# THE APPLICATION OF ANALYTICAL PROCEDURES IN THE INTERNAL AUDIT PROCESS

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## ABSTRACT

*The paramount objective of the study was to investigate the application of analytical procedures in the internal audit process. The changes in the application of analytical procedures being attributed mainly to developments in technology, adoption of risk auditing methodologies and the incorporation of non- financial information in the Auditing process. Several studies have been conducted in various countries on the application of analytical procedures, however little is known exactly on how internal auditors in the Zimbabwean context specifically the Agri-business sector apply these analytical procedures in the internal audit processes. The finding of this study indicated that Internal auditors need to apply analytical procedures in the internal audit process because this adds value to an audit improving audit quality and effectiveness, it also emerged through the findings that the application of these procedures relies on the internal auditor' competence, availability of integrity and reliable data.*

**Keywords**: Application, Analytical Procedures, Internal Audit Proces.

## INTRODUCTION

This desktop study reviewed the heralded literature related to the implementation in the internal Audit process. Many contributors and researchers in the fields of application of analytical procedures were considered by the researcher using the guideline of research objectives. An analysis to the theoretical and empirical findings of various researchers is also included

## THEORETICAL LITERATURE REVIEW

### Agency Theory

Agency relationship could be described as aa agreement between the proprietor(s) of the company and upper management. These managers work with the company being agents who provide a service on behalf of owners responsible for the assignment of those decision-making authority to managers. Managers might exploit these authorities to address personal interests. The availability of audit committees, internally and external auditors would thus help a company to improve its performance and would also guarantee that the management implements its plans in accordance with the intended procedures (Adams, 1994). Peursem & Pumphrey (2005) regarded internal audit to be agents and overseers the wide range of internal internal audit user groups, including the board of directors, audit committee and senior management.

Agency problems might emerge when the board or the audit committee is weaker and ineffective therefore the senior management is likely to have an override over the internal audit This dynamic system poses some inherent challenges to the internal audit as to how it can conduct out its oversight function over management therefore they tend to be unsuccessful. Internal auditors are mostly appointed by senior management, and they also appear to be body and audit committee members with faith in the internal auditors' ability to evaluate the works of senior management.

Internal auditors could have different interests for acting against the desires of the Board of Directors as well as audit committee as a result of many reasons including monetary gains from managers, social connections with managers, and the strength of senior executives to change the future role performed by internal auditors as well as their compensation packages. Internal auditors being in that particular work environment representing agents may be bound to be bias of information leaks, which leads to concerns over the board and audit committee about their trust on the internal auditors' objectivity, and preventing such threats of objectivity becomes necessary for the board and its audit committee. internal auditors, working as agents, would carry out audit assignments at a competent level requiring training and professional qualifications, expertise and other competencies required to carry out their duties perfectly.

Internal auditors equipped with these requirements as well as other training programmes would actually boost the confidence level of the board and audit committee. This can result in internal auditors perfoming their duties in accordance to their expected competence thereby avoiding penalties of duty negligence. The Chief Audit excutive being responsible solely for the internal audit plan, reporting audit findings as well as follow ups of audit recommendations enables the effectiveness of the internl audit function by supervising their works. The members of the company are expected to review the internal control structure, and they rely on the internal audit department to fulfill this requirement. Internal auditors on their evaluation must collect enough and reliable evidence that can assist on evaluating the internal control system. The presence of such documentation enhances the degree of trust among the members of the company about the functions performed by the internal audit. Internal audit success is therefore a critical prerequisite for members of the company to accept internal auditors as their agents. Banmiyre (2017) Internal auditors need their help as representatives of the organisation's officers. The presence of an influential audit committee in the company strengthens the freedom of audit function and also decreases the involvement of top management, either in the field of internal audit or its results. The problem relates, for example, to the capacity of the top leadership to influence career prospects and salaries.

## EMPERICAL LITERATURE REVIEW

### Why Internal Auditors need to implement analytics

The one major advantage of implementing analytics during data analysis in internal auditing can be in the form of an increase in the audit quality, efficience and effectiveness (Braun & Davis, 2017; Brown-Liburd et al., 2015; Byrnes et al., 2015; Coderre, 2015; Soileau et al., 2015; Yoon et al., 2015; Cangemi, 2016; Chan & Kogan, 2016; Richins et al., 2017; Singh et al., 2017; Appelbaum et al., 2018; Li et al., Dai, 2018;). Singh et al. (2017) Stated that using analytics provides for a thorough analysis with a higher degree of quality and productivity while also providing a deeper understanding of business operations

Chan & Kogan (2016) reached a conclusion that implementation of analytics enhances internal auditing performance and usefulness in relationship to the procedures for manual audit process Albitar et al. (2020) suggested that analytics prevail more than traditional audit procedures. These authors layed a concensus that in other scenarios implementation of analytical procedures is deemed to be more applicable and useful compared to substantive test of details for instance when large and variable amounts of data is involved Iatridis (2010) expressed that analyticl procedures such as cross-tabulating, summarizing and stratifying can be merged with software to enhance audit quality. Kopotienko (2015) warned that the implementation of anltical procedures in the internal audit heavily depends on their consistency and the audit process stage.

García-Sánchez et al. (2020) undertook a study which concluded that by using analytics to enhance audit effectiveness and efficiency would enable internal auditors to carry out frequent and more high-risk audits increasing the reliability of audit results nd also enhance the probability of finding data anomalies. Cagemi (2016) gave a relationship between innovations and analytics implying that data tools make it easier to access effective and efficient computerized auditing. Soilau et al. (2015) gave emphasis on the utilization of technology in the internal auditing stating that it pave way for new approaches to auditing which is only limited to auditor's imagination. Herath & Albarqi (2017) concluded that the requirements for effective application of analytical proceures includes auditor's special skills nd knowledge in discussing the value of technology and analytics these authors concluded that there are new challenges involved in using these advanced auditing tools and techniques and emphasized that internal auditors have limited knowledge therefore it is a challenge to understand these techniques. The above fact consequently leads to misuse of methodology and misinterpretation of results.

Gajevszky (2015) outlined a number of benefits accrued from using analytics in the internal auditing. Among these benefits are the facilitation in reduction of audit scope through emphsise on the greates risks, assistance in avoiding an in appropriate involvement or exclusion of details and also helps in obtaining an appropriate oversight, thes are the benefits but they are not limited to these. In general terms, thes researchers reached a concensus that implementing analytical procedure facilitate quality internal audits although it application requires technology, appropriate skill level and necessary knowledge. The literature has extended suggesting that an inconsistency between an organization's financial and non-financial information could be an indication offraudulent financial reporting this cumulative led to the need to implement analytical procedures effectively (Eilifsen et al., 2014). The reasons attributed being that it is complex and almost impossible for management to manipulate and window dress data especiallywhen collected from external sources (Amis et al., 2012:33). It is straightforward in terms of verification of financial data. It is because of these reasons that led (Ames 2012 et al., 2012:28) to give an emphasis that internal auditors ought to evaluate the existing relationship between financial and non financial measures to validate financial statement data. These authors used two approaches to emphasize the usefulness of analytics in the internal audit addressing where and how analytical procedures can be used and lastly the types of analytics to be used.

Various scholars stress the need to include analytics at all levels of the internal auditing process (Soileu et al., 2015; Kopotinko, 2015; Moolmann, 2017). Marks (2019) points out that analytical procedures must be an important part of audit preparation, and Glover et al. (2000) point out that the outcomes of analytical procedures will affect the revision of audit plans. In their research, Glover et al. (2000) suggest that the findings of analytical procedures may have an effect on the revision of the audit plans. In their analysis, Glover et al. (2000) obtained conflicting results. Analytical techniques are effective methods for detecting threats and defining data problems (Davuzyn & Kavut, 2015, Sporks, 2016; Jens et al., 2014; Kopotinko, 2015). Coderre (2015) stresses that through data mining, internal and Internal audit should take into account not only control vulnerabilities, and moreover opportunities for streamlining business processes, enhancing the use of technology by the company and concentrating senior management on the areas of highest risk. Richins et al. (2017) raise awareness of new methods to internal auditing by replacing manual verification with a blockchain form of technology to be used for internal auditing.

However, Brown-Liburd et al. (2015) concluded that analytical techniques are required since they enable internal auditors to evaluate all transactions. Sparks (2016) points out that data analysis tools allow the auditor to interrogate vast quantities of data and run numerous queries to check for and retrieve unknown information that helps identify internal control breaches, defects and potential fraudulent activities. The writers highlight the opportunities of utility of big data. For example, shipping documents are used to validate shipments, but GPS data provides a more accurate, tamper-resistant source of data for authentication. For conventional auditing, records are checked manually for the verification of company transactions. In the era of big data, auditors may use textual analytical techniques, such as clustering nd use analytical procedures to summarise documents automatically. Dhilon & Modhaa, (2011) implies that this method is more effective and informative than a manual investigation. Vasarhelyi et al. (2017) further demonstrate the effectiveness of linking conventional data with new types and amounts of new data, develop incentives for additional research and improve the organizational value of data research.

Moolman (2017) also used secondary source of data to define the need for analytics that are usually used by the internal auditors. The findings of the study indicate that 91% of the papers in force concerning the methods of financial analysis typically used by the auditor concentrated on ratio and trend analysis. (Moolman, 2017: 174). It is also recommended that the internal auditor allow the application of additional procedures to standard analytical procedures, including Du Pont, EVA, Altman 's Z-score and Benford 's Law. Such analytical procedures can suggest areas of possible misstatement in the financial statements in the process of risk analysis.

## How Do Internal Auditors Apply Analytical Procedures in the Audit Process?

Jamil et al. (2020), the internal auditor could apply analytics as risk analysis in planning and at the review phases. Risk assessment procedures relate to the internal examination techniques used to obtain an understanding of the organization and its environment, including the internal monitoring of the company, to define and evaluate the risks of the materil misstatement as a result of fraud, errors and omissions in the data intended for internl audit, analytics can also be extended to different phases. Vitolla et al. (2020) extended that analytical procedures can be an analysis of significant ratios and patterns, including the subsequent examination of anomalies and relationships in both financial and non-financial data that are incompatible with, or substantially deviating from other relevant details. This is also suggested that analytical procedures should enable efficient means for the internal auditor to carry out an evaluation of the data gathered during the audit. The evaluation results from a comparison of this information with standards identified or generated by the internal auditor.

KPMG (2018) suggest that internal auditors should position the status of the application for the analytical procedure at the starting stage given that auditors often use basic procedures performed using MS Excel. Within this context, the viewpoints provide a higher degree of adoption of ERP systems in an organizational environment that can offer more accurate data to internal auditors and the opportunity to audit direcly from the system. Jamil & Rusli (2021) indicated that the next critical move would require the capacity of internal auditors to manage big data. In this process, the use of advanced analytics would be unavoidable and necessary. In order to do so, internal auditors need to gain sufficient information about technology implementation and analytics understanding.

Tusek et al. (2018) indicated that overally internal auditors can impliment analytical procedures to obtain factual information, and this application of analytical procedures includes the analysis and comparison of relationships between financial and non-financial data. Internal auditors can use analytical techniques to collect audit proof in an appropriate way. Analytical procedures to apply include the analysis and comparison of relationships between both financial and non-financial details. Vunchnich (2018) suggested the use of analytical methods on the basis that, in the lack of defined circumstances contrary to condition involving ror example, irregular or non-recurring transactions or events; financial, organizational, operational, environmental and technical changes; inefficiencies; inefficiencies; errors; fraud; or criminal acts and, in all these cases, internal auditors will apply analytical procedures Adenji (2014) Discovered that analytical procedures often provide the internal auditor with an efficient and effective means of obtaining evidence.

Dixon (2016) stressed the importance of evaluation results from a comparison of the information with expectations identified or developed by the internal auditor. Therefore, it is concluded that analytical techniques are useful in identifying unexpected variations, the absence of predicted variations, potential errors, potential fraud or illegal activities, and other unusual or non-recurring transactions or events.

Analysis techniques include making comparisons between financial and non-financial details of the company with comparative information for previous periods. Kamau (2016) asserts that good examples being the entity's expected performance, such as budgets or internal auditor's predictions or expectations. Alleyne (2016) researched that analytical procedures include forecasted estimates prepared by an internal auditor, such as an annual estimation of depreciation, relevant industry figures, such as a measure of the entity's sales ratio to corporate debtors, market averages. Analytical techniques may require analysis of the existing relation between non financial and financial information items that would be required to adhere to a logical sequence based on the performance of the company, such as gross margin percentages between financial information information and related non-financial informatio which may include payroll costs compared to employee or overall production costs per generated quantity (Emma, 2012). Igbinosa (2012) suggested various methods from basic comparisons using modern statistical approaches to complex analyzes can be used to undertake abovementioned procedures. Furthermore, analytics can be applied to consolidated financial statements, component financial statements such as branches, divisions or segments, individual elements of financial information and non-financial information.

According to Jezovita (2018) the selection of procedures, techniques and baseline of application by the internal auditor can be the subject of professional judgment. Unique analytical methods include ratio analysis, analysis of trends and regression, reasonableness checks, time-to-period comparisons, expenditure comparisons, projections, and external economic statistics, but they are not limited Zagger (2016 ) proposed that empirical audit procedures would involve comparing existing knowledge about the duration of present period information with projections based on common data for previous periods and also estimates or predictions, the analysis of connections between financial and related non-financial information for example reported payroll costs relative to differences in the total number of workers, and the analysis of relationships between information components a good example being variations in recorded interest expense matched against changes debt balances. Further added bench marking with other organizational entities and the sector in which the company works based on similar information.

Jaloudi (2019) found that internal auditors may use amount balances, ratios, or percentages to perform analytical procedures. Specific analytics involves the trend and ratio analysis, regression, period from period comparisons, tests of reasonableness, budgets contrsts with forecasts and relevant external economic information. Analytics help internl auditors in the detection of ircumstances in need of attention for additional audit procedures an internal auditor may use the guideline in the standards to apply analytics on the planning stage of an engagement.

During most of the auditing process that is according to Howard (2005) internal auditors may apply analytics to come up with audit evidence. The internal auditor considers, when ascertaining the depth of the analytical procedures, the importance of the function being audited, the analysis of the risk management in the area being audited, the efficacy of the system of internal control and the efficiency and reliability of financial and non financial information. Additionally, incorporating accuracy with which to forecast the outcomes of theoretical auditing procedures. Epstein (2013) addressed other considerations, such as the quality and comparability of knowledge about the sector in which the company works and to what degree such procedures provide evidence. Fadzly (2014) added that in analytics unexpected outcomes or relationships are found and therefore the internal auditor assesses certain findings or connections. This evaluation involves deciding whether the deviation from expectations are as a result from fraud, mistake, or circumstance alteration.

According to Tong (2014) the internal auditor may inquire from management on reasons regarding the key distinctions and corroborating the explanation given by management, for example, by changing anticipations and recalculating the disparity or by applying other analytics. In addition, the internal auditor must be confident that the justification recognizes both the direction of the adjustment as an indication of the decline in revenue and, for example, the sum of the difference decreased by 10 per cent in sales value. Sidan (2007) addressed that unexplained findings or association from the implementation of analytics may indictate possible mistake fraudulent activities. Outcomes or interactions which are not sufficiently explained indicate a situation that, in accordance with Standard 2060, should be communicated to executive management, and, the Board. The internal auditor can recommend proper measures, depending on the condition.

According to Braun (2017) when analytical procedures detect substantial anomalies or relationships which are incompatible with other pertinent data or deviate from its forecasted numbers, the internal auditor may inspect and obtain sufficient explanations and acceptable corroborative evidence. The review and assessment could include managerial inquiries and the implementation of other auditing techniques up to a point where the internal auditor is confident that there is adequate justification for the results or ties. Gilles (2015) added that the findings or relationships explained be reflective of a significant circumstance such as a possible mistake, anomally or illegal act. Events or interactions which are not clarified adequately should be conveyed to the correct management levels. Depending on the circumstances the internal auditor may recommend appropriate courses of action.

## How has the Application of Analytical Procedures Changed in Response to Changes in the Internal Auditing Environment?

According to Zianca (2016) in today’s fast-paced business environment, financials, time and human resources are very important to manage efficiently and effectively. Contemporary market dynamics render decision-makers more anticipated to implement quicker actions. In that sense, internal auditors had to be capable of meeting those requirements in order to stay in line with the management needs and priorities of stakeholders. Caratas & Spatarium (2014) claimed an elevated risk climate in today’s operating conditions internal auditors have a position to predict risks and recognize patterns in the internal control system. Respecting this, internal auditors must constantly develop their expertise, skills and methodology so that they can keep up with developments, complexity, stochasticity, and dynamism of the company.

Omoteso (2013) stated that developments in information technology has resulted in automation of business activities and this presented a huge impact on the audit environment.

Internl auditors inorder to enhance better quality in their audits, they need to use computer tools and techniques (Porter et al., 2003). According to Kuenkaikaew & Vasarhelyi (2013) This includes using financial information in real-time for continuous auditing as well s the use of audit support systems. Lim (2011) discovered that the shifts in business trends have further pushed for changes in practices within the auditing profession, specifically the methods used. Hunton & Rose (2010) outlined that the changes in the present conditions have resulted in pilling pressures on internal auditors to constantly as well as increasingly investigate operating risks from different and various angles. In order to remain relevant, the incorporation of audit support systems in audit processes was suggested.

In the current period investors could access relevant information about an entity such as financial presses, statistics of product quality, competitor's news and other relevant news meaning say reporting, financial and non financial has became real-time. According Lombadi (2014) the use of analytics enable the auditors to overcome the challenge of being delayed providing backward-assurance. This therefore means the use of analytics has greatly changed responding to changes in the auditing environment.

There is an extended body of literature indicating a discrepancy existing on financial and non financial information of an entity possibly indicate fraududent and illegal acts in the financial reporting that is according to (Eilisen et al., 2014). The reason argumented for this being that window dressing of non financial information by management is impossible. This specifically applies when the information is secondary data obtained out of external sources and non financial information verification is rather straightforward. Jones (2009) emphasized that internal auditors should investigate the existing relationship on financial and non financial information so as to validate financial statements.

## Challenges Faced by Internal Auditors in the Implementation of Analytics

### Availability and integrity of data

Frank et al. (2016) discovered that internal auditors believed the effiency and effectiveness of analytics to largely depend on accessibility as well as intergrity of data. They suggested that company employees would not utilize systems in full capacity especially when capturing data for instance omitting the capturing of certain fields, this becomes a limitation therefore to the ability of the internal auditor to implement analytics. The challenge also exists in obtaining the required data in the right format as in certain circumstances the quality of the data avilble restrict the auditor to implement analytical procedures. There may be need for brilliant analytics to be performed but the information is not readily available (Frank et al 2016).

Furthermore, according to Marc (2014) internal auditors my also be limited in application of analytics being credited to limited performing capabilities of computer systems which may prohibit certain performances on large amounts of data. Conclusively it is evident that accessibility to integrity information and availabity if required information determines the application of analytics.

### Resistance to reducing tests of details

Humphrey (2016) and Miller (2014) discovered that internl auditors formed an opinion on using tests of details as find it easier to use in different other circumstances compared to application of analytics. These would need less judgement and is cost effective compared to the implementation of analytics. These investigators Humphrey & Miller (2014) found from internal auditors that in other circumstances they are challenged by analytical reviews comparing to how they find it easy in coming up with a right detailed testing.

Salehi et al. (2012) believed that internal auditors were resistant to change as they hesitate to limit the degree of test of details that they applied. However, considering complications imposed by some operating environments and accelarating improvements in information technology these required shifts in methodology are actually impossible to circumvent. The reasons for these hesitations is ascribed to lack of confidence in the outcome of analytics. Therefore, this is currently a burning issue inside the audit career as it remains complex for internal auditors by the day end to reach a conclusion on what is enough and what extent of assurance can be obtained from the information.

**Regulatory challenges**

According to Nachmias (2014) internl auditors regarded the regulated standard concerning the implementation of analytics to be a major limiting factor in the performance of analytics. Stressing that the outlined regulations may be ok in the view of the regulators but the internal auditors in their own capacity and abilities may however desist from implementing an analtytical procedure when they are doubtful. The major reason put forward being that the standard has shortfalls since it lacks guidance on the degree of assurance to be relied on analyticl procedures. Further more Nachmias (2014) extended that the standard lacked provisions and adequate guidance on the degree of professional judgement that could be exercised on analyticl procedures as it appears that internal auditors remain doubtful on how much examination might be needed, how large a difference can be accepted and how to adjure the existing difference. Therefore, it was concluded that the major challenge is the judgement involved in the implementation of these analytics.

Based upon opinions expressed by the participants in the internal audit, they found the minimal guidance given by the auditing standard (IAASB, 2017) was a challenge. Inspections of the regulator and the company's quality assurance reports revealed that internal auditors are struggling to make decision appeals on methodological procedures and some of the participants find these as obstacles.

**Risk for the profession**

Internal auditors generally agreed that analyticl procedures could present a professional threat beacause as a result of technological improvements these are becoming more automated. Hudaib (2017) discovered that internal auditors fear of becoming redundancy as a result of analytical procedures, auditing procedures becoming automated means that the auditor would have no more work to do. Regarding to this threat, it was also argumented that it would minimize the demand for internal audit interns required, resulting in a negative effect on the amount of training opportunities created by audit. Juan (2014) deliberated on the point further suggesting that the data analysis would not only require fewer auditors but also more competition.

According to Accountants (2017) in the future experts in information technology could be found in carrying out data analysis, the IT auditor demand would only increase therefore it is a very big danger to the profession. But it is certainly the best approach from an investor's perspective as well as from a quality knowledge point of view as a better response to real- time. It can be concluded evidently from the above that while participants in the internal audit can be supported by developments in information technology in the implementation of analytical procedures it also raises their concerns. Generally suggesting that this would create opportunities for experts in IT, these changes would accelerate competition from non-auditors making auditors redundancy and limit their opportunities.

### Non-financial information

Liggio et al. (2013) supported the utilization of non-financial information in development of expectatations, with a discussion indicating that internl auditors regarded non-financial information to be an important source of audit evidence adding further tht currently there is increasing motivation to include non-financial information in implementation of analytics. However, the discussion proved that there is complex credibility of such information because various sources would be included in obtaining non-financial information. In this discussion concerns were raised that it is a challenge to implement non-n financial information for instance how can industry current affairs be made applicable to certain financial statement line items. Denver (2016) argumented that including industrial information in data analytics becomes complex because this data cannot be captured, and if it can, in what format.

## COMPETENCE OF AUDITORS

Internal auditors surveyed by Dunn (2010) presented the opinion successful implementation of analytics involves competence which is not ingrained in the current training of internal auditors as the lack a broader perspective view but would want to follow standardized routes being guided by compliance.

### Summary of Research Findings

1. The study found that internal auditors need to apply analytics in the internal audit process because it is an integral part of the audit process, adds value to an audit, could be a very effective way to detect and identify risks, and also is a regulatory requirement.
2. The study indicated that internal auditors do implement analytical procedures during the planning, fieldwork and evaluation phase, these analytical procedures are applied at a high level and however the application varies on each of these processes and also indicated that it depends on the availabilityquality and reliability of data.
3. The application of analytical procedures in the internal audit process has changed in the past and is predictable to change in the near future, specifically data analysis. This has greatly attributed to advancement in Information Technology (IT) developments, implementation of risk based audit methods and emphasis on non-financial information.
4. The application of analytical procedure in the internal audit process has many benefits which includes improving audit efficiency, promoting cost effectiveness by reducing the extent of detailed testing, assisting with identification of risks and compel auditors to apply their minds, and however also found the challenges that the performing of analytical procedures would depend on availability and integrity of data, there exist a gap in the education on the application of analytical procedures and also that auditors lack competence

## CONCLUSION

The purpose was to investigate the implementation of analytics in internal audit processes. Literarture reviewd managed to reveal how internal auditors apply analytics during the planning stage, fieldwork phase, and the evaluation and conclusion stage. Hopefully the results of this study would encourage internal auditora to implement more analyticts in data analysis improving internal audit quality hence adding value to the organization.

### Recommendations

1. Concerning the above conclusions, it is recommended that internal auditors should intergrate more analytical procedures in their performing of audits and add value to audits also benchmarking their practices on the implementation of analytics to international standards

2. The findings of this study indicated internal auditors' lack of competence in the application of analytical procedures and limited education on the subject, it is recommended that professional bodies like the Institute of Internal Auditors increase seminars and workshops for professional development and increase in skills for internal auditors to apply analytical procedures effectively

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