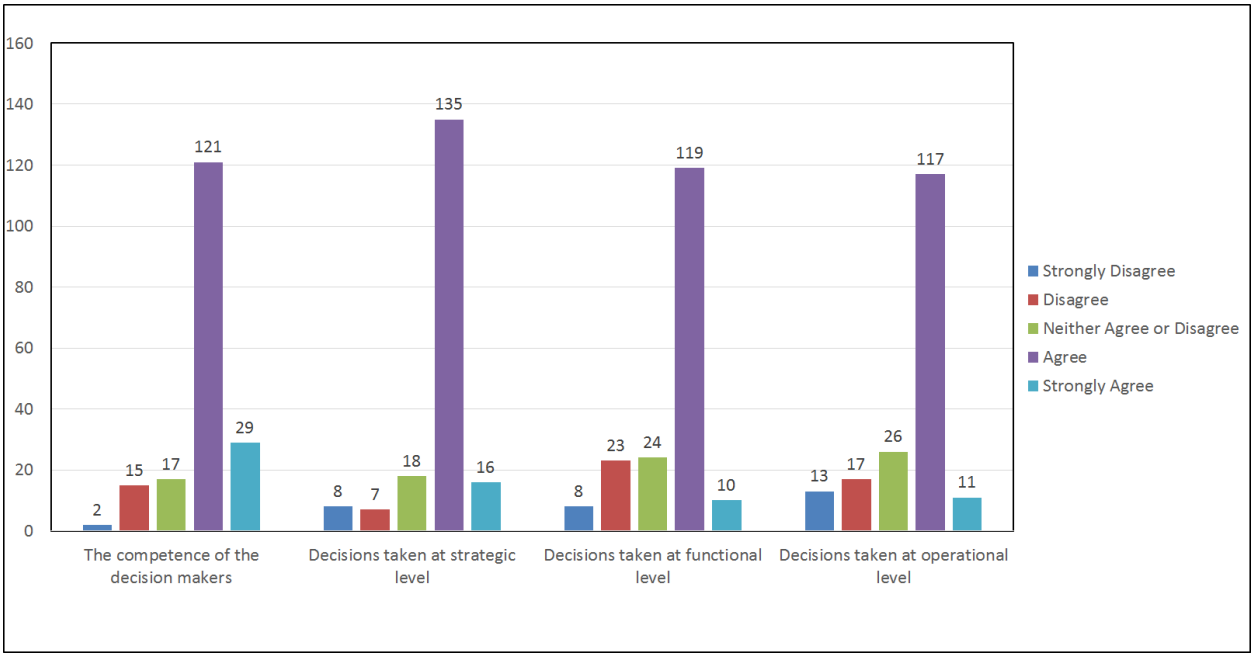

Figure 4.11: Decision-making factors spread of responses

4.4.2.4 CI practice factors descriptive statistics

Table 4.37 and figure 4.12 reveal their descriptive statistics and spread of responses of CI practice factor, respectively. Five items of this factor are valid and reliable. Their central tendencies are analysed hereunder.

Clear CI needs: The standard deviation, skewness and kurtosis for this element are 0.574, -1.221 and 6.179 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.06, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by clear CI needs when adopting CI ethics.

Communication between decision-makers and CI practitioners/professionals: The standard deviation, skewness and kurtosis for this element are 0.618, -1.145 and 4.554 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.03, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by communication between decision-makers and CI practitioners/professionals when adopting CI ethics.

CI quality assurance: The standard deviation, skewness and kurtosis for this element are 0.698, -1.274 and 3.679 respectively. A lower standard deviation indicates that there is

less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.93, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by CI quality assurance when adopting CI ethics.

Availability of resources for CI: The standard deviation, skewness and kurtosis for this element are 0.667, -1.569 and 4.812 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.91, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by availability of resources for CI when adopting CI ethics.

Skilled CI professionals: The standard deviation, skewness and kurtosis for this element are 0.630, -1.881 and 8.580 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.04, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by skilled CI professionals when adopting CI ethics.

Table 4.37: CI practice factors descriptive statistics

Items	Mode	Median	Mean	Standard Deviation	Skewness	Kurtosis	Response Count
Clear CI needs	4	4	4.06	.574	-1.221	6.179	184
Communication between decision-makers and CI practitioners/professionals	4	4	4.03	.618	-1.145	4.554	184
CI quality assurance	4	4	3.93	.698	-1.274	3.679	184
Availability of resources for CI	4	4	3.91	.667	-1.569	4.812	184
Skilled CI professionals	4	4	4.04	.630	-1.881	8.580	184

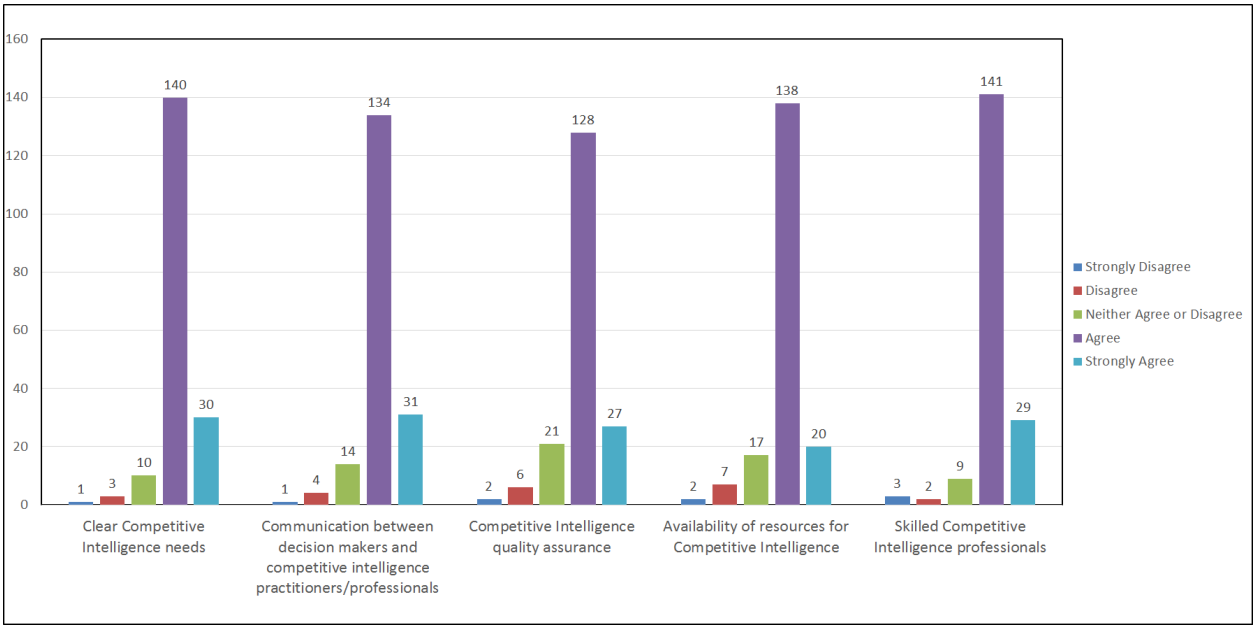

Figure 4.12: CI practice factors spread of responses

4.4.2.5 Raising CI ethics awareness descriptive statistics

Table 4.38 and figure 4.13 reveal the descriptive statistics and spread of responses for the factor raising CI ethics awareness, respectively. Five items of this factor are valid and reliable and their central tendencies are analysed below.

Perceived potential for customer backlash: The standard deviation, skewness and kurtosis for this element are 0.909, -0.819 and 0.419 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the

skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.63, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by perceived potential for customer backlash when adopting CI ethics.

Management support, participation and visibility: The standard deviation, skewness and kurtosis for this element are 0.471, -0.989 and 10.557 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.09, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by management support, participation and visibility when adopting CI ethics.

Raising ethics awareness through ethics roundtables: The standard deviation, skewness and kurtosis for this element are 0.688, -1.478 and 4.072 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.89, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by raising ethics awareness, through ethics roundtables when adopting CI ethics.

Raising ethics awareness through workshops, seminars, speeches, meetings and conferences: The standard deviation, skewness and kurtosis for this element are 0.509, -1.162 and 8.470 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.05, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by raising ethics awareness through workshops, seminars, speeches, meetings and conferences when adopting CI ethics.

Raising ethics awareness through education and training: The standard deviation, skewness and kurtosis for this element are 0.551, -1.360 and 7.363 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 4.04, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are positively influenced by raising ethics awareness through education and training when adopting CI ethics.

Table 4.38: Raising CI ethics awareness descriptive statistics

Items	Mode	Median	Mean	Standard Deviation	Skewness	Kurtosis	Response Count
Perceived potential for customer backlash	4	4	3.63	.909	-0.819	0.419	184
Management support, participation and visibility	4	4	4.09	.471	-0.989	10.557	184
Raising ethics awareness through ethics roundtables	4	4	3.89	.688	-1.478	4.072	184
Raising ethics awareness through workshops, seminars, speeches, meetings and conferences	4	4	4.05	.509	-1.162	8.470	184
Raising ethics awareness through education and training	4	4	4.04	.551	-1.360	7.363	184

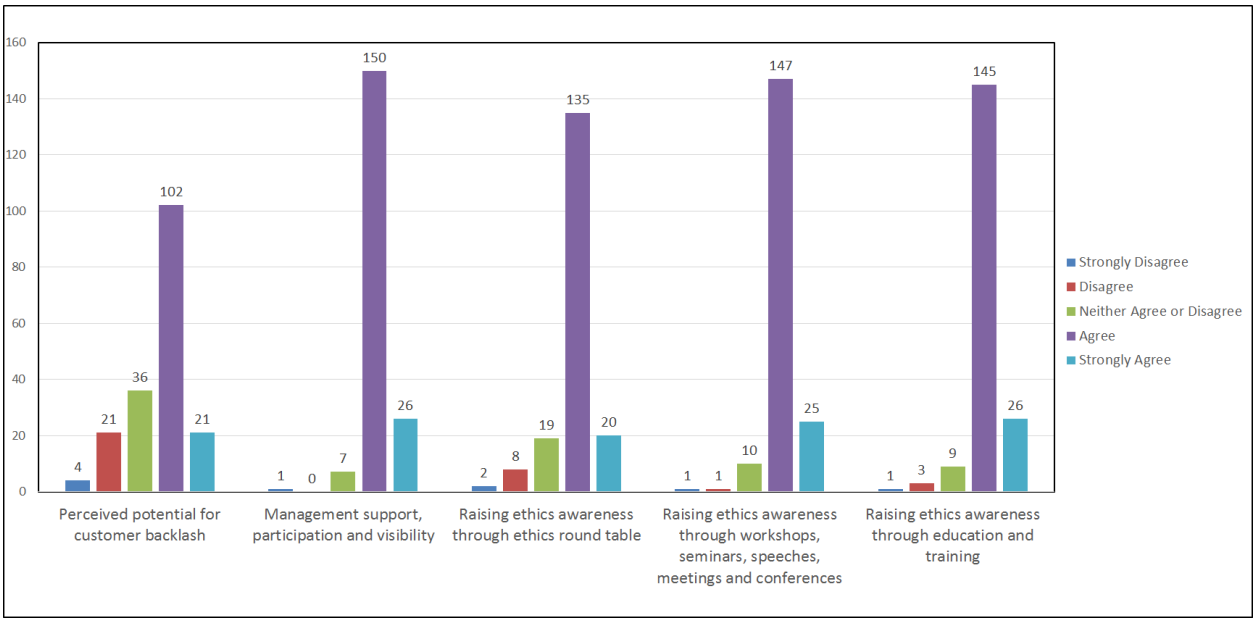

Figure 4.13: Raising CI ethics awareness spread of responses

4.4.3 Descriptive statistics of factors that negatively influence the adoption of CI ethics

The aim of question 5 was to establish factors that negatively influence the adoption of CI ethics and to fulfil objective 3 of this study. A Likert scale ranging from “Strongly Disagree” (1) to Strongly Agree (5) was used to establish the level of agreement by ICT firms to the factors that negatively influence the adoption of CI ethics (see Appendix A). Only one factor that negatively influence the adoption of CI ethics was found valid and

reliable, namely CI ethics challenges: industrial, ethical and CI practice. This factor had six valid and reliable items. The central tendencies of these items are analysed below. Table 4.39 and figure 4.14 reveal their descriptive statistics and spread of responses, respectively.

Weak barrier to entry and high competition in the ICT industry: The standard deviation, skewness and kurtosis for this element are 1.210, -0.374 and -1.015 respectively. A higher standard deviation indicates that there is wide spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this element. The mode, median and mean for this element are 4, 3.5 and 3.13, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are negatively influenced by weak barrier to entry and high competition in the ICT industry.

Lack of resources or infrastructure in the ICT industry: The standard deviation, skewness and kurtosis for this element are 1.138, -0.124 and -1.042 respectively. A higher standard deviation indicates that there is wide spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this element. The mode, median and mean for this element are 4, 3 and 2.99, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are negatively influenced by lack of resources or infrastructure in the ICT industry.

High telecommunication costs: The standard deviation, skewness and kurtosis for this element are 1.167, -0.287 and -0.985 respectively. A higher standard deviation indicates that there is wide spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this element. The mode, median and mean for this element are 4, 3 and 3.10, respectively.

The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are negatively influenced by high telecommunication costs.

ICT skills shortage: The standard deviation, skewness and kurtosis for this element are 0.898, -1.250 and 1.525 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.76, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are negatively influenced by ICT skills shortage.

Self-interests and lack of care for others: The standard deviation, skewness and kurtosis for this element are 0.868, -1.328 and 1.797 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this element. The mode, median and mean for this element are 4, 4 and 3.73, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms are negatively influenced by self-interests and lack of care for others when adopting CI ethics.

CI budgetary constraints: The standard deviation, skewness and kurtosis for this element are 0.969, -0.466 and -0.546 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this element. The mode, median and mean for this element are 4, 4 and 3.48, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the

median indicate that the majority of the ICT firms are negatively influenced by CI budgetary constraints.

Table 4.39: CI ethics challenges: industrial, ethical and CI practice descriptive statistics

Items	Mode	Median	Mean	Standard Deviation	Skewness	Kurtosis	Response Count
Weak barrier to entry and high competition in the ICT industry	4	3.5	3.13	1.210	-0.374	-1.015	184
Lack of resources or infrastructure in the ICT industry	4	3	2.99	1.138	-0.124	-1.042	184
High telecommunication costs	4	3	3.10	1.167	-0.287	-0.985	184
ICT skills shortage	4	4	3.76	.898	-1.250	1.525	184
Self-interests and lack of care for others	4	4	3.73	.868	-1.328	1.797	184
CI budgetary constraints	4	4	3.48	.969	-0.466	-0.546	184

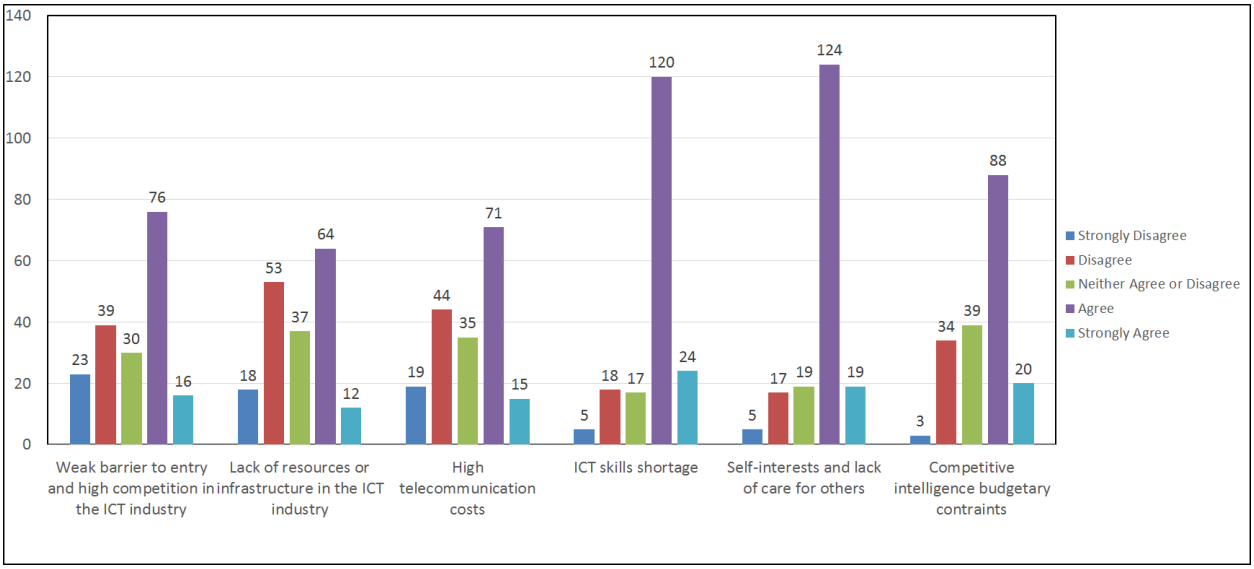

Figure 4.14: CI ethics challenges: industrial, ethical and CI practice spread of responses

4.4.4 Descriptive statistics of the extent of CI ethics adoption

The aim of question 1 was to establish the extent to which the South African ICT firms have adopted CI ethics and fulfil objective 1 of this study. A Likert scale ranging from “Not

at all" (1) to "To a greater extent" (4) was used (see Appendix A). ICT firms that indicated "Not at all" were removed for analysis purpose. Table 4.40 and figure 4.15 indicate the descriptive statistics and spread of responses for the extent of CI adoption, respectively. The standard deviation, skewness and kurtosis for the extent of CI ethics adoption are 0.636, -0.110 and -0.552 respectively. A lower standard deviation indicates that there is less spread of responses. Thus, the skewness and the kurtosis indicate that there is a light abnormal distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they adopt CI ethics to absolute or greater extent. The mode, median and mean for this element are 3, 3 and 3.13, respectively. The mode indicates that the most selected answer to this element was "absolutely". Thus, the mean and the median indicate that the majority of the ICT firms adopt CI ethics to an absolute extent.

Table 4.40: Descriptive statistics for the extent of CI ethics adoption

	Mode	Median	Rating Average	Standard Deviation	Skewness	Kurtosis	Response Count
Indicate the extent to which your enterprise observes and comply with a code of ethics when practising CI.	3	3	3.13	.636	-0.110	-0.552	184

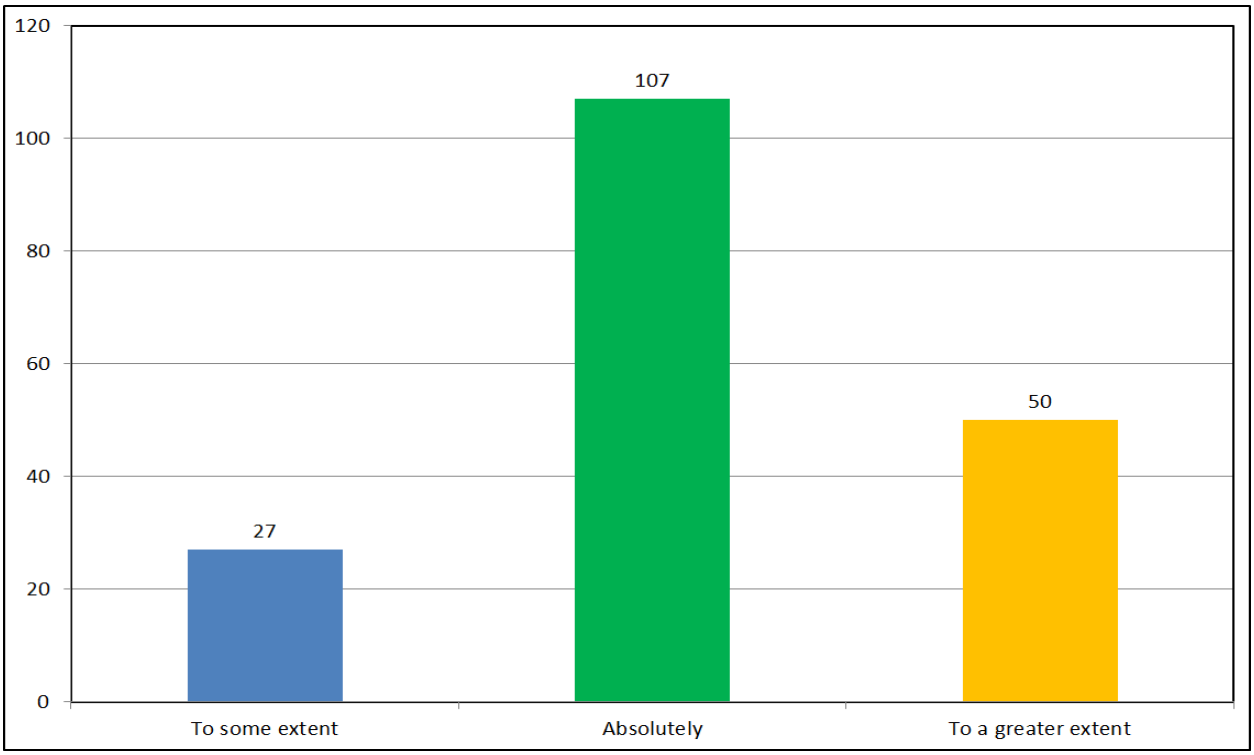

Figure 4.15: Spread of responses for the extent of adoption of CI ethics

4.4.5 Descriptive statistics of CI ethics enforcement methods

The aim of question 3 was to establish the methods used to enforce CI ethics by ICT firms and to fulfil objective 2 of this study. A Likert scale ranging from “Strongly Disagree” (1) to Strongly Agree (5) was used to establish the level of agreement by ICT firms to the methods used to enforce CI ethics (see Appendix A). The CI ethics enforcement methods were found valid and reliable and their central tendencies are analysed hereunder. Table 4.41 and figure 4.16 reveal their descriptive statistics and spread of responses respectively.

Ethics roundtables: The standard deviation, skewness and kurtosis for this element are 1.150, -0.562 and -0.755 respectively. A higher standard deviation indicates that there is wide spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light uneven distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree to this method. The mode, median and mean for this element are 4, 4 and 3.49, respectively. The mode indicates

that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms use “ethics roundtables” to implement or enforce CI ethics.

Workshops, seminars, conferences, meetings and speeches to implement or enforce CI ethics: The standard deviation, skewness and kurtosis for this element are 0.614, -0.929 and -3.981 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy uneven distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this method. The mode, median and mean for this element are 4, 4 and 4.26, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms use “workshops, seminars, conferences, meetings and speeches” to implement or enforce CI ethics.

Education and training: The standard deviation, skewness and kurtosis for this element are 0.939, -1.094 and -0.768 respectively. A lower standard deviation indicates that there is less spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a heavy uneven distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this method. The mode, median and mean for this element are 4, 4 and 3.91, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms use “education and training” to implement or enforce CI ethics.

Rewards for compliance and punishment for non-compliance: The standard deviation, skewness and kurtosis for this element are 1.126, -0.745 and -0.349 respectively. A higher standard deviation indicates that there is wide spread of responses to this element. Thus, the skewness and the kurtosis indicate that there is a light uneven distribution of data as respondents chose options on the right-hand side of the ranking scale, indicating that they agree or strongly agree to this method. The mode, median and mean for this

element are 4, 4 and 3.51, respectively. The mode indicates that the most selected answer to this element was “agree”. Thus, the mean and the median indicate that the majority of the ICT firms use “rewards for compliance and punishment for non-compliance” to implement or enforce CI ethics.

Table 4.41: CI ethics enforcement methods descriptive statistics

Items	**Mode**	**Median**	**Mean**	**Standard Deviation**	**Skewness**	**Kurtosis**	**Response Count**
Ethics roundtables	4	4	3.49	1.150	-0.562	-0.755	184
Workshops, Seminars, Conferences, Meetings and Speeches	4	4	4.26	.614	-0.929	3.981	184
Education and Training	4	4	3.91	.939	-1.094	0.768	184
Rewards for compliance and Punishment for non-compliance	4	4	3.51	1.126	-0.745	-0.349	184

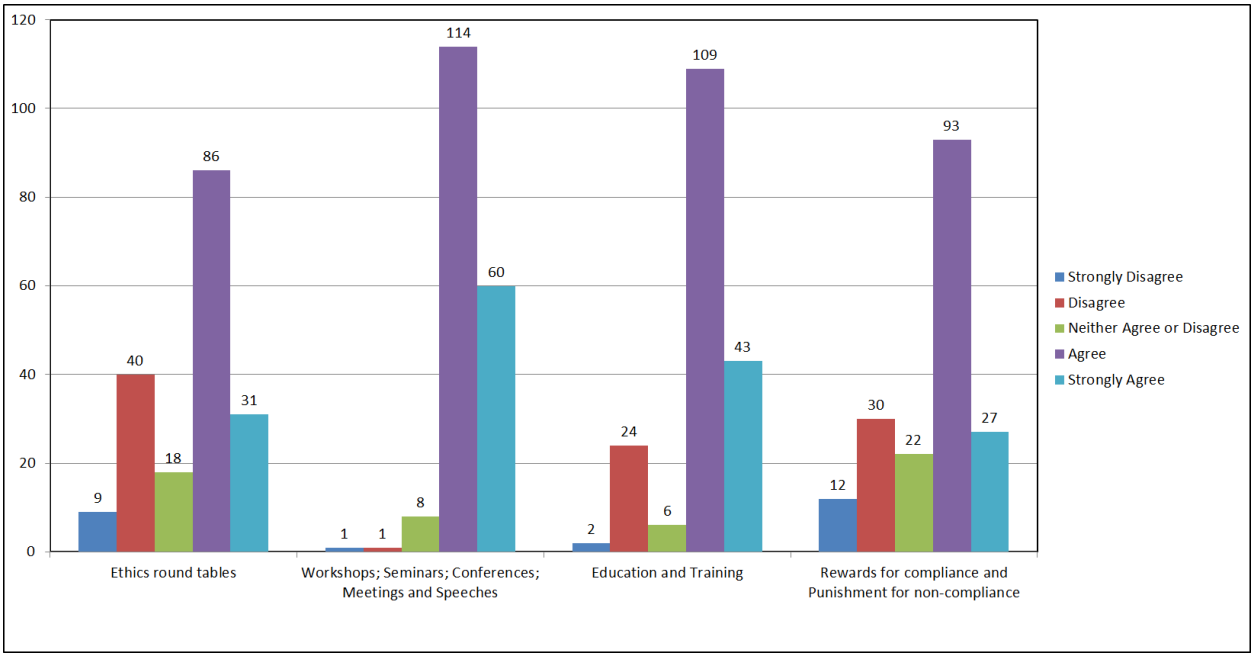

Figure 4.16: CI ethics enforcement methods spread of responses

4.5 Hypotheses test results using correlation analysis

This section analyses the hypotheses test results. This study aimed to test eight (8) hypotheses. The hypothesised CI ethics adoption model is depicted in figure 2.1. Due to constant variable being divided into two variables during exploratory factor analysis, namely, adoption of CI ethics respect and adoption of CI ethics promotion, each hypothesis was divided into two. Hypotheses tests analyses are done to fulfil objective 3 and the main aim of this study. All the hypotheses test the correlation between factors that positively and negatively influence the adoption of CI ethics and the adoption of CI ethics. Thus, this study uses correlation analysis to test the hypotheses. The correlation results are indicated in Table 4.42 indicates the correlation between factors that positively and negatively influence the adoption of CI ethics and the adoption of CI ethics.

Table 4.42: Correlation between predictor variables and constant variables

Correlations									
		F1	F2	F3	F4	F5	F6	F7	F8
F1	Pearson Correlation	1	.730**	.135	.479**	.540**	.193**	.677**	.115
	Sig. (2-tailed)		.000	.068	.000	.000	.009	.000	.121
	N	184	184	184	184	184	184	184	184
F2	Pearson Correlation	.730**	1	.234**	.513**	.641**	.335**	.644**	.192**
	Sig. (2-tailed)	.000		.001	.000	.000	.000	.000	.009
	N	184	184	184	184	184	184	184	184
F3	Pearson Correlation	.135	.234**	1	.395**	.305**	.419**	.520**	.272**
	Sig. (2-tailed)	.068	.001		.000	.000	.000	.000	.000
	N	184	184	184	184	184	184	184	184
F4	Pearson Correlation	.479**	.513**	.395**	1	.431**	.631**	.492**	.444**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000
	N	184	184	184	184	184	184	184	184
F5	Pearson Correlation	.540**	.641**	.305**	.431**	1	.400**	.609**	.313**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000
	N	184	184	184	184	184	184	184	184
F6	Pearson Correlation	.193**	.335**	.419**	.631**	.400**	1	.367**	.435**
	Sig. (2-tailed)	.009	.000	.000	.000	.000		.000	.000
	N	184	184	184	184	184	184	184	184
F7	Pearson Correlation	.677**	.644**	.520**	.492**	.609**	.367**	1	.243**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.001
	N	184	184	184	184	184	184	184	184
F8	Pearson Correlation	.115	.192**	.272**	.444**	.313**	.435**	.243**	1
	Sig. (2-tailed)	.121	.009	.000	.000	.000	.000	.001	
	N	184	184	184	184	184	184	184	184
**. Correlation is significant at the 0.01 level (2-tailed).									

Hypothesis 1: H_{01}: There is no significant correlation between industrial factors and the adoption of CI ethics. H_{a1}: There is a significant correlation between industrial factors and the adoption of CI ethics.

The Eigenvalue for industrial factors is less than 1.4 and not valid in PCA and therefore not extracted for further analyses. Thus, industrial factors are not valid predictor of the adoption of CI ethics. There is therefore no significant correlation between industrial factors and the adoption of CI ethics. The null hypothesis is accepted and the alternative hypothesis is rejected.

Hypothesis 2: H_{02}: There is no significant correlation between decision-making-factors and the adoption of CI ethics. H_{a2}: There is a significant correlation between decision-making factors and the adoption of CI ethics.

$H_0$2a: There is no significant correlation between decision-making factors and the adoption of CI ethics respect.
H_a2a: There is a significant correlation between decision-making factors and the adoption of CI ethics respect.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors is 0.395. Thus, 15% (0.392^2) of the variation in adoption of CI ethics respect (F4) is explained by decision-making factors (F3). Thus, there is a significant positive linear correlation between adoption of CI ethics respect (F4) and decision-making factors (F3). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

$H_0$2b: There is no significant correlation between decision-making factors and the adoption of CI ethics promotion.
H_a2b: There is a significant correlation between decision-making factors and the adoption of CI ethics promotion.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.419. Thus, 18% (0.419^2) of the variation in adoption of CI ethics promotion (F6) is explained by decision-making factors (F3). Thus, there is a significant positive linear correlation between adoption of CI ethics promotion (F6) and decision-making factors (F3). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

Hypothesis 3: $H_0$3: There is no significant correlation between business ethics and ethical theories and the adoption of CI ethics. H_a3: There is a significant correlation between business ethics and ethical theories and the adoption of CI ethics.

$H_0$3a: There is no significant correlation between business ethics and ethical theories and the adoption of CI ethics respect.
H_a3a: There is a significant correlation between business ethics and ethical theories and the adoption of CI ethics respect.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.513. Thus, 26% (0.513^2) of the variation in adoption of CI ethics respect (F4) is explained by business ethics and ethical theories (F2). Thus, there is a significant positive linear correlation between adoption of CI ethics respect (F4) and business ethics and ethical theories (F2). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

$H_0$3b: There is no significant correlation between business ethics and ethical theories and the adoption of CI ethics promotion.
H_a3b: There is a significant correlation between business ethics and ethical theories and the adoption of CI ethics promotion.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.335. Thus, 11% (0.335^2) of the variation in adoption of CI ethics promotion (F6) is explained by business ethics and ethical theories (F2). Thus, there is a significant positive linear correlation between adoption of CI ethics promotion (F6) and business ethics and ethical theories (F2). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

Hypothesis 4: $H_0$4: There is no significant correlation between raising CI ethics awareness and the adoption of CI ethics. H_a4: There is a significant correlation between raising CI ethics awareness and the adoption of CI ethics.

$H_0$4a: There is no significant correlation between raising CI ethics awareness and the adoption of CI ethics respect. H_a4a: There is a significant correlation between raising CI ethics awareness and the adoption of CI ethics respect.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.492. Thus, 24% (0.492^2) of the variation in adoption of CI ethics respect (F4) is explained by raising CI ethics awareness (F7). Thus, there is a significant positive linear correlation between adoption of CI ethics respect (F4) and raising CI ethics awareness (F7). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

$H_0$4b: There is no significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics promotion*. H_a4b: There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics promotion*.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.367. Thus, 14% (0.367^2) of the variation in adoption of CI ethics promotion (F6) is explained by raising CI ethics awareness (F7). Thus, there is a significant positive linear correlation between adoption of CI ethics promotion (F6) and raising CI ethics awareness (F7). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

Hypothesis 5: $H_0$5: There is no significant correlation between organisational and stakeholders' factors and the adoption of CI ethics. H_a5: There is a significant correlation between organisational and stakeholders' factors and the adoption of CI ethics.

$H_0$5a: There is no significant correlation between organisational and stakeholders' factors and the adoption of CI ethics respect. H_a5a: There is a significant correlation between organisational and stakeholders' factors and the adoption of CI ethics respect.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.479. Thus, 23% (0.479^2) of the variation in adoption of CI ethics respect (F4) is explained by organisational and stakeholders' factors (F1). Thus, there is a significant positive linear correlation between adoption of CI ethics respect (F4) and organisational and stakeholders' factors (F1). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

$H_0$5b: There is no significant correlation between organisational and stakeholders' factors and the adoption of CI ethics promotion. H_a5b: There is a significant correlation between organisational and stakeholders' factors and the adoption of CI ethics promotion.

The *p* value for this correlation was 0.009. Thus, there is 99% level of confidence in this correlation. The Pearson's *r* for these factors was 0.193. Thus, 4% (0.193^2) of the variation in adoption of CI ethics promotion (F6) is explained by organisational and stakeholders' factors (F1). Thus, there is a significant positive linear correlation between adoption of CI ethics promotion (F6) and organisational and stakeholders' factors (F1). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

Hypothesis 6: $H_0$6: There is no significant correlation between CI practice factors and the adoption of CI ethics. H_a6: There is a significant correlation between CI practice factors and the adoption of CI ethics.

$H_0$6a: There is no significant correlation between CI practice factors and the adoption of CI ethics respect. H_a6a: There is a significant correlation between CI practice factors and the adoption of CI ethics respect.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.431. Thus, 19% (0.431^2) of the variation in adoption of CI ethics respect (F4) is explained by CI practice factors (F5). Thus, there is a significant positive linear correlation between adoption of CI ethics respect (F4) and CI practice factors (F5). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

$H_0$6b: There is no significant correlation between CI practice factors and the adoption of CI ethics promotion. H_a6b: There is no significant correlation between CI practice factors and the adoption of CI ethics promotion.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.400. Thus, 16% (0.400^2) of the variation in adoption of CI ethics promotion (F6) is explained by CI practice factors (F5). Thus, there is a significant positive linear correlation between adoption of CI ethics promotion (F6) and CI practice factors (F5). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

Hypothesis 7: $H_0$7: There is no significant correlation between economic, political and social factors and the adoption of CI ethics. H_a7: There is a significant correlation between CI practice factors and the adoption of CI ethics.

The Eigenvalue of the economic, political and social factor was less than 1.4 not valid in PCA and was therefore rejected and not analysed further. Thus, economic, political and social factors are not valid predictor of the adoption of CI ethics. There is therefore no significant correlation between economic, political and social factors and the adoption of CI ethics. The null hypothesis is accepted and the alternative hypothesis is rejected.

Hypothesis 8: $H_0$8: There is no significant correlation between CI ethics challenges and the adoption of CI ethics. H_a8: There is a significant correlation between CI ethics challenges and the adoption of CI ethics.

$H_0$8: There is no significant correlation between CI ethics challenges and the adoption of CI ethics respect. H_a8a: There is a significant correlation between CI ethics challenges and the adoption of CI ethics respect.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.444. Thus, 24% (0.444^2) of the variation in adoption of CI ethics respect (F4) is explained by CI ethics challenges: industrial, ethical and CI practice (F8). Thus, there is a significant positive linear correlation between adoption of CI ethics respect (F4) and CI ethics challenges: industrial, ethical and CI practice (F8). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted.

$H_0$8: There is no significant correlation between CI ethics challenges and the adoption of CI ethics promotion. H_a8b: There is a significant correlation between CI ethics challenges and the adoption of CI ethics promotion.

The *p* value for this correlation was 0.000. Thus, there is 100% level of confidence in this correlation. The Pearson's *r* for these factors was 0.435. Thus, 19% (0.435^2) of the variation in adoption of CI ethics promotion (F6) is explained by CI ethics challenges: industrial, ethical and CI practice (F8). Thus, there is a significant positive linear correlation between adoption of CI ethics promotion (F6) and CI ethics challenges: industrial, ethical and CI practice (F8). Therefore, the null hypothesis is rejected and the alternative hypothesis accepted. The results of the hypotheses tests are summarised in table 4.43 below.

Table 4.43: Summary of hypothesis test results (Part 1)

	Null hypothesis	Accepted or Rejected	Alternative hypothesis	Accepted or Rejected
Hypothesis 1	**H_{01}:** There is no significant correlation between *industrial factors* and *the adoption of CI ethics*.	This hypothesis was not tested as the factor was found to be invalid by EFA.	**H_{a1}**: There is a significant correlation between *industrial factors* and *the adoption of CI ethics*.	This hypothesis was not tested as the factor was found to be invalid by EFA.
Hypothesis 2	**H_{02}:** There is no significant correlation between *decision-making-factors* and *the adoption of CI ethics*.	**Rejected**	**H_{a2}:** There is a significant correlation between *decision-making factors* and *the adoption of CI ethics*.	**Accepted**
	$H_0$2a: There is no significant correlation between *decision-making factors* and *the adoption of CI ethics respect*.	Rejected	H_a2a: There is a significant correlation between *decision-making factors* and *the adoption of CI ethics respect*.	Accepted
	$H_0$2b: There is no significant correlation between *decision-making factors* and *the adoption of CI ethics promotion*.	Rejected	H_a2b: There is a significant correlation between *decision-making factors* and *the adoption of CI ethics promotion*.	Accepted
Hypothesis 3	**$H_0$3:** There is no significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics*.	**Rejected**	**H_a3:** There is a significant correlation between *business* ethics and ethical *theories* and *the adoption of CI ethics*.	**Accepted**
	$H_0$3a: There is no significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics respect*.	Rejected	H_a3a: There is a significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics respect*.	Accepted
	$H_0$3b: There is no significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics promotion*.	Rejected	H_a3b: There is a significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics promotion*.	Accepted
Hypothesis 4	**$H_0$4:** There is no significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics*.	**Rejected**	**H_a4:** There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics*.	**Accepted**
	$H_0$4a: There is no significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics respect*.	Rejected	H_a4a: There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics respect*.	Accepted
	$H_0$4b: There is no significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics promotion*.	Rejected	H_a4b: There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics promotion*.	Accepted

Table 4.43: Summary of hypothesis test results (Part 2)

	Null hypothesis	Accepted or Rejected	Alternative hypothesis	Accepted or Rejected
Hypothesis 5	**$H_0$5:** There is no significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics*.	**Rejected**	**H_a5:** There is a significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics*.	**Accepted**
	$H_0$5a: There is no significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics respect*.	Rejected	H_a5a: There is a significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics respect*.	Accepted
	$H_0$5b: There is no significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics promotion*.	Rejected	H_a5b: There is a significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics promotion*.	Accepted
Hypothesis 6	**$H_0$6:** There is no significant correlation between *CI practice factors* and *the adoption of CI ethics*.	**Rejected**	**H_a6:** There is a significant correlation between *CI practice factors* and *the adoption of CI ethics*.	**Accepted**
	$H_0$6a: There is no significant correlation between *CI practice factors* and *the adoption of CI ethics respect*.	Rejected	H_a6a: There is a significant correlation between *CI practice factors* and *the adoption of CI ethics respect*.	Accepted
	$H_0$6b: There is no significant correlation between *CI practice factors* and *the adoption of CI ethics promotion*.	Rejected	H_a6b: There is no significant correlation between *CI practice factors* and *the adoption of CI ethics promotion*.	Accepted
Hypothesis 7	**$H_0$7:** There is no significant correlation between *economic, political and social factors* and *the adoption of CI ethics*.	This hypothesis was not tested as the factor was found to be invalid by EFA.	**H_a7:** There is a significant correlation between *CI practice factors* and *the adoption of CI ethics*.	This hypothesis was not tested as the factor was found to be invalid by EFA.
Hypothesis 8	**$H_0$8:** There is no significant correlation between *CI ethics challenges* and *the adoption of CI ethics*.	**Rejected**	**H_a8:** There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics*.	**Accepted**
	$H_0$8: There is no significant correlation between *CI ethics challenges* and *the adoption of CI ethics respect*.	Rejected	H_a8a: There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics respect*.	Accepted
	$H_0$8: There is no significant correlation between *CI ethics challenges* and *the adoption of CI ethics promotion*.	Rejected	H_a8b: There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics promotion*.	Accepted

4.6 Structural equation modelling

This section analyses the test results of the structural equation modelling (SEM) of the proposed Competitive Intelligence Ethics Adoption Model (CIEAM). The analysis of how the conceptual model depicted in figure 2.1 in chapter 2 fits the collected data using SEM is analysed in this section. This is done to fulfil the main aim of the study, which is to develop CIEAM for the South African ICT industry. The exploratory factor analysis divided the constant variable of the proposed model of the adoption of the CI ethics into two

variables, namely, adoption of CI ethics respect and adoption of CI ethics promotion. This meant that the proposed model should be divided into two models, namely, the *adoption of CI ethics respect model* and the *adoption of CI ethics promotion model*. These models are discussed in the following subsections.

4.6.1 The adoption of CI ethics respect model

The adoption of CI ethics respect model as depicted in figure 4.17, consists of the dependent variable adoption of CI ethics respect (F4) and seven predictor variables, namely, organisational and stakeholders' factors (F1), business ethics and ethical theories (F2), decision-making factors (F3), CI practice factors (F5), adoption of CI ethics promotion (F6), raising CI ethics awareness (F7) and CI ethics challenges: industrial, ethical and CI practice (F8). The predictor variables influence the adoption of CI ethics respect. The arrowed lines indicate the direction and contribution of the influence of each predictor variable on the constant variable.

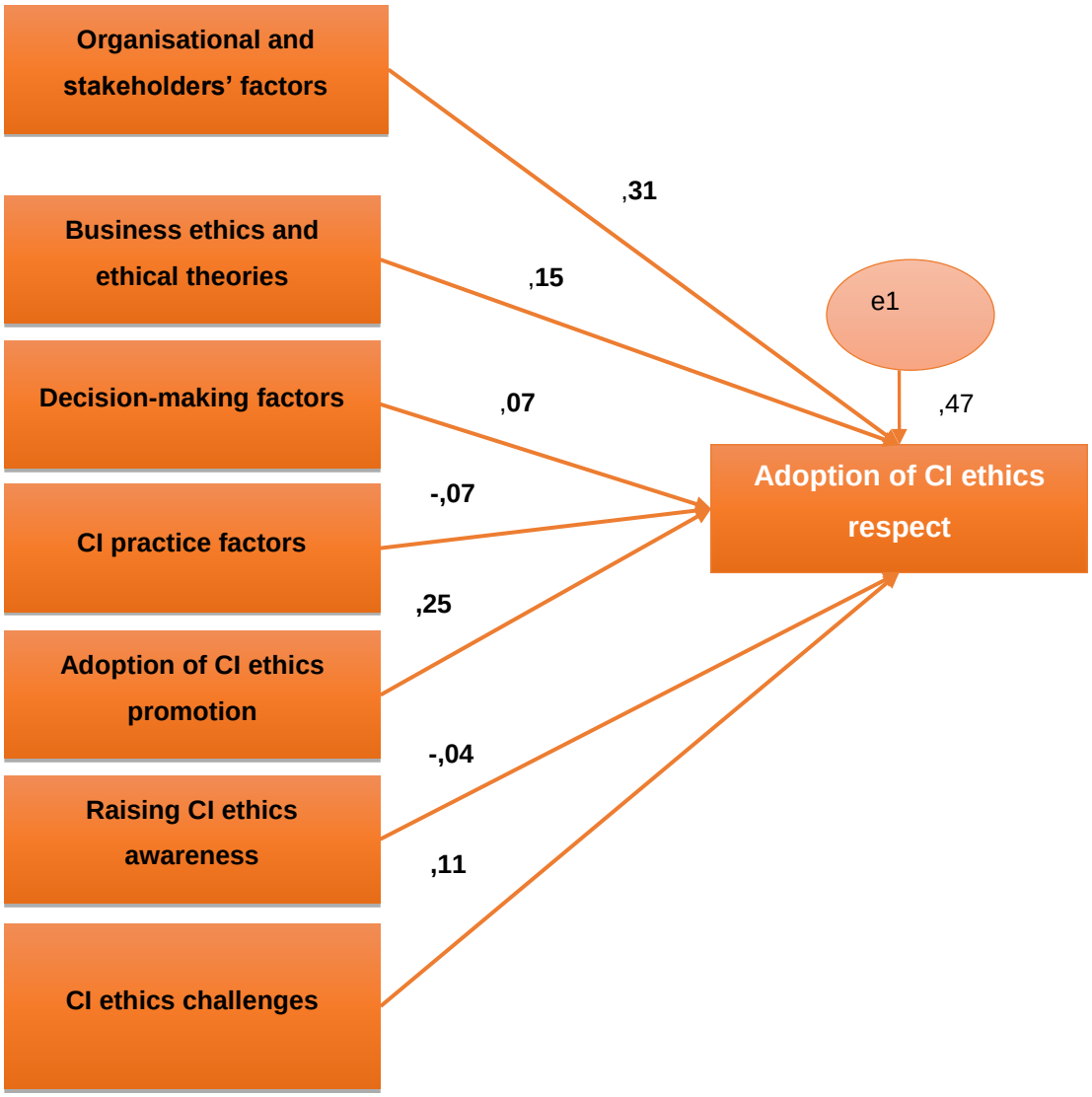

Figure 4.17: The adoption of CI ethics respect model

4.6.1.1 Maximum likelihood estimates of the adoption of CI ethics respect model

The adoption of CI ethics respect model depicted in figure 4.17, shows significant linear correlation between predictor variables organisational and stakeholders' factors (F1), business ethics and ethical theories (F2), decision-making factors (F3), CI practice factors (F5), adoption of CI ethics promotion (F6), raising CI ethics awareness (F7) and CI ethics challenges: industrial, ethical and CI practice (F8) and constant variable adoption of CI

ethics respect (F4). The correlations have *p* value less than 0.05 indicating 95% or more level of confidence. The estimates range from -0.070 to 0.314. Variable organisational and stakeholders' factors (F1) has a significant positive linear correlation to variable adoption of CI ethics respect (F4) and its contribution is 0.314 and a *p* value of *** (significant with p≤0.001 (Garson, 2009)). Thus, an increase in the value of organisational and stakeholders' factors (F1) leads to an increase in the value of adoption of CI ethics respect (F4). Variable business ethics and ethical theories (F2) has a significant positive linear correlation to variable adoption of CI ethics respect (F4) and its contribution is 0.148 with a *p* value of 0.002. Thus, an increase in the value of business ethics and ethical theories (F2) leads to an increase in the value of adoption of CI ethics respect (F4). Variable decision-making factors (F3) has a significant positive linear correlation to variable adoption of CI ethics respect (F4) and its contribution is 0.073 with a *p* value of 0.005. Thus, an increase in the value of decision-making factors (F3) leads to an increase in the value of adoption of CI ethics respect (F4). Variable CI practice factors (F5) has a significant negative linear correlation to variable adoption of CI ethics respect (F4) and its contribution is -0.070 with a *p* value of 0.029. Thus, an increase in the value of CI practice factors (F5) leads to a decrease in the value of adoption of CI ethics respect (F4). Variable adoption of CI ethics promotion (F6) has a significant linear positive correlation to variable adoption of CI ethics respect (F4) and its contribution is 0.253 with a p value of *** (significant with p≤0.001 (Garson, 2009)). Thus, an increase in the value of adoption of CI ethics promotion (F6) leads to an increase in the value of adoption of CI ethics respect (F4). Variable raising CI ethics awareness (F7) has a significant linear negative correlation to variable adoption of CI ethics respect (F4) and its contribution is -0.043 with a *p* value of 0.001. Thus, an increase in the value of raising CI ethics awareness (F7) leads to a decrease in the value of adoption of CI ethics respect (F4). Variable CI ethics challenges: industrial, ethical and CI practice (F8) has a significant linear positive correlation to variable adoption of CI ethics respect (F4) and its contribution is 0.109 with a *p* value of *** (significant with p≤0.001 (Garson, 2009)). Thus, an increase in the value of CI ethics challenges: industrial, ethical and CI practice (F8) leads to an increase in the value of adoption of CI ethics respect (F4). These predictors variables explain 47% (R^2=0.473) of the CI ethics promotion. The R^2 of this model represents large practical

effect size (Osteen & Bright, 2010). Thus, the model is valid, reliable and acceptable. Table 4.44 and table 4.45 indicate the regression weight and squared multiple regression correlations of the adoption of CI ethics respect model respectively.

Table 4.44: Regression weight of the adoption of CI ethics respect model

Regression Weights: (Group number 1 - Default model)

	Estimate	Standard Errors (S.E.)	Standardised regression weights	Critical Ratio (CR)	P-Value	Label
F4 <--- F1	,314	,046	,365	6,798	***	par_1
F4 <--- F3	,073	,026	,149	2,780	,005	par_2
F4 <--- F5	-,070	,040	-,094	-1,757	,029	par_3
F4 <--- F2	,148	,048	,164	3,064	,002	par_4
F4 <--- F6	,253	,028	,483	8,998	***	par_5
F4 <--- F7	-,043	,046	-,050	-,932	,001	par_6
F4 <--- F8	,109	,027	,217	4,038	***	par_7

Table 4.45: Squared multiple regression correlations of the adoption of CI ethics respect model

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
F4	,473

4.6.1.2 The adoption of CI ethics respect model goodness of fit indices

The value of the Chi-square (CMIN) of the adoption of CI ethics respect model was 0.000, indicating a poor fit as it is less than 0.05. The value of the Chi-square/degree of freedom (CMIN/DF) ratio was 2.727 indicating a very good fit as it is closer to 3. The value of the Relative fit index (RFI) was 0.943 indicating a very good fit as it is greater than 0.90 and closer to 1. The value of the Normed fit index (NFI) was 1.000 indicating a perfect fit. The value for the Tucker-Lewis index (TLI) was -0.944 indicating a poor fit as it is less than 0.90. The value of the comparative fit index (CFI) was 1.000 indicating a perfect fit. The value of the incremental fit index (IFI) was 1.000 indicating a perfect fit. The value of the root mean square error of approximation (RMSEA) was 0.079 indicating a very good fit as it is less than 0.08 cut off point. The value of the parsimony normed fit index (PNFI) was 0.964 indicating a very good fit as it is greater than 0.90 and closer to 1. The value of the parsimony comparative fit index (PCFI) was 0.963 indicating a very good fit as it is greater than 0.90 and closer to 1. The value of the p of close fit (PCLOSE) was 0.000

indicating a very good fit as it is less than 0.05 cut off point. The adoption of CI ethics respect model fits majority of the goodness of fit indices. Thus, the model is valid, reliable and acceptable. Table 4.46 indicates the adoption of CI ethics respect model goodness of fit indices results.

Table 4.46: The adoption of CI ethics respect model goodness of fit indices results

Index	Recommended value	Actual results
CMIN	≥0.05	0.000
CMIN/DF	<2 or <3	2.727
RFI	≥0.90	0.943
NFI	≥0.90	1.000
TLI	≥0.90	-0.944
CFI	≥0.95	1.000
IFI	≥0.95	1.000
RMSEA	≤0.08	0.079
PNFI	≥0.90	0.964
PCFI	≥0.90	0.963
PClose	≤0.05	0.000

4.6.2 The adoption of CI ethics promotion model

The adoption of CI ethics promotion model as depicted in figure 4.18, consists of the dependent variable adoption of CI ethics promotion (F6) and seven predictor variables, namely, organisational and stakeholders' factors (F1); business ethics and ethical theories (F2); decision-making factors (F3); adoption of CI ethics respect (F4); CI practice factors (F5); raising CI ethics awareness (F7); and CI ethics challenges: industrial, ethical and CI practice (F8). The predictor variables influence the adoption of CI ethics promotion. The arrowed lines indicate the direction and contribution of the influence of each predictor variable on the constant variable.

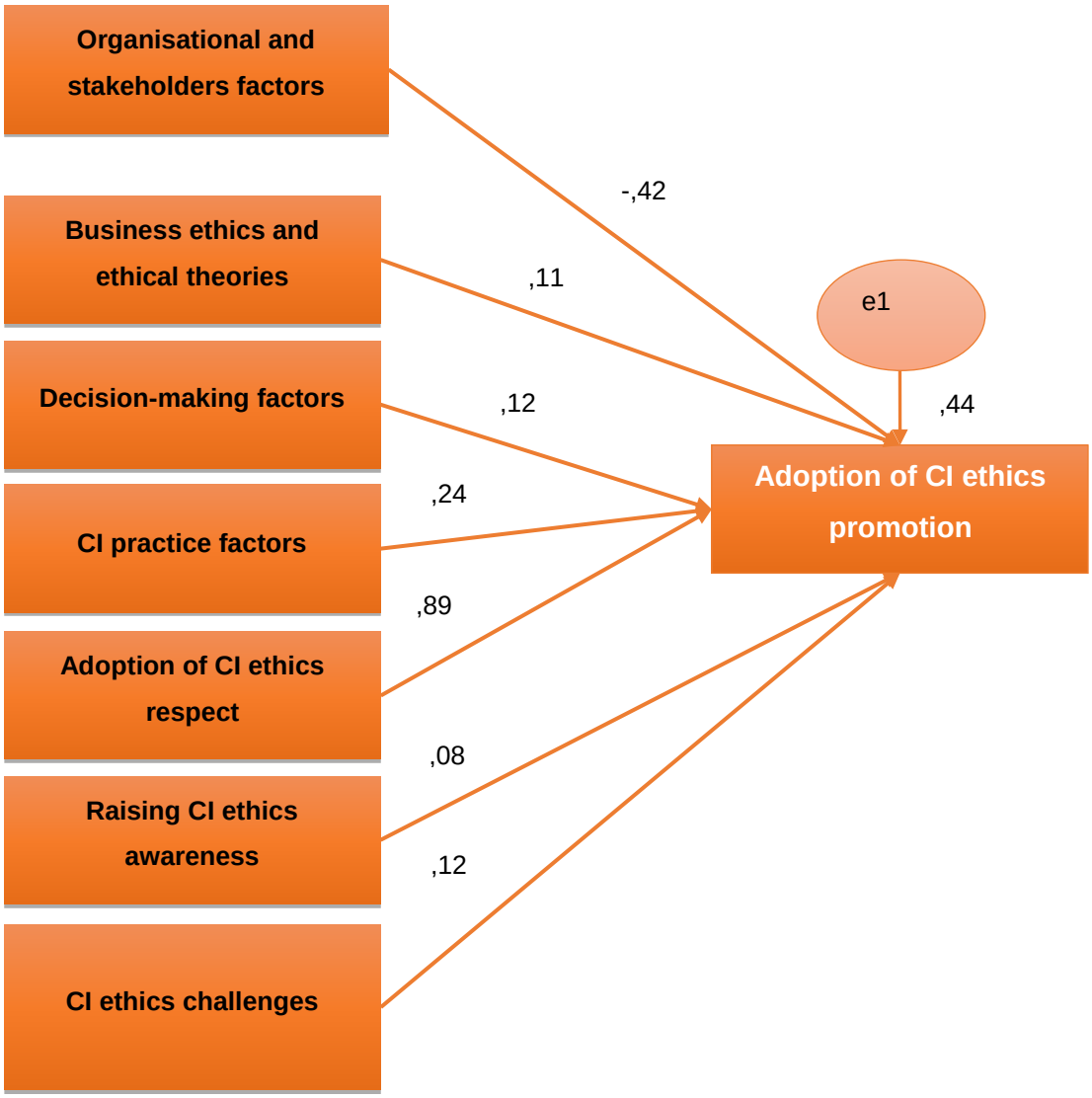

Figure 4.18: The adoption of CI ethics promotion model

4.6.2.1 Maximum likelihood estimates of the adoption of CI ethics promotion model

The adoption of CI ethics promotion model depicted in figure 4.18 shows significant linear correlation between predictor variables organisational and stakeholders' factors (F1); business ethics and ethical theories (F2); decision-making factors (F3); adoption of CI ethics respect (F4); CI practice factors (F5); raising CI ethics awareness (F7); and CI ethics challenges: industrial, ethical and CI practice (F8) and the constant variable

adoption of CI ethics promotion (F6). The correlations have *p* value less than 0.05 indicating 95% or more level of confidence. The estimates range from -0.423 to 0.887. Variable organisational and stakeholders' factors (F1) has a significant negative linear correlation to variable adoption of CI ethics promotion (F6) and its contribution is -0.423 and a *p* value of *** significant with p≤0.001 (Garson, 2009). Thus, an increase in the value of organisational and stakeholders' factors (F1) leads to a decrease in the value of adoption of CI ethics promotion (F6). Variable business ethics and ethical theories (F2) has a significant positive linear correlation to variable adoption of CI ethics promotion (F6) and its contribution is 0.113 with a *p* value of 0.010. Thus, an increase in the value of business ethics and ethical theories (F2) leads to an increase in the value of adoption of CI ethics promotion (F6). Variable decision-making factors (F3) has a significant positive linear correlation to variable adoption of CI ethics promotion (F6) and its contribution is 0.115 with a *p* value of 0.019. Thus, an increase in the value of decision-making factors (F3) leads to an increase in the value of adoption of CI ethics promotion (F6). Variable adoption of CI ethics respect (F4) has a significant positive linear correlation to variable adoption of CI ethics promotion (F6) and its contribution is 0.887 with a *p* value of *** significant with p≤0.001 (Garson, 2009). Thus, an increase in the value of adoption of CI ethics respect (F4) leads to an increase in the value of adoption of CI ethics promotion (F6). Variable CI practice factors (F5) has a significant linear positive correlation to variable adoption of CI ethics promotion (F6), and its contribution is 0.236 with a *p* value of 0.002. Thus, an increase in the value of CI practice factors (F5) leads to an increase in the value of adoption of CI ethics promotion (F6). Variable raising CI ethics awareness (F7) has a significant linear positive correlation to variable adoption of CI ethics promotion (F6), and its contribution is 0.076 with a *p* value of 0.009. Thus, an increase in the value of raising CI ethics awareness (F7) leads to an increase in the value of adoption of CI ethics promotion (F6). Variable CI ethics challenges: industrial, ethical and CI practice (F8) has a significant linear positive correlation to variable adoption of CI ethics promotion (F6) and its contribution is 0.117 with a *p* value of 0.020. Thus, an increase in the value of CI ethics challenges: industrial, ethical and CI practice (F8) leads to an increase in the value of adoption of CI ethics promotion (F6). These predictors variables explain 44% (R^2=0.444) of the CI ethics promotion. The R^2 of this model represents large practical

effect size (Osteen and Bright, 2010). Thus, the model is valid, reliable and acceptable. Table 4.47 and table 4.48 indicate the regression weights and squared multiple correlations of the adoption of CI ethics promotion model respectively.

Table 4.47: Regression weights of the adoption of CI ethics promotion model

Regression Weights: (Group number 1 - Default model)

	Estimate	Standard Errors (S.E.)	Standardised regression weights	Critical Ratio (CR)	P-Value	Label
F6<---F1	-,423	,086	-,270	-4,904	***	par_1
F6<---F3	,115	,049	,129	2,340	,019	par_2
F6<---F5	,236	,074	,175	3,170	,002	par_3
F6<---F2	,113	,090	,069	1,254	,010	par_4
F6<---F4	,887	,089	,547	9,928	***	par_5
F6<---F7	,076	,087	,049	,880	,009	par_6
F6<---F8	,117	,050	,128	2,324	,020	par_7

Table 4.48: Squared multiple correlations of the adoption of CI ethics promotion model

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
F6	,444

4.6.2.2 The adoption of CI ethics promotion model goodness of fit indices

SEM should be tested for fitness using goodness of fit indices. The more indices the model fit, the more valid, reliable and acceptable it is. The value of the CMIN of the adoption of CI ethics promotion model was 0.000 indicating a poor fit as it is less than 0.05. The value of the CMIN/DF ratio was 2.899, indicating a very good fit as it is closer to 3. The value of the RFI was 0.908 indicating a very good fit as it is greater than 0.90 and closer to 1. The value of the NFI was 0.969 indicating a very good fit as it is greater than 0.90 and closer to 1. The value for the TLI was 0.912 indicating a very good fit as it is greater than 0.90 and closer to 1. The value of the CFI was 0.966, indicating a very good fit as it is greater than 0.95 and closer to 1. The value of the IFI was 0.974 indicating a very good fit as it is greater than 0.95 and closer to 1. The value of the RMSEA was 0.071 indicating a very good fit as it is less than 0.08 cut off point. The value of the PNFI was 0.927 indicating a very good fit as it is greater than 0.90 and closer to 1. The value

of the PCFI was 0.924 indicating a very good fit as it is greater than 0.90 and closer to 1. The value of the PClose was 0.000 indicating a very good fit as it is less than 0.05 cut off point. The adoption of CI ethics promotion model fits majority of the goodness of fit indices and therefore valid, reliable and acceptable. Table 4.49 indicates the adoption of CI ethics promotion model goodness of fit indices results.

Table 4.49: The adoption of CI ethics promotion model goodness of fit indices results

Index	Recommended value	Actual results
Chi-square (CMIN)	≥0.05	0.000
Chi-square/degree of freedom ratio (CMIN/DF)	<2 or <3	2.899
RFI	≥0.90	0.908
NFI	≥0.90	0.969
TLI	≥0.90	0.912
CFI	≥0.95	0.966
IFI	≥0.95	0.974
RMSEA	≤0.08	0.071
PNFI	≥0.90	0.927
PCFI	≥0.90	0.924
PClose	≤0.05	0.000

4.7 Chapter summary

Having followed different validation principles, only nine (9) factors were found valid and retained for further analysis, namely, organisational and stakeholders' factors; business ethics and ethical theories; decision-making factors; adoption of CI ethics respect; CI practice factors; adoption of CI ethics promotion; raising CI ethics awareness; CI ethics challenges: industrial, ethical and CI practice; and CI ethics enforcement methods. The Cronbatch alpha was used to test the reliability of these factors and their items were all found reliable. The descriptive statistics of these factors indicate that the majority of the ICT firms are influenced by the factors to adopt CI ethics.

The correlation and hypotheses analysis found that predictor variables and dependent variables are significantly correlated. Due to exploratory factor analysis having divided the constant variable into two constant variables, the proposed model was divided into two models, namely, the adoption of CI ethics respect model and the adoption of CI ethics

promotion model. These two models were tested through SEM. The two models fit structural equation modelling principles. They are therefore valid, reliable, acceptable and final. The next chapter (chapter 5) discusses the results of the study.

CHAPTER 5: RESEARCH FINDINGS AND DISCUSSIONS

This chapter describes and discusses the research findings from the data analysed in preceding chapters. Table 5.1 highlights the structure and presentation of this chapter including links to sections of the data analysis that speaks to the specific findings and objectives of the study.

Table 5.1: Structure and categorisation of findings (part 1)

Structure and Categorisation of Research Findings	Research Findings	Link to Data Analysis and statistical techniques	Objectives and aim
Demographics and CI Ethics Adoption	5.1 Demographics and Status of CI Ethics Adoption in South African ICT Industry	The study uses frequency distribution to analyse the demographics. Findings are drawn from data analysis in section 4.1.	Objective 1 Objective 2 Objective 3
Extent of CI Ethics Adoption	5.2 Extent of CI Ethics Adoption in the South African ICT Industry	The study uses descriptive statistics, to analyse the extent of CI ethics adoption. Findings are drawn from data analysis in section 4.4.4.	Objective 1
CI Ethics Enforcement Methods	5.3 Methods used by South African ICT Firms to enforce CI Ethics	The study uses descriptive statistics, to analyse the methods used by South African ICT firms to enforce CI ethics. Findings are drawn from data analysis in section 2.2.2 and 4.4.5.	Objective 2
Factors that Influence CI Ethics Adoption in South Africa ICT Industry	5.4 Factors that positively and negatively influence CI Ethics in the South African ICT Industry	The study uses ISM, exploratory factor analysis, reliability analysis, descriptive statistics, correlation and hypotheses tests to analyse the factors that positively and negatively influence the adoption of CI ethic in the South African ICT industry. Findings are drawn from sections 2.4, 4.2, 4.3, 4.4.1-4.4.3, and 4.5.	Objective 3
CI ethics adoption model	5.5 CI ethics adoption model	The study uses ISM and SEM to analyse the model. Findings are drawn from section 2.4 and 4.6.	Aim of study
Statistical techniques	5.6 Statistical techniques used to achieve objectives	The study uses EFA, reliability analysis, descriptive statistics, hypothesis tests and SEM	Objective 1 Objective 2 Objective 3
Hypotheses tests	5.7 Hypotheses tests	The study uses correlation to test the hypotheses.	Objective 3

5.1 Demographics and status of CI ethics adoption in South African ICT industry

The demographic findings are drawn from the demographics analysis in section 4.1.1 to 4.1.5 in chapter 4 of this thesis. The demographics analysis analysed, using frequency distribution, the province from which the ICT firms operate, the ICT sub-industry the firms operate in, the size of the ICT firms in terms of number of employees, the number of years the ICT firms have been in operation, and the position of the individual who responded on behalf of the ICT firms.

The demographics analysis reveals that of the 184 South African ICT firms that participated in this study, the highest percentage (35%) were operating their businesses in the Gauteng Province. Though it is the smallest province in South Africa, Gauteng Province is equipped with advanced ICT resources that enables business operation. For example, most major cities in this province have Wi-Fi connection enabling Internet access to businesses and individuals. Gauteng Province is the economic hub of South Africa and hosts some of the headquarters of some of largest South African ICT firms. The findings indicate that both Mpumalanga and Northern Cape Province hosted the lowest percentage (4%) ICT firms that participated in this study. Although Northern Cape Province is the largest in South Africa, its ICT infrastructure is less advanced compared to that of Gauteng Province. Mpumalanga Province is the second smallest province after Gauteng and its ICT infrastructure is less advanced compared to that of Gauteng Province.

Using the OECD (2007) classification of ICT companies, the majority of participants falls under intangible services. Thus, they are for example, into web hosting, web design, software development, debugging, and storage. These findings concur with that of Esselaar *et al*. (2010) which found that most South African ICT firms operate in the intangible services sub-industry.

The findings reveal that the majority of the ICT firms have 11 to 20 employees. These ICT firms are considered very small according to National Small Business Amendment Act 102 of 1996. The demographics analysis also reveals that the majority of the ICT firms have been in business operation for 6 to 10 years. Thus, they have passed the survival stage of a business. Most businesses fail within the first five years of operation (Abor & Quartey, 2010).

The findings reveal that the highest percentage (36%) of the respondents are sales/marketing managers. The findings are in accordance with Antia and Hesford (2007) who found that CI is mainly located in the marketing department and often practiced by sales/marketing managers.

5.2 Extent of CI ethics adoption in the South African ICT industry

From the data analysis in section 4.4.4, the majority of the South African ICT firms have adopted CI ethics. According to data analysis in section 4.4.1.1 and 4.4.1.2, South African ICT firms respect and promote the CI code of ethics. South African ICT firms fulfil the call by scholars for the adoption of CI ethics (Santos & Correia, 2010; Casali, 2011; Yap & Rashid, 2011; Okorie & Lazarus, 2015; Köseoglua, Rossc & Okumus, 2016). A closer look at the data shows no variance in adoption of CI ethics across provinces.

5.3 Methods used by South African ICT firms to enforce CI ethics

Section 2.2.2 of chapter 2 discussed the literature reviewed on methods used to enforce CI ethics. The section indicates that firms use the following methods to enforce CI ethics: ethics roundtables; workshops, seminars, conferences, meetings, and speeches; education and training; and rewards for compliance and punishment for non-compliance (Kullberg, 1988; Frederick, 1988; Henderson, 1988; Smith *et al*., 2010; Nasri, 2011; Brown & Trevino, 2006). Data analysis in section 4.4.5 reveals that although all methods are used to enforce CI ethics, (namely ethics roundtables; workshops, seminars, conferences, meetings and speeches; education and training; and rewards for

compliance and punishment for non-compliance) the majority of the ICT firms, the majority of the South African ICT firms prefer workshops, seminars, conferences, meetings and speeches. The findings are in discordance with those of Smith *et al*. (2010) who found education and training to be the most preferred method.

5.4 Factors that positively and negatively influence CI ethics in the South African ICT industry

The aim of objective 3 was to establish factors that positively and negatively influence the adoption of CI ethics. The interpretive structural modelling (ISM) in section 2.4 of chapter 2 found seven (7) factors that positively influence the adoption of CI ethics, namely industrial factors; organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; competitive intelligence practice factors; economic, political and social factors; and business ethics and ethical theories. The ISM also found one factor that negatively influence the adoption of CI ethics, namely CI ethics challenges. All these factors have sub-factors. Sections 5.4.1 and 5.4.2 below discuss the findings from the data analysis in chapter 4.

5.4.1 Factors that positively influence CI ethics adoption in the South African ICT industry

Of the seven factors that positively influence the adoption of CI ethics identified through ISM in section 2.4 only five (5) are valid and reliable according to exploratory factor analysis (EFA) and reliability analysis in sections 4.2 and 4.3 respectively. These factors are: organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; competitive intelligence practice factors; and business ethics and ethical theories. These factors all have an Eigenvalue greater than 1.4 and are therefore stronger, noise free and random error free (see table 4.2 in chapter 4). They each have more than three items loading at more than 0.4 (see table 4.3 in chapter 4). These six factors are reliable because they have values for Cronbatch's Alpha greater than 0.6 (see table 4.13 in chapter 4). Organisational and stakeholders' factors and raising CI ethics

awareness are purely rooted in non-consequentialism theories of ethics, whereas decision-making factors, competitive intelligence practice factors, and business ethics and ethical theories are rooted in both consequentialism and non-consequentialism. The findings indicate that industrial factors and economic, political and social factors are not valid as they have readings for an Eigenvalue less than 1.4 (see table 4.2 in chapter 4). These two factors specifically are weaker influencers of CI ethics adoption according to Linacre (2005). Table 5.2 compares factors that positively influence the adoption of ethics identified through ISM and valid and reliable factors according to EFA and reliability analysis.

Table 5.2: Comparison of ISM CI ethics adoption positive influencers and valid and reliable factors

ISM factors	Number of ISM sub-factors	Valid and reliable factors according to EFA	Number of valid and reliable sub-factors
Organisational and stakeholders' factors	6	Organisational and stakeholders' factors	5
Raising CI ethics awareness	4	Raising CI ethics awareness	5
Decision-making factors	4	Decision-making factors	4
Competitive intelligence practice factors	7	competitive intelligence practice factors	5
Business ethics and ethical theories	9	Business ethics and ethical theories	7
Industrial factors	6		
Economic, political and social factors	3		

The findings reveal that of the 6 sub-factors of organisation and stakeholders' factors identified through ISM, only 5 are valid and reliable according to EFA and reliability analysis (see table 2.8 in chapter 2; and table 4.3 and 4.14 in chapter 4). All 4 sub-factors of raising CI ethics awareness identified through ISM are valid and reliable (see table 2.8 in chapter 2 and table 4.3 and 4.26 in chapter 4). An additional sub-factor was added to the factor raising CI ethics awareness through EFA making it to have 5 valid and reliable sub-factors. The findings indicate that all four sub-factors of the decision-making factors identified through ISM are valid and reliable (see table 2.8 in chapter 2; and table 4.3 and 4.18 in chapter 4). Of the 7 sub-factors of competitive intelligence practice factors identified through ISM, only 5 are valid and reliable according to EFA and reliability analysis (see table 2.8 in chapter 2 and table 4.3 and 4.22 in chapter 4). The findings also

indicate that of the 9 sub-factors of business ethics and ethical theories identified through ISM, only 7 are valid and reliable (see table 2.8 in chapter 2 and table 4.3 and 4.16 in chapter 4). Further data analysis using descriptive analysis and hypotheses tests (correlations) indicate that organisational and stakeholders' factors, raising CI ethics awareness, decision-making factors, competitive intelligence practice factors, and business ethics and ethical theories positively influence the adoption of CI ethics. The descriptive statistics indicate that South Africa ICT firms agree that they are positively influenced by these factors in their adoption of CI ethics. The findings indicate a significant correlation between these factors and the adoption of CI ethics. The findings are in accordance with the ISM in section 2.4 of chapter 2.

5.4.2 Factors that negatively influence CI ethics adoption in the South African ICT industry

The findings indicate that CI ethics challenges are valid and reliable as it has shown an Eigenvalue greater than 1.4, has more than three items loading at more than 0.4 and has a Cronbatch's Alpha greater than 0.6. Section 2.4 indicates that the majority of the sub-factors of CI ethics challenges are rooted in non-consequentialism theories of ethics. Table 5.3 compares factors that negatively influence the adoption of ethics identified through ISM and valid and reliable factors according to EFA and reliability analysis. The findings indicate that of the 14 sub-factors of CI ethics challenges identified through ISM, only 5 sub-factors are valid and reliable according to EFA and reliability analysis (see table 2.8 in chapter 2 and table 4.3 and 4.28 in chapter 4). Further data analysis using descriptive statistics, correlation and hypothesis indicates that CI ethics challenges negatively influence the adoption of CI ethics. The descriptive statistics indicate that South Africa ICT firms agree that they are negatively influenced by this factor in their adoption of CI ethics. The findings indicate a significant correlation between CI ethics challenges and the adoption of CI ethics. These findings are in accordance with the ISM in section 2.4 of chapter 2.

Table 5.3: Comparison of ISM CI ethics adoption negative influencers and valid and reliable factors

ISM factors	Number of ISM sub-factors	Valid and reliable factors according to EFA	Number of valid and reliable sub-factors
CI ethics challenges	14	CI ethics challenges	5

5.5 CI ethics adoption model

The main aim of this study was to develop a Competitive Intelligence Ethics Adoption Model (CIEAM) for the South African ICT industry. Section 2.5 of chapter 2 discusses and depicts the conceptual CIEAM based on the factors identified through ISM. Figure 2.1 in chapter 2 depicts the conceptual CIEAM. The conceptualised model consists of the constant variable, namely, the adoption of CI ethics (adoption of CI code of ethics) and predictor variables, namely, industrial factors; organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; CI practice factors; economic, social and political factors; business ethics and ethical theories; and CI ethics challenges.

The findings indicate that the constant variable adoption of CI ethics is divided into two valid and reliable variables with Eigenvalue greater than 1.4, more than three items loading at more than 0.4 and Cronbatch's Alpha greater than 0.6 (see table 4.2, 4.3 and 4.13 in chapter 4). These constant variables are named according to common themes, adoption of CI code of ethics respect and adoption of CI code of ethics promotion (see section 4.2.3.4 and 4.2.3.6 in chapter 4).

The findings indicate that of the eight predictor variables in the conceptual CIEAM, only six are valid and reliable as they have Eigenvalue greater than 1.4, more than three items loading at more than 0.4 and Cronbatch's Alpha greater than 0.6 (see table 4.2, 4.3 and 4.13 in chapter 4). These are, namely organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; CI practice factors; business ethics and ethical theories; and CI ethics challenges. Industrial factors and economic, political and social factors are not valid predictors of CI ethics adoption as they have Eigenvalue less than 1.4 (see table 4.2 in chapter 4). Table 5.4 compares the variables in the conceptual CIEAM and valid and reliable variables.

Table 5.4: Comparison of CIEAM variables and valid and reliable CIEAM variables

Conceptual CIEAM variables	Valid and reliable CIEAM variables as per EFA and reliability analysis
Adoption of CI ethics	Adoption of CI ethics respect
	Adoption of CI ethics promotion
Organisational and stakeholders' factors	Organisational and stakeholders' factors
Raising CI ethics awareness	Raising CI ethics awareness
Decision-making factors	Decision-making factors
Competitive intelligence practice factors	competitive intelligence practice factors
Business ethics and ethical theories	Business ethics and ethical theories
Industrial factors	
Economic, political and social factors	

The findings indicate that due to the constant variable being divided into two variables, the CIEAM had to be divided into two models, namely adoption of CI ethics respect model and adoption of CI ethics promotion model. The findings indicate that the two constant variables have positive influence on each other. Thus, an increase in the adoption of CI ethics respect will lead to an increase in the adoption of CI ethics promotion and vice versa (see figure 4.17 and 4.18 in chapter 4). Section 5.5.1 and 5.5.2 discuss the findings on these two models.

5.5.1 Adoption of CI ethics respect model

The findings indicate that organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; CI practice factors; business ethics and ethical theories; and CI ethics challenges have significant influence on the adoption of CI ethics respect. The findings indicate that organisational and stakeholders' factors; decision-making factors; and business ethics and ethical theories positively influence the adoption of CI ethics respect. Thus, an increase in these factors lead to an increase in the adoption of CI ethics respect. These findings are in accordance with the findings of ISM in section 2.4 of chapter 2.

It is interesting to note that some of the factors that were identified through ISM as having a positive influence on the adoption of CI ethics have a negative influence on the adoption of CI ethics respect in structural equation modelling (SEM), namely CI practice factors and raising CI ethics awareness. The findings indicate that an increase in these factors lead to a decrease in the adoption of CI ethics respect. It is also interesting to note from the findings that a factor that was identified through ISM as having a negative influence on the adoption of CI ethics has a positive influence on the adoption of CI ethics respect, namely CI ethics challenges. The findings indicate that an increase in this factor lead to an increase in the adoption of CI ethics respect. These findings are in discordance with the findings of ISM in section 2.4 of chapter 2. Figure 4.17 depicts the adoption of CI ethics respect model. The findings indicate that the model is valid and acceptable as it fits majority of the goodness of fit indices (see table 4.46 in chapter 4). Table 5.5 compares the ISM and SEM findings with regard to factors that influence the adoption of CI ethics.

Table 5.5: Comparison of ISM key variable and variables that influence CI ethics respect as per SEM

ISM key variables	**Positive influence**	**Negative influence**	**Variables that influence CI ethics respect adoption as per SEM**	**Positive influence**	**Negative influence**
Organisational and stakeholders' factors	X		Organisational and stakeholders' factors	X	
Raising CI ethics awareness	X		Raising CI ethics awareness		X
Decision-making factors	X		Decision-making factors	X	
Competitive intelligence practice factors	X		Competitive intelligence practice factors		X
Business ethics and ethical theories	X		Business ethics and ethical theories	X	
Industrial factors	X		Industrial factors	Not valid	Not valid
Economic, political and social factors	X		Economic, political and social factors	Not valid	Not valid
CI ethics challenges		X	CI ethics challenges	X	

5.5.2 Adoption of CI ethics promotion model

The findings indicate that organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; CI practice factors; business ethics and ethical theories; and CI ethics challenges have significant influence on the adoption of CI ethics respect. The findings indicate that raising CI ethics awareness; decision-making factors; CI practice factors; and business ethics and ethical theories positively influence the adoption of CI ethics promotion. Thus, an increase in these factors lead to an increase in the adoption of CI ethics promotion. These findings are in accordance with the findings of ISM in section 2.4 of chapter 2.

It is interesting to note that a factor that was identified through ISM as having a positive influence on the adoption of CI ethics have a negative influence on the adoption of CI ethics promotion in structural equation modelling (SEM), namely organisational and stakeholders' factors. The findings indicate that an increase in this factor leads to a decrease in the adoption of CI ethics promotion. It is also interesting to note from the findings that a factor that was identified through ISM as having a negative influence on the adoption of CI ethics has a positive influence on the adoption of CI ethics promotion, namely CI ethics challenges. The findings indicate that an increase in this factor lead to an increase in the adoption of CI ethics respect. These findings are in discordance is with the findings of ISM in section 2.4 of chapter 2. Figure 4.18 depicts the adoption of CI ethics promotion model. The findings indicate that the model is valid and acceptable as it fits the majority of the goodness of fit indices (see table 4.49 in chapter 4). Table 5.6 compares the ISM and SEM findings with regard to factors that influence the adoption of CI ethics.

Table 5.6: Comparison of ISM key variable and variables that influence CI ethics promotion as per SEM

ISM key variables	Positive influence	Negative influence	Variables that influence CI ethics promotion adoption as per SEM	Positive influence	Negative influence
Organisational and stakeholders' factors	X		Organisational and stakeholders' factors		X
Raising CI ethics awareness	X		Raising CI ethics awareness	X	
Decision-making factors	X		Decision-making factors	X	
Competitive intelligence practice factors	X		Competitive intelligence practice factors	X	
Business ethics and ethical theories	X		Business ethics and ethical theories	X	
Industrial factors	X		Industrial factors	Not valid	Not valid
Economic, political and social factors	X		Economic, political and social factors	Not valid	Not valid
CI ethics challenges		X	CI ethics challenges	X	

5.6 Statistical techniques used to achieve objectives

Different statistical techniques are used to achieve the three objectives of this study. Table 5.7 contains the objectives, statistical techniques and the contribution of each statistical technique in achieving the objectives and the main aim of the study.

Table 5.7: Statistical techniques used to achieve objectives

Objectives	Statistical techniques	Contributions of statistical techniques to achieving objectives
Objective 1: To establish the extent to which firms in the South African Information and Communication Technology industry have adopted competitive intelligence ethics.	Descriptive statistics (mean, median, standard deviation, skewness and kurtosis)	Descriptive statistics helped to describe the extent to which South African ICT firms have adopted competitive intelligence ethics by showing the central tendency and spread of responses. They helped reveal how many South African ICT firms have according the findings adopted competitive intelligence ethics to an absolute extent.
Objective 2: To establish and assess the generic/existing methods in use by Information Communication Technology firms in an attempt to enforce CI ethics.	Descriptive statistics (mean, median, standard deviation, skewness and kurtosis)	Descriptive statistics helped to describe the level of agreement regarding the methods used by South African ICT firms to enforce CI ethics by showing the central tendency and spread of responses. They helped revealed how many South African ICT firms have according the findings are using the different CI ethics enforcement methods.
Objective 3: To assess the factors that positively and negatively influence the adoption of competitive intelligence ethics by firms in the South African Information Communication Technology industry.	• Exploratory factor analysis (EFA) • Reliability analysis (Cronbach's alpha) • Descriptive statistics (mean, median, standard deviation, skewness and kurtosis) • Hypothesis tests (correlation) • Structural equation modelling (SEM)	EFA helped to establish the suitability and validity of data and factors for analysis. The data and factors for this study were found suitable and valid for analysis. Reliability analysis was used to test the reliability of the data and factors for further analysis. The data and factors for this study were found to be reliable for further analysis. Descriptive statistics helped to describe the level of agreement regarding the factors that positively and negatively influence the adoption of CI ethics by showing the central tendency and spread of responses. They helped revealed how many South African ICT firms agree or disagree to be positively or negatively influenced by the valid and reliable factors in their adoption of CI ethics. Hypothesis test helped to establish significance of the relationships between the positive and negative factors to the adoption of CI ethics. SEM helped to construct a valid and reliable CIEAM using the factors that influence the adoption of CI ethics.

5.7 Hypotheses tests

Hypotheses tests were conducted in this study using correlations to achieve objective 3. The aim of objective 3 was to establish factors that positively and negatively influence the adoption of CI ethics. Hypotheses tests were conducted to establish significance of the relationship between the factors and the adoption of CI ethics. The findings indicate that due to the constant variable (adoption of CI ethics) being divided into two variables during EFA, namely the adoption of CI ethics respect and the adoption of CI ethics promotion, the hypotheses were also divided into two. Hypothesis 1 and 7 were not tested as the variables industrial factors and economic, political and social factors were found invalid through EFA (they have Eigenvalue less than 1.4 (see table 4.2 in chapter 4)). The findings indicate that the following relationships are significant with a *p* value of less than or equals to 0.05 (thus, the null hypotheses are rejected and the alternative hypotheses are accepted):

- Hypothesis 2: H_a2a: There is a significant correlation between *decision-making factors* and *the adoption of CI ethics respect*. H_a2b: There is a significant correlation between *decision-making factors* and *the adoption of CI ethics promotion*.
- Hypothesis 3: H_a3a: There is a significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics respect*. H_a3b: There is a significant correlation between *business ethics and ethical theories* and *the adoption of CI ethics promotion*.
- Hypothesis 4: H_a4a: There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics respect*. H_a4b: There is a significant correlation between *raising CI ethics awareness* and *the adoption of CI ethics promotion*.
- Hypothesis 5: H_a5a: There is a significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics respect*. H_a5b: There is a significant correlation between *organisational and stakeholders' factors* and *the adoption of CI ethics promotion*.

- Hypothesis 6: H_a6a: There is a significant correlation between *CI practice factors* and *the adoption of CI ethics respect*. H_a6b: There is no significant correlation between *CI practice factors* and *the adoption of CI ethics promotion*.
- Hypothesis 8: H_a8a: There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics respect*. H_a8b: There is a significant correlation between *CI ethics challenges* and *the adoption of CI ethics promotion*.

The hypotheses test findings indicate that decision-making factors, business ethics and ethical theories, raising CI ethics awareness, organisational and stakeholders' factors, CI practice factors, and CI ethics challenges have significant influence on the adoption of CI ethics.

5.8 Chapter summary

This chapter discussed the findings drawn from the preceding chapters. It discussed the findings on the characteristics of the South African ICT firms as per the demographics analysis in chapter 4. The findings on the extent of CI ethics adoption and the methods used to enforce CI ethics are also discussed in this chapter. The chapter ended with the discussion of the findings on factors that positively and negatively influence the adoption of ethics and the CIEAM. The next chapter (Chapter 6) discusses the conclusions, recommendations, limitations and further researches.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

This chapter discusses the conclusions and recommendations drawn from preceding chapters of this study. This is followed by a discussion of the theoretical and practical contributions of the study. It also outlines the limitations of the study. Areas for further research are outlined in this chapter.

6.1 CI ethics adoption in the South African ICT industry

This study aimed to establish the extent to which firms in the South African ICT industry have adopted CI ethics (Objective 1). Contrary to the claim of lack of CI ethics adoption, the findings of this study indicate that South African ICT firms have absolutely adopted CI ethics. South African ICT firms enforce, respect and promote CI ethics. They comply with all applicable domestic and international laws. Moreover, they ethically and legally collect information for CI. Thus, South African ICT firms honestly disclose their identity; they keep collected information confidential; they are guided by policies, objectives and guidelines; and they make honest and realistic conclusions and recommendations (Strategic and Competitive Intelligence Professionals (SCIP), 1999). South African ICT firms therefore contribute towards the enhancement of CI reputation and recognition of the profession (Bartes, 2014a; Gheysari, 2015; Reinmoeller & Ansari, 2015).

6.2 CI ethics enforcement methods used by South African ICT industry

Objective 2 of this study was to establish and assess the generic/existing methods in use by ICT firms in an attempt to enforce CI ethics. In accordance with the existing literature, the findings of this study indicate that South African ICT firms use all four methods of enforcing CI ethics, namely, (1) ethics roundtables, (2) workshops; seminars; conferences; meetings and speeches, (3) education and training, and (4) rewards for compliance and punishment for non-compliance (Kullberg, 1988; Frederick, 1988;

Henderson, 1988; Smith *et al*., 2010; Nasri, 2011; Brown & Trevino, 2006; Brown & Trevino, 2006). Contrary to the findings that education and training is the most used method, the findings of this study indicate that South African ICT firms mostly use workshops, seminars, conferences, meetings and speeches to enforce CI ethics (Smith *et al*., 2010).

6.3 Factors that positively and negatively influence the adoption of CI ethics

The aim of objective 3 was to assess the factors that positively and negatively influences the adoption of CI ethics by firms in the South African ICT industry. This study found six valid and reliable factors that significantly influence the adoption of CI ethics, namely organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; competitive intelligence practice factors; business ethics and ethical theories; and CI ethics challenges. The majority of these factors are guided by non-consequentialism theories of ethics as their focus are on compliance, social justice and caring. These factors positively and negatively influence the adoption of CI ethics in the South African ICT industry. South African ICT firms may use these factors to moderate the adoption of CI ethics. Thus, they may include these factors in CI ethics adoption checklists. The existence or non-existence of these factors in an ICT firm influences the adoption of CI ethics. These factors may be used to motivate and measure the adoption of CI ethics. Thus, some of these factors encourage the adoption of CI ethics while some discourage. They may be included in a CI ethics adoption measuring tool.

6.3.1 Factors that positively influence the adoption of CI ethics

The findings of this study indicate that organisational and stakeholders' factors; raising CI ethics awareness; decision-making factors; competitive intelligence practice factors; and business ethics and ethical theories positively influence the adoption of CI ethics. Thus, South African ICT firms that acknowledge and respect organisational stakeholders, policies, code of ethics, standards and approaches adopt CI ethics (Sexton, 2007;

Rittenburg *et al*., 2007; Brown & Trevino, 2006). In addition, ICT firms with competent decision-makers in all management levels adopt CI ethics. Moreover, South African ICT firms that have clear CI needs; good communication between decision-makers and CI professionals; CI quality assurance; qualified CI professionals; and resources available for CI adopt CI ethics (Yassine, 2014; Bartes, 2014b; Barnea, 2014; McGonagle & Vella, 2012). Additionally, ICT firms that have management support, visibility and participation and raise CI ethics awareness through ethics roundtables; workshops, seminars, speeches, meetings and conferences; and education and training adopt CI ethics. Also, ICT firms that are guided by business ethics, ethical theories and justice, have virtuous decision-makers, and consider the interests of stakeholders adopt CI ethics. South African ICT firms that embrace and strengthen these factors increase the adoption of CI ethics.

6.3.2 Factors that negatively influence the adoption of CI ethics

According to the findings of this study, CI ethics challenges negatively influence the adoption of CI ethics in the South African ICT industry. Thus, weak barriers to enter the ICT industry; high competition in the ICT industry; lack of resources or infrastructure in the ICT industry; high telecommunication costs; ICT skills shortage; self-interests and lack of care for others; and CI budgetary constraints negatively influence the adoption CI ethics by South African ICT firms. This factor and its sub-factors weaken and decrease the adoption of CI ethics (Rittenburg *et al*., 2007). Thus, ICT firms that weaken this factor adopts CI ethics.

6.4 CI ethics adoption model

This study aimed to develop a Competitive Intelligence Ethics Adoption Model (CIEAM) for the South African ICT industry. According to the findings of this study, the CIEAM is divided into two models, namely the adoption of the CI ethics respect model and the adoption of CI ethics promotion model. These models are valid, reliable and acceptable as they fit the majority of the goodness of fit indices. The models indicate the factors that

must be strengthened and weakened by South African ICT firms for the adoption of CI ethics. ICT firms should put measures in please to strengthen factors that positively influence the adoption of CI ethics and weaken factors that negatively influence the adoption of CI ethics. From the perspective of CI ethics promotion, the factors that should be strengthen include: decision-making factors, CI ethics challenges, competitive intelligence practice factors, raising CI ethics awareness, and business ethics and ethical theories. Hence, the variable that should be weakened within CI ethics promotion include only organisational and stakeholders' factors. In the CI ethics respect strand of the model, factors that should be strengthened are: organisational and stakeholders' factors, decision-making factors, CI ethics challenges, and business ethics and ethical theories. Hence, those factors that should be weakened within CI ethics respect include competitive intelligence practice factors and raising CI ethics awareness.

Thus, South African ICT firms may use these models to motivate, moderate and measure the adoption of CI ethics. The two models of CIEAM are interrelated as their constant variables are interrelated. Thus, an increase or decrease in the constant variable adoption of CI ethics respect leads to an increase or a decrease in the adoption of CI ethics promotion. However, the contribution of the predictor variables differs between these two models of CIEAM.

According to the findings of this study, an increase in organisational and stakeholders' factors; decision-making factors; business ethics and ethical theories; and CI ethics challenges will lead to an increase in the adoption of CI ethics respect whereas a decrease in these factors will lead to a decrease in the adoption of CI ethics respect. An increase in CI practice factors and raising CI ethics awareness lead to a decrease in the adoption of CI ethics respect whereas a decrease in these factors will lead to an increase in the adoption of CI ethics respect.

An increase raising CI ethics awareness; decision-making factors; CI practice factors; business ethics and ethical theories; and CI ethics challenges leads to an increase in the adoption of CI ethics promotion whereas a decrease in these factors leads to decrease

in the adoption of CI ethics promotion. An increase in organisational and stakeholders' factors leads to a decrease in the adoption of CI ethics promotion whereas a decrease in this factor leads to an increase in the adoption of CI ethics promotion.

6.5 Recommendations

From the data analysis, findings and conclusions, the following recommendations are reached. South African ICT firms should:

- Strive to move from adopting CI ethics to an absolute extent to a greater extent as doing so may lead to an increase in recognition of CI as a reputable profession.
- Use workshops, seminars, conferences, meetings, and speeches as this is the most widely used method of enforcing CI ethics.
- Embrace and strengthen organisational and stakeholders' factors; should raise CI ethics awareness; decision-making factors; CI practice factors; and business ethics and ethical theories as they positively influence the adoption of CI ethics.
- Weaken and reduce CI ethics challenges as they negatively influence the adoption of CI ethics.
- Adopt, embrace and use the CIEAM as doing so may ensure an increase in recognition of CI as a reputable profession, eliminate the confusion of CI with industrial espionage, and enhance the reputation of the firms.

6.6 Contributions of the study

The aim of this study was to develop a CIEAM for the South African ICT industry. To achieve this aim, this study established methods used by South African ICT firms to enforce CI ethics, which play a critical role in the adoption of CI ethics. The study revealed that South African ICT firms have adopted CI ethics to an absolute extent. The study also established factors that positively and negatively influence the adoption of CI ethics and introduces the CIEAM. The findings indicate that the CIEAM meet almost all the structural equation modelling (SEM) indices and it is therefore fitting and usable as a tool for the

adoption of CI ethics. Although validation split the CIEAM into two models, the two models are interrelated as an increase in adoption of CI ethics respect leads to increase in adoption of CI ethic promotion and the opposite is the same. Figure 6.1 depicts the interrelated CIEAM for the South African ICT industry. It is a combination of figure 4.17 and 4.18. The CIEAM shows how business ethics and ethical theories, organisational and stakeholders' factors; decision-making factors, CI practice factors, raising CI ethics awareness, and CI ethics challenges influence both the adoption of CI ethics respect and the adoption CI ethics promotion.

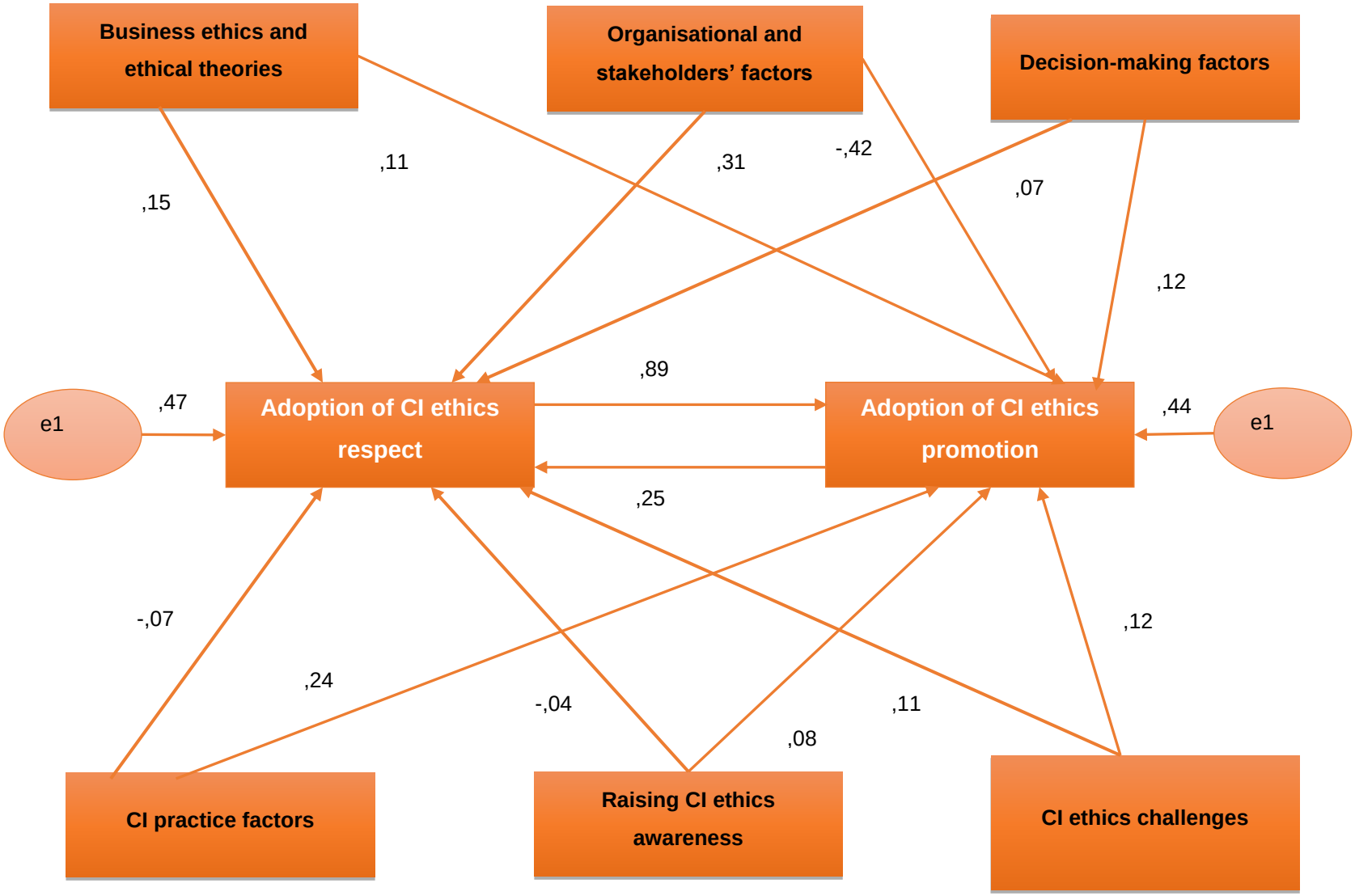

Figure 6.1: The CIEAM for the South African ICT industry

6.6.1 Practical contributions of the study

In practice, the CIEAM may minimise unethical conducts by some CI professionals and the confusion of CI with espionage whilst improving the credibility and recognition of the CI profession. The model may also serve as valuable tool for practitioners and scholars needing to measure the adoption of CI ethics across different business sectors, and enhance their understanding of core drivers of adoption for possible proactive interventions such as training or raising awareness.

6.6.2 Theoretical contributions of the study

Theoretically, the CIEAM can serve as input in the development of CI policies and CI ISO standards in the ICT industry and related industries. The study contributes to the body of knowledge through the establishment of factors that positively and negatively influence the adoption of CI ethics. Moreover, the study established the CI ethics enforcement methods. The study also established the extent to which South African ICT industry have adopted CI ethics. In addition, the study established and justified the theories of ethics that underpin the factors that positively and negatively influence the adoption of CI ethics.

6.7 Limitations of the study

This study had the following limitations:

- This study was limited to South African ICT firms only and may not be generalised to other industries or countries.
- Literature on CI ethics and CI practice in the South African ICT industry was very scarce as CI is still evolving in South Africa.
- The sample size for this study is considered acceptable and not necessarily excellent.

6.8 Further research

Based on the data analysis, findings, conclusions, and limitations of the study, the following further studies may be conducted:

- To establish the adoption of CI ethics should be conducted in other industries that practise CI in South Africa and other developing and developed countries.
- Using excellent sample size (500 and above) to evaluate if the outcome will be different from this study.
- To establish the influence of South African ICT firms' characteristics on the adoption of CI ethics.
- To establish why South African ICT firms have adopted CI ethics to an absolute extent and not yet to a greater extent.

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APPENDIX A: FINAL QUESTIONNAIRE – ADOPTION OF COMPETITIVE INTELLIGENCE ETHICS (CIE) IN THE ICT INDUSTRY OF SOUTH AFRICA

Welcome to our survey

Thank you for your willingness to participate in this survey.

Please note that the survey is completely anonymous and the information obtained will be kept confidential. It will take you at most 15 minutes to complete this questionnaire.

Competitive Intelligence refers to the collection of information from internal and external environment (including your competitors) for the purpose of decision making and gaining competitive advantage. For example, you check the prices of other businesses in order to set competitive prices. This can be done formally or informally.

Majority of the questions will require you to indicate your level of agreement to statements under different influencial factors of Competitive intelligence ethics adoption.

The following rating scale will be used:

1 = Strongly Disagree
2 = Disagree
3 = Neither Agree or Disagree
4 = Agree
5 = Strongly Agree

The last questions are on enterprise information.

Thank you for participating in our survey. Your feedback is important.

Yours Sincerely
Mr Eric Nenzhelele

Open Rubric

CODE OF ETHICS FOR COMPETITIVE INTELLIGENCE

* 1. ETHICS IN COMPETITIVE INTELLIGENCE

	Not at all	To some extent	Absolutely	To a greater extent
Indicate the extent to which your enterprise observes and comply with a code of ethics when practicing competitive intelligence.	○	○	○	○

* 2. Indicate your level of agreement regarding your enterprise's application of the following elements of the Competitive Intelligence ethics code in your enterprise.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
We strive to continually increase the recognition of the competitive intelligence profession	○	○	○	○	○
We respect the competitive intelligence profession	○	○	○	○	○
We comply with all the applicable laws, domestic and international	○	○	○	○	○
We disclose accurately all relevant information, including one's identify and enterprise, prior to all interviews	○	○	○	○	○
We fully respect all requests for confidentiality of information	○	○	○	○	○
We avoid conflicts of interest in fulfilling our duties	○	○	○	○	○
We provide honest recommendations in the execution of our duties	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
We promote the competitive intelligence code of ethics within our enterprise	○	○	○	○	○
We promote the competitive intelligence code of ethics to our third-party contractors	○	○	○	○	○
We promote the competitive intelligence code of ethics within the entire profession	○	○	○	○	○
We adhere to our enterprise's policies, objectives and guidelines	○	○	○	○	○

IMPLEMENTATION METHODS OF COMPETITIVE INTELLIGENCE CODE OF ETHICS

* 3. Indicate which of the following methods helped you to implement competitive intelligence code of ethics in your enterprise.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Ethics round tables	◯	◯	◯	◯	◯
Workshops; Seminars; Conferences; Meetings and Speeches	◯	◯	◯	◯	◯
Education and Training	◯	◯	◯	◯	◯
Rewards for compliance and Punishment for non-compliance	◯	◯	◯	◯	◯

Other (please specify)

FACTORS THAT POSITIVELY INFLUENCE THE ADOPTION OF COMPETITIVE INTELLIGENCE ETHICS

* 4. Indicate your level of agreement regarding which of the following factors have a positive influence (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
The role of Independent Communications Authority of South Africa, The Black Information Technology Forum and The Black Economic Empowerment Charter for ICT	○	○	○	○	○
ICT codes of good practice	○	○	○	○	○
Collaboration between universities, government, research institutions and enterprises	○	○	○	○	○
South African ICT policies	○	○	○	○	○
Exposure to international forces	○	○	○	○	○
Government spending on infrastructure and growing investor confidence	○	○	○	○	○
Ethical leaders, managers and decision makers	○	○	○	○	○
Rewards for compliance and punishments for non-compliance	○	○	○	○	○
Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development	○	○	○	○	○
Virtues/good characters of employees e.g. integrity, honesty and humility	○	○	○	○	○
Ensuring that justice prevail in all decisions taken	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Bad and good consequences of one's actions	○	○	○	○	○
Consideration of all organisational stakeholders' interests	○	○	○	○	○
Considerations of rules and principles that governs the community	○	○	○	○	○
Respect for all organisational stakeholders	○	○	○	○	○
Clear Competitive Intelligence needs	○	○	○	○	○
Communication between decision makers and competitive intelligence practitioners/professionals	○	○	○	○	○
Competitive Intelligence quality assurance	○	○	○	○	○
Availability of resources for Competitive Intelligence	○	○	○	○	○
Skilled Competitive Intelligence professionals	○	○	○	○	○
Formalisation of Competitive Intelligence process	○	○	○	○	○
Being a member of Strategic and Competitive Intelligence Professionals (SCIP)	○	○	○	○	○
The role of stakeholders e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and audtors	○	○	○	○	○
Organisational awareness and culture	○	○	○	○	○
Organisational policies, code of ethics and approaches/standards	○	○	○	○	○
Government laws/regulations	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Established societal/industry/business norms	◯	◯	◯	◯	◯
Perceived potential for customer backlash	◯	◯	◯	◯	◯
Management support, participation and visibility	◯	◯	◯	◯	◯
Raising ethics awareness through ethics round table	◯	◯	◯	◯	◯
Raising ethics awareness through workshops, seminars, speeches, meetings and conferences	◯	◯	◯	◯	◯
Raising ethics awareness through education and training	◯	◯	◯	◯	◯
The competence of the decision makers	◯	◯	◯	◯	◯
Decisions taken at strategic level	◯	◯	◯	◯	◯
Decisions taken at functional level	◯	◯	◯	◯	◯
Decisions taken at operational level	◯	◯	◯	◯	◯
Low interest and inflation rate	◯	◯	◯	◯	◯
Global economic growth	◯	◯	◯	◯	◯
Ethical political leaders	◯	◯	◯	◯	◯

Other (please specify)

FACTORS THAT NEGATIVELY INFLUENCE THE ADOPTION OF COMPETITIVE INTELLIGENCE ETHICS

* 5. Indicate your level of agreement regarding which of the following factors have a negative influence (i.e. these factors will hinder/discourage your enterprise) on the adoption of CI ethics code in your enterprise.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Weak barrier to entry and high competition in the ICT industry	○	○	○	○	○
Lack of resources or infrastructure in the ICT industry	○	○	○	○	○
High telecommunication costs	○	○	○	○	○
ICT skills shortage	○	○	○	○	○
Self-interests and lack of care for others	○	○	○	○	○
Competitive intelligence budgetary contraints	○	○	○	○	○
Outsourcing of competitive intelligence	○	○	○	○	○
Informal competitive intelligence process	○	○	○	○	○
Lack of competitive intelligence expertise and experience	○	○	○	○	○
Global economic slowdown/recession	○	○	○	○	○
High interest and inflation rates	○	○	○	○	○
Poverty	○	○	○	○	○
Poor education system	○	○	○	○	○
Constant puplication of business scandals, corruption and fraud	○	○	○	○	○

Other (please specify)

ENTERPRISE INFORMATION

The following questions are for statistical purpose.

* 6. Please indicate the province in which your business is primarily based

- ◯ Eastern Cape
- ◯ Free State
- ◯ Gauteng
- ◯ KwaZulu-Natal
- ◯ Limpopo
- ◯ Mpumalanga
- ◯ North West
- ◯ Northern Cape
- ◯ Western Cape

* 7. Please indicate the ICT sub-industry you primarily operate in

- ◯ Manufacturing
- ◯ Goods related services (e.g. sales of digital devices, repairs, shipping of devices)
- ◯ Intangible services (e.g. web hosting, web design, software development, debugging, storage)
- ◯ Both goods related services and intangible services

Other (please specify)

* 8. Please indicate the number of employees in your organisation

- ◯ 1 to 5
- ◯ 6 to 10
- ◯ 11 to 20
- ◯ 21 to 50
- ◯ 51 to 200
- ◯ 201 or more

* 9. Indicate the number of years your business have been in operation

- ◯ Less than 1 year
- ◯ 1 to 5 years
- ◯ 6 to 10 years
- ◯ 11 or more years

* 10. Indicate the position you hold in your organisation

- ◯ Business owner
- ◯ General manager
- ◯ Sales/Marketing Manager
- ◯ Information/Knowledge Manager
- ◯ Competitive Intelligence Professional/Practitioner
- ◯ Chief Executive Officer

Other (please specify)

APPENDIX B: INITIAL QUESTIONNAIRE BEFORE VALIDATION – ADOPTION OF COMPETITIVE INTELLIGENCE ETHICS (CIE) IN THE ICT INDUSTRY OF SOUTH AFRICA

ADOPTION OF COMPETITIVE INTELLIGENCE ETHICS IN THE ICT INDUSTRY OF SOUTH AFRICA

SURVEY QUESTIONNAIRE

BY TSHILIDZI ERIC NENZHELELE (D.COM STUDENT AND PRINCIPAL RESEARCHER)
SURPERVISED BY: PROF RENÉ PELLISSIER
FUNDED BY: NATIONAL RESEARCH FOUNDATION (NRF)

Dear Prospective participant,

The purposes of this survey are to establish the adoption of Competitive Intelligence (CI) ethics, and to determine the salient factors that influence the adoption of CI ethics in the ICT industry of South Africa. This study forms part of the D.Com research at the Department of Business Management, Unisa. By completing this survey, you agree that the information you provide may be used for these research purposes. You have been selected to participate in this survey because you are a CI professional or information manager or knowledge manager or marketing manager or owner of the enterprise or Chief Executive Officer or someone who is responsible for the implementation of competitive intelligence. You are, however, under no obligation to complete the survey and can withdraw from the study prior to submitting the survey. Your completion of the questionnaire will serve as consent to participate in this survey.

Also note that the survey is developed to retain your anonymity and we as researchers will have no way of connecting the information you provided to you personally. You will not be able to withdraw from the study once you have completed and return the survey based on the anonymous nature of the survey. If you choose to participate in this survey

it will take up no more than *30 minutes* of your time. *Answer all the questions honestly by marking the most appropriate block.*

We do not anticipate any harm which you can experience by participating in this survey. However, any case anything beyond our control happens, a written apology will be sent to you. The researchers undertake to keep any individual information provided herein strictly confidential, not to let it out of their possession, and to analyse the feedback received only on group level. The records will be kept for five years for publication purposes where after it will be permanently destroyed.

The data collected by means of this questionnaire will assist in the development of a CI ethics adoption model. This model will assist ICT enterprises to design applications that consider CI ethics when collecting information for CI. Moreover, the outcome of this survey will assist government and enterprises at large to design ICT policies that consider CI ethics. You will not be reimbursed or receive any incentives for your participation in this survey. Should you require any further information, want feedback on the study or need to contact the researcher about any aspect of this study, please contact Mr. Tshilidzi Eric Nenzhelele on 012 429 3756; e-mail nenzhte@unisa.ac.za; fax 086 694 6436.

PART 1: DEFINITIONS OF TERMS

Competitive Intelligence: A process or practice that produce actionable intelligence by ethically and legally collecting, processing and analysing information about the external or competitive environment in order to help in decision-making and to provide competitive advantage to the enterprise.

Competitive Intelligence ethics: The code of ethics developed by the Strategic and Competitive Intelligence Professionals (SCIP) for Strategic and Competitive Intelligence professionals.

PART 2: ENTERPRISE INFORMATION

2.1 Please indicate the province in which your business is primarily based

Mark the most appropriate block with an X.

1	Eastern Cape	
2	Free State	
3	Gauteng	
4	KwaZulu-Natal	
5	Limpopo	
6	Mpumalanga	
7	North West	
8	Northern Cape	
9	Western Cape	

2.2 Please indicate the ICT sub-industry you primarily operate in

Mark the most appropriate block with an X.

1	Manufacturing	
2	Goods related services	
3	Intangible services	
4	*Other (please specify):*	

2.3 Please indicate the type of your business

Mark the most appropriate block with an X.

1	Close Corporation	
2	Company	
3	Partnership	
4	Sole proprietorship	
5	*Other (please specify):*	

2.4 Please indicate the number of employees in your organisation

Mark the most appropriate block with an X.

1	1 to 5	
2	6 to 10	
3	11 to 20	
4	21 to 50	
5	51 to 200	
6	201 or more	

2.5 Indicate the number of years your business have been in operation

Mark the most appropriate block with an X.

1	Less than 6 years	
2	6 or more years	

2.6 Indicate the position you hold in your organisation

Mark the most appropriate block with an X.

1	Manager/owner	
2	Manager	
3	Chief Executive Officer	
4	Competitive Intelligence Professional	
5	Information/Knowledge Manager	
6	*Other (please specify):*	

PART 3: CODE OF ETHICS FOR COMPETITIVE INTELLIGENCE

3.1 IMPLEMENTATION OF THE COMPETITIVE INTELLIGENCE CODE OF ETHICS

Indicate the extent to which your enterprise implements a competitive intelligence code of ethics.

Mark the most appropriate block with an X.

1	2	3	4
Not at all	To some extent	Absolutely	Do not know

VERY IMPORTANT: ANSWER QUESTIONS 3.2 TO 3.12 ONLY IF YOUR ANSWER TO QUESTION 3.1 IS EITHER 2 OR 3.

3.2 ELEMENTS OF THE COMPETITIVE INTELLIGENCE CODE OF ETHICS

Indicate your level of agreement regarding your enterprise's application of the following elements of the Competitive Intelligence ethics code in your enterprise.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

Mark the most appropriate block with an X.

We are aware of the competitive intelligence code of ethics	1	2	3	4	5
We strive to continually increase the recognition of the competitive intelligence profession	1	2	3	4	5
We respect the competitive intelligence profession	1	2	3	4	5
We comply with all the applicable laws, domestic and international	1	2	3	4	5
We disclose accurately all relevant information, including one's identify and enterprise, prior to all interviews	1	2	3	4	5
We fully respect all requests for confidentiality of information	1	2	3	4	5
We avoid conflicts of interest in fulfilling our duties	1	2	3	4	5
We provide honest recommendations in the execution of our duties	1	2	3	4	5
We promote the competitive intelligence code of ethics within our enterprise	1	2	3	4	5
We promote the competitive intelligence code of ethics to our third-party contractors	1	2	3	4	5
We promote the competitive intelligence code of ethics within the entire profession	1	2	3	4	5
We adhere to our enterprise's policies, objectives and guidelines	1	2	3	4	5

3.3 IMPLEMENTATION METHODS OF COMPETITIVE INTELLIGENCE CODE OF ETHICS

Indicate which of the following methods helped you to implement competitive intelligence code of ethics in your enterprise.

Mark the most appropriate block with an X.

Ethics round table	1	2	3	4	5
Workshops	1	2	3	4	5
Seminars	1	2	3	4	5
Meetings	1	2	3	4	5
Training	1	2	3	4	5
Rewards	1	2	3	4	5
Punishment	1	2	3	4	5
Accountability	1	2	3	4	5
Accreditation	1	2	3	4	5
Conferences	1	2	3	4	5
Speeches	1	2	3	4	5
Education	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.4 INDUSTRIAL FACTORS

3.4.1 Indicate your level of agreement regarding which of the following industrial factors have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Independent Communications Authority of South Africa	1	2	3	4	5
The Black Information Technology Forum	1	2	3	4	5
ICT codes of good practice	1	2	3	4	5
Allowing the inflow of migrants with sought-after skills	1	2	3	4	5
E-skilling	1	2	3	4	5
Universities, government, research institutions and enterprises collaboration	1	2	3	4	5
The Black Economic Empowerment Charter for ICT	1	2	3	4	5
South African ICT policies	1	2	3	4	5
High innovation	1	2	3	4	5
Exposure to international forces	1	2	3	4	5
Drop in interconnection fees between communication services providers	1	2	3	4	5
Growing investor confidence	1	2	3	4	5
Government spending on infrastructure	1	2	3	4	5

Faster growth of the ICT industry	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.4.2 Indicate your level of agreement regarding which of the following industrial factors have a <u>negative influence</u> (i.e. these factors will hinder/discourage your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

High competition	1	2	3	4	5
Highly skilled labour migrates to developed countries looking for better opportunities	1	2	3	4	5
Lack of ICT Research and Development skills	1	2	3	4	5
Weak barrier to entry	1	2	3	4	5
Outsourcing of ICT projects	1	2	3	4	5
Lack of resources or infrastructure	1	2	3	4	5
High telecommunication costs	1	2	3	4	5
ICT skills shortage	1	2	3	4	5
Rapid change in technology	1	2	3	4	5
Fewer people with ICT research skills	1	2	3	4	5
Low level of computer literacy	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.5 BUSINESS ETHICS

Indicate your level of agreement regarding which of the following business ethics have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Ethical leaders or managers	1	2	3	4	5
Information ethics	1	2	3	4	5
Sustainable development	1	2	3	4	5
Corporate Social Responsibility	1	2	3	4	5
Corporate governance	1	2	3	4	5
Ethical decision-makers	1	2	3	4	5
Rewards for compliance	1	2	3	4	5
Punishments for non-compliance	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.6 ETHICAL THEORIES

3.6.1 Indicate your level of agreement regarding which of the following ethical theories have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Virtues/good characters of employees e.g. integrity, honesty and humility	1	2	3	4	5
Justice	1	2	3	4	5
Caring for others	1	2	3	4	5
The interests of stakeholders	1	2	3	4	5
Good consequences of actions	1	2	3	4	5
Bad consequences of actions	1	2	3	4	5
Best interest for everyone	1	2	3	4	5
Rules and principles	1	2	3	4	5
Respect for others	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.6.2 Indicate your level of agreement regarding which of the following ethical theories have a <u>negative influence</u> (i.e. these factors will hinder/discourage your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Self-interests	1	2	3	4	5
Lack of care	1	2	3	4	5
The interests of shareholders	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.7 COMPETITIVE INTELLIGENCE PRACTICE

3.7.1 Indicate your level of agreement regarding which of the following competitive intelligence practice factors have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Formal Competitive Intelligence process	1	2	3	4	5
Centralised Competitive Intelligence Unit	1	2	3	4	5
Competitive Intelligence performance measurement	1	2	3	4	5
Clear Competitive Intelligence needs	1	2	3	4	5
Availability of resources	1	2	3	4	5
Competitive Intelligence needs from top management	1	2	3	4	5
Clear Competitive Intelligence objectives	1	2	3	4	5
Training and education in Competitive Intelligence	1	2	3	4	5
Independent location of Competitive Intelligence	1	2	3	4	5
Skilled Competitive Intelligence professionals	1	2	3	4	5
Locating Competitive Intelligence in strategic department	1	2	3	4	5
Automated Competitive Intelligence	1	2	3	4	5
Being a member of Strategic and Competitive Intelligence Professionals (SCIP)	1	2	3	4	5
Recognition of Competitive Intelligence as a profession	1	2	3	4	5
Sourcing of external information	1	2	3	4	5
Competitive Intelligence for strategic decisions					
External personal sources of information e.g. customers, suppliers and competitors	1	2	3	4	5
External impersonal sources of information e.g. newspapers, periodicals and internet	1	2	3	4	5
Internal personal sources of information e.g. employees and board members	1	2	3	4	5
Internal impersonal sources of information e.g. circulars, reports and libraries	1	2	3	4	5
Methods of information collection e.g. environmental scanning, surveys, interviews, observation, media scanning and networking	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.7.2 Indicate your level of agreement regarding which of the following competitive intelligence practice factors have a <u>negative influence</u> (i.e. these factors will hinder/discourage your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Informal Competitive Intelligence process	1	2	3	4	5
Decentralised Competitive Intelligent Unit	1	2	3	4	5
Competitive Intelligence Outsourcing	1	2	3	4	5
Competitive Intelligence needs from lower management	1	2	3	4	5
Budgetary constraints	1	2	3	4	5
Locating Competitive Intelligence in marketing department	1	2	3	4	5
Interests of shareholders	1	2	3	4	5
Lack of Competitive Intelligence expertise and experience	1	2	3	4	5
Perceptions about competitor's Competitive Intelligence practice	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.8 STAKEHOLDERS

Indicate your level of agreement regarding which of the following stakeholders have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Shareholders	1	2	3	4	5
Suppliers	1	2	3	4	5
Customers	1	2	3	4	5
Competitors	1	2	3	4	5
The community	1	2	3	4	5
Creditors	1	2	3	4	5
Government	1	2	3	4	5
Employees	1	2	3	4	5
Auditors	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.9 ORGANISATIONAL FACTORS

Indicate your level of agreement regarding which of the following organisational factors have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Organisational awareness and culture	1	2	3	4	5
Organisational policies	1	2	3	4	5
Organisational code of ethics	1	2	3	4	5
Government laws/regulations	1	2	3	4	5
Established societal/industry/business norms	1	2	3	4	5
Professional approaches/standards	1	2	3	4	5
Organisational approaches/standards	1	2	3	4	5
Perceived potential for customer backlash	1	2	3	4	5
Management support, participation and visibility	1	2	3	4	5
Business collaboration/alliances	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.10 ORGANISATIONAL AWARENESS AND CULTURE

Indicate your level of agreement regarding which of the following organisational awareness and cultural factors have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Organisational culture	1	2	3	4	5
Ethics round table	1	2	3	4	5
Workshops	1	2	3	4	5
Seminars	1	2	3	4	5
Meetings	1	2	3	4	5
Training	1	2	3	4	5
Rewards	1	2	3	4	5
Punishment	1	2	3	4	5
Accountability	1	2	3	4	5
Accreditation	1	2	3	4	5
Conferences	1	2	3	4	5
Speeches	1	2	3	4	5
Education	1	2	3	4	5
Collaborating entities	1	2	3	4	5

Other (please specify):	1	2	3	4	5

3.11 DECISION MAKING

Indicate your level of agreement regarding which of the following decision making factors have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Strategic decisions	1	2	3	4	5
Functional decisions	1	2	3	4	5
Operational decisions	1	2	3	4	5
Competence of decision-maker	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.12 ECONOMIC, POLITICAL AND SOCIAL FACTORS

3.12.1 Indicate your level of agreement regarding which of the following economic, political and social factors have a <u>positive influence</u> (i.e. these factors will drive/assist/persuade your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Global economic boom	1	2	3	4	5
Low interest rates	1	2	3	4	5
Low inflation rate	1	2	3	4	5
Ethical political leaders	1	2	3	4	5
Foreign direct investment	1	2	3	4	5
Other (please specify):	1	2	3	4	5

3.12.2 Indicate your level of agreement regarding which of the following economic, political and social factors have a <u>negative influence</u> (i.e. these factors will hinder/discourage your enterprise) on the adoption of CI ethics code in your enterprise.

Mark the most appropriate block with an X.

Global economic slowdown/recession	1	2	3	4	5
Lack of funding	1	2	3	4	5
High interest rates	1	2	3	4	5
High inflation rates	1	2	3	4	5
Poverty	1	2	3	4	5
Poor education system	1	2	3	4	5
Constant publication of corruption and fraud scandals	1	2	3	4	5
Constant business scandals	1	2	3	4	5
Other (please specify):	1	2	3	4	5

Thank you very much for your time.

APPENDIX C: COLLOQUIUM COMMITTEE CERTIFICATE

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Final feedback E. Nenzhelele **9 October 2014**

Panel Members:

Prof R Pellissier
Dr S Radipere
Dr MC Tshilongamulenzhe
Mr KS Boya

Final comments:

This letter serves as a confirmation that the Higher Degrees Committee consisting of the above mentioned members, were satisfied with the proposal of Mr E. Nenzhelele and that **the proposal was accepted** in 2012 by these panel members.

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APPENDIX D: ETHICAL CLEARANCE CERTIFICATE

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DEPARTMENT OF BUSINESS MANAGEMENT RESEARCH ETHICS REVIEW COMMITTEE

20 November 2014

Ref #: 2014_CEMS_BM_021
Mr Tshilidzi Eric Nenzhelele
Student #:32544480
Prof R Pellissier

Dear Mr Tshilidzi Eric Nenzhelele,

Decision: Ethics Approval

Name: Mr Tshilidzi Eric Nenzhelele – Principal Researcher (nenzhte@unisa.ac.za; 0124293756)

Proposal: Adoption of competitive intelligence ethics in the ICT industry of South Africa.

Qualification: Postgraduate degree

Thank you for the application for research ethics clearance by the Department of Business Management Research Ethics Review Committee for the above mentioned research. Final approval is granted for the duration of the project from the date of issue.

For full approval: *The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Department of Business Management on 12 November 2014.*

The proposed research may now commence with the proviso that:

1) *The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
2) *Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Department of Business Management Ethics Review Committee. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*
3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

Kind regards,

Prof Watson Ladzani
Chairperson of the sub-unit RERC
Department of Business Management
wladzani@unisa.ac.za

Prof Raphael Mpofu
Executive Dean
College of Economic and Management Sciences

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APPENDIX E: INFORMED CONSENT AND PARTICIPATION INFORMATION SHEET

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CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), volunteer to participate in a research conducted by Mr. Tshilidzi Eric Nenzhelele and his supervisor Prof René Pellissier. I understand the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet. I have had sufficient opportunity to ask questions and am prepared to participate in the study. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be anonymously processed into a research report, journal publications and/or conference proceedings.

I agree to the recording of the survey questionnaire.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname: ..... (please print)

Participant Signature: .....Date.....

Researcher's Name & Surname: Mr. Tshilidzi Eric Nenzhelele

Researcher's signature:  Date: 9 October 2014

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PARTICIPANT INFORMATION SHEET

9 October 2014

Adoption of competitive intelligence ethics in the ICT industry of South Africa

Dear Prospective Participant

My name is Tshilidzi Eric Nenzhelele and I am doing research with René Pellissier, a Professor extraordinaire at Unisa towards a D.Com at the University of South Africa. We have funding from National Research Foundation (NRF) for paying all expenses relating to this research. We are inviting you to participate in a study entitled Adoption of competitive intelligence ethics in the ICT industry of South Africa. The purposes of this study are to establish the adoption of Competitive Intelligence (CI) ethics, and to determine the salient factors that influence the adoption of CI ethics in the ICT industry of South Africa.

You have been selected to participate in this survey because you are a CI professional or information manager or knowledge manager or marketing manager or owner of the enterprise or Chief Executive Officer or someone who is responsible for the implementation of competitive intelligence in an ICT enterprise. Your contact details were obtained from a public domain or from the internet.

Your role will be that of a respondent to a questionnaire. The questionnaire asks questions relating to the adoption of CI ethics within your organization. The primary researcher, supervisor, statistician, editor, and data capture will have access to your responses. All these individuals will sign a confidentiality agreement. Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

The outcome of this study will be published in a thesis, research report, journal articles, and conference proceeding. Care will be given to maintain the privacy of participants during publication of research outputs. All paper-based responses will be kept in a lockup cabinet and

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shredded after a period of five years. All electronic records will be protected with passwords and will only be accessed by authorized people and will be completely deleted after a period of five years. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable.

You will not be reimbursed or receive any incentives for your participation in this survey. We do not anticipate any harm which you can experience by participating in this survey. However, in case anything beyond our control happens, a written apology will be sent to you. If you choose to participate in this survey it will take up no more than 30 minutes of your time. This study has received written approval from the Research Ethics Committee of the College of Economic and Management Sciences, Unisa. A copy of the approval letter can be obtained from the researcher if you so wish.

If you would like to be informed of the final research findings, please contact Tshilidzi Eric Nenzhelele on +27 012 429 3756 or nenzhte@unisa.ac.za or fax 0866946436. The findings are accessible for five years. Should you require any further information or want to contact the researcher about any aspect of this study, please contact Tshilidzi Eric Nenzhelele on +27 012 429 3756 or nenzhte@unisa.ac.za or fax 0866946436.

Should you have concerns about the way in which the research has been conducted, you may contact Prof René Pellissier +27 012 743 6369 or renepellissier@gmail.com. Alternatively, contact the research ethics chairperson of the Department of Business Management Ethic Committee Prof Watson Ladzani on +27 012 429 3756 or WLadzani@unisa.ac.za or fax +27 086 641 5423.

Thank you for taking time to read this information sheet and for participating in this study.
Thank you.

Mr. Tshilidzi Eric Nenzhelele

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APPENDIX F: FACTOR EXTRACTION USING PRINCIPLE COMPONENT ANALYSIS (PCA)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.551	25.810	25.810	17.551	25.810	25.810	7.127	10.481	10.481
2	7.195	10.581	36.391	7.195	10.581	36.391	6.730	9.898	20.379
3	3.955	5.817	42.208	3.955	5.817	42.208	4.542	6.679	27.058
4	3.558	5.232	47.440	3.558	5.232	47.440	4.121	6.060	33.118
5	2.460	3.618	51.058	2.460	3.618	51.058	3.851	5.663	38.781
6	1.884	2.771	53.829	1.884	2.771	53.829	3.700	5.442	44.223
7	1.819	2.674	56.503	1.819	2.674	56.503	3.612	5.312	49.536
8	1.572	2.312	58.816	1.572	2.312	58.816	2.692	3.958	53.494
9	1.512	2.224	61.039	1.512	2.224	61.039	2.277	3.348	56.842
10	1.343	1.975	63.015	1.343	1.975	63.015	1.983	2.916	59.758
11	1.245	1.831	64.845	1.245	1.831	64.845	1.876	2.759	62.517
12	1.238	1.821	66.667	1.238	1.821	66.667	1.696	2.494	65.011
13	1.153	1.695	68.362	1.153	1.695	68.362	1.511	2.222	67.233
14	1.131	1.663	70.024	1.131	1.663	70.024	1.510	2.220	69.454
15	1.019	1.498	71.522	1.019	1.498	71.522	1.407	2.069	71.522
16	.980	1.442	72.964						
17	.900	1.324	74.288						
18	.874	1.285	75.573						
19	.798	1.173	76.746						
20	.783	1.152	77.898						
21	.752	1.105	79.003						
22	.705	1.037	80.040						
23	.680	1.000	81.040						
24	.663	.974	82.014						
25	.627	.923	82.937						
26	.600	.882	83.819						
27	.573	.843	84.662						
28	.563	.828	85.490						
29	.561	.825	86.315						
30	.508	.747	87.062						
31	.495	.728	87.791						
32	.467	.687	88.478						
33	.451	.663	89.141						
34	.414	.609	89.749						
35	.402	.591	90.340						
36	.388	.570	90.911						
37	.383	.563	91.474						
38	.366	.538	92.012						
39	.351	.517	92.529						
40	.339	.498	93.027						
41	.317	.466	93.493						

42	.304	.447	93.941						
43	.296	.435	94.376						
44	.268	.394	94.770						
45	.264	.389	95.158						
46	.243	.357	95.516						
47	.238	.351	95.866						
48	.227	.334	96.200						
49	.218	.321	96.521						
50	.205	.302	96.823						
51	.201	.296	97.119						
52	.184	.271	97.390						
53	.174	.255	97.645						
54	.164	.241	97.886						
55	.160	.236	98.121						
56	.149	.219	98.340						
57	.144	.212	98.552						
58	.136	.200	98.752						
59	.131	.192	98.944						
60	.122	.180	99.124						
61	.113	.167	99.291						
62	.102	.150	99.441						
63	.093	.137	99.578						
64	.074	.109	99.687						
65	.070	.103	99.790						
66	.064	.094	99.884						
67	.054	.080	99.963						
68	.025	.037	100.000						
Extraction Method: Principal Component Analysis.									

APPENDIX G: ROTATED COMPONENT MATRIX – ITEM LOADING PER FACTOR

Rotated component matrix[a]															
	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
We strive to continually increase the recognition of the competitive intelligence profession				.669											
We respect the competitive intelligence profession				.744											
We comply with all the applicable laws, domestic and international				.747											
We disclose accurately all relevant information, including one's identity and enterprise, prior to all interviews				.769											
We fully respect all requests for confidentiality of information				.708											
We avoid conflicts of interest in fulfilling our duties				.751											
We provide honest recommendations in the execution of our duties				.761											
We promote the competitive intelligence code of ethics within our enterprise						.732									
We promote the competitive intelligence code of ethics to our third-party contractors						.745									
We promote the competitive intelligence code of ethics within the entire profession						.762									
We adhere to our enterprise's policies, objectives and guidelines						.706									
Ethics roundtables									.617						
Workshops; Seminars; Conferences; Meetings and Speeches									.612						
Education and Training									.604						
Rewards for compliance and Punishment for non-compliance									.619						
The role of Independent Communications Authority of South Africa, The Black Information Technology Forum and The Black Economic Empowerment Charter for ICT										803					
ICT codes of good practice										.820					
Collaboration between universities, government, research institutions and enterprises										.809					
South African ICT policies										.769					
Exposure to international forces												.435			
Government spending on infrastructure and growing investor confidence												.429			
Ethical leaders, managers and decision-makers												.432			
Rewards for compliance and punishments for non-compliance												.414			
Business ethics such as information ethics, corporate governance, corporate social responsibility and sustainable development		.409													
Virtues/good characters of employees e.g. integrity, honesty and humility		.744													
Ensuring that justice prevail in all decisions taken		.669													
Bad and good consequences of one's actions		.620													
Consideration of all organisational stakeholders' interests		.763													

Considerations of rules and principles that governs the community		.617														
Respect for all organisational stakeholders		.752														

Rotated component matrix[a]															
	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Clear competitive intelligence needs					.606										
Communication between decision-makers and competitive intelligence practitioners/professionals					.600										
Competitive Intelligence quality assurance					.682										
Availability of resources for competitive intelligence					.605										
Skilled competitive intelligence professionals					.672										
Formalisation of competitive intelligence process											.428				
Being a member of Strategic and Competitive Intelligence Professionals (SCIP)											.426				
The role of stakeholders e.g. shareholders, suppliers, customers, competitors, community, creditors, government, employees, and auditors	.534														
Organisational awareness and culture	.524														
Organisational policies, code of ethics and approaches/standards	.537														
Government laws/regulations	.518														
Established societal/industry/business norms	.504														
Perceived potential for customer backlash							.602								
Management support, participation and visibility							.607								
Raising ethics awareness through ethics roundtable															
Raising ethics awareness through workshops, seminars, speeches, meetings and conferences							.622								
Raising ethics awareness through education and training							.628								
The competence of the decision-makers			.778												
Decisions taken at strategic level			.787												
Decisions taken at functional level			.896												
Decisions taken at operational level			.886												
Low interest and inflation rate													.545		
Global economic growth													.540		
Ethical political leaders													.546		
Weak barrier to entry and high competition in the ICT industry								.716							
Lack of resources or infrastructure in the ICT industry								.727							
High telecommunication costs								.724							
ICT skills shortage								.750							
Self-interests and lack of care for others								.714							
Competitive intelligence budgetary constraints								.710							
Outsourcing of competitive intelligence															.709
Informal competitive intelligence process															.707

Rotated Component Matrix[a]															
	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lack of competitive intelligence expertise and experience														.788	
Global economic slowdown/recession														.800	
High interest and inflation rates														.826	
Poverty														.768	
Poor education system														.797	
Constant publication of business scandals, corruption and fraud														.785	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.															
a. Rotation converged in 11 iterations.															