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Signalling of internal audit effectiveness

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Abstract

The internal audit function is increasingly recognised as an important internal governance mechanism and consequently factors that contribute to its effectiveness are now an area of great interest to researchers and practitioners. This study draws on signalling theory to fill a gap in the internal audit effectiveness (IAE) literature by investigating which IAE signals are sent by large South African companies in their company reports. Using a self-developed IAE signalling frame, a content analysis was performed on the integrated reports and other annual reports of the top 100 listed companies in South Africa over a five-year period. Thereafter a multiple correspondence analysis was used to extract IAE signals. The results revealed that IAE disclosure patterns of South African listed companies follow the normative dictates of the King Code and the Companies Act. The study also discovered a low average IAE disclosure rate linked to non-mandatory disclosure requirements. Disclosing more detail on IAE represents a missed opportunity to signal superiority through voluntary communication of the IAE signals especially on internal aspects such as management support for internal audit recommendations and the continuous professional development of internal auditors.

Keywords: internal audit effectiveness; disclosure; signalling; multiple correspondence analysis ; content analysis

1. Introduction

Internal audit effectiveness (IAE) needs to be embedded in the internal audit function (IAF) as this function is expected to add value as an important internal corporate governance mechanism. The IAF is designed to provide independent and objective assurance to contribute to organisational efficiency and effectiveness (Gramling et al., 2004; Lenz & Hahn, 2015), by recommending improvements to the organisation's operations, risk management, control and governance processes (Dada et al., 2018; Ernst & Young, 2008; IIA, 2016a). Thus, an effective IAF should make recommendations that improve the effectiveness and efficiency of the governance, risk management and control processes in a

manner that results in improved performance (Ali, 2018). Consequently, some scholars have advocated the voluntary disclosure of the IAF's composition, responsibilities and activities (Behrend & Eulerich, 2019), with a view to enhance investor and stakeholder confidence (Holt, 2012; Subramanian & Reddy, 2012). Little is, however, known about disclosure or signalling of IAE information, a gap which this study intends to fill by investigating which IAE signals are sent by large South African companies in their company reports.

Previous studies on IAE have investigated a variety of different factors impacting on IAE, for example, organisational setting, internal audit (IA) quality of work, IA competence and proficiency, IA processes, and IA's relationship with the executive or senior management (SM) and the audit committee (AC) (Alzeban & Gwilliam, 2014; Arena & Azzone, 2009; Badara & Saidin, 2014; Cohen & Sayag, 2010; Ramanchandran et al., 2012). Other studies have delved more deeply into the relational aspects of IAE (Abuazza et al., 2015; Lenz et al., 2017; Soh & Martinov-Bennie, 2011). Some of these studies were based on Common Body of Knowledge (CBOK) data and similar surveys (D'Onza et al., 2015). In their recent synthesis of IAE literature, Turetken et al. (2020), distinguish between objectively measured IAE indicators and those based on perceptions. They categorised the objectively measured IAE indicators such as the audit plan completion rate, cost savings, and the implementation rate of audit recommendations, according to the type of activity (process, output and outcome) (Turetken et al., 2020). On the other hand, perception-based IAE indicators were categorised as falling in the supply side (internal audit self-evaluation) or the demand side (stakeholder satisfaction surveys) (Turetken et al., 2020). Indicators in these categories include whether IA evaluates and improves risk management and governance process as well as whether audit findings are aligned to established objectives (Turetken et al., 2020).

This study builds on previous studies by exploring IAE signals in company reports. This was done by consolidating IAE factors revealed in the literature into an IAE signalling frame which was used to extract signalled IAE indicators from integrated reports (IRs) and other annual reports (ARs) of large, listed South African (SA) companies between 2012 and 2016. As there is a variety of annual reports published by companies, other ARs include annual financial statements (AFS) and the governance and risk reports (GRRs).

South Africa provides an ideal setting for this study as the country is seen as being at the forefront of integrated reporting (Makiwane, 2012). The improved disclosure used in integrated reporting is in line with the South African governance code, the King Code of Corporate Governance, which recommends transparent disclosure to stakeholders (IoDSA, 2009). Listed companies are encouraged to produce IRs which use a value creation perspective to integrate social, environmental, financial and governance information (De Villiers & Alexander, 2014). IA is seen as a control mechanism that can create value by providing assurance and advisory services that increase the rate of return on capital (Roussy & Perron, 2018). Even though the King Code recommends that companies use an effective, risk-based IAF (IoDSA, 2009, 2016), there is no guidance in the Code nor in legislation on what disclosures should be made on IAE. Consequently, there is generally poor disclosure of the IAF by companies (Barac & Mdzikwa, 2016; Marx & Voogt, 2010).

This study draws on signalling theory to clarify and explain voluntary IAE disclosure in corporate reporting (Spence, 1973). Signalling theory posits that increased mandatory disclosure leads to more voluntarily disclosure of information, which in turn leads to value maximisation (expressed in the form of an entity's share price) (Dye, 1986; Sharma, 2013). Voluntary disclosure signals to investors and shareholders that the company is well governed

and that management will not exploit investments (Ntim, 2009). Investors perceive this as demonstrating value that reduces cost of capital, and they are then willing to pay a premium for the company's shares (Healy & Palepu, 2001; La Porta et al., 2002). Voluntary disclosure can also be viewed as managers' directions to investors, or signals which relate to the effectiveness of management strategies and views on future prospects (Harmadji et al., 2018). Past research has found that when listed companies' actions are transparent and they disclose internal control information, efforts to attract investment are more successful (Agyei-Mensah Ben, 2016). In light of the above discussion, this study aims to answer the following research question: *What IAE indicators are signalled in company reports?*

Three contributions emanate from this study. First, the study adds to IAE literature by developing a comprehensive IAE signalling frame. Second, the study uses multiple correspondence analysis (MCA) which is uncommon in IA research, as a dimension reduction tool to identify the underlying IAE factors. Third, the study contributes to practice: the IAE factors can assist management in their decision on whether to signal private information as part of their disclosure on best corporate governance practices.

The remainder of this article is organised as follows. The next section positions the IAE signalling frame in IAE literature. This is followed by a description of the research methodology employed in the study and the study's results. The article concludes with recommendations and presents areas for future research.

2. Positioning the IAE signalling frame in IAE literature

The Institute of Internal Auditors (IIA) (2010) defines IAE as "the degree (including quality) to which established objectives are achieved". Other scholars view IAE as the IAF making valuable recommendations in an organisation (Saud & Marchand, 2012), ensuring the IAF is fit for purpose (Mihret & Yismaw, 2007) or as a "risk-based goal-attainment concept that helps the organisation to achieve its objectives by positively influencing the quality of corporate governance" (Lenz, 2013). The latter agrees with the definition used by Lenz, Sarens and Jeppesen (2018) which implies IAE relates to objectives or goals and effects (outputs and outcomes). The literature points to a number of factors that affect IAE (Lenz & Hahn, 2015). These factors relate to some aspects of IA processes, IA resources, IA relationships and organisational setting (Lenz & Hahn, 2015). In their recent synthesis of IAE literature, Turetken et al. (2020) identified eight factors to objectively measure IAE; namely (1) percentage of fulfilling the IA plan, (2) time required to complete the IA plan, (3) recommendation implementation rate, (4) time used to issue an IA report, (5) time used to solve IA findings, (6) IA time management, (7) number of audit findings and (8) value of IA. They also found most studies (Roussy & Brivot, 2016; Sarens & De Beelde, 2006; Soh & Martinov-Bennie, 2011) regard IAE as a matter of perception (e.g., based on stakeholder satisfaction surveys or perceptions of value added by IA) (Turetken et al., 2020). Studies show a relationship between IAE and the quality of the financial reporting process (Abbott et al., 2016; Prawitt et al., 2012), suggesting that external stakeholders could benefit from IAE disclosures. Accordingly, Behrend and Eulerich (2019) call for research about the usefulness of IA related information disclosures.

Table 1: IAE factors and categories used in the IAE signalling frame

IAE factors and sub-categories		IAE Indicators comprising the IAE signalling frame	
(a) Organisational factors			
(1)	IAF status in the organisation	1	IAF profile in the organisations structure
		2	CAE position in organisation
		3	CAE educational & professional qualifications, experience
(2)	IAF structure	4	In-house IAF, co-sourced, outsourced
		5	IAF size
		6	IAF age (years since establishment)
(3)	IAF independence	7	CAE reports to AC functionally
		8	CAE reports to CEO administratively
		9	AC appoints/dismisses the CAE
		10	Unlimited scope of IAF
		11	AC approves IAF charter, plan and budget
Al-Twaijry et al., 2004; Alqudah et al., 2019; Alzeban & Gwilliam, 2014; Arena & Azzone, 2009; Badara & Saidin, 2014, Coetzee & Erasmus 2017; Endaya & Hanefah, 2016; Feizizadeh, 2012; Goodwin, 2004; IIARF, 2015; Mihret et al., 2010; Mihret & Yismaw, 2007; Ramanchandran et al., 2012; Sarens & Beelde, 2006; Soh & Martinov-Bennie, 2011; Roussy & Brivot, 2016; Temesgen & Estifanos, 2018; Turetken et al., 2020.			
(b) Relational factors			
(4)	AC support	12	Number of meetings with AC
		13	Private meetings with AC chairperson
		14	AC/SM special request for CAE
		15	AC support for IAF findings & recommendations
(5)	SM support	16	Management implements IA recommendations
		17	AC/SM encourage & co-ordinate IA-EA interaction
		18	Budgetary status & resources
(6)	IAF support to others	19	EA & IA cooperation in audits
		20	EA relies on IA work
		21	IA coordination with other parties
Abuazza, 2012; Alzeban & Gwilliam, 2014; Arena & Azzone, 2009; Chen & Lin, 2011; Coetzee & Erasmus, 2017; Cohen & Sayag, 2010; D'Onza & Sarens, 2018; Endaya & Hanefah, 2016; IIARF, 2015; Lenz et al., 2017; Mihret & Yismaw, 2007; Oussii & Klibi, 2019; Sarens & Beelde, 2006; Soh & Martinov-Bennie, 2011; Ramanchandran et al., 2012; Roussy & Brivot, 2016; Turetken et al., 2020.			
(c) IA Processes			
(7)	IAF competence	22	Internal auditor's objectivity/independence
		23	Educational, professional qualifications of internal auditors
		24	Work experience and expertise of internal auditors
		25	CPD (average hours annual training)
(8)	IAF service and roles	26	Assurance (strategic & operational)
		27	Consulting (strategic & operational)
		28	Ad hoc engagements
(9)	IAF work quality	29	Compliance with *Standards*
		30	Effective planning
		31	Risk-based audit plans
		32	Strategy aligned audit activities
		33	Unrestricted & free access to all data, data pools & activities
		34	Adoption of Control Self-Assessment techniques
		35	Quality assurance and improvement program
		35	Performance evaluation
		37	Effective communication
		38	Use of IT tools & techniques
		39	Useful findings & recommendations
		40	IA report quality

Abuazza, 2012; Al-Twaijry et al., 2004; Alqudah, et al., 2019; Alzeban & Gwilliam, 2014; Arena & Azzone, 2009; Coetzee & Erasmus, 2017; Cohen & Sayag, 2010; Endaya & Hanefah, 2016; Feizizadeh, 2012; Goodwin-Stewart & Kent, 2006; IIARF, 2015; Mahzan & Hassan, 2015; Mihret & Yismaw, 2007; Sarens & De Beelde, 2006; Shamki & Alhari, 2017; Soh & Martinov-Bennie, 2011; Spira & Page, 2003; Turetken et al., 2020.			
(d) IAE measurement			
(10)	IAE outcomes	41	Reliable financial statements
		42	Sound financial controls
		43	Auditee compliance with laws & regulations
		44	Auditee compliance with policies & procedures
		45	Recommendations implemented
		46	Reasons for non-implementation
		47	Client satisfaction
		48	Satisfaction of stakeholder-specific expectation
		49	Training ground for management positions
		50	Reduction of EA fees
		51	Cost savings
(11)	IAE output	52	Percentage of audit plan completed
		53	Budget to actual audit hours
		54	Completion of mandated coverage
Coetzee & Erasmus; 2017; Dittenhofer, 2001; Endaya & Hanefah, 2016; IIARF, 2015.			

AC = audit committee, CAE = chief audit executive, CEO = chief operating officer, CPD = continuous professional development, EA = external audit, SM = senior management

In order to achieve the purpose of the study, an analysis of current literature was undertaken to identify factors and indicators of IAE which formed the foundation of an IAE signalling frame. As part of the literature analysis both academic and professional studies of IAE factors and indictors from the last two decades were used, corresponding with the 1999 definition of IA by the IIA which linked IA with the achievement of organisational objectives (IIA, 2016a). This definition gave rise to another perspective of evaluating IAE (Arena & Azzone, 2009; Dittenhofer, 2001). The review included previous studies that synthesised IAE factors such as Lenz and Hahn (2015) and more recently Turetken et al. (2020). The search was mainly performed using databases linked to Google Scholar and only articles that related to IAE in the Accountancy discipline were considered. The results of the systematic analysis of the articles as reflected in Table 1 pointed to 54 IAE factors and indicators which were grouped into four primary categories or dimensions and 11 sub-categories. One of the challenges with IAE is the multiplicity of factors and indicators in literature. Reliance was placed on previous studies that synthesised IAE literature in order to categorise IAE factors (Lenz & Hahn 2015; Coetzee & Erasmus 2017; Turetken et al., 2020). For example, Lenz and Hahn (2015) identified broad dimensions that included factors that dealt with organisational setting, the relational and IA process aspects of IAE. IAE measurement was included by Coetzee and Erasmus (2017) and Turetken et al, (2020) as an indicator of IAE.

The four primary categories identified were a) organisational factors, b) relational factors, c) IAE processes and d) IAE measurement. Organisational factors were further grouped into IAF status in the organisation (sub-category 1), IAF structure (sub-category 2) and IAF independence (sub-category 3). Relational factors were sub-divided into senior management (SM) support (sub-category 4), audit committee (AC) support (sub-category 5) and IAF support provided to others (sub-category 6). IAE processes were further grouped into IAF competence (sub-category 7), IAF service and roles (sub- category 8) and IAF work quality (sub-category 9). IAE measurement was sub-divided into IAE outcome (sub-category 10) and IAE output (sub-category 11).

Table 1 presents the four factors (a-d) with the 11 sub-categories (1-11) (column 1) and shows 54 IAE indicators identified from IAE literature (column 2). The 54 indicators were used as the IAE signalling frame to guide the content analysis of this study.

2.1. Organisational factors

Organisational settings have been found to have a significant impact on IAE. These indicators include prevailing organisational dynamics that determine the IAFs status, structure and independence. The IAF status in the organisation's structure is determined by the IAF profile (Alzeban & Gwilliam, 2014; Mihret et al., 2010; Mihret & Yismaw, 2007; Soh & Martinov-Bennie, 2011) and the chief audit executive (CAE) position (leadership) in the organisation (Coetzee & Erasmus, 2017). IAF structure, whether the IAF is an in-house institution or is out-sourced or co-sourced (Feizizadeh, 2012; Goodwin, 2004; Soh & Martinov-Bennie, 2011), and size and age of the IAF (Alzeban & Gwilliam, 2014; Al-Twaijry et al., 2004; Arena & Azzone, 2009; Goodwin, 2004; Ramanchandran et al., 2012) were also found to impact IAE. Indicators relating to the independence of the IA such as reporting lines of the IAF within the organisation (Abuazza, 2012; Aksoy & Bozkus, 2012; Al-Twaijry et al., 2003; Soh & Martinov-Bennie, 2011), the appointment and dismissal of the CAE (Alzeban & Gwilliam, 2014) and the number of meetings with the AC (Arena & Azzone, 2009; Cohen & Sayag, 2010; IIA, 2011; Ramanchandran et al., 2012; Soh & Martinov-Bennie, 2011) also serve as indicators. Private meetings with the chair of the AC (Alzeban & Gwilliam, 2014; Soh & Martinov-Bennie, 2011), approval of the IA charter, plan and budget and performance review by the AC (Arena & Azzone, 2009; Badara & Saidin, 2013; IIA, 2015; Ramanchandran et al., 2012; Soh & Martinov-Bennie, 2011; Van Gansberghe, 2005) are further organisational indicators.

2.2. Relational factors

The relationship between IAE and the AC as one of the main customers of IA services has been the subject of a number of studies (Aksoy & Bozkus, 2012; Al-Twaijry et al., 2003; Alzeban & Sawan, 2015; Arena & Azzone, 2009; Lenz et al., 2017; Sarens & De Beelde, 2006; Soh & Martinov-Bennie, 2011). Some of the relational indicators identified as crucial for IAE are AC support, including AC support for IAF findings (Alzeban & Sawan, 2015; Sarens & De Beelde, 2006; Soh & Martinov-Bennie, 2011), implementation by management of IA recommendations (Endaya & Hanefah, 2016; Roussy & Brivot, 2016), encouragement and co-ordination of the interaction between IA and the EA (external audit) (Alzeban & Gwilliam, 2014), and IA invitation to meetings (Cohen & Sayag, 2010; Endaya & Hanefah, 2016; Ramanchandran et al., 2012; Soh & Martinov-Bennie, 2011). IAE has also been associated with the value that IAF brings by supporting other assurance providers, both internal and external. Thus, IA co-operation with EA (IIARF, 2015), the reliance of EA on work performed by IA and the sharing of working papers are considered to be indicators of an effective IAF (Alzeban & Gwilliam, 2014). Another telling factor serving as an indicator of IAE is the support that IA gives internal assurance providers like risk management.

Senior management (SM) support has been discovered to be one of the most important determinants of IAE. As an advisory service to management, IA requires their support in providing resources and access to the information they need to perform their function, (Mahzan & Hassan, 2015; Roussy & Brivot, 2016). It comes as no surprise, therefore, that management support features as an important indicator in IAE research (Abuazza, 2012;

Alzeban & Gwilliam, 2014; Endaya & Hanefah, 2016; Lenz et al., 2017; Mihret & Yismaw, 2007; Sarens & De Beelde, 2006).

2.3. IA processes

The quality of the IAF's work is influenced by organisational setting and IA process. Compliance with the IPPF, risk-based approach to auditing, communication and report quality, scope of the work and due professional care (Abuazza, 2012; Al-Twaijry et al., 2003; Arena & Azzone, 2009; Dittenhofer, 2001; Mihret & Yismaw, 2007) are features of IA work quality that are considered to add value. The quality of IA staff is considered essential for IAE. The competence of individual IA staff members has long been advanced as an important indicator in IAE (Al-Twaijry et al., 2003; Arena & Azzone, 2009). Competence includes the educational and technical skills and the experience required to perform a function effectively. A number of studies have highlighted professional qualifications, experience, education and training (Alzeban & Gwilliam, 2014; Endaya & Hanefah, 2016; Coetzee & Erasmus, 2017; Turetken et al., 2020). Other aspects of staff quality concern the individual characteristics of the internal auditors. These include their professionalism, objectivity and independence (Abuazza, 2012; Al-Twaijry et al., 2003; 1988; Alzeban & Gwilliam, 2014; Arena & Azzone, 2009; Coetzee & Erasmus, 2017; Mihret & Yismaw, 2007; Soh & Martinov-Bennie, 2011. Furthermore, IAE can be viewed from the perspective of the typical services they offer and the role they play in the governance, risk and control arena in line with the internal auditing definition (Coetzee & Erasmus, 2017; Dittenhofer, 2001).

2.4. IAE measurement

IAE is advocated as a function that advances organisational objectives and goals. Since organisational objectives are context-bound, methods of evaluating IAE are varied. A distinction is drawn between output-related measures such as percentage of completed work, budget-to-actual audit hours, work plan completion and outcome-related measures such as the implementation of IAF recommendations, auditee compliance and client satisfaction (Coetzee & Erasmus; 2017; Dittenhofer, 2001; Endaya & Hanefah, 2016; IIARF, 2015). IAE is also evaluated from the perspective of different stakeholders or customers of IA services. These include the AC, SM, EA and self-assessment by the IAF. Various instruments are therefore used; these include perceptual and objective measures of performance, mostly in a form of a balanced scorecard (BSC) (IIA, 2010).

3. Research methodology

The study uses a quantitative approach and was conducted in two phases. The first phase involved an a priori content analysis[1] to generate a dataset of IAE disclosures by populating the IAE signalling frame in Table 1. The second phase used MCA to reduce the data and identify signalled IAE factors. The phases are described in detail below.

3.1. Sample description

By investigating which IAE signals are send by large SA companies in their IRs and other ARs, this study used the top 100 JSE-listed companies as at 31 December 2016 (based on market capitalisation) as the population, and data on the performance of these companies was collected for the five year period 2012 to 2016. Survivorship bias was necessarily considered in this study as the top 100 JSE-listed companies changes from year to year. Survivorship

bias occurs when a historical study includes only surviving objects in the dataset instead of the complete dataset for the period under review (Gilbert & Strugnell, 2010). This may lead to wrong conclusions especially when evaluating performance over a period of time as the structure of the delisted companies may be different from that of the surviving ones. No top 100 companies were liquidated during the period under review. During the period under review a few mergers occurred, predominantly in the realty sector, and some mining companies dropped out of the top 100 as a result of a decline in international commodity prices (Bellmann & Hepburn, 2017) and prolonged industrial action locally (Bohlmann et al., 2015). At least one company was placed under curatorship during this period, and another was found to be riddled with accounting irregularities (Butters, 2019), but all were still trading as at 31 December 2016. Eleven companies, including the two mentioned above were excluded as a result of lack of information for most of the periods under review. Data were thus collected from a sample of 89 companies that maintained their listings for the period 2012 to 2016.

3.2. Reliability and validity

The study used IRs and other ARs obtained from company websites. These documents are considered to be trustworthy (Catasús, 2008; Chau & Gray, 2010) as they fulfil regulatory and statutory requirements, and form part of the main communication effort with external stakeholders. A coding key which defined the words and phrases linked to each IAE indicator was developed and used by the researcher to ensure validity of the data collection during content analysis. In this study reliability and validity were ensured through the widely used method of inter-coder checking (Kavitha and Nandagopal, 2011). The study was coded by one of the authors however, all authors were involved at the pilot stage to establish a common understanding of the coding key and at the end of the data collection process in verifying the results on a sample basis. The validity of the MCA can be evaluated by different complimentary matrices (Rodriguez-Sabate et al., 2017). These include the inertia (relative and accumulated) and eigenvalues and they are discussed in section 3.4.

3.3. Phase 1: Content analysis

Content analysis is a preferred method to collect data from text sources such as the IRs or other ARs (Babbie, 2013) and has been used on numerous occasions by SA researchers (Mans-Kemp et al., 2016; Ntim, 2009; Ntim et al., 2012). The study's primary documents for analysis were the IRs and other ARs (AFS and GRRs) of the participating companies. The list of IAE indicators (

) formed the basis of the IAE signalling frame which facilitated the systematic coding of data obtained through content analysis of IRs (the main unit of observation) and other ARs. The content analysis was performed at a single word or key phrase level emanating from IAE literature (Barac & Moloi, 2010; Mans-Kemp, 2014). The initial key words used included: internal audit, internal and external audit, combined assurance, assurance, findings, recommendations, opinion, complaints, non-compliance, fines, penalty/penalties, meetings, and satisfied.

A coding key which forms part of the IAE signalling frame was developed to provide an explanation of what information was coded for each IAE indicator to ensure that words, phrases and sentences were coded correctly and consistently. Irrelevant information yielded by the key-word search was discarded and not coded. A dichotomous scoring procedure was

followed in which the presence or absence of disclosure was recorded by scoring each of the 54 IAE indicators (coded 1 to 54) as 0 (for non-disclosure) or 1 (for disclosure). Thus, the existence of disclosure was measured, but this did not necessarily signify the quality of disclosures (Kavitha & Nandagopal, 2011). The 54 indicators scored using the IAE signalling frame were consolidated in an Excel worksheet, one per company and one row per year, and with 54 columns, one for results of each of the IAE indicators.

3.4. Phase 2: Multiple correspondence analysis

Phase 2 of the study used MCA, a multivariate graphical technique designed to investigate relationships among multiple variables while preserving the categorical nature of the variables (Sourial et al., 2010). MCA has the ability to transform complicated tables into simple graphical presentations of analysis tables with three or more categorical variables[2] (Hoffman & Franke, 1986). This technique is suitable for the current study as the content analysis of IRs and other ARs produced a very large matrix of categorical, binary data ((0) for non-disclosure and (1) for disclosure of IAE indicators). MCA is an extension of correspondence analysis (CA), an exploratory technique widely used to analyse large contingency tables and multivariate categorical data (Hoffman & Franke, 1986) or binary data (McGillivray et al., 2008). It uses optimal scaling, a technique that converts qualitative variables into quantitative variables by assigning numerical scales to categories based on some optimising criteria. MCA, as CA, is used for the analysis of categorical variables because it is conducted at the level of response categories (Sourial et al., 2010). MCA is similar to "the decomposition of a bivariate correlation matrix in Principal Component Analysis" (PCA) or factor analysis (Sourial et al., 2010).

MCA comprises two steps. The first step is to determine whether the rows and columns are significantly dependent. This is done by examining the eigenvalue report. It discloses the trace (the sum of eigenvalues) (Bendixen, 2003) which is interpreted as a correlation co-efficient between the rows and columns. The sum of the eigenvalues is equal to the trace. "The ratio of the eigenvalue of any axis to the trace represents the proportion of the total inertia (or *chi*-square value) explained by that axis" (Bendixen, 2003, p. 7). "As a rule of thumb, any value of this correlation co-efficient in excess of 0.2 indicates significant dependency" (Bendixen, 2003, p. 7). Large discrimination measures (dimension loadings) denote a high degree of discrimination between the categories of a variable along that dimension. Dimension loadings of 0.5 and above indicate clear discrimination (Costa et al., 2013). The second step is to use accumulated inertia as an indicator of the appropriate number of dimensions (Rodriguez-Sabate et al., 2017).

Inertia accounts for the variance explained by the dimensions and is defined as "the weighted sum of the squared *chi*-square distance between each row profile and the average row profile" (Sourial et al., 2010, p. 5). It is inertia that assists the determination of how well a dimension explains the movement or variance in the data (Husson & Josse, 2014). The dimensions are ranked in descending order in terms of the eigenvalues where the largest contributor is named Dimension 1 and the next Dimension 2 and so on to the smallest contributor at the bottom of the table (Rodriguez-Sabate et al., 2017, p. 7). Since the aim of MCA is data reduction, inertia helps determining which dimensions retain most of the information on a lower dimensional space and should therefore be retained (Bendixen, 2003; Rodriguez-Sabate et al., 2017).

A number of considerations are made when defining the number of dimensions to retain. There is no established rule regarding the number of dimensions to be retained but it is generally recommended that a two-dimensional picture of the data be retained in order to facilitate interpretation of data (Costa et al., 2013). Higgs (1991) suggests a value of 70% for variance explained for marketing-related research. This is considered appropriate where actual responses to perceptual questions were obtained from respondents. Since this study presents patterns of IAE disclosure based on a content analysis of IRs and other ARs and not actual responses from respondents, a lower threshold was considered acceptable. Various studies have employed a combination of measures in addition to the cumulative inertia to determine whether to retain a dimension or not. These include scree test (Costa et al., 2013; Rodriguez-Sabate et al., 2017; Sourial et al., 2010), eigenvalues above 0.2 (Costa et al., 2013; Rodriguez-Sabate et al., 2017; Sourial et al., 2010) and two-dimensional pictures of data (Costa et al., 2013; Fithian & Josse, 2017; Higgs, 1991; Rodriguez-Sabate et al., 2017; Sourial et al., 2010).

In this study, dimensions were retained as factors based on eigenvalues above 0.2 and where cumulative inertia was explained by the indicators in the dimension. Therefore, all dimensions with eigenvalues above 0.2 that explained at least 40% of the variation in the data in a category (cumulative inertia was recognised at 40% and above) were retained.

4. Results and discussion

Results for the two phases of the study are reported as follows.

4.1. Phase 1: Content analysis

The content analysis populated the 54 IAE indicators in the IAE signalling frame (Table 1) to construct an unweighted, dichotomous IAE assessment using information contained in IRs and other ARs. A code of 1 was allocated for disclosure and 0 for no disclosure, resulting in a large multiway frequency table. Table 2 contains a breakdown of descriptive statistics of the 54 indicators obtained from the content analysis for the 89 companies over five years. However, one company only began trading in 2012 and therefore had only four years' data available: thus, firm-year observations amounted to 444. The frequencies in Table 2 are presented numerically and as percentages for the 1 code.

Table 2 shows that frequencies of IAE indicators varied. The indicators that scored the highest were (41) reliable financial statements (n=442; 99.55%), (4) in-house IAF, co-sourced, outsourced (n=434; 97.75%), (26) assurance services (n=411; 92.57%), (12) meetings with the AC (n=378; 85.14%) and (42) sound financial controls (n=368; 82.88%). These were followed by (9) AC approves IAF charter, plan and budget (n=335; 75.45%), (7) CAE reports functionally to the AC (n=319; 71.85%), (22) internal auditors' objectivity/independence (n=292; 65.77%), (31) risk-based audit plans (n=287; 64.64%), (17) AC/SM encourage and co-ordinate IA and EA interaction (n=276; 62.16%) and (13) AC support for IAF findings and recommendations (n=268; 60.36%). The following indicators had a zero frequency, meaning that they did not score at all: (45) recommendations implemented, (46) reasons for non-implementation, (50) reduction of EA fees and (53) budget to actual audit hours. These indicators were later excluded in the MCA as they are constants and therefore not considered to be observations (Agresti, 2013). Indicators that scored very low included indicators (6) IAF Age (n=1; 0.23%), (48) satisfaction of stakeholder-specific expectations (n=2; 0.45%), (49) IAF as a training ground for

management positions (n=2; 0.45%), (51) cost savings (n=4; 0.90%), (52) percentage of audit plan completed (n=5; 1.13%) and (39) IAF adoption of control self-assessment (CSA) techniques (n=6; 1.35%).

Table 2: Descriptive statistics of IAE indicators

	Indicators	1 = Disclosure	
		Frequency	%
1	IAF profile in the organisation's structure***	129	29.05%
2	CAE position in organisation***	126	28.38%
3	CAE educational and professional qualifications, experience***	27	6.08%
4	In-house IAF, co-sourced, outsourced**	434	97.75%
5	IAF size***	8	1.80%
6	IAF age***	1	0.23%
7	CAE reports functionally to the AC**	319	71.85%
8	CAE reports administratively to the CEO**	157	35.36%
9	AC approves IAF charter, plan and budget**	335	75.45%
10	AC appoints/dismisses the CAE**	110	24.77%
11	IAF's unlimited scope***	62	13.96%
12	Meetings with AC**	378	85.14%
13	AC support for IAF findings and recommendations***	268	60.36%
14	Private meetings with AC chairperson	258	58.11%
15	AC/SM special request for CAE***	27	6.08%
16	Management implements IA recommendations	210	47.30%
17	AC/SM encourage and co-ordinate IA and EA interaction**	276	62.16%
18	Budgetary status and resources**	140	31.53%
19	EA and IAF cooperation**	210	47.30%
20	EA relies on IA work***	133	29.95%
21	Coordination with other parties**	233	52.48%
22	Internal auditors' objectivity/independence**	292	65.77
23	Educational, professional qualifications of internal auditors***	49	11.04
24	Work experience and expertise of internal auditors***	80	18.02
25	CPD***	11	2.48
26	Assurance (strategic and operational/risk and control) services**	411	92.57%
27	Consulting (strategic and operational) and IT**	261	58.78%
28	Ad hoc engagements**	112	25.23%
29	Compliance with the *Standards***	105	23.65%
30	Effective planning***	22	4.95%
31	Risk-based audit plans**	287	64.64%
32	Strategy-aligned audit activities**	148	33.33%
33	Unrestricted and free access to all data, data pools and activities***	71	15.99%
34	QAIP**	111	25.00%
35	Performance measurement**	257	57.88%

36	Use of IT tools and techniques***	40	9.01%
37	Useful findings and recommendations**	253	56.98%
38	IA report quality***	20	4.50%
	Indicators	**1 = Disclosure**	
		Frequency	**%**
39	Adoption of CSA techniques***	6	1.35%
40	Effective communication***	9	2.03%
41	Reliable financial statements*	442	99.55%
42	Sound financial controls***	368	82.88%
43	Auditee compliance with laws and regulations**	164	36.94%
44	Auditee compliance with policies and procedures***	14	3.15%
45	Recommendations implemented***	0	0.00%
46	Reasons for non-implementation***	0	0.00%
47	Client satisfaction***	97	21.85%
48	Satisfaction of stakeholder-specific expectations***	2	0.45%
49	Training ground for management positions***	2	0.45%
50	Reduction of EA fees***	0	0.00%
51	Cost savings***	4	0.90%
52	Percentage of audit plan completed***	5	1.13%
53	Budget to actual audit hours***	0	0.00%
54	Completion of mandated coverage***	94	21.17%

Key descriptions: *- disclosure in terms of the South African Companies Act (RSA, 2008); **- disclosure in terms of the JSE listing requirements (JSE, 2014); *** - non-mandatory disclosures

The overall disclosure percentage was calculated as the sum of actual disclosure frequency percentages for all 54 indicators, divided by the total possible disclosure percentage score (54 IAE indicators x 100%). The results show an overall disclosure percentage of 31.62%, which shows limited IAE signals are sent by large South African companies in their company reports. This is in line with the limited disclosure of IAE indicators noted by prior research. For instance, Barac and Mdzikwa (2016) analysed the content of annual reports in order to find attributes associated with the independence of the IAF, and found limited disclosure thereof in the ARs. The limited disclosure regarding the IAF was attributed to the lack of legislative requirements to disclose the IA independence-related attributes in question. Similarly, Marx and Voogt (2010) found little disclosure in the company ARs on the ACs' discharge of their functions in relation to the IAF. From a signalling theory perspective, the poor disclosure of IAE indicators shows that participating companies did not take the opportunity to reveal their (operational) superiority through voluntary disclosure (Campbell et al., 2001).

The IAE signalling frame contains indicators which are mandatory in terms of the South African Companies Act (SA, 2008) and/or JSE listing requirements (JSE, 2014), plus others which are not mandatory. The results of the content analysis were mixed but favoured mandatory IAE indicators (average disclosure rate of 25.28%), as opposed to 6.33% for non-mandatory disclosure IAE indicators. For instance, the disclosure of the reliability of financial statements follows the well-established statutory requirement contained in the South African Companies Act for an annual audit of company financial statements, and the issue that the audit report be prepared by a registered auditor (SA, 2008). Similarly, directors are

required to issue a declaration pertaining to the state of internal and financial controls of the company (SA, 2008). As expected, reliable financial statements, based on the external auditors' unqualified reports, scored the highest (99.55%), followed by sound financial controls (82.88%). Both have been identified as an outcome measure of IAE (Dittenhofer, 2001; Endaya & Hanefah, 2016). IAE indicators which were related to the JSE listing requirements also enjoyed higher disclosure. Non-mandatory IAE indicators, although appreciated as IAE enablers (such as educational, professional qualifications (11.04%), and experience and expertise of internal auditors (18.02%), were seldom disclosed as IAE indicators (refer to Table 2 and its key descriptions).

The relationship between the JSE listing requirements and the King Code is of interest in explaining the IAE disclosures discovered in the IRs. The King Code applicable to the period under review (2012–2016) is the third King Report on Corporate Governance (hereafter referred to as King III), and a predecessor to King IV, which came into effect on 1 April 2017 (IoDSA, 2009). Paragraph 8.63(a)(i) of the JSE listing requirements stipulates that listed companies should supply a narrative statement of compliance with King III, providing sufficient information to allow shareholders to make an informed decision on whether principles espoused by King III have been applied by the company. In addition, paragraph 8.63(a)(ii) requires that an explanation be given in instances of non-applicability and a statement of the period of such non-applicability of King III (JSE, 2014).

While companies are required to "apply or explain" adherence to all the 75 principles of King III, paragraph 3.84(a)–(j) of the JSE listing requirements makes certain specific principles and their disclosure mandatory for companies listed on the JSE's main board (JSE, 2014). These comprise principles on board appointments and composition (a–b), board independence (c), board subcommittees (e–f), executive financial directors (g–h), and the company secretary (i–j) (JSE, 2014). These principles essentially reflect what is contained in Chapter 2 of King III, which specifically deals with the board of directors (Deloitte, 2017; IoDSA, 2009, 2016). Consequently, the JSE assents to the recommendation of the Code that a summary of the application of the principles contained in Chapter 2 of King III should be disclosed in the IR or the AR (JSE, 2014).

King III advances IA as a governance mechanism, and the need for its effectiveness is expressed in Principle 2.10, which states that the "board should ensure that there is an effective risk-based internal audit" (IoDSA, 2009, p. 23). Some of the disclosures that are linked to King III are those that deal with Principle 2.10: IAF structure ((4) in-house IAF, co-sourced, outsourced), IA process ((31) risk-based audit plans); Principle 7.1: IAF role and service ((26) assurance services, (27) consulting services); Principles 7.4 and 7.5 IAF: independence ((7) CAE reports functionally to the AC, (22) internal auditors' objectivity/independence); AC oversight and support ((12) meetings with the AC, (11) scope and resources, (9) AC approves IAF charter, plan and budget, (35) performance evaluation), and relational factors (combined assurance) ((17) AC/SM encourage and co-ordinate IA and EA interaction, (21) IAF coordination with other parties).

Some IAE measurement-related indicators (outcome and output) did not score at all, and others scored very low. The zero scoring indicators were (45) recommendations implemented, (46) reasons for non-implementation, (50) reduction of EA fees and (53) budget to actual audit hours. While this information is of importance to IA's internal stakeholders including management and the AC who have a vested interest in the value derived from the IA, such information is not disclosed to external stakeholders of the

company. Similarly, (6) IAF age, (48) satisfaction of stakeholder-specific expectations, (49) IAF as a training ground for management positions, (39) IAF adoption of CSA techniques, (51) cost savings, and (52) percentage of audit plan completed, were rarely disclosed. IAE indicators that are connected to outside governance indicators were better disclosed as they involve external stakeholders. But the bulk of the internal IAE indicators are not disclosed as the internal stakeholders already have knowledge of the position and therefore no marginal benefit is expected from disclosing those internal indicators of IAE (Abhayawansa & Abeysekera, 2009). Be that as it may, the poor disclosure of these IAE indicators is recognised as a missed opportunity for the companies in that voluntary disclosure would have disclosed their (operational) superiority (Campbell et al., 2001).

4.2. Phase 2: Multiple correspondence analysis

The result of phase 1 of the research process was a multi-way table (matrix) presenting sampled companies and 54 indicators scored as 1 or 0. Based on the literature, the 54 indicators representing IAE were grouped into four categories and eleven sub-categories, with the latter being subjected to MCA dimension reduction. The indicators that load heavily on one dimension are considered homogeneous and therefore belong to the same sub-category. As previously noted, four indicators were constant variables with a zero disclosure and were excluded. This resulted in 50 indicators being subjected to MCA using optimal scaling in the SPSS Statistics Software (as explained above in section 3.4). Tables 3 to 6 present a summary of the results per category. The first column presents the four categories of IAE derived from the literature on IAE indicators, and the second column presents these in eleven sub-categories. The next column gives the 50 indicators used in content analysis. Then the dimensions (one, two or even three) extracted from the MCA are presented with the loading for each item in the dimension. The next column gives the cumulative inertia or amount of variance explained by dimensions in the sub-category. The final column provides the names of the retained dimensions as IAE disclosed factors. The names are derived from the IAE indicators in each dimension. Figures 1 to 11 present the discrimination measures represented by the length and steepness of the lines for the dimensions extracted for the eleven sub-categories.

Table 3 shows the eigenvalues of organisational factors are above the threshold of 0.2 (Bendixen, 2003), ranging from 0.976 to 1.698: thus, all dimensions that were extracted are retained for each sub-category.

4.2.1. Internal audit function status in the organisation

For this sub-category, the signalling frame included indicators on the IAF profile in the organisational structure, the CAE position in the organisation and CAE educational and professional qualifications/experience. Table 3 and Figure 1 show that two dimensions were identified from the extraction. The first related to the IAF profile (its reporting lines) (0.474) and qualifications of the CAE (0.502), with the latter being the highest contributor (greater than 0.5) while the second comprised the CAE's position in the organisation (0.636). The two extracted dimensions related to this sub-category explained 76.66% of the variance in the data. Noteworthy is the item CAE position in the organisation which, while having the largest loading in dimension 1, made no contribution in dimension 2. This suggests that the disclosure of the CAE position lies in a different dimension from that of the other indicators. This is further illustrated in the chart (Figure 1).

Table 3 MCA results - Organisational factors

Category	Sub-category	IAE signalling frame indicators	Dimension 1 loading	Dimension 2 loading	Eigenvalue	Cumulative Inertia % (Variance explained)	Dimensions Retained (IAE signalled factors)
(1) Organisational factors	1 IAF status in the organisation	IAF profile in the organisations structure		0.474	0.976	76.66%	(1) IAF status
		CAE educational and professional qualifications/experience		0.502			
		The CAE position in organisation	0.636		1.324		(2) CAE position
	2. IAF structure	In-sourced, out-sourced or co-sourced	0.483		1.021	67.47%	(3) IAF structure
		IAF size	0.535				
		IAF Age		0.801	1.004		(4) IAF Age
	3. IAF independence	CAE reports functionally to the AC	0.576		1.698	56.02%	(5) CAE reporting lines
		CAE reports administratively to the CEO	0.491				
		The AC approves the IAF charter, plan and budget	0.349				
		The AC appoints and dismisses the CAE		0.464	1.103		(6) AC oversight
		IAFs unlimited scope		0.269			

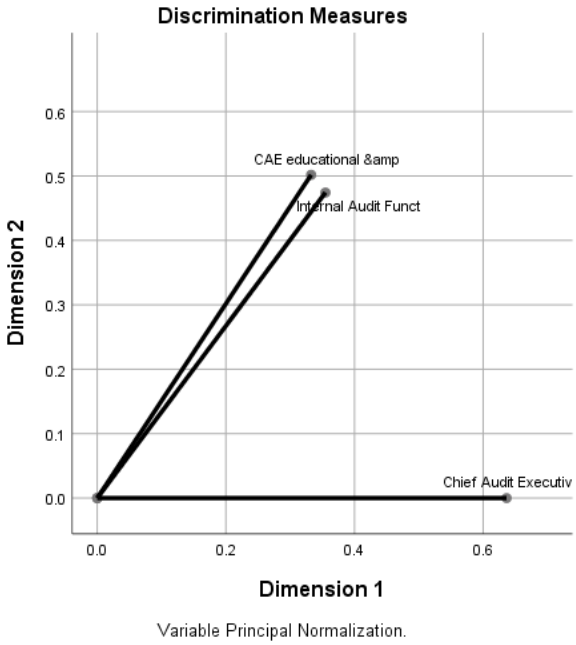

Figure 1. IAF status.

Figure 1 depicts the two dimensions. Dimension 1, labelled CAE position (2), comprises a single item, namely CAE position (0.636), while dimension 2, termed IAF status (1), comprises two indicators, namely IAF profile and CAE educational and professional qualifications/experience. The IAF profile dimension (reporting lines and CAE qualification and experience) has been identified in the literature as a driver of IAE. For example, Coetzee and Erasmus (2017) found that the CAE leadership, defined in terms of competence (educational and professional qualifications and IIA membership) and administrative reporting line, is an important driver of IAE. CAE position has been identified as an important factor in ensuring the independence of the IAF (Soh & Martinov-Bennie, 2011).

4.2.2. Internal audit function structure

For this sub-category, the signalling frame included the IAF size, age and the question of whether it is in-sourced, out-sourced or co-sourced. Table 3 and Figure 2 indicate that two dimensions were extracted. The first dimension related to the sourcing particulars of the IAF (0.483) and its size (0.535), while the second concerned its age (0.801). The two extracted dimensions related to this sub-category, explain 67.47% of the variance in the data.

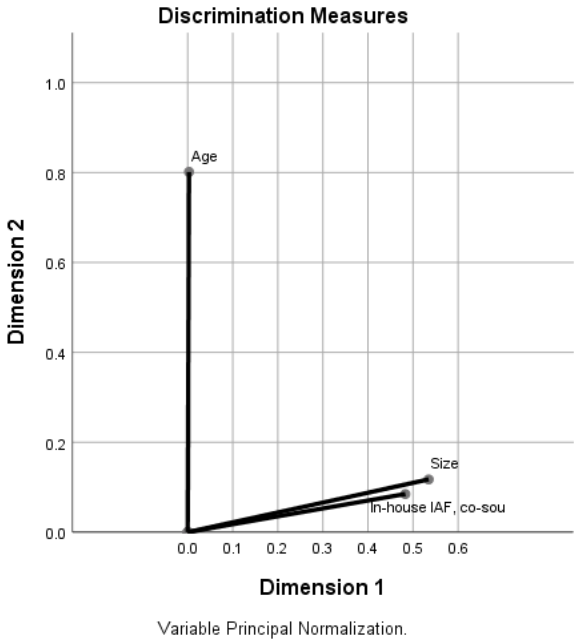

Figure 2. IAF structure.

Figure 2 shows that IAF age, with a high discrimination (0.801), falls into a different dimension from the other two indicators. Therefore, IAF age (4) is retained as a dimension of IAE while the other two indicators are consolidated into a new variable called IAF structure. IAF structure (3), consist of two indicators - the IAF size and whether the IAF was in-house, out-sourced or co-sourced. This is in line with previous research which showed management's preference for in-house IAFs while still recognising its limitation (Erasmus & Coetzee, 2009; Soh & Martinov-Bennie, 2011). Past research has found that the older and bigger the IAF, the more capacity and expertise it has, which is reflected in its competence (Abdolmohammadi et al., 2006; Sarens & Abdolmohammadi, 2007; Zain et al., 2006); these factors have been used by external auditors to evaluate IAE (Arena & Azzone, 2009; Zain et al., 2015*)*.

4.2.3. Internal audit function independence

For this sub-category, the indicators examined were whether the CAE reports functionally to the AC, whether the CAE reports administratively to the CEO, whether the AC appoints or dismisses the CAE, and whether the AC approves the IAF's charter, plan and budget, and whether the IAF enjoys unlimited scope. The results identify two dimensions (dimension 1 and dimension 2), that explain 56.02% of the variance in this sub-category. CAE reports to AC functionally and CAE reports to CEO administratively score high at 0.576 and 0.491 respectively in dimension 1, while AC approves IAF charter plan and budget scored 0.349. This dimension is named CAE reporting lines. Dimension 2, known as AC oversight, has AC appoints or dismisses CAE (0.464) and the IAF's unlimited scope (0.269) as indicators.

Figure 3 graphically illustrates that the indicators that make up the sub-category IAF independence fall into two dimensions. Indicators relating to CAE reporting lines are close together while indicators associated with AC oversight, i.e. AC appoints or dismisses the CAE and unlimited scope of IAF, are further apart from CAE reporting lines. CAE reporting

lines have been advocated as important indicators of IAF independence, a necessary factor in IAE (Al-Twaijry et al., 2004; Soh & Martinov-Bennie, 2011; Tušek & Pokrovac, 2012). IAE is resource-dependent (Ramanchandran et al., 2012) and therefore the approval of the IAF charter, plan and budget by the AC helps to ensure that necessary resources will be available to allow the IAF to fulfil its mandate. In dimension 2, referred to as AC oversight, AC appoints/dismisses the CAE contributes more to defining the dimension than the unlimited scope of the IAF. The scope of the IAF's work could also be governed by the charter.

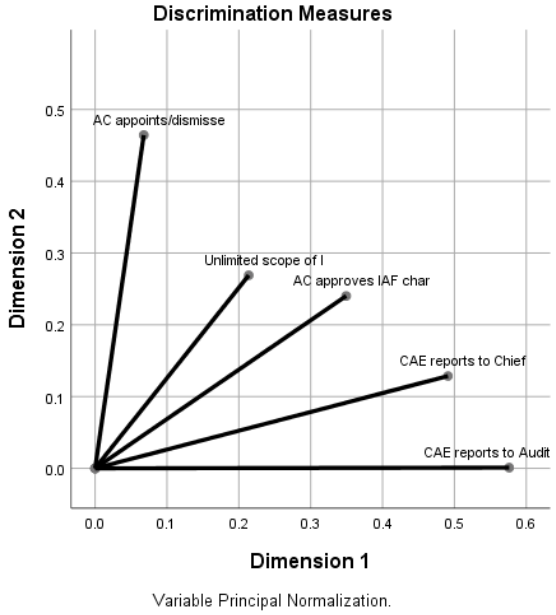

Figure 3. IAF independence.

Table 4 shows the eigenvalues of relational factors are above the threshold of 0.2 (Bendixen, 2003), ranging from 1.028 to 2.060: thus, all dimensions that were extracted were retained for each sub-category.

4.2.4. Audit committee support

The relationship between the IAF and the AC was examined next. This sub-category consists of the support given to findings or recommendations of the IAF by the AC, the number of meetings with the AC, private meetings with the AC chairperson and special requests by the AC for the CAE/IAF. The indicators fall into two dimensions which account for most of the variance at 64.48%. Table 4 and Figure 4 detail the discrimination measures for indicators in the two dimensions.

Table 4 MCA results –Relational Factors

Category	Sub-category	IAE signalling frame indicators	Dimension 1 loading	Dimension 2 loading	Eigenvalue	Cumulative Inertia (%) (Variance explained)	Dimensions Retained (IAE signalled factors)
(2) Relational factors	4. Audit Committee (AC) support	Meetings with AC	0.572		1.551	64.48%	(7) AC support
		AC support for IAF findings and recommendations	0.537				
		Private meetings with AC chairperson		0.396	1.028		(8) AC chair-CAE relations
		AC/SM special request for CAE		0.545			
	5. Senior Management (SM) Support	Management implements IA recommendations	0.442		1.391	46.37%	(9) SM support
		AC/SM encourage and coordinate IA-EA interaction	0.320				
		Budgetary status and resources	0.629				
	6. IAF support to others	EA and IAF cooperation	0.736		2.060	68.67%	(10) Assurance partner relations
		EA reliance on IAF	0.741				
		IAF coordination with others	0.583				

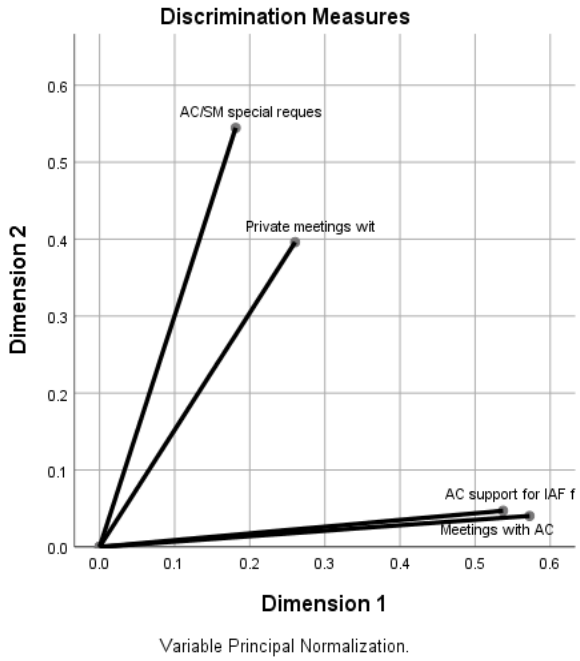

Figure 4. AC relations.

Figure 4 shows dimension 1, known as AC support (7), represented by meetings with AC (0.572) and AC support for IAF findings and recommendations (0.537). Dimension 2 which consists of private meetings with AC chairperson (0.396) and AC/SM special request for CAE (0.545), and is called AC chair-CAE relations (8). Previous studies have shown how important implementing recommendations is for IAE (Endaya & Hanefah, 2016; Van Gansberghe, 2005), while others have found that IAE is influenced by the frequency of the meetings between the AC and the CAE (Alzeban & Sawan, 2015). Zaman and Sarens (2013) found the occurrence of informal meetings between the CAE and the AC chair to be positively related to IA quality, an aspect of IAE that confirms the importance of the role of the AC chair.

4.2.5. Senior management support

The sub-category SM support includes the three indicators management implements IA recommendations; AC or SM encourage and coordinate internal and external auditor interaction, and budgetary status and resources. These indicators fall into a single dimension which explains 46.37% of the variance in this sub-category.

Figure 5 shows that all indicators under SM support are grouped along a single dimension. This is in line with previous research, which identified SM support as one of the most important factors impacting IAE (Endaya & Hanefah, 2016; Lenz & Hahn, 2015; Mihret & Yismaw, 2007; Sarens & De Beelde, 2006).

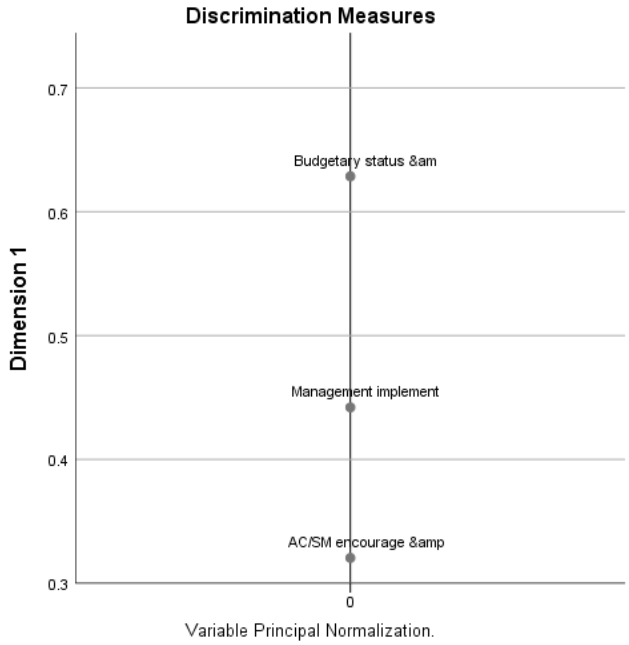

Figure 5. SM support.

4.2.6. Internal audit function support to others

Indicators relating to the relationship between the IAF and other assurance providers servicing the organisation was examined next. This is represented by EA and IAF coordination (0.741), EA reliance on IAF (0.736) and IAF coordination with other assurance providers (0.583) who are part of the combined assurance model. The discrimination measures are high (0.741, 0.736 & 0.583), indicating a high degree of discrimination between the indicators of the variable along the dimension. These indicators fall into a single dimension which explains 68.67% of the variance.

Figure 6 shows that all indicators under IAF support to others are grouped along a single dimension. This suggests that the indicators IAF coordination, EA reliance on IAF, and IAF coordination with other assurance providers, can be considered as a single dimension which is named assurance partner relations (10). This is in line with previous research, which found that IAE is impacted by frequency of meetings with external auditors, cooperation in audits and the sharing of information (Abuazza, 2012; Alzeban & Gwilliam, 2014; Cohen & Sayag, 2010; Endaya & Hanefah, 2016; Soh & Martinov-Bennie, 2011).

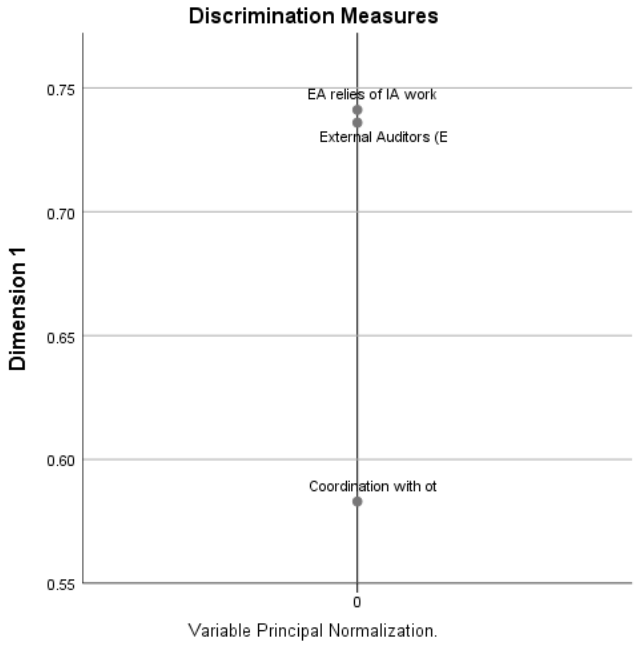

Figure 6. Assurance partner relations.

Table 5 shows the eigenvalues of IA process factors are above the threshold of 0.2 (Bendixen, 2003), ranging from 0.980 to 3.327: thus, all dimensions that were extracted are retained for each sub-category.

4.2.7. Internal audit function competence

This sub-category is made up of internal auditors' objectivity or independence, educational and professional qualifications, work experience and expertise, and continuous professional development (CPD). Table 5 and Figure 7 identifies two dimensions that explain 67.76% of the variance in the data. In dimension 1, termed IAF competence (11), educational and professional qualifications (0.629), and work experience and expertise (0.688) achieve relatively high scores, with moderate scores for internal auditors' objectivity or independence (0.304), indicating that the latter contributes less to the definition of this dimension. This in line with previous studies which concluded that IA staff quality or IAF competence was a contributor to IAE (Alzeban & Gwilliam, 2014; Badara & Saidin, 2014; Coetzee & Erasmus, 2017; Endaya & Hanefah, 2016; Ramanchandran et al., 2012).

Figure 7 shows that two dimensions were extracted. IA objectivity/independence is closer to educational and professional qualifications, work experience and expertise than it is to CPD. The item CPD (12), with a high discrimination of 0.777, falls into dimension 2. This is an interesting revelation. While CPD, measured by the average number of hours spent on training (Bota-Avram & Palfi, 2009), is advocated as a necessary aspect of IAF competence (Al-Twaijry et al., 2003; Alzeban & Gwilliam, 2014), this is probably the first time it has been confirmed as a significant factor in IAE. With rapid changes in governance in the work environment, the risk management arena (Mihret et al., 2010; Spira & Page, 2003) and the evolving nature of IA, life-long learning (which entails CPD) is demanded as a key attribute of IAE (Endaya & Hanefah, 2016).

Table 5 MCA results - IA Process

Category	Sub-category	IAE signalling frame indicators	Dimension 1 loading	Dimension 2 loading	Eigen value	Cumulative Inertia (%) (Variance explained)	Dimensions Retained (IAE signalled factors)
(3) IA Process	7. IAF competence	Internal auditors objectivity/independence	0.304		1.730	67.76%	(11) IAF competence
		Educational professional qualifications of internal auditors	0.629				
		Work experience and expertise of internal auditors	0.688				
		Continuous Professional Development (CPD)		0.777	0.980		(12) CPD
	8. IAF services and role	Assurance strategic and operational risk and control	0.455		1.523	50.75%	(13) IA typical services
		Consulting strategic and operational and IT	0.639				
		Ad hoc engagements	0.429				
	9. IAF work quality	Compliance with *Standards*	0.534		3.327	39.28%	(14) IAF work quality
		QAIP	0.538				
		Risk-based audit plans	0.285				
		Strategy-aligned audit activities	0.270				
		Unrestricted, free access to all data, data pools & activities	0.290				
			0.311				
		Performance evaluation	0.284				
		Use of IT tools and techniques	0.226				
		Useful findings and recommendations	0.179				
		Effective planning	0.174				
		IA report quality					
		Adoption of CSA techniques		0.599	1.387		(15) Communication
		Effective communication		0.473			

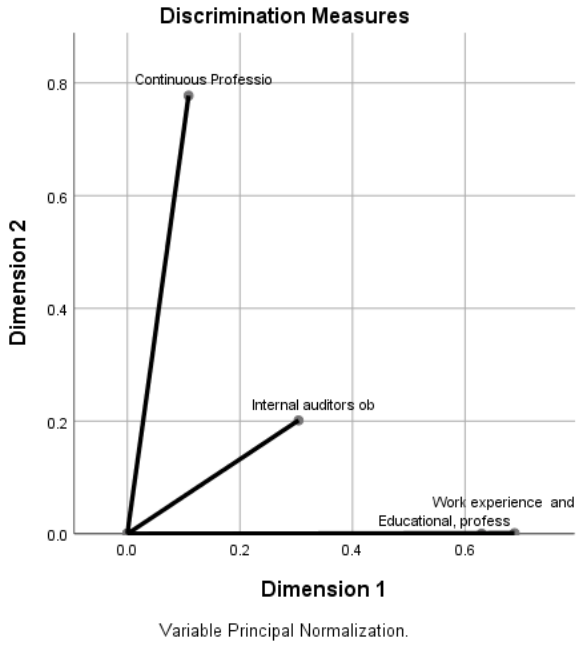

Figure 7. IAF competence.

4.2.8. Internal audit function services and role

The IA typical services (13) sub-category represents the services and roles commonly ascribed to the IAF, and includes assurance services, consulting services and ad hoc services. The services and roles of the IAF are clearly outlined in the IPPF of the IIA. This framework indicates that the IAF engages in assurance and consulting services in the areas of control, risk management and governance (IIA, 2016b). Ad hoc services represent those unplanned engagements where the IAF is requested to provide either assurance or consulting services on environmental, sustainability and other issues. Table 5 shows moderate values for all indicators under IA typical services, namely assurance services (0.455), consulting services (0.639) and ad hoc services (0.429). These dimensions account for 50.75% of the variance in the data.

Figure 8 shows amongst others that consulting services ranks the highest in this dimension (0.639), which indicates that the participation of the IAF in consulting services contributes most to the definition of this dimension. This should be seen in the context of the complexity of the business environment in which companies find themselves and their need to assure stakeholders that they take counsel from their IAF. While assurance on controls, governance and risk dominates activities performed by IA (IIARF, 2015), their perceived effectiveness results from the IAF being viewed by management as business partners, worthy of consultation (Shahimi et al., 2016). Consulting engagements therefore relate largely to the value proposition of the IAF, to be a trusted adviser (Chambers, 2017).

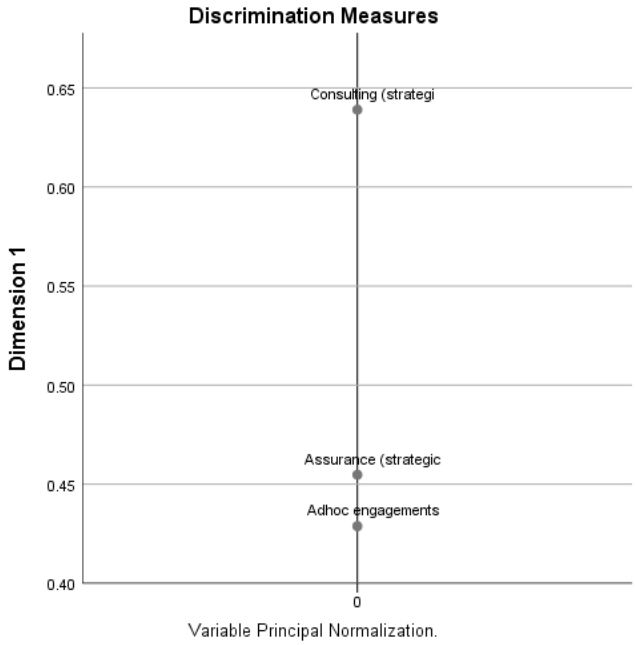

Figure 8. IAF typical services.

4.2.9. Internal audit function work quality

IAF work quality contains indicators relating to the quality of the work performed by the IAF as well as the processes followed. The indicators include compliance with the IIA Standards, effective planning, performing risk-based audits, other strategy-aligned activities, unrestricted access to all data pools and activities, adoption of CSA techniques, implementation of a quality assurance and improvement programme (QAIP), performance evaluation, effective communication, use of IT tools and techniques, useful findings and recommendations, and the IA report quality. Table 5 identifies two dimensions, explaining 39.3% of the variance in this sub-category.

Figure 9 graphically illustrates that the indicators that make up the sub-category IAF work quality fall into two dimensions. Dimension 1 with the indicators' compliance with Standards (0.534) and QAIP (0.538) have relatively high discrimination measures, while for dimension 2 adoption of CSA (0.599) and effective communication (0.473) have relatively high discrimination measures. Whilst CSA assesses the IAF's risk management and control processes, such a self-assessment can only be effective in an organisation where management fosters a culture of open communication (Murdock, 2019). Both dimensions are retained; they are referred to as IAF work quality (14) and communication (15) (conducive for self-assessment), respectively.

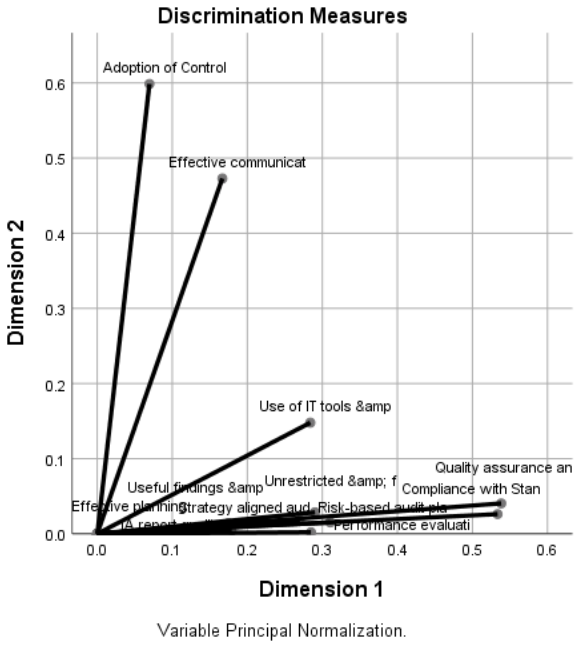

Figure 9. IAF work quality.

Table 6 shows the eigenvalues of IAE measurement are above the threshold of 0.2 (Bendixen, 2003), ranging from 1.068 to 1.354: thus, all dimensions that were extracted for each sub-category are retained.

4.2.10. Internal audit function outcome measures

In this sub-category, IAF outcome measures were analysed. These are reliable financial statements, sound financial controls, auditee compliance with laws and regulations, auditee compliance with policies and procedures, client satisfaction, satisfaction of stakeholder-specific expectations, training ground for management positions and cost savings. Three dimensions were detected which account for 44.41% of the variance in the data.

Figure 10 depicts the three dimensions clearly indicating the major contributors to each dimension. In dimension 1 these are, auditee compliance with laws and regulations (0.366) and auditee compliance with policies and procedures (0.515). This dimension is called auditee compliance (16), with auditee compliance with policies and procedures contributing most to the definition of the dimension. Compliance with laws and regulations and compliance with company policies and procedures are at the heart of the internal control systems set up by management (COSO, 2013). Internal auditors are mostly concerned with evaluation and the provision of assurance with respect to the effectiveness of internal controls on the one hand and compliance with laws, contracts and regulations on the other. Their effectiveness can be judged on the basis of auditee compliance (Dittenhofer, 2001; Endaya & Hanefah, 2016). Therefore, assurance provided by the IAF must carry weight with both internal and external stakeholders and the disclosure of auditee compliance with laws and regulations and its own policies and procedures signals good corporate governance.

Table 6 MCA results - IAE measurement

Category	Sub-category	IAE signalling frame indicators	Dimension 1 loading	Dimension 2 loading	Dimension 3 loading	Eigenvalue	Cumulative Inertia (%) (Variance explained)	Dimensions Retained (IAE signalled factors)
(4) IAE measurement	10. IAF outcome measures	Auditee compliance with laws and regulations	0.336			1.354	44.41%	(16) Auditee compliance
		Auditee compliance with policies and procedures	0.515					
		Training ground for management positions	0.180					
		Reliable financial statements		0.404		1.130		(17) Reliable financial reporting
		Sound financial controls		0.366				
		Client satisfaction			0.506	1.068		(18) Client satisfaction
		Satisfaction of stakeholder specific expectation			0.083			
		Cost savings			0.284			
	11. IAF output measures	Percentage of audit plan completed	0.600			1.206	60.30%	(19) IAF efficiency
		Completion of mandated coverage	0.606					

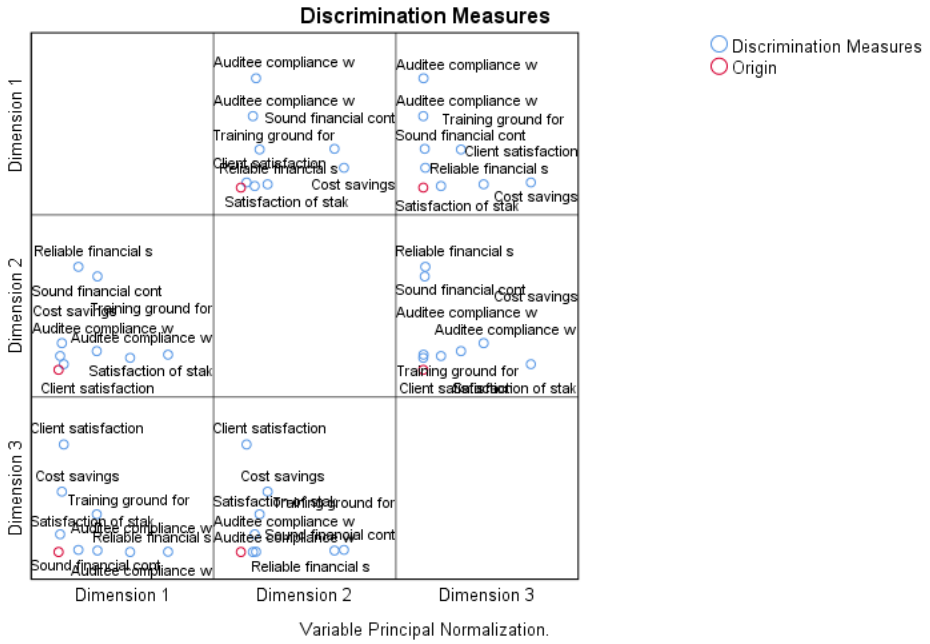

Figure 10. IAF outcome measures.

Dimension 2, which consists of reliable financial statements (0.404) and sound financial controls (0.366), is termed reliable financial reporting (17). One of the other objectives of internal control is to produce reliable financial information (COSO, 2013). Similarly, disclosures to the effect that the IAF provides assurance on financial controls and that no financial malfeasance has been found and reported by the external auditors are good indicators of an effective IAF (Dittenhofer, 2001).

Dimension 3, termed client satisfaction (18), consists of the indicators of client satisfaction (0.506) (contributing most to the definition of the dimension) and cost savings (0.284). Client satisfaction is an outward-facing performance measure used by the IAF to assess the value attached to the IAF activities by others; it is also linked to the fulfilment of specific expectations set by and agreed to with key stakeholders (IIARF, 2015). According to Feizizadeh (2012), using the balanced scorecard (BSC) would provide a comprehensive measure of IAF performance as it includes both qualitative and quantitative measures. Since these documents are in the custody of the IAF, client satisfaction was mainly disclosed as the absence of complaints levelled against the IAF function by stakeholders and there was rarely disclosure of the results of the IA client/auditee satisfaction surveys.

4.2.11. Internal audit function output measures

IAF efficiency (19) is an output measure of the IAF's performance. It is made up of the percentage of work completed and completion of mandated coverage. The results show that these indicators fall into one dimension and explain 60.30% of the variance. Percentage of audit plan completed and completion of mandated coverage loadings in this dimension stand at 0.600 and 0.606 respectively.

Figure 11 shows that all indicators under IAF output measures are grouped along a single dimension. The high loadings on each item also affirm them as contributors to the dimension

impacting on IAE. The percentage of work completed compared to the audit plan is the most commonly used measure of IAF productivity or efficiency (Bota-Avram & Palfi, 2009; IIARF, 2015). According to IIARF (2015), completion of mandated coverage has been found to be one of the top three measures used by the IAF to measure its efficiency.

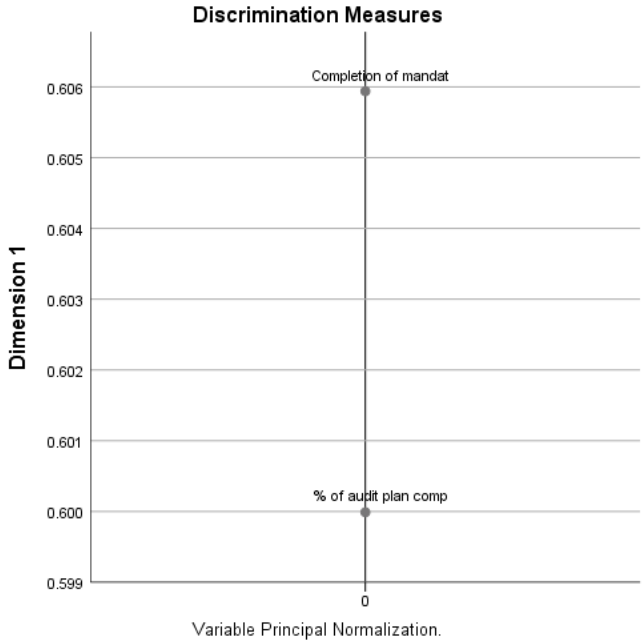

Figure 11. IAF efficiency.

4.3. Summary

The nineteen dimensions identified above represent the signalled IAE factors. Except for CPD, these factors frequently appear in the IAE literature. This study is, however, a first attempt to investigate IAE signals in company reports using a self-constructed IAE signalling frame based on 54 IAE indicators deduced from literature. The 54 indicators' scores were reduced using MCA to 19 signalled IAE factors which are considered to be the IAE signals found in company reports. As espoused by signalling theory, these signals contain mandatory and non-mandatory information, and reduce information asymmetry characteristic of a company with various internal and external stakeholders (An et al., 2011). Voluntary disclosure is one kind of signalling, where companies disclose more information than the mandatory facts required by law and regulation in order to signal their superiority (Campbell et al., 2001).

5. Conclusion

The aim of the study was to investigate how IAE is signalled in company reports. The results revealed that IAE disclosure patterns of South African listed companies, following the normative dictates of rules and regulation, miss an opportunity to signal superiority through voluntary communication of the effectiveness of one of the governance mechanisms that ensures good corporate governance. The study further identified 19 IAE signals, indicating that signalling theory applies to IAE. The content analysis done using the IAE signalling frame revealed that some IAE indicators, which could contribute to improved understanding

of the role of internal audit in governance and serve as indicators of its effectiveness, were not disclosed (zero rated indicators). This gives rise to a recommendation for more IAE information to be disclosed in IRs and other ARs using the IAE signalling frame for a more holistic view of the influencers and indicators of IAE and how it is measured.

Notwithstanding its contribution to theory and practice, this study is not without limitations. The study is limited in terms of the sample selected and the time period under investigation: the study focused on the top 100 JSE-listed companies for the specific time period, 2012–2016. Hence, the results of the study can only be generalised with caution. The source of IAE signals was based solely on annual IRs and other ARs, with the exclusion of other forms of communication by companies in the interim. Further studies could include other communication modes and platforms to gain a broader understanding of disclosure of IAE.

The study also made no distinction between different industries as the sectors as defined by the JSE. Previous studies indicate differences in corporate governance disclosures between industries (Ntim 2009) and it will be interesting to see if this holds for IAE signalling.

The study's empirical discovery of the 19 IAE signals in the absence of mandatory disclosure requirements indicates that signalling theory applies to IAE. The use of signalling theory in IAE research provides various new avenues of research relating to IAE signalling quality, credibility and frequency of disclosures, all being aspects explained by this theory. Finally, future studies could identify and explore reasons behind IAE signalling by investigating behaviour patterns intended to motivate IAE disclosure.

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Notes

1 The data collection process was performed in line with generally accepted research ethics.

2 An MCA is similar to a factor analysis for categorical data making the method ideal for identifying IAE signalled factors.

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