

## CHAPTER THREE

### THE USE OF CORPORATE FINANCE TECHNIQUES AND THEORIES IN THE DETECTION AND IDENTIFICATION OF ACCOUNTING IRREGULARITIES

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#### 3.1 INTRODUCTION

This chapter forms part of Phase One of the Mitroff model as described in Chapter One, aiming to describe the reality surrounding the problem by means of a literature review.

Financial analyses have been used and are still extensively used to evaluate financial performance and position. Some authors, notably Altman (1968) and Altman and Hotchkiss (2006), use financial analyses to attempt to predict possible bankruptcy. Even though this study is not aimed at predicting financial distress, given the other positive uses of financial analyses that have been identified in the past, it may be found that financial analysis is also able to assist in the detection and identification of the accounting irregularities that can manifest themselves in the financial statements.

Kaminski, Wetzel and Guan (2004:15) claim that some practical evidence is still needed to create a better understanding of the capabilities of financial analysis in detecting accounting irregularities. For that reason it is necessary to research the use of financial analyses and the interpretation thereof; as a foundation for the comprehension of financial health and as a helpful tool in detecting and identifying accounting irregularities.

This chapter gives some background about various uses for financial statement analysis. Methods and techniques that were coined by researchers many years ago, but which are still being used today, are discussed. The various uses for financial analyses may include and assist in a search for accounting irregularities that are manifested in the financial statements. The chapter commences with a review of research on the uses of financial statement analysis, followed by a review of the uses of financial analysis specifically to detect and identify accounting irregularities in the financial statements.

### **3.2 THE USE (AND PROBLEMS) OF USING FINANCIAL ANALYSIS TO DETECT AND IDENTIFY ACCOUNTING IRREGULARITIES**

A large part of any financial analysis consists of ratio analysis. Morley (1984: vii) defines ratio analysis as the process of calculating and evaluating financial ratios on the basis of the accounts of an organisation. Each ratio expresses the relationship between two or more figures from the financial statements. Ratio analysis as a measure to analyse and evaluate performance and to predict future occurrences has received both criticism and praise in the past.

Fridson and Alvarez (2002:3) claim that financial analysis, particularly ratios, is useful for different purposes and can be used by a variety of people. As researchers they focus mostly on investment managers, corporate financiers and commercial lenders, but there is no reason why ratios cannot be successfully implemented by investors and creditors who want to secure their interests in a company against corporate misconduct.

Ratios have the capability to be used in financial analyses, but there is a risk inherent in using financial ratios. They can be interpreted incorrectly, which can cause confusion. The calculation of financial ratios is mostly done by humans and the interpretation of financial ratios is mostly a matter of human judgement. Therefore, the use of financial ratios becomes subject to the possibility of human error. This implies that financial ratios are not a foolproof means of evaluating an organisation's financial performance and position. Some difficulties with ratio analysis that were identified by Morley (1984:35) are that they ignore accounting policies, disregard specific industry characteristics, lead to improper comparisons, allow technical errors and lead to an exclusive reliance on ratios. However, it is possible to take steps to reduce these difficulties: for example, by taking accounting policies into account, by scrutinising the disclosure notes and by considering the industry in which a company operates.

A sure problem with ratio analysis is that it does not include size as an important factor that needs to be considered. In 1968, Altman started to identify ratios to predict possible

bankruptcy. He found that an important benefit of using ratios is that they eliminate discrepancies in comparisons by removing the effect of company size. He however also recognised that difficulties arise when ratios take away the effect of size. Size has an impact on the performance and position of the companies that are being studied (Altman, 1968:593). It is therefore important that a measure taking size into account is also included when a company is analysed, whether for financial position and performance or for accounting irregularities.

Because of the use of creative accounting, financial statements on their own do not always reflect a company's financial position and performance accurately. For example, a practice called "income-smoothing" is used in some companies. Even though this practice is not explicit misrepresentation, it does mean that the financial statements will not give a completely accurate picture of the financial performance of the company. This becomes a problem for individuals who want to analyse the financial statements and it is something that interested parties would want to detect and identify. In order to get an accurate picture and to be able to identify something like "income-smoothing", various forms of analysis, including comparisons with other periods and companies (or the industry), need to be performed.

Some researchers believe that basic analytical procedures, such as trend and ratio analyses are not effective in signalling misstatements (Calderon & Green, 1994:30). However, they do acknowledge that the subject is open to debate and that they can be proven wrong, especially if more sophisticated statistical procedures are applied. Kaminski *et al.* (2004:16) additionally observe that very little is known about the use of financial ratios to identify irregularities in financial reports. In a study of 21 financial ratios, they found 16 to be significant. They believe that a detection model similar to Altman's Z-score for bankruptcy can be developed for accounting irregularities, but they did not go that far in their study. The results of the research by Kaminski *et al.* (2004) indicate that ratios are perfectly capable of classifying a firm as being honest in its representations (98%), but the identification of a firm that engages in corporate

misconduct was not as successful (24% to 59%). Their conclusion is therefore that ratio analysis is of limited use in the detection of accounting irregularities.

There is, however, still room for further research in this area. If combined with qualitative analysis, financial analysis of the financial statements may prove to be a reasonably successful method to detect and identify accounting irregularities. At the lack of any better alternative, it may be the single best means that one has available.

### **3.3 FINANCIAL ANALYSES THAT MAY HAVE POWER IN DETECTING AND IDENTIFYING ACCOUNTING IRREGULARITIES**

Pinches, Eubank, Mingo and Caruthers (1975:295) found that some financial ratios are useful for prediction purposes. In the same way, ratios may be helpful in identifying financial statement irregularities that may point to the presence of accounting irregularities. They quote Horrigan, who claims that the co-linearity between ratios means that only a few ratios are needed to capture most of the information. The most significant predictors that they identified were ratios in the categories of return on investment, capital turnover, inventory turnover and financial leverage. Three specific ratios in each category were sales/total assets, debt/total capital and debt/total assets. Three other significant ratios that did not fall into any of the categories were cash flow/total debt, working capital/total assets and net income plus interest/interest.

Wells (1997:475) acknowledges the importance of almost all the financial ratios for investigating accounting irregularities. He specifically refers to the liquidity, activity, leverage and profitability ratios. These are all useful ratios to evaluate the relationship between particular financial statement line items. Schilit (1993:125) claims that an analysis of the quality of earnings of a company is useful in determining its risk regarding accounting irregularities. The quality of earnings is calculated by comparing cash flow with net income. If a company tends to record healthy profits with high cash outflows, there may be reason for suspicion. Another measure recommended by Schilit (1993:133) is examining the relationship between sales and inventory, as well as the

relationship between sales and accounts receivable. Normally a company anticipates its future sales and then orders inventory accordingly. A sudden growth in inventory without a corresponding growth in sales can therefore perhaps be a sign of trouble. Also, if the accounts receivable grows faster than sales it may be indicative of misrepresented sales.

Holder (1983:103) came to a similar conclusion when he determined that auditors apply the inventory turnover ratio, the gross margin ratio and the accounts receivable aging analysis extensively to detect accounting irregularities. There are other procedures that are used frequently: examining the plant assets level, the inventory level, the accounts receivable level, the current ratio, the bad debts level, and the interest expense to debt ratio, as well as analysing the financial statement element fluctuation, the interest expense level, the day's outstanding revenue, and the depreciation level. The depreciation to property, plant and equipment ratio is not generally used (Fridson & Alvarez, 2002:62). This ratio gives an indication of whether depreciation charges have been manipulated (a low result indicates that the company is unrealistic in its estimate of the pace of depreciation).

Wells (1997:471) mentions the use of vertical and horizontal analysis. In a vertical analysis, all the numbers in a statement are expressed as percentages of a chosen significant item. In the income statement, all items are mostly expressed as a percentage of sales, and in a balance sheet as a percentage of total assets. This is also called the "percentage" or the "common form" income statement (Fridson & Alvarez, 2002:54). In a horizontal analysis, the percentage of change in figures from one period to the next is calculated and analysed. Adverse results obtained from these methods need not be indicative of accounting irregularities; as it can likely be explained away as the effect of organisational, industrial and economic factors and conditions.

Fridson and Alvarez (2002:334) recommend the use of Altman's Z-score in financial analyses. Some researchers claim that financial distress may indicate a higher propensity for accounting irregularities in a business, as businesses in financial distress

are in dire financial straits and may feel that it is necessary to apply unethical means to improve the appearance of their financial position. For that reason, Altman's Z-score may also be helpful in a search for accounting irregularities.

For his study on bankruptcy, Altman (1968:594) used ratios from the major categories from which to derive his Z-score: liquidity, profitability, leverage, solvency and activity.

$$Z = 0.012x_1 + 0.014x_2 + 0.033x_3 + 0.006x_4 + 0.999x_5$$

Where:

- $x_1$  = working capital/total assets
- $x_2$  = retained earnings/total assets
- $x_3$  = earnings before interest and tax/total assets
- $x_4$  = market value of equity/total liabilities
- $x_5$  = sales/total assets

A score below 1.81 is an indicator of financial problems, while a score of above three indicates a healthy organisation. A score between 1.81 and 3 falls in a grey area where no clear signal of possible success or failure is given. The use of financial distress can therefore be an important indicator of a company's financial well-being and therefore can be a possible indicator of an increased risk for accounting irregularities.

Another measure that is recommended by Fridson and Alvarez (2002:358) is the sustainable growth rate. It is calculated as follows:

$$\text{Sustainable growth rate} = (\text{Return on equity}) \times (\text{Income reinvestment rate})$$

Where:      Income reinvestment rate = 1 – Dividend payout ratio

Ratio analysis has been proven to be helpful in determining, amongst other things, the liquidity, solvency, profitability, financial distress and growth rate of a company. In the

same way, it is likely that ratio analysis may prove to be helpful in detecting and identifying accounting irregularities.

### **3.4 THE EFFICIENT MARKET HYPOTHESIS**

The theoretical basis of the statistical analyses described later in the study lies in the mechanics of the efficient market hypothesis. The efficient market hypothesis has its origins in the corporate finance subject field from which the use of financial statement analysis stems. It is important to consider the effect of market (in)efficiencies since market data is used in the statistical analyses described later.

When theories about share price movements were initially researched, the random walk theory was introduced. The random walk theory claims that share prices follow a random walk and cannot be predicted through the analysis of past share prices. Johnson and Tellis (2005:490) define this in simpler terms, stating that share prices behave as if each day's price comes from something similar to a "random draw." Therefore the best estimate of tomorrow's price is today's price and past prices are of no consequence when predicting future prices.

However, there may be some shortcomings in the random walk theory. Today the general view is that share prices do not follow a pure random walk, but rather behave according to the efficient market hypothesis theory. The efficient market hypothesis states that share prices adjust according to information that affects the share market (Johnson & Tellis, 2005:490). The efficient market hypothesis is therefore the theory or hypothesis that securities markets reflect all available information. If this is the case, an assumption can be made that the flow of information is unrestricted and is immediately reflected in share prices. This means that tomorrow's price changes will only reflect tomorrow's news and be independent from today's changes. If the assumptions of the theory hold true, they make markets useful tools, because they reflect new information quickly.

However, the efficient market hypothesis and market reactions to information do not operate perfectly. Therefore three forms of market efficiency are defined, based on the amount of information that affects the share prices in a particular market. There are three forms of market efficiency: weak form, semi-strong form and strong form. Semi-strong form is generally accepted as the standard at which efficient market hypothesis tests are conducted (Findlay & Williams, 2001:183) and refers to a market where both past information and all publicly available information are reflected in share prices. Weak form efficiency refers to a market where only past information is reflected in share prices while strong-form efficiency refers to the unlikely situation where a company's internal private information is also reflected in share prices.

Various researchers have conducted research about the efficiency of the South African market. One of the first studies was conducted by Gilbertson and Roux (1977), in which they found the Johannesburg Stock Exchange of South Africa to be an efficient capital market. Later studies focused more on the efficiency of all the markets on the African continent as a whole. However, researchers such as Magnusson and Wydick (2002), Jefferis and Smith (2004), as well as Mlambo and Biekpe (2007) found the Johannesburg Stock Exchange of South Africa to be at least weak-form efficient, but with tendencies towards semi-strong efficiency. The level of efficiency found in the South African market ensures that analysis of share returns may provide useful information.

Unfortunately it is not reasonable to expect that the efficient market hypothesis will hold true in all cases. However, many financial economists and statisticians believe that the hypothesis is at least partially accurate (Malkiel, 2003:60). The analysis of share prices is therefore still a worthwhile method of research for various purposes. It is not possible to correlate each day's share price movements to news events, but significant events ought to be visible in share price movements. Unlike real economic variables, share prices have the ability to change almost immediately and without cost (Findlay & Williams, 2001:187). Malkiel (2003:73) states that share prices can be sensitive to investors' responses to small changes in risk perceptions. Fama (1998:284) and Malkiel

(2003:61) also find that the full effect of any announcement of information is grasped only over a period of time. Therefore news data of a company must be analysed for a period before and after an identified share return change or event in order to consider all possibilities of what caused a change in share returns.

Findlay and Williams (2001:182) claims that all perfect markets are efficient, but that a market does not need to be perfect to be efficient. This means that the assumption of the efficient market hypothesis can be applied to share price information in order to establish trends and events. Fama (1998:283) used event studies and the efficient market hypothesis to observe how share prices react to information. He found that there are often both over- and under-reactions to information. However, it remains true that share prices do reflect available information, albeit only over a period of time. As part of a paradigm shift in financial studies, the use of equilibrium structures have become more popular. For this reason, the equilibrium assumed to be in place with share prices can be observed to establish what effects the addition of information has on share prices.

The implication of the effects of the efficient market hypothesis for this study is that the daily share price data of the case study companies have the potential to indicate when significant changes happened in each of the companies and/or the companies' environments. Statistical analyses of share price data using event studies, regression analyses and structural break analyses can therefore support and serve as further support for the findings in the qualitative and quantitative analyses.

### **3.5 SUMMARY**

In the past, financial data has been used extensively for various performance and position measurement purposes, as well as to make predictions about future performance, position and possible bankruptcy. This was done because, in many cases, financial data may be the only available reference for investment and financial decisions internal and external to the company.

In the same way that financial data can be used for performance and position appraisal, it can also be analysed to detect and identify accounting irregularities. Researchers have found that there are some procedures that are more appropriate for this purpose. However, research in this regard is at present still fairly limited, especially in a South African setting.

Because of the fact that certain conscious actions lead to changes in particular financial accounts, it is proposed in this study that selected ratios may be able to detect the occurrence of accounting irregularities. Together with this, there is a possibility that the application of the mechanics as established by the efficient market hypothesis through statistical techniques that may have the potential to detect and identify cases of accounting risk. These arguments are developed more fully in Chapter Seven where the analyses of a number of case study companies are described.

In Chapter Four the reader is given a detailed account of the research methodology and research methods that are applied in the rest of the study.

## **CHAPTER FOUR**

### **RESEARCH METHODOLOGY**

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#### **4.1 INTRODUCTION**

This chapter forms part of Phase Two of the Mitroff model as described in Chapter One. In this chapter a conceptual model is developed for the proposed empirical research.

In order to add significant value to the research area, the topic that is to be addressed in this study warrants the use of a variety of different research methods. Different types of data are collected and analysed in order to get a view from different angles. This provides the opportunity for a range of different insights and results that needs to be considered and evaluated to reach a final conclusion. The following paragraphs describe the research structure, the objectives and the investigation methods that are used in the study.

#### **4.2 RESEARCH STRUCTURE, OBJECTIVES AND AIMS**

##### **4.2.1 Research design structure**

Due to the uniqueness of the study to be conducted, a design of mixed methods is the most appropriate, since it combines different research methods and different types of data to extract the most comprehensive results.

Mixed methods research is defined as a research method that focuses on collecting, analysing and mixing quantitative and qualitative data in a single study (Creswell & Plano Clark, 2007:8). Mixed methods research may not be as scientific as traditional research methods, but since accounting and finance can be categorised as part of the social sciences, alternative approaches may be required. Ryan, Scapens and Theobald (2002:46) recognise that the social sciences do not lend themselves to being

researched objectively, as it is thought to be possible in the natural sciences. Therefore, by mixing data and research methods, it is possible to gain a better understanding of a problem and perhaps to be better equipped to derive possible solutions using this mixed methods approach. This method is particularly useful in this research area, which involves accounting and finance, since there is a strong element of the natural sciences integrated with it in the form of mathematical and statistical methods.

Robson (2002:59) categorises research into the following:

- exploratory – exploring unknown research areas;
- descriptive – describing or creating a profile of persons, events or situations;
- explanatory – seeking an explanation of a situation or problem through causal relationships; and
- emancipatory – creating opportunities and the will to engage in social action.

Of these methods, this study falls into the category of exploratory research, since the study involves a relatively new field of research.

Unfortunately any research project, regardless of its category, is subject to construct validity threats. Construct validity refers to the ability or inability of a chosen measure to really measure what it is supposed to (Robson, 2002:102). Construct validity is addressed by establishing adequate operational measures for the concepts that are studied (Yin, 2009:34). Two specific types of threats to validity can have an effect on a study, namely internal and external validity. Internal validity refers to whether a study has generated accurate and valid findings of the phenomena studied while external validity refers to the next stage in research, where it has to be established whether the findings of a project can possibly be generalised or applied to all similar cases (Mouton & Marais, 1996:50). In addition to internal and external validity, Yin (2009:37) also adds the threat of reliability. The goal when aiming to ensure reliability is to minimise errors and biases in a study. In a case study research environment specifically, this is best accomplished through the repetition of a case study's analysis.

Mouton and Marais (1996:68) believe that construct validity is one of the most difficult problems to address in social science research. This is because research in the social sciences is characterised by a majority of theoretical concepts. Mouton and Marais (1996:91) and Robson (2002:175) find a possible solution to validity threats through the use of triangulation, claiming that this method has the potential to decrease the effect of internal and external validity threats and to increase the reliability of a study. An adaptation of triangulation, as defined and described in the sections that follow, is used in this study to address these threats.

Downward and Mearman (2007:77) define triangulation in social research as the combination of different sets of insights in an investigation. They continue to explain that there are different types of triangulation, namely data triangulation, investigator triangulation, theoretical triangulation and methodological triangulation. This research study makes use of methodological triangulation, specifically the so-called “between-method”. This is where different research methods are combined, such as quantitative and qualitative or subjective and objective evaluation. Creswell and Plano Clark (2007:62) also recommend triangulation when a researcher wants to use qualitative and quantitative data and various research methods in a single research project, which is the case in the study to be conducted here.

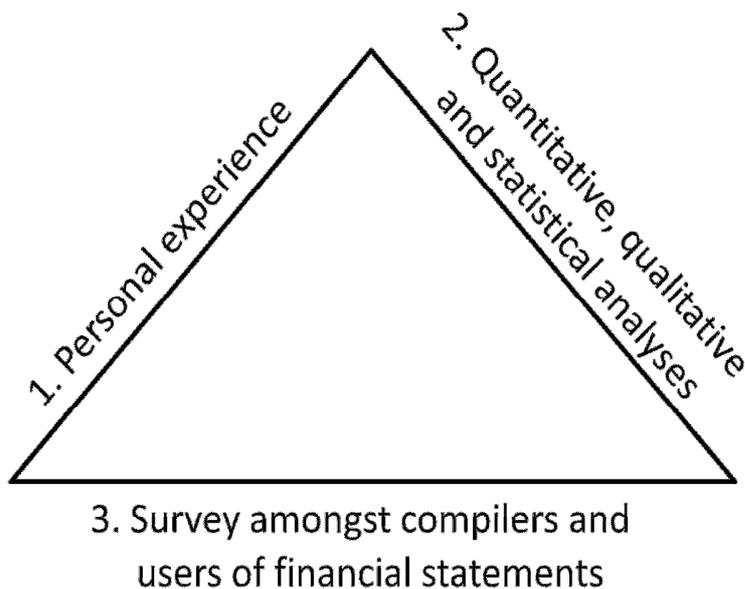
By using triangulation, therefore using more than one method to collect and analyse data, one is able to compensate for the limitations of different data sets and different research methods. According to the findings on triangulation by Olsen (2004), this research method has the potential to provide the researcher with multi-perspective interpretations because it makes the research multi-disciplinary. It additionally assists in making sure that research is interdisciplinary and holistic as well as being able to cut across the qualitative-quantitative divide.

Based on the evidence from the research referred to above, this study is classified as an exploratory study that makes use of triangulation to define the different empirical research areas. The study has four objectives, which are set out in detail with their aims

in a later section. In Figure 4.2, the three approaches that are to be followed in the application of a triangulation methodology become clear. Therefore Phase Three of the Mitroff model is to be completed using the triangulation methodology and will consist of the following:

1. Identification of characteristics that are prevalent in companies with a risk of accounting irregularities
2. An analysis of the case study companies using quantitative and qualitative means; with statistical analysis of the companies by means of event studies and regression and structural break analyses
3. A survey sent out to a selection of people involved in the preparation of annual reports as well as users of annual reports.

**Figure 4.1: Illustration of how the triangulation methodology is applied in this study**



**Source:** Own application of the triangulation methodology

The approaches, as illustrated in Figure 4.1, are implemented as follows:

- Personal experience - As part of the initial development of the research idea, an article was written by the author (Du Toit, 2008) in which the characteristics

displayed by companies with a risk or a propensity for accounting irregularities were analysed from existing literature. This, together with personal experience gained by the author while doing a post-graduate diploma in investigative and forensic accounting, forms the first stage of the research that is conducted in the triangulation model.

- Quantitative, qualitative and statistical analyses: The second stage is to observe the characteristics identified during the author's personal experience in as objective a way as possible. For this, quantitative and qualitative analyses are performed on the published annual report of five case study companies that have had allegations of accounting irregularities against them. The quantitative and qualitative analyses are supplemented with statistical analyses of significant events that the companies went through during the period in which accounting irregularities allegedly occurred and also by means of regression analyses of share prices over the same period.
- Survey: The third stage consists of questionnaires sent out to compilers and users of corporate annual reports. This stage aims to give a subjective view of how useful the practitioner finds the annual report when observing and attempting to establish the financial health of a company.

The collection and analysis of the data from five companies, which forms the most integral part of the study calls for a case-study approach. Robson (2002:165 & 182) defines a case study as an in-depth analysis of one or more cases, and also states that a case study is ideal for an exploratory study in order to get a feel of what is going on in a situation that is created by a new research area. The fact that case studies are useful for exploratory research is confirmed by Yin (2009:1) and that it is common in accounting research is confirmed by Ryan *et al.* (2002:143). Not only based on these findings, but also because of limited data availability, exploratory case study research forms a significant part of the study.

When it comes to the type of data that is analysed in an exploratory study, Mouton and Marais (1996:51) claim that internal validity threats in particular can be reduced through

the use of case studies as a means to overview phenomena. In addition to that, they also claim that external validity threats can be addressed through an overview of phenomena by means of exploratory surveys, such as the observation of available literature or surveys distributed to individuals. As is the case with any research method, case studies do pose a few problems, as is discussed at a later stage in this section, but it can still be considered to be a useful way to observe phenomena.

According to Yin (2009:2-3), case study research arises from a need to understand social systems and relationships. The use of case study analysis allows a researcher to obtain and observe realistic characteristics of real-life events. The use of a case study in this particular research can be motivated through a number of arguments. The first is that limited data on the phenomena is available for the analyses. Secondly, case studies allow for investigating contemporary phenomena in a real-life context. Thirdly, a case study enquiry copes with a situation where there are significantly more variables of interest than data points. Finally, case study research is ideal where the prior development of theoretical propositions is used to guide data collection and analysis.

A few additional characteristics of case study research are provided by Ryan *et al.* (2002:146-149). With regards to the view of the world that is observed, the goal is to identify relationships in a world that is external to the researcher. The nature of explaining such relationships is mostly deductive, since the direction of the researcher is from the specific to the general. Hypotheses and theories are generated through exploration, using theory to generate theories. It is difficult to make statistical generalisations about the population from which a case study comes, but a case study is able to act as a tool to generate hypotheses that can be tested in further studies on larger populations. Case studies are therefore especially useful where theories are not well developed. The researcher can make use of some existing theories and allow these to assist in modelling patterns and perhaps developing further theories.

There has been criticism in the past against the use of case studies in research (Yin, 2009:10). Yin continues to explain that such criticism generally arises from the fact that

people feel one should not make generalisations from the limited research opportunities provided through case study research. A problem with case studies, as identified by Ryan *et al.* (2002:159), is firstly that it can be difficult to draw boundaries around the subject matter of a case study. As it can be difficult to study all aspects of a social system, the researcher therefore needs to set artificial limits on the subject matter. A second matter that may have an effect on the reliability of a case study is that it is virtually impossible to conduct a purely objective social systems case study. A social system is made up of humans and since studies are conducted by humans it means that a subjective human element is part of all case studies based on social systems.

However, apart from the criticisms, case studies are still considered as a useful means of doing research. Instead of doing research in terms of enumerating frequencies (called statistical generalisation), the goal is rather to expand and generalise theories (called analytical generalisation). According to Ryan *et al.* (2002:144), exploratory case studies enable researchers to create hypotheses about the reasons for certain occurrences. Such hypotheses can later be tested in larger-scale studies. Based on this, a case study approach appears to be the most appropriate way for data collection and analysis for purposes of the study to be conducted here, since the conditions that are described are all applicable to the study that will be undertaken.

#### **4.2.2 Research objectives and aims**

The main significance of this study lies in its focus on a South African setting, and the establishment of a range of characteristics that can be used by interested parties to detect and identify accounting irregularities manifested in the published financial statements of a company. Interested parties who are outsiders to the company may not have the benefits of the information or skills in analysing techniques that are available to parties internal to the organisation and with the necessary financial knowledge. The end result of the study is not limited to interested parties external to a company alone, but could also be helpful to all interested parties to detect and identify accounting

irregularities. The following paragraphs set out the four main objectives and aims of the study, based on the research design structure that was explained in Section 4.2.1.

The first objective of the study is based on the first step of the triangulation methodology, namely personal experience of the author. This experience stems from an article by the author (Du Toit, 2008), which also originally motivated the research study. The article made an investigation into the characteristics, as identified by researchers both locally and abroad, which are displayed by companies with higher risk of suffering from the occurrence of accounting irregularities. The aim of such an analysis was to ascertain which characteristics various authors and researchers reach consensus on. It is assumed that such characteristics have the potential to be useful in the assessment of a company's vulnerability to accounting irregularities.

The second objective of the study forms the basis for step two in the triangulation methodology. This involves firstly a survey of the media by means of a literature review in order to identify case study companies that had allegations of accounting irregularities against them and which can be used in further analyses.

The third objective refers to step two in the triangulation methodology and involves an analysis of the case study companies identified in the second objective. Subjective quantitative and qualitative analyses are performed on the annual reports of the identified companies. For each of these case study companies, a control sample of companies in the same sector with no known accounting irregularities is used as a comparison. The aim is to determine whether the characteristics that are identified in the first objective hold true in practice. If this is the case, such characteristics have the potential to be applied in the detection and identification of accounting irregularities by interested parties without internal knowledge of a company.

The fourth objective, also part of step two in the triangulation methodology, involves statistical analysis of the share price data of the case study companies that are allegedly guilty of committing accounting irregularities. The statistical analysis consists of an event

study, a regression analysis and a structural break analysis performed for each company in order to determine when and under what circumstances significant change happens. The aim with the statistical analysis is to support the findings of the third objective and perhaps also serve as a means of detecting and identifying occurrences of accounting irregularities.

The fifth and final objective is depicted in step three of the triangulation method and involves sending a questionnaire out to compilers and users of financial statements. The questionnaires are analysed statistically with the aim of deriving conclusions regarding what practitioners experience and what their feelings are regarding the use of financial statements and accounting data in an analysis of the financial health of a company. The questionnaire contains three factors, which also represent three constructs that the questionnaire aims to answer:

- **Construct 1:** Financial statements can be used for decision-making and predicting of the future
- **Construct 2:** Ratio analysis is useful when analysing a company's financial health
- **Construct 3:** There is a need to use more than financial information from the financial statements when analysing a company's financial health

## **4.3 METHOD OF INVESTIGATION**

### **4.3.1 Research design**

Because this research study is mainly an exploration into a relatively new research area making use of triangulation and a case study approach, it also falls into the category of a flexible research design structure. Robson (2002:5) defines a flexible research design structure as research that emerges in various forms and arises from various theoretical positions. Two characteristics that capture the essence of a flexible research design structure are “qualitative” and “flexible.” The methods used in flexible research are firstly qualitative, because they result mostly in qualitative data, and secondly they are flexible, because very few specifications are established beforehand but rather develop as the research progresses.

Other characteristics that Robson (2002:166) gives of a flexible design structure are that the study should be framed within the assumptions and characteristics of a flexible approach to research, but it must be informed by traditional methods of enquiry. He contends that the traditional methods used in the enquiry need not be “pure”, but may involve several procedures brought together. A project with a flexible design starts with a single idea or problem that the researcher wants to understand and address and not a causal relationship of variables, even though this may follow later in the research. Multiple data collection techniques may be used and data is analysed using multiple levels of abstraction and writers often present the studies in stages. The study to be conducted here has characteristics that are in line with what is described above. The research involves five case studies that are analysed using the three steps of the triangulation methodology, but in a broad and flexible way, which means that the specific methods and techniques that are applied for the triangulation steps develop as the study progresses. The described research design is applied to the specific objectives and aimed outcomes of this study as identified in 4.2.2.

Using the proposed design structure, the research in this study is split into five distinct sections. The first section, based on personal experience and a literature review, deals with identifying the characteristics previous researchers found to be useful in the detection of an increased risk of accounting irregularities. The intention is to determine whether previous research indicated that companies with a greater risk for accounting irregularities show similar behaviour patterns and characteristics.

The second section of the study is devoted to an identification of South African companies with known allegations of accounting irregularities against them, to use as case studies.

In the third section, the annual reports of the companies identified in the second section are analysed in a subjective way so as to determine whether quantitative and qualitative analyses of annual reports have the potential to be used successfully to detect and identify increased risk and the possible occurrence of accounting irregularities.

The fourth section of the study involves statistical analyses of the identified companies with allegations of accounting irregularities against them. The statistical methods include event studies, regression analyses and structural break analyses. The aim is to establish which significant occurrences had an impact on the companies' operations. This, in turn, will establish when and under what circumstances significant changes happened in the company or in its environment.

The fifth and final section of the study is devoted to the results from a questionnaire sent out to compilers and users of financial statements. The questionnaire sets out to establish their opinions and experiences regarding the use of financial analyses to determine the financial health of a company.

If the research proves successful, it has the potential to provide interested parties with a range of characteristics that are displayed by companies with an increased risk of

accounting irregularities. Such characteristics will also assist in the detection and identification of existing occurrences of accounting irregularities.

#### **4.3.2 Data collection**

In Robson's (2002:165) explanation of a case study approach, he states that the data to be used in exploratory case study research needs to come from various sources, such as documents, archival records and observations. This is confirmed by Yin (2009:83). Robson also states that, in flexible design, some less scientific decisions may have to be made regarding the collection of data and that the sampling strategy needs to evolve with other aspects of the design. For this reason various types of material are used in this study.

In order to meet the first objective, literature from various sources and by a variety of authors is analysed so as to determine whether there are specific characteristics displayed by companies with a history of a greater risk of accounting irregularities.

For the second and third objectives, the problem of obtaining data is similar to that which becomes apparent in a study done by Beneish (1997), where he found it problematic to find data of companies with a history of irregularities. In South Africa, there is no formal record of companies that have a history of irregularities in their accounting systems. There have also not been a significant number of companies in South Africa with known accounting irregularity allegations against them. Due to this lack of data, media searches are performed to identify companies that had allegations or cases of accounting irregularities against them. After the companies are identified, the annual reports that are obtained from the McGregor BFA database of company information are to be subjectively analysed.

For the fourth objective, namely statistical analyses in the form of event studies, regression analyses and structural break analyses, the daily share price data of the identified case study companies is used. The daily share price data over the relevant

period for each company as well as the market return over the same periods are obtained from the McGregor BFA database of company information.

For the fifth objective, data is obtained by means of a questionnaire sent out to a selection of compilers and users of financial statements. The aim is to determine the opinion of people in practice regarding the use of accounting data, and specifically the published financial statements in order to evaluate the financial health of a company.

### **4.3.3 Data analysis**

Robson (2002:311) claims that observation is a commonly-used method in exploratory research. It is mostly unstructured in form and seeks to find out what is going on in a situation in order to find explanations. In this study, different types of data is observed and analysed in order to identify trends that may be useful in future observations of similar data.

For the first objective, that being the analysis of the characteristics and behaviour of companies with an increased risk for accounting irregularities, the work of various researchers is analysed and integrated. After a critical evaluation, this exercise creates a range of characteristics that have the potential be used in identifying an increased risk for possible accounting irregularities.

The second objective is to identify companies with allegations of accounting irregularities. For this purpose, information from media searches is reviewed and evaluated.

For the purpose of the third objective, share price information and financial statements are sourced for the analysis of the companies over each company's relevant "period of misconduct". These are obtained from the McGregor BFA database of companies for both the case study companies and for the control sample companies. In the McGregor BFA database the financial statements are already standardised, so no

manipulation is necessary in order to get the statements of the different companies into the same format (examples of the format of the financial statements are available in Tables B.1 and B.2 in Appendix B at the end of the document). The McGregor BFA database also provides calculated financial ratios; therefore it is not necessary to calculate any ratios. The annual reports and share price data used in the study depend on the availability of financial data, as well as the years in which the accounting irregularities allegedly occurred. For each company, five years' statements are used which cover the period when the accounting irregularities allegedly occurred, with the implication that the time period for each company differs.

In order to address the third objective – the analysis of the case study companies – complete quantitative financial analyses of the financial statements of the chosen companies are performed. This aims to establish whether accounting irregularities can potentially be detected through such means. In order to observe the qualitative aspects and the characteristics and/or implications of accounting irregularities in financial statements, the non-financial and non-numerical sections of the financial statements of the companies and their relevant control samples are analysed through observation of similarities and differences in the narrative reports that are included with the financial statements to make up a complete annual report. The quantitative financial analysis consists of a qualitative item-for-item review of the results from horizontal and vertical financial statement analyses, as well as a ratio analysis for each company and its control sample.

For the fourth objective, statistical analyses of share price data in the form of event studies, regression analyses and structural break analyses are performed to establish when and under what circumstances significant changes happened to each of the companies or its environment. This aims to provide further proof of the findings in the preceding quantitative and qualitative subjective analyses of the annual reports.

For a scatter plot and a regression analysis of each of the companies' data, the statistical computer software package SPSS20<sup>®</sup> is used. The regression analyses are

performed on the returns from the individual companies' shares and the returns from the market. The two variables in the regression analysis are in each case the share return of the company as the dependent variable and the market return as the independent variable. The aim of the regression analysis is to establish to what extent the companies' share price returns behaved differently to the returns of the market over the same period. If there appears to be significant differences between the returns from the companies and the returns from the market, or perhaps clear outliers, they can act as support to the earlier findings. In such a case there may therefore have been volatility within the companies which caused uncertainty in the market for the specific company's shares.

Depending on the aim of the analysis, each outlier can be considered and a decision can be made whether it is due to human error, or whether it is indeed an outlier. Such an outlier can then be excluded from the analysis or not. In this study an outlier may give additional information regarding break points. As part of the regression analyses, the F-statistic is also provided. The F-statistic gives information on the fit of the model.

For the Quandt-Andrews unknown breakpoint test (also called a structural break analysis/test), the statistical computer package E-Views<sup>®</sup> is applied using the companies' regression analyses as the basis. The results from the structural break analyses indicate when, in the five-year periods analysed for each of the companies, an event occurred that changed the trading structure of the companies' shares. The date on which such a structural break occurred should correlate with the period when the alleged accounting irregularities were first detected and identified. Through a backwards comparison of the findings in the media searches, qualitative and quantitative analyses, it can perhaps be established what characteristics the company and/or its financial statements displayed at that time, providing support for such characteristics as indicators of accounting irregularities.

For the fifth and final objective, the questionnaires sent to compilers and users of financial statements are analysed statistically. Feedback is obtained by means of a

questionnaire distributed randomly to respondents working in a financial environment in South Africa and specifically involved in either compiling or using financial statements.

The questionnaire poses 25 statements, on which the respondents have to indicate on a five-point Likert scale whether they strongly agree, agree, are undecided, disagree or strongly disagree. The results of the questionnaire will be statistically analysed using the BMDP Statistical Software Package<sup>®</sup>. Additionally, underlying relationships between statements can be found by means of a factor analysis.

The next three sections give a more detailed description of the methods used in the qualitative, quantitative and statistical analyses, the results of which appears in Chapter Seven.

## **4.4 THE QUALITATIVE AND QUANTITATIVE ANALYSES**

### **4.4.1 Qualitative analysis**

For the qualitative analysis, the financial statements of each year are used just as they are made available to the public. These statements are obtained from the McGregor BFA database as Microsoft<sup>®</sup> Office Word documents. For the control sample, the statements are obtained for the same periods as for the companies with allegations of accounting irregularities. The periods in which accounting irregularities took place and which are relevant to the study occurred mostly before international reporting standards were introduced in South Africa. This leads to narrative reports that differ to some extent between the companies with allegations of accounting irregularities and their control samples. For this reason, the focus in the qualitative analysis falls mainly on reports not regulated by GAAP (such as the chairman's report, director's report and the audit report) that are similar between the companies and therefore comparable.

#### 4.4.2 Quantitative analysis

For the quantitative analysis, the financial statements of the case study companies are obtained from the McGregor BFA database. The reporting periods of the financial statements used in the analysis depend on the year(s) in which the alleged accounting irregularities occurred. A period of five years is selected for each company, because it appears that after such time has passed, the incidents are in each case either solved, or the company delisted from the Johannesburg Securities Exchange South Africa. A period of five years also ensures that there is a period before and after the alleged accounting irregularities in order to observe changes and trends over time before and after the alleged occurrences. The date ranges differ for the companies, because these were the periods when irregularities allegedly happened in the accounting system for each company. The same date ranges are in each case used for each individual control sample to be compared with each case study company. Detail about the period chosen for each company and its control sample is available in Table B.3, Appendix B.

For the horizontal analysis, percentage changes are calculated on a time-series basis. For the vertical analysis, all items from the balance sheet are expressed as a percentage of the line item “capital employed”. In the income statement, all items are expressed as percentages of the line item “turnover”.

The ratio analysis of the case study companies and its control samples are based on the ratios that are calculated and made available by the McGregor BFA database. The McGregor BFA calculates ratios that can be regarded as “familiar” ratios and that are often also available in the annual report of a company. No attempt is made to calculate any additional ratios that are not available from the McGregor BFA database, as the aim of the study is to work with information that is most readily available to interested parties who may not have the resources to do further calculations. Details regarding the McGregor BFA ratios are available in Table B.4 in Appendix B at the end of the document.

Share prices and share price ratios are not available for the control samples, since the control samples are the totalled financial statements of the sector excluding the company with allegations of accounting irregularities. Share prices and share price ratios are, however, included in the analysis. This means that share price ratios are only compared on a time-series basis and not on a cross-sectional basis.

#### **4.5 THE STATISTICAL ANALYSIS**

In order to further analyse the companies from the case studies and to provide additional supporting data, statistical analysis is used. However, a traditional statistical method such as the so-called “t-test” is not recommended for data with many variables, as is the case in this study. The probability of statistical error is too high when such a method is used with a large number of variables. A possible solution is the use of statistical analyses through econometrical methods. Such methods analyse changes in the share prices of companies, through which significant events may be identified.

Three econometric statistical methods are applied to the data in this study, namely event studies, regression analysis and structural break analysis. Event studies are used to make simple comparisons between dates and share prices to see when significant events occurred. Regression analyses and structural break analyses are used to make comparisons between market returns and the returns of the individual companies. Such analyses assist in identifying those dates when significant events or structural breaks occurred over the periods when irregularities allegedly took place in each case study company. Through analysis of the data from the formal Stock Exchange News Service (SENS), it can be determined what happenings on those dates may have resulted in the events and/or structural breaks and perhaps what might have led to accounting irregularities.

#### 4.5.1 Event studies

An event study refers to an empirical study of asset (share) prices before and after an event, like an announcement, merger, or dividend. Event studies are mostly used for examining security price behaviour around events such as accounting rule changes, earnings announcements, changes in the severity of regulation and money supply announcements (Bender, 1998:111). This leads to the assumption that certain changes in share returns can be applied “backwards” to identify possible events.

Event study methods assume that share returns can be predicted to some degree (Wells, 2004:62). If predicted returns differ from actual returns, some event may be the reason for the difference. The premise of an event study can be described through a three-step procedure (Cyree & DeGennaro, 2002:399), namely by firstly selecting a model of returns, by secondly calculating abnormal returns as the difference between realised returns and expected returns and by thirdly evaluating the statistical evidence of any abnormal returns.

Wells (2004:66) is of the opinion that event studies ought not to be trusted as being hundred percent accurate, since they are based on a number of assumptions which may prove to be false or which may be violated. One assumption that is made amongst others is that the returns across a study sample are independent of each other. This assumption is unlikely to hold true when the focus falls on a single industry.

However, the purpose of the event study analysis in this study does not call for a hundred percent accurate result, but only asks for a broad indication of the dates when occurrences happened that may have been significant in some way. Therefore, in this particular study, event analysis is used differently in the sense that it is not applied to observe what the effect of an event is on market values. It is rather an analysis of market values to see when an event that may have had an impact on the value of companies' share prices occurred. Bender (1998:122) found that it often happens that

corporate announcements, for example, are well guarded but that share prices still reflect changes around the announcement date.

The event studies of the individual companies in this study will indicate on which dates events occurred that may have been significant in some way. It is likely that such events may perhaps be in line with the findings of the qualitative and quantitative analyses and can therefore provide further support for the use of such characteristics in the detection and identification of accounting irregularities. For purposes of this study, the daily share price data for each company is retrieved from the McGregor BFA database of company information. Event study techniques, as described in the following paragraph, are applied to this data in order to identify on which dates certain occurrences had an impact on the price and volume of the individual companies' shares.

For each day in the identified 5-year period for each company, information about the closing share price, volume and the consumer goods index is obtained. This data is then used to calculate a return for the share price of the company and the consumer goods index. The calculated return of each company is then used in the FORECAST function of Microsoft® Office Excel to predict the future return by using the existing values. A difference is then calculated between each company's daily return and the forecast return. An accumulated difference is calculated by adding a specific day's difference to those of the previous periods. The STEYX function determines the standard error of the predicted return for each day in the data set. To establish if there appears to be any significant difference, the difference as originally calculated is divided by the standard error as calculated using the STEYX function. If the absolute value of the statistically significant daily difference is less than 1.96, it indicates that the difference is in fact not significant, but if it is more than 1.96, the difference is considered to be significantly different from zero at the 5% level of statistical significance. A 40-day rolling volume average is also calculated from the data, in order to bring in the element of significant changes in the volume of trade. If a particular date saw significant changes (or events), the date is flagged as "TRUE." If no significant events occurred, the date is flagged as "FALSE."

From the analysis described above, a final indication can be obtained of whether or not there were any events on a particular day that may have had an impact on the company. The exact formulae that were used in the event studies are supplied in Appendix F.

#### **4.5.2 Regression and structural break analysis**

Regression analysis refers to a basic statistical technique that is applied to find relationships between variables for the purpose of predicting future values. For the regression analyses in this study, the two variables analysed are the market return as independent variable and the share return of the individual companies as the dependent variable. The aim is to establish whether changes in the share price returns of companies can be predicted from changes in the market return.

In regression analysis the statistical F-test (also referred to as the F-ratio) is used to test the hypothesis that the amount of variation explained by the regression model is more than the amount of variation explained by the average by more than mere chance.

An additional application for a statistical F-test is in tests of structural change, also known as a structural break analysis or a Chow test (Greene, 2003:130). A structural break analysis refers to an econometric test which aims to determine whether the coefficients in a regression model show similarities in separate sub-samples. A test of structural change assumes that the underlying process is stable up to a specific point, from where it makes a change to a new structure.

In this particular study, the exact date of the structural break is unknown. However, Lee and Strazicich (2001:380) claim that an unknown structural break can be successfully identified through structural break principles. Greene (2003:139) also recognises that there are strategies to follow if the timing of a structural break is not known. One statistical test that identifies an unknown breakpoint is called the Quandt-Andrews Breakpoint Test. This method tests for one or more unknown structural breakpoints in

the sample for a specified equation. The idea behind the Quandt-Andrews test is that a single Chow Breakpoint Test is performed at every observation between two dates, or observations, and the test statistics from those Chow tests are then summarised into one test statistic for a test against the null hypothesis. By default the test determines whether there is a structural change in all of the original equation parameters.

For the purposes of the structural break analysis in this study, the weekly share returns for the five case study companies are used. As a comparator, the weekly returns of an all-share index over the same periods as for the individual companies are used. Weekly share price data of the company and the all-share index are obtained from the McGregor BFA database of company information.

A structural break analysis for each company aims to indicate if and when, in the five-year periods in which accounting irregularities allegedly occurred in each of the companies, an event occurred that changed the trading structure of the companies' shares. The date of such a structural break ought to correlate with the period when the alleged irregularities were first detected and identified. Through a backwards comparison of the findings in qualitative and quantitative analyses, it can perhaps be established what characteristics the company and/or its financial statements displayed at that time, providing support for such characteristics as indicators of accounting irregularities.

For the structural break analysis, a basic regression analysis needs to be performed first. This is supplemented with a graph over time and a scatter plot for each company that illustrates how the share prices of the companies with allegations of accounting irregularities compared with the market. Thereafter a Quandt-Andrews unknown breakpoint test (hereafter referred to as structural break analyses) is performed on the data of each company to identify the date(s) of any unknown break point(s) for each.

The regression analyses of the companies are presented in Appendix H and are discussed in the text. This is supplemented by a scatter plot of each company's share

return (on the vertical axis) and market return (on the horizontal axis). Usually a scatter plot gives an indication of the possible relationship (e.g. linear) between two variables and one can see if there are any outliers or extreme values. Outliers are values that are unusually large or small. A rule of thumb is to declare a value an outlier if it is more than two standard deviations from the mean.

#### **4.6 A SURVEY BY MEANS OF QUESTIONNAIRES**

The objective of using questionnaires is to obtain information from the users and the compilers of financial statements. The aim is not to develop a new theory, but rather to test and verify conclusions that were already reached, to supplement and verify the results of the qualitative and quantitative research.

Making use of questionnaires can lead to the discovery of a more in-depth understanding of the perceptions and experiences of those individuals affected by the information contained in financial statements. It gives the researcher the opportunity to capture information on how the targeted respondents, as representatives of the population, interpret and experience their environment.

As discussed by Khomba (2011), the use of a research survey meets the requirements of a proper method of study, namely,

- it addresses issues raised in the problem statement;
- it validates research hypotheses that have been developed to address the problem;
- reliability of data can be confirmed by means of statistical measurements;
- the questionnaire makes use of a Likert scale that can be statistically analysed;
- by means of using an electronic questionnaire, the opinions of a wide variety of people can be obtained;
- the method used allows the author to comply with the requirements of the University of Pretoria's Research Ethics Committee;
- research participants have a month to respond to the questionnaire, which is acceptable within the timeframe of the study; and

- the results enable the author to provide further proof of the research results that were previously obtained.

The study is conducted at a single point in time by means of a structured questionnaire (see Appendix I). The structured questionnaire is based on statements made by experts in the field of accounting and financial statement analysis. The main focus of the questionnaire is to determine the opinion of the users and the compilers of financial statements regarding these topics.

A structured questionnaire is the chosen method because it allows all the respondents to react to the same set of statements. Questions that are open-ended were avoided, because in such a question the respondent gives his/her own observation and it is more difficult to analyse statistically.

Making use of a structured questionnaire also gives the researcher the added benefit of reaching a wider variety of respondents over a larger geographical region than would be possible when making use of personal interviews and personal observations. The confidentiality that this type of survey provides to respondents also tends to increase the response rate (Khomba, 2011:254). For the benefits mentioned above, a decision was made to use a structured questionnaire.

#### **4.6.1 The questionnaire**

The questionnaire uses a five-point Likert scale, with structured statements to obtain the opinions of respondents regarding accounting and financial statement analysis. Likert scale questionnaires provide a measurement method based on standard response categories (Babbie & Mouton, 2007:160). A Likert scale provides a tool for researchers to measure the perceptions of respondents on a variety of topics in a structured way. It also makes the comparison of respondents' feedback possible. The Likert scale used in the questionnaire is based on a five-point scale that ranges from "strongly disagree" to "strongly agree".

The statements are both positive and negative and randomly placed in the questionnaire in order to encourage respondents to think about their answers. The individual results of the statements can be analysed using descriptive statistics by simply counting the number of respondents that gave a certain response to a certain statement. A score is calculated by assigning a numerical value to each response, from a 1 for “strongly disagree” to a 5 for “strongly agree”.

The Likert scale is perceived to be ideal for the social sciences, because the result is based on empirical data derived from the respondents’ answers rather than subjective opinions (Babbie & Mouton, 2007). The homogenous scales that respondents have to use for their answers also increase the probability of a unitary attitude (Khomba, 2001:257). It follows that the Likert scale is the best method of research for the study conducted here.

#### **4.6.2 Development of the questionnaire**

For developing the questionnaire, the researcher started off with statements that experts made about accounting and the use of financial analysis. From those, new statements were written that will test the opinion of the respondent on that specific topic. The researcher decided not to use the statements of the experts as they were, so as to avoid possible bias from the respondent. In the analysis of the survey results, the original statements will be linked again to the statements of the experts.

This procedure resulted in 25 statements on accounting and financial statement analysis. As mentioned by Khomba (2011:258), the shorter and more concise the statements and the entire questionnaire, the better the results.

After developing the initial questionnaire, it was presented to a sample of respondents in a pilot study. The preliminary respondents were required to give their opinion of the statements in the questionnaire and also to provide feedback on how they interpreted them. This is done so as to avoid any misunderstanding and possible problems later

with unreliable results and statistics.

The responses from the pilot study allowed the researcher to refine the questionnaire and correct all deficiencies and mistakes that were identified by the preliminary respondents. Some additional phrases were also added in places to make certain statements clearer. The questionnaire provided in Appendix I is the final version.

The questionnaire consists of two sections. Section A only requires the respondent to state whether he/she is a compiler or a user of financial statements. For purposes of this study, no further demographical information is necessary.

Section B presents the 25 statements in an uncategorised table. Even though the statements can be divided into separate sections for accounting and financial analysis (or “ratios”), and between positive, negative and neutral, it was not presented in that way to the respondent. This is to avoid any possible bias from the respondent.

#### **4.6.3 Profile of respondents**

The sample of respondents is randomly selected from different industries and various sizes of business. The only consideration is that the respondent must be either a compiler or a user of financial statements. Most often, if a respondent is a compiler of financial statements, he/she is also a user of financial statements.

The participants to whom the questionnaire was sent include company board members, chief executive offices, chief financial officers, financial directors, financial controllers, management accountants, financial managers, company secretaries and academic researchers.

#### 4.6.4 Sampling design and sampling method

Sampling is necessary in order to achieve representativeness, representative of the population from which it comes. In order to achieve that representativeness, the sample is taken randomly by using the simple random sampling technique.

All responses are taken from South Africa. This decision was made because the study has its focus on a South African environment and aims to find means by which parties with an interest in a company can protect their interest in South Africa.

The researcher wishes to do a statistical analysis for at least 200 respondents. Since the average response rate from similar studies is approximately 45% (Khomba, 2011:267), the sample size is determined as follows:

$$\text{Sample size} = \frac{\text{Targeted number of respondents}}{\text{Expected response rate}} = \frac{200}{0.45} = 444 \text{ respondents}$$

More than 444 questionnaires therefore have to be distributed to ensure that a response rate of 45% or 200 respondents can be reached.

#### 4.6.5 Collection of results

The questionnaire was sent out in electronic format, making use of the Qualtrics Online Survey Software<sup>®</sup> programme (<https://tuks.eu.qualtrics.com/ControlPanel/>). The link to the survey was sent out per e-mail to 500 potential respondents. The survey has settings that make it possible to “lock” the questionnaire so that it can only be completed by those respondents who have been invited by the researcher. This ensures the integrity of the questionnaire results by making it impossible for just anyone to gain access to the questionnaire.

#### 4.6.6 Analysis of the results

The survey data is analysed using the BMDP Statistical Software Package<sup>®</sup>. This package was chosen because of its statistical analysis capabilities and its popularity in social sciences research. Using the Qualtrics Online Survey Software<sup>®</sup> programme, the data is captured in the correct format for use in BMDP<sup>®</sup> without any further coding being necessary. Using the BMDP Statistical Software Package<sup>®</sup>, descriptive statistics, frequencies and factor analysis are performed on the data.

Descriptive statistics is the term used for statistics that describes the data that is obtained for a group of individual units of analysis. The descriptive statistics with which the analysis commences consist of:

- Mean
- Standard deviation
- Median

To supplement the basic descriptive, a frequency analysis is performed. Univariate analysis (analysing one variable at a time) is done by producing frequency tables. Such a frequency table provides the researcher with the number of respondents and the percentage for each of the categories for the variable being considered. In this study, frequency tables are extracted for each of the statements to summarise the respondents' agreement on each. Statistics can also be used to measure average ratings for each statement.

Factor analysis is also performed on the results obtained from the questionnaire. This can be referred to as bivariate analysis since it looks at correlations between different statements to determine whether there are any relations between the statements. The correlations do not imply that one variable causes another variable. For causal relationships it is necessary to collect and analyse data over a long period of time. The most common type of factor analysis, namely exploratory factor analysis, is used in this study to uncover latent dimensions in the set of statements of the questionnaire. This

allows one to reduce a large number of items into smaller, more manageable factors.

Els (2007:235) identified and summarised certain considerations that need to be taken into account when doing a factor analysis. They are the following:

- *Sample size* – For a factor analysis the sample size needs to be more than four times the number of statements in the questionnaire.
- *Method of rotation* – Rotation assists with the interpretation of variables making up a factor. This study makes use of the Direct Oblimin method of Oblique Rotation.
- *Reliability of factor analysis* – The reliability of the factor analysis is determined by:
  - Kaiser-Meyer-Olkin Measure of Sampling Accuracy (a value higher than 0.5 is deemed to be acceptable)
  - Bartlett's Test of Sphericity (the smaller the value, the more useful the factor analysis can be considered to be)
  - Initial Eigenvalues (explaining the total variance, Eigenvalues above 1 are indicative of factors that can be further analysed)

The factor analysis leads to prove or disprove constructs that were mentioned in Section 4.2.3 and is discussed with the results of the analyses of the questionnaire feedback in Chapter Eight.

## **4.8 ETHICAL CONSIDERATIONS**

In order to comply with the ethical considerations underlying the undertaking of any research project, attention was given to the following aspects:

### **4.8.1 Permission to collect data**

All company data (financials and market data) was obtained from public sources and all comments on company data and performance were made as objectively as possible in order not to create any bias.

Permission on ethical grounds to conduct the survey was given by the Post Graduate Research Committee of the Faculty of Economic and Management Sciences of the University of Pretoria.

#### **4.8.2 Informed consent**

Before the questionnaire could be completed, the respondent first had to read through a letter to explain the study and then also indicate his/her consent to take part in the survey.

#### **4.8.3 Confidentiality and anonymity**

To ensure confidentiality respondents were assured in a letter accompanying the questionnaire that the information would be treated with confidentiality. Various analyses are to be performed on the results of the questionnaire, but the resulting report will not identify any respondent personally.

The questionnaire and consent letter is available as Appendix I.

### **4.9 SUMMARY**

The research for this study makes use of different research methods in a flexible research approach as described in the preceding paragraphs. The reason for choosing such an approach was firstly the limited availability of data on this topic, especially data in a South African setting. A flexible approach is also considered to be ideal to ensure that all types of data around the topic are considered to ensure a thorough evaluation.

The study makes use of triangulation in order to conduct research in three ways. The main and most significant part of the study makes use of a case study approach. Research by Sharma and Panigrahi (2012:45) has indicated that one of the reasons for the limited number of relevant journal articles published about accounting irregularity

detection is the difficulty in obtaining sufficient research data. There is a challenge in getting fraudulent financial statements. Therefore the use of case studies is ideal in this setting, since there are only few companies that fit the profile of what need to be observed and evaluated. A case study approach also allows for situations where there are significantly more variables than observations, which renders the more traditional types of statistical analyses unreliable.

The case studies are analysed by means of financial analysis and also by means of descriptive statistics of market changes for those companies. This is supplemented by means of questionnaires that are distributed to the compilers and the users of financial statements in order to gain access to their opinions of the use of accounting and financial analysis.

It is believed that the methods to be used in this study encompass all areas of concern and that it will result in a thorough analysis of the topic. The analysis of the research results can provide some useful conclusions which are not only of value for use by interested parties, but also worthy of further research.

In Chapter Five the characteristics displayed by companies that have a greater risk for accounting irregularities are discussed. The information used to compile the chapter comes from the work of various researchers and writers around the world, including South Africa. There appears to be a number of quantitative and qualitative characteristics that are displayed by companies with a higher possibility of having accounting irregularities.

## **CHAPTER FIVE**

### **CHARACTERISTICS DISPLAYED BY COMPANIES THAT HAVE AN INCREASED RISK OF ACCOUNTING IRREGULARITIES**

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#### **5.1 INTRODUCTION**

This chapter forms part of Phase Three of the Mitroff model as described in Chapter One. Studies about criminogenic organisational structures indicate that all organisations are prone to crime, even if they are not inherently criminal (Robertson, 2002:53). However, in various studies it has been found that there are a number of characteristics that some companies display that show a tendency to accounting irregularities. This chapter sets out to summarise the findings of various researchers in order to compile a list of characteristics for companies that display a greater possibility for accounting irregularity occurrences.

The chapter commences with an analysis of the characteristics that can be found in companies with a tendency towards accounting irregularities and the relationships between such characteristics, as identified through previous research. Each characteristic or relationship is evaluated individually for consistency and its usefulness in the detection and identification of possible accounting irregularities.

#### **5.2 CATEGORIES OF CHARACTERISTICS THAT INCREASE THE RISK FOR THE OCCURRENCE OF ACCOUNTING IRREGULARITIES**

An analysis of the work of various researchers over a period that ranges from 1980 to 2010 reveals 22 main categories of company characteristics related to cases of increased risk for accounting irregularities. There may be more characteristics that have the ability to identify accounting irregularity risk, but these 22 characteristics are deemed to be observed most often. The identified characteristics are both quantitative and qualitative and it needs to be noted that some of the characteristics can only be evaluated subjectively, this having an impact on reliability. The 22 characteristics are set out in alphabetical order in Table 5.1.

**Table 5.1: 22 Categories of company characteristics considered in accounting irregularity analyses**

No	Category
1	Accounting transactions
2	Auditors
3	Cash flow
4	Company age
5	Company size
6	Control
7	Culture
8	Debt
9	Directors
10	Financial distress
11	Geographic location
12	Growth
13	Industry
14	Liquidity
15	Management
16	Personnel
17	Profitability
18	Receivables and inventories
19	Remuneration
20	Shareholding
21	Stock market performance
22	Structure

**Source:** Du Toit (2008)

### 5.3 THE ANALYSIS OF COMPANY CHARACTERISTICS AND RELATIONSHIPS

This section summarizes the detailed findings of the various researchers' studies with regard to the above 22 categories of characteristics displayed in cases of increased risk for accounting irregularities. Each characteristic or relationship is followed by a short summary of the findings and the usefulness of the characteristic or relationship in the detection and identification of accounting irregularities. It is important to note that the presence of no single one of these characteristics or relationships can act as guaranteed confirmation that a company engages in accounting irregularities. The aim is to create a range of measures that have the potential to act as indicators of increased accounting irregularity risk. Such measures also need to be observed together and in conjunction with other types of analysis.

### 5.3.1 Accounting transactions

From the findings of various researchers in the past, it appears that the use of unusual and complex accounting transactions and practices tend to be present in companies that experience accounting irregularity problems. It also appears as if companies with accounting irregularity problems tend to use subjective judgements in their accounting practices. Significant related-party transactions also appear to occur more regularly in comparison to other companies.

Some companies do have more complex accounting procedures due to the nature of their operations and this can potentially be misused by individuals or groups in an organisation. Complex accounting transactions are a useful way to hide the manipulations made to accounts in order to misstate the financial statements. The type and nature of accounting transactions that a company gets involved in on a regular basis is a useful means to assess whether a company displays an increased risk for accounting irregularities.

**Table 5.2: Findings regarding the accounting transactions found in firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Related-party transactions</li> <li>• Large year-end and unusual transactions</li> <li>• Many adjusting entries</li> <li>• Liberal accounting practices</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Related-party transactions</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Contentious or difficult transactions</li> <li>• Related-party transactions</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Major transactions</li> <li>• Related-party transactions</li> <li>• Transactions difficult to audit</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Creative accounting</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Unusual transactions affecting earnings</li> <li>• Complex transactions</li> <li>• Related-party transactions</li> </ul>

**Table 5.2 (continued): Findings regarding the accounting transactions found in firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Significant related-party transactions</li> <li>• Use of estimates based on subjective judgements</li> <li>• Unusual, significant and complex transactions</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• Changes to accounting principles</li> <li>• Accounting irregularities</li> </ul>
Lendez and Korevec (1999)	<ul style="list-style-type: none"> <li>• Related-party transactions</li> <li>• Complex transactions</li> <li>• Transactions based on subjective estimates</li> </ul>
Mitchell (1997)	<ul style="list-style-type: none"> <li>• Unusually large transactions, especially at year-end</li> <li>• Many related-party transactions</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Unusual or complex transactions</li> <li>• Estimates based on subjective judgements</li> <li>• Special valuation needs</li> <li>• Related-party transactions</li> </ul>
Nieschwietz, Schultz Jr and Zimbelman (2000)	<ul style="list-style-type: none"> <li>• Subjective accounting judgements</li> </ul>
Price (1991)	<ul style="list-style-type: none"> <li>• Intra-company transactions</li> </ul>
Quinn Mills (2003)	<ul style="list-style-type: none"> <li>• Accounting practices and transactions that put company at risk of not complying with accounting principles</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Unusual and/or complex transactions</li> <li>• Unusual and/or large year-end transactions</li> <li>• Liberal accounting practices</li> <li>• Transactions for which a lot of judgement is needed</li> <li>• Significant related-party transactions</li> <li>• Aggressive attitude towards financial reporting</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Transactions at odd times</li> <li>• Too many or too few transactions</li> <li>• Transactions that are too consistent or too different</li> <li>• Difficult accounting measurements</li> <li>• Difficult-to-audit transactions</li> <li>• Unusual related-party transactions</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Liberal accounting policies</li> <li>• Unjustified change to accounting policies</li> <li>• Aggressive policies</li> </ul>

**Source:** Du Toit (2008)

### 5.3.2 Auditor aspects

Prior research about auditor relationships in companies with accounting irregularity problems reveal that companies with a higher accounting irregularity risk tend to change their auditors frequently. The relationship between management and auditors is also in some cases strained. There may be cases of open disputes between the management of a company and the auditors or attempts are made by management to influence the auditors. In some cases information is withheld from auditors.

The relationship that a company's management has with the auditors (both internal and external) can become strained if individuals or groups in management have something to hide. If information about a company's relationship with its auditors is available, it can therefore be a useful guideline of whether the company may be involved in questionable practices.

**Table 5.3: Findings regarding the auditors and the relationship between the auditor and the firm in cases of an increased accounting irregularity risk**

Researchers	Characteristics
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Use of various auditing firms or regular change of auditor</li> <li>• Reluctance to give data to auditors</li> <li>• Inexperienced auditors</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Strained relationship between management and auditors</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Evasiveness towards auditors</li> <li>• Disputes with auditors</li> <li>• Auditor experience indicating dishonesty</li> <li>• Pressure placed on auditors</li> </ul>
Beneish (1997)	<ul style="list-style-type: none"> <li>• No "big"-firm auditor</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Lies to auditor</li> <li>• Disputes with auditor</li> <li>• Pressure placed on auditors</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Several firms of auditors</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Frequent change of auditor</li> </ul>

**Table 5.3 (continued): Findings regarding the auditors and the relationship between the auditor and the firm in cases of an increased accounting irregularity risk**

Researchers	Characteristics
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Strained relationship with auditor</li> <li>• Frequent disputes with auditors</li> <li>• Unreasonable demands on the auditor (e.g. time to complete audit)</li> <li>• Restrictions on auditor to access people or information</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• Receive more qualified opinions from auditors than other companies in the same industry</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• Change of auditor</li> <li>• Auditors give more qualified opinions</li> </ul>
Mitchell (1997)	<ul style="list-style-type: none"> <li>• Frequent change of auditor</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• Concern about auditor visits</li> </ul>
Quinn Mills (2003)	<ul style="list-style-type: none"> <li>• Same company responsible for internal and external auditing function</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Poor quality external auditors</li> <li>• Lack of due diligence</li> <li>• Frequent change of external auditor</li> <li>• Restricted access to people and information</li> <li>• Attempts by management to influence scope of audits</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Evasiveness with regard to audit enquiries</li> <li>• Disputes with auditors</li> <li>• Opinion shopping</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Lack of independent or external auditor</li> <li>• Change in auditor or sudden resignation</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Link between company management and auditor</li> </ul>
Summers and Sweeney (1998)	<ul style="list-style-type: none"> <li>• Auditor changes</li> </ul>

**Source:** Du Toit (2008)

### 5.3.3 Cash flow

Research shows that companies with poor cash flow, especially cash flow in relation to profit, tend to be at a higher risk for accounting irregularities than a company with good cash flow. Cash flow problems may lead to a situation where the parties that manage the company feel that drastic measures have to be taken in order to keep the company

afloat and be able to continue with its daily operations. Cash flow is therefore a useful financial statement item to observe and take notice of in order to determine if a company can potentially rationalise the use of manipulation to improve its situation.

**Table 5.4: Findings regarding the cash flow of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• High profit, poor cash flow</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Negative operating cash flow but positive reported earnings</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• Poor cash from operations to assets ratio</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Profit not consistent with cash flow</li> <li>• Cash pressure in profitable business</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Recurring negative cash flows</li> <li>• Poor cash flow but positive reported earnings and/or earnings growth</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• Low cash flow</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Inadequate cash flow</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• Profits not converted into cash</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Insufficient cash to support reported earnings growth</li> <li>• Cash shortage or negative cash flow</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Cash receipts from customers not in line with sales figures</li> </ul>

**Source:** Du Toit (2008)

#### **5.3.4 Company age**

According to the research, it appears as if companies that are operational for a shorter period of time tend to have an increased risk for accounting irregularities. A possible reason for this may be that a younger company can experience problems to cope with the competition, or can even be deliberately undermined by the competition.

Accounting irregularities do occur in older and more established companies, but it may be that younger companies have more reason to take inappropriate action to find a foothold in the industry and to keep ahead of the competition.

**Table 5.5: Findings regarding the age of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Beneish (1997)	<ul style="list-style-type: none"> <li>Younger firms compared to other firms in the industry</li> </ul>
Fridson and Alvarez (2002)	<ul style="list-style-type: none"> <li>Younger companies when compared to the industry</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>Young firms</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>Became a public company more recently than its peers</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>The younger companies in an industry sometimes use unconventional methods</li> </ul>

**Source:** Du Toit (2008)

### 5.3.5 Company size

With regards to company size, the outcome from prior researchers' work is inconclusive. The different researchers all had different views of whether the size of a company determines its risk of committing accounting irregularities. Company size is therefore not a reliable indicator of whether a company has an increased risk of being involved or getting involved in accounting irregularities.

**Table 5.6: Findings regarding the size of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Baucus and Near (1991)	<ul style="list-style-type: none"> <li>Large firms</li> </ul>
Beasley (1996), Beasley, Carcello, Hermanson and Lapedes (2000), Beasley, Carcello and Hermanson (2001)	<ul style="list-style-type: none"> <li>Small to mid-size companies</li> </ul>
Cressey (1986)	<ul style="list-style-type: none"> <li>Firms in small towns</li> </ul>
Davia, Coggins, Wideman, Kastantin (2000)	<ul style="list-style-type: none"> <li>Small companies</li> </ul>

**Table 5.6 (continued): Findings regarding the size of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
DeFond and Jiambalvo (1991)	<ul style="list-style-type: none"> <li>• Small companies</li> </ul>
Fridson and Alvarez (2002)	<ul style="list-style-type: none"> <li>• Both small and large companies</li> </ul>
Hylas and Ashton (1982)	<ul style="list-style-type: none"> <li>• Errors in revenue cycle, property, plant and equipment, prepaid expenses, deferred charges and other assets in smaller companies</li> <li>• Errors in inventory, notes receivable and other liabilities in larger companies</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• Small firms</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Small firms</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Large and decentralized companies</li> </ul>
Saksena (2001)	<ul style="list-style-type: none"> <li>• Large firms</li> </ul>

**Source:** Du Toit (2008)

### 5.3.6 Control

From the research it appears as if a poor or a weak control environment leads to an increased risk of accounting irregularities being committed. A poor or weak control environment means that there is insufficient oversight over the activities of those individuals or groups who have the authority to make decisions and who have the means to manipulate financial accounts.

For interested parties who are not internally involved in a company's operations, it may not be possible to evaluate the efficiency of the company's internal controls since such privileged information is not available to all parties. However, if evaluation of controls is possible, the way in which controls are executed may be an indicator of whether a company has an increased risk of falling victim to accounting irregularities.

**Table 5.7: Findings regarding the controls employed in firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Poor internal control</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Poor attitude towards internal control</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Weak internal control</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Weak internal control</li> </ul>
Davia, Coggins, Wideman, Kastantin (2000)	<ul style="list-style-type: none"> <li>• No adaptation of controls to changes</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• Weak overview of affairs by management</li> </ul>
DeFond and Jiambalvo (1991)	<ul style="list-style-type: none"> <li>• Weak internal controls</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Poor commitment to control</li> <li>• Poor strategy formulation</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Lack of response to management queries</li> <li>• Management overrides controls</li> <li>• Rumours and tip-offs that controls are not adhered to</li> <li>• Unreliable internal financial information</li> <li>• Failure to correct internal control weaknesses</li> <li>• “Lost records”</li> <li>• Low internal control priority</li> </ul>
Heiman-Hoffman, Morgan and Patton (1996)	<ul style="list-style-type: none"> <li>• Weak control environment</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Lack of proper control</li> <li>• Ineffective supervision of the financial reporting process and internal control</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• Lack of proper management supervision</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Weak control</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• Absence of controls</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Lack of or inadequate control structure</li> <li>• Poor corporate governance</li> <li>• Lack of internal audit function and structure</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Weak internal control</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Weak control environment</li> </ul>

**Source:** Du Toit (2008)

### 5.3.7 Culture

The culture of a company may be difficult to evaluate, especially by outsiders. However, it has been found that a lack of documentation to formalise processes (e.g. a code of conduct, an ethics policy or a fraud policy) may indicate that a company's culture is liberal enough to make accounting irregularities less of a moral problem. A further indicator seems to be a culture that is competitive, therefore focusing on being the best and obtaining the highest results under all circumstances. This may lead to individuals and groups rationalising the need for manipulation of accounting information in order to reach goals and targets. For these reasons information about a company's culture, if it is available, has the potential to be a useful indicator of whether the company's culture fosters an unethical environment that is more prone to accounting irregularities.

**Table 5.8: Findings regarding the culture of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• No rules regarding perpetrators</li> <li>• No uniform personnel policies</li> <li>• No code of ethics</li> <li>• Few interpersonal relationships</li> <li>• No dissatisfaction outlets</li> </ul>
Baucus and Near (1991)	<ul style="list-style-type: none"> <li>• Certain company cultures, e.g. where an autocratic top management structure is in place</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Lack of ethics</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Culture where results must be achieved at any cost</li> <li>• No code of ethics</li> <li>• Unquestioning staff obedience</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Low morale</li> <li>• Pressure to complete financial statements as soon as possible</li> <li>• Secrecy</li> <li>• No fraud policy</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Attitudes and actions of personnel and management are questionable</li> <li>• No code of conduct or the code of conduct is vague</li> </ul>

**Table 5.8 (continued): Findings regarding the culture of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Inappropriate or dishonest “tone at the top”</li> <li>• No code of conduct</li> <li>• No communication regarding values and ethical behaviour</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Poor reputation</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Management of questionable character</li> </ul>

**Source:** Du Toit (2008)

### 5.3.8 Debt

Research shows that companies with a high level of debt seem to have a higher risk of accounting irregularities. Companies that are in debt and face financial difficulties because of it may feel the pressure to manipulate their records to make their company’s situation appear more favourable. Due to the conclusive results of the research, high leverage has the potential to be used as a positive indicator of an increased risk of accounting irregularities.

**Table 5.9: Findings regarding the debt in firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• High debt</li> <li>• Reduced ability to get credit</li> <li>• Tough loan restrictions, little flexibility</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• High dependence on debt</li> <li>• Poor financial position</li> </ul>
Beneish (1997)	<ul style="list-style-type: none"> <li>• More leveraged firms with high growth</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• More leveraged positions</li> </ul>
DeFond and Jiambalvo (1991)	<ul style="list-style-type: none"> <li>• High leverage</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Problems to meet debt repayments or covenant requirements</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• High leverage</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• High leverage</li> </ul>
Mitchell (1997)	<ul style="list-style-type: none"> <li>• High debt</li> </ul>

**Table 5.9 (continued): Findings regarding the debt in firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• High debt and problems in complying with debt covenants</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Higher financial leverage</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• High debt</li> <li>• Operating at levels close to debt covenant limits</li> <li>• High interest rates</li> <li>• Inability to obtain further credit</li> </ul>

**Source:** Du Toit (2008)

### 5.3.9 Directors

According to prior research, companies that display an increased accounting irregularity risk tend to have few outsiders on the board of directors. An additional finding is that such companies may have a weak, or in some cases, no audit committee.

Few outsiders on the board of directors and a lack of a proper audit committee mean that a company has a poorer system of control about the activities of the board of directors and the management of the company. This may lead to a situation where it becomes easy to successfully commit accounting irregularities.

Guidelines to the likes of the King Report I, II and III all attempt to alleviate this problem by giving guidelines regarding the requirements for an acceptable board of directors. However, if these guidelines are not followed, observing the level of outside representation on the board of directors and the presence of an audit committee can potentially be used as an indicator of whether a company displays a higher risk of misconduct in its accounting statements.

**Table 5.10: Findings regarding the directors of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Beasley (1996), Beasley, Carcello, Hermanson and Lapedes (2000), Beasley, Carcello and Hermanson (2001)	<ul style="list-style-type: none"> <li>• Few outside directors on the board</li> <li>• Few outside directors on audit committee</li> <li>• Short tenure of outside directors</li> <li>• Large boards</li> <li>• Weak board and audit committees</li> <li>• No audit committee</li> <li>• Founder also serving as CEO, chairman of the board</li> </ul>
Davia, Coggins, Wideman, Kastantin (2000)	<ul style="list-style-type: none"> <li>• A weak and inexperienced board of directors</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• Mostly insiders on the board of directors</li> <li>• CEO is company founder and the chairman of the board</li> <li>• No audit committee</li> </ul>
DeFond and Jiambalvo (1991)	<ul style="list-style-type: none"> <li>• No audit committee</li> </ul>
Fridson and Alvarez (2002)	<ul style="list-style-type: none"> <li>• No audit committee</li> <li>• Poor audit committee</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• More internal than external directors</li> </ul>
Mitchell (1997)	<ul style="list-style-type: none"> <li>• Frequent change of board members</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Absence of directors and/or audit committee</li> </ul>
Quinn Mills (2003)	<ul style="list-style-type: none"> <li>• CEO that controls board of directors</li> <li>• Not a majority of independent outsiders (audit committee included)</li> <li>• Loans to directors</li> <li>• Not full-time membership on board of directors</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Mostly insiders on the board of directors</li> <li>• Short tenure of outside directors</li> <li>• Lack of corporate governance</li> <li>• Ineffective boards of directors</li> <li>• Not enough independent directors on the board</li> <li>• Audit committees (if any) ineffective and not independent.</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Too few independent members on the board of directors</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Head of the audit committee not independent</li> </ul>
Van Wyk (2004)	<ul style="list-style-type: none"> <li>• One person both the chairman and CEO</li> </ul>

**Source:** Du Toit (2008)

### 5.3.10 Financial distress

As is the case with the level of debt in a company, the presence of high financial pressure can in some cases be observed in companies that commit accounting irregularities. Financial distress indicators such as Altman's Z-score may therefore be a useful indicator of a company's risk profile regarding accounting irregularities.

**Table 5.11: Findings regarding financial distress in firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Threat of bankruptcy</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Lack of financial stability</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• Financial distress</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Financial pressure</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Financial difficulties</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Going concern problems</li> </ul>
Saksena (2001)	<ul style="list-style-type: none"> <li>• Threat of insolvency</li> </ul>
Summers and Sweeney (1998)	<ul style="list-style-type: none"> <li>• Poor financial conditions</li> </ul>

**Source:** Du Toit (2008)

### 5.3.11 Geographic location

Previous research proves that companies with occurrences of accounting irregularities are generally decentralised, with some operations at geographically remote locations. If some corporate functions are geographically removed from head-office, top management has less control. Especially in a decentralised management structure there is likely to be less interference from top management. Performance targets are sometimes added to the equation, increasing pressures on the management of the remote location to improve its performance. If problems are experienced in reaching targets, it may lead to pressures and the rationalisation of using improper means of account manipulation to improve the situation.

The extent to which a company's operations are geographically dispersed may therefore act as an indicator of the risk for accounting irregularities in a company.

**Table 5.12: Findings regarding the geographic location of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>Decentralised</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>Decentralised</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>Decentralised</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>Remote location</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>Significant operations located across international borders</li> <li>Bank accounts or operations in tax-haven jurisdictions without clear justification</li> </ul>
Price (1991)	<ul style="list-style-type: none"> <li>Multinational companies (more difficult to control)</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>Decentralisation with remote locations</li> <li>Tax haven operations</li> </ul>

**Source:** Du Toit (2008)

### 5.3.12 Growth

With regards to growth, the results of previous research prove to be inconclusive. Slow growth puts pressure on companies to reflect improvement by unethical means, while fast growth has to be maintained. Therefore observing the growth levels of a company is not a reliable indicator of its risk for accounting irregularities.

**Table 5.13: Findings regarding the growth levels of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>Rapid expansion</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>Rapid growth</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>Rapid growth</li> <li>Sales, mergers, purchases, acquisitions</li> </ul>
Beneish (1997)	<ul style="list-style-type: none"> <li>Slow sales growth</li> </ul>

**Table 5.13 (continued): Findings regarding the growth levels of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Rapid growth</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• High growth opportunities</li> </ul>
DeFond and Jiambalvo (1991)	<ul style="list-style-type: none"> <li>• Small growth in earnings</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Mismatch between growth and systems development</li> </ul>
Fridson and Alvarez (2002)	<ul style="list-style-type: none"> <li>• Previous rapid growth now declining</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Rapid growth, especially compared to others in the industry</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• Slow growth</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• High growth</li> <li>• Large sales growth</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• Rapid growth</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• High earnings growth expectations</li> <li>• Unusually rapid growth</li> <li>• Rapid expansion</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Rapid growth – lead to loss of control</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Fast growth beginning to slow</li> <li>• Very weak, trying to improve</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Falsely created slow growth in a high-growth firm to refute the negative impact if results are expected really to falter later</li> </ul>
Summers and Sweeney (1998)	<ul style="list-style-type: none"> <li>• Rapid growth</li> <li>• Irregularities used to hide slow growth rates</li> </ul>

**Source:** Du Toit (2008)

### 5.3.13 Industry

The previous research on the effect of specific industries on the risk of accounting irregularities is largely inconclusive. However, it may be worthwhile to take note of a few observations. It is found that in volatile industries where changes (e.g. technology) are frequent and significant there may be a higher risk of accounting irregularities. It is also found that industries with a high level of competition may face more risk and that certain economic factors may affect certain industries, for example, an increased interest rate that affects customer spending.

The factors that affect the industry may cause pressures that may lead to individuals or groups rationalising the use of account manipulation to improve results and to keep up with a changing environment. Specific industries are therefore not identified as being indicators of increased risk for accounting irregularities. However, observation of what happens in and what affects the industry a company operates in may be a worthwhile indication of the risk a company faces.

**Table 5.14: Findings regarding the industry in which firms that have an increased risk for accounting irregularities operate**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Poor economic conditions in industry</li> <li>• Heavy competition</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• New accounting requirements in industry</li> <li>• High degree of competition</li> <li>• Declining industry</li> <li>• Rapid industry changes</li> <li>• Vulnerability to changing technology and product obsolescence</li> </ul>
Baucus and Near (1991)	<ul style="list-style-type: none"> <li>• History and structure of an industry</li> <li>• No enforcement agencies or regulatory bodies present</li> <li>• Inherent uncertainties</li> <li>• Dynamic environments</li> <li>• Specifically foods, lumber, petroleum refining, and automobiles</li> </ul>
Beasley (1996), Beasley, Carcello, Hermanson and Lapedes (2000), Beasley, Carcello and Hermanson (2001)	<ul style="list-style-type: none"> <li>• Concentrations in healthcare, technology and financial services</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Sensitivity to economic factors</li> <li>• Rapid industry changes</li> <li>• Declining industry</li> <li>• Adverse conditions</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Industry decline</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• Transport</li> <li>• Communication</li> <li>• Wholesale and retail</li> <li>• Manufacturing</li> <li>• Business services</li> </ul>

**Table 5.14 (continued): Findings regarding the industry in which firms that have an increased risk for accounting irregularities operate**

<b>Researchers</b>	<b>Characteristics</b>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Certain industry conditions, e.g. a decline as result of interest rate increases</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Results out of line with those in the rest of the industry</li> </ul>
Fridson and Alvarez (2002)	<ul style="list-style-type: none"> <li>• New industry</li> </ul>
Hylas and Ashton (1982)	<ul style="list-style-type: none"> <li>• Some errors occur more frequently in companies in certain industries</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• High degree of competition</li> <li>• Vulnerability to change (e.g. technology, economy)</li> <li>• Decline in customer demand and increasing business failures</li> <li>• New accounting, statutory or regulatory requirements</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Impacting new accounting pronouncements</li> <li>• Seasonal fluctuations</li> <li>• High capital needs</li> <li>• Transition in industry environment</li> </ul>
Nieschwietz, Schultz Jr and Zimbelman (2000)	<ul style="list-style-type: none"> <li>• Certain industries display more inappropriate behaviour, specifically financial institutions, manufacturing companies, high technology companies and merchandising companies.</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Computer and data processing, scientific and medical instrument manufacturing, household appliances and electronic equipment manufacturing and computer manufacturing</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Some industry cultures increase the probability for accounting irregularities</li> <li>• Sudden industry decline</li> <li>• Highly competitive markets</li> <li>• Volatile industry</li> <li>• Technological changes</li> <li>• Aggressive or unrealistic forecasts of an industry</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Oil, pharmaceutical and vehicle industries</li> </ul>
Saksena (2001)	<ul style="list-style-type: none"> <li>• Dynamic, hostile industry</li> <li>• Heterogeneity between companies in the industry</li> <li>• Industry culture, structure and vulnerability to regulation</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Strong competition</li> </ul>

**Table 5.14 (continued): Findings regarding the industry in which firms that have an increased risk for accounting irregularities operate**

Researchers	Characteristics
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Emerging markets and industries</li> <li>• Industries where legal and regulatory environment is weak</li> </ul>

**Source:** Du Toit (2008)

### 5.3.14 Liquidity

Research finds that at-risk companies often display situations of poor liquidity. A poor liquidity position may act as a pressure to rationalise the use of manipulation to improve the financial statements. Therefore poor liquidity can potentially act as an indicator of a company's risk for accounting irregularities.

**Table 5.15: Findings regarding the liquidity of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Poor liquidity</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Poor liquidity</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Low liquidity</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Lack of working capital</li> </ul>
Saksena (2001)	<ul style="list-style-type: none"> <li>• Low liquidity</li> </ul>

**Source:** Du Toit (2008)

### 5.3.15 Management

According to prior research, the risk for accounting accounting irregularities is higher in companies with an autocratic or dominant management team. It appears as if accounting irregularities are more prevalent in cases where management turnover is high and/or where conflicts of interest occur and/or where short-term performance is emphasised.

Information about the management style of a management team is not necessarily readily available to outsiders. However, if such information is available, it appears that the management style and culture of an organisation may be a useful indicator of the risk for accounting irregularities in a company.

**Table 5.16: Findings regarding the management of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Weak leadership</li> <li>• Dishonest management</li> <li>• Dominant top management</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• High turnover of senior management</li> <li>• Pressure to apply aggressive accounting practices</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Dominated by one person/small group</li> <li>• Aggressive attitude</li> <li>• High management turnover</li> <li>• Emphasis on earnings</li> <li>• Poor reputation</li> <li>• Inexperienced management</li> <li>• Undue risk-taking</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Decisions dominated by one person or small group</li> <li>• High management turnover</li> <li>• Inexperienced managers</li> <li>• Conflict of interests</li> <li>• Undue emphasis on earnings</li> <li>• Dishonesty</li> <li>• Aggressive attitude towards financial reporting</li> <li>• Poor reputation</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Autocratic management</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Dominated by one person</li> </ul>
Heiman-Hoffman, Morgan and Patton (1996)	<ul style="list-style-type: none"> <li>• Dishonest management</li> <li>• Pressure to meet financial targets</li> <li>• Aggressive financial reporting</li> </ul>

**Table 5.16 (continued): Findings regarding the management of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Management dominated by a single person or small group</li> <li>• Managers hold significant interests in the entity</li> <li>• Personal guarantees of entity debt</li> <li>• High manager turnover</li> </ul>
Mitchell (1997)	<ul style="list-style-type: none"> <li>• High manager turnover</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• A few managers dominate</li> <li>• Emphasis on meeting targets</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• Poor communication between departments</li> </ul>
Quinn Mills (2003)	<ul style="list-style-type: none"> <li>• All information and ideas come from CEO</li> <li>• Transactions that lead to a conflict of interests</li> <li>• Loans to senior executives</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Dominant management team with little/no accountability</li> <li>• Poor supervision of top managers by the board of directors</li> <li>• Misconduct remaining unpunished</li> <li>• Substantial discretion or judgement responsibility on management</li> <li>• Frequent turnover of management</li> <li>• Inexperienced management team</li> <li>• Autocratic management</li> <li>• Conflict of interests within management</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Decisions made by small group</li> <li>• Aggressive accounting attitude</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Management team known or suspected of misconduct</li> </ul>
Van Wyk (2004)	<ul style="list-style-type: none"> <li>• Excessive power held by a few managers</li> </ul>

**Source:** Du Toit (2008)

### 5.3.16 Personnel

The most significant findings from previous research regarding personnel indicate that accounting irregularities are more prevalent in companies where there is a rapid personnel turnover and also in cases where personnel, especially management, maintain lavish lifestyles.

As was the case with information about management styles and cultures, information about the personnel corps of a company and their lifestyles is not necessarily available to all parties. However, if such information can be obtained and observed, it may act as an indicator of the risk for accounting irregularities.

**Table 5.17: Findings regarding the personnel of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Personnel living beyond their means</li> <li>• Perceived inequities</li> <li>• Rapid personnel turnover</li> <li>• No annual vacations</li> <li>• No rotations or transfers of key personnel</li> <li>• No proper screening of potential employees</li> <li>• Too much trust in key personnel</li> <li>• Inexperienced personnel in key positions</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Aggressive incentive programmes</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Inexperienced accounting personnel</li> <li>• Unaffordable lavish lifestyles</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Mismatches of personality and status</li> <li>• Unusual behaviour</li> <li>• Expensive lifestyles</li> <li>• Leave not taken</li> <li>• Poorly trained staff</li> <li>• Poor quality staff</li> <li>• Low morale</li> <li>• Regular overtime</li> <li>• High staff turnover</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• High turnover of key accounting and financial personnel</li> <li>• Understaffing of departments</li> <li>• No enforced holidays</li> <li>• Lifestyles too lavish</li> <li>• Excessive hours worked by key staff</li> <li>• No checking of employees' references</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• High employee turnover</li> <li>• Ineffective staff for accounting, internal control and IT</li> </ul>

**Table 5.17 (continued): Findings regarding the personnel of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• High turnover in key personnel</li> <li>• Instability in the lives of personnel</li> <li>• Feelings of dissatisfaction</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• High personnel turnover</li> <li>• No-one taking responsibility for the accounting function</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Unexplained lifestyle changes</li> <li>• Inexperienced staff</li> <li>• Difficult and lax personnel</li> </ul>

**Source:** Du Toit (2008)

### **5.3.17 Profitability**

The results of previous research regarding profitability prove to be inconclusive, with companies experiencing accounting irregularities both in cases of good and in cases of poor profitability. The reason for this may be on the one hand that poor profitability puts on individuals and groups a pressure to manipulate financial accounts to show better profitability. On the other hand, good profitability may lead to increased pressure to manipulate financial accounts based on the rationalisation that past performance needs to be maintained.

This results in profitability being less useful to act as an indicator of a risk for accounting irregularities. It may, however, still be worthwhile to observe profitability in order to determine if profitability is exceptionally poor or if it perhaps shows exceptional improvements.

**Table 5.18: Findings regarding the profitability of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Expenses rising faster than revenues</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• High profitability relative to industry</li> </ul>
Baucus and Near (1991)	<ul style="list-style-type: none"> <li>• Moderate to good performance</li> </ul>
Beasley (1996), Beasley, Carcello, Hermanson and Lapidés (2000), Beasley, Carcello and Hermanson (2001)	<ul style="list-style-type: none"> <li>• Often in a net loss or break-even situation</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Inconsistent profitability</li> </ul>
Beneish (1997)	<ul style="list-style-type: none"> <li>• Deteriorating gross margins</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Inadequate compared to industry</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• Heavy reliance on earnings performance</li> </ul>
DeFond and Jiambalvo (1991)	<ul style="list-style-type: none"> <li>• Low earnings</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Not meeting expectations</li> <li>• Profit in excess of industry norm</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• High levels of profits or losses</li> <li>• Profits and cash flows at variance with each other</li> <li>• Deteriorating quality of earnings</li> <li>• In need of an upward profit trend to support market price of shares</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Unusual profitability, especially compared to industry norm</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• Unprofitable</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• High earnings</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Sudden decreases</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Low profitability</li> </ul>
Powell and Wilkinson (2002)	<ul style="list-style-type: none"> <li>• Poor return on capital employed</li> <li>• Inconsistent profit and revenue trends</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Decline in the quality and quantity of earnings</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Emphasis on earnings</li> </ul>

**Table 5.18 (continued): Findings regarding the profitability of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Saksena (2001)	<ul style="list-style-type: none"> <li>• Poor financial performance</li> </ul>
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Sudden high profitability</li> <li>• Sudden low profitability</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Working towards specific earnings targets</li> </ul>
Summers and Sweeney (1998)	<ul style="list-style-type: none"> <li>• High profitability</li> </ul>

**Source:** Du Toit (2008)

### 5.3.18 Receivables and inventories

According to research, unexplained increases in receivables and/or inventory tend to be present in companies with occurrences of accounting irregularities. Manipulation of sales and/or cost of sales needs to be offset with a contra-entry in the accounting records according to the double-entry system. The contra-entry that is affected is likely to be receivables and/or inventory. For that reason, sudden unexplained increases in receivables and/or inventory may be an indicator of the presence of accounting irregularities.

**Table 5.19: Findings regarding the receivables and inventories of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Beneish (1997)	<ul style="list-style-type: none"> <li>• Decline in inventory and receivable turnovers</li> </ul>
Fridson and Alvarez (2002)	<ul style="list-style-type: none"> <li>• Increased receivables</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• Large amounts of receivables and inventories</li> </ul>
Nieschwietz, Schultz Jr and Zimbelman (2000)	<ul style="list-style-type: none"> <li>• Asset overstatement</li> </ul>
Persons (1995)	<ul style="list-style-type: none"> <li>• Overstatement of receivables and inventories</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Excessive bad debt resulting from inability to collect receivables</li> <li>• High inventory values, indicating overstatement</li> <li>• Inventories stored in unusual locations or manners</li> <li>• Special expertise needed to value inventory</li> <li>• Increase in inventory without increase in sales</li> </ul>

**Table 5.19 (continued): Findings regarding the receivables and inventories of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Schilit (1993), Schilit and Perler (2010)	<ul style="list-style-type: none"> <li>• Large amounts of overdue receivables</li> <li>• Related-party receivables</li> <li>• Slow receivables and/or receivables turnover</li> <li>• Large growth of inventory without growth in sales</li> </ul>
Summers and Sweeney (1998)	<ul style="list-style-type: none"> <li>• High inventory relative to sales</li> </ul>

**Source:** Du Toit (2008)

### 5.3.19 Remuneration

Research finds that the risk for accounting irregularities increases where remuneration is mainly based on short-term performance. The reason for this is most probably that individuals and groups are pressured to artificially improve the performance of the company or a division in order to earn performance-based incentives.

Detailed information about the remuneration packages of personnel is not always reported, but if it is available it can potentially be a useful indicator of the risk for accounting irregularities.

**Table 5.20: Findings regarding the remuneration structure of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Remuneration based on performance</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Remuneration based on recorded performance</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>• Remuneration based on earnings</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Compensation tied to performance</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Remuneration based on financial performance</li> </ul>
<i>ISA 240</i> (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Significant compensation portions contingent on aggressive financial targets</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Compensation for executives linked to earnings or stock price targets</li> </ul>

**Table 5.20 (continued): Findings regarding the remuneration structure of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Robertson (2002)	<ul style="list-style-type: none"> <li>• Remuneration based on performance</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Remuneration based on economic performance</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Compensation linked to short-term financial business goals</li> </ul>

**Source:** Du Toit (2008)

### 5.3.20 Shareholding

The research results indicate that, in cases of accounting irregularities, there are in some cases high levels of internal shareholding, therefore large blocks of shares held by management and/or directors.

Large shareholding by internal parties may result in pressures on individuals and groups to artificially improve performance in order to improve the returns earned from shares held in the company. Since it is a requirement that information about the shareholding structure of a company needs to be publicised, the shareholding structure is a useful indicator of the risk for accounting irregularities faced by a company.

**Table 5.21: Findings regarding the shareholding structure of firms that have an increased accounting irregularity risk**

Researchers	Characteristics
Beasley (1996), Beasley, Carcello, Hermanson and Lapedes (2000), Beasley, Carcello and Hermanson (2001)	<ul style="list-style-type: none"> <li>• Few outside owners in the company</li> <li>• Insiders own significant portions</li> <li>• Less likely to have a block-holder as shareholder</li> </ul>
Bell and Carcello (2000)	<ul style="list-style-type: none"> <li>• Management holds a significant portion of company's shares</li> </ul>
Beneish (1997)	<ul style="list-style-type: none"> <li>• Large number of shares held by management</li> </ul>
Calderon and Green (1994)	<ul style="list-style-type: none"> <li>• Ownership share consists of a significant portion of management's own wealth</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>• More equity securities issued</li> </ul>

**Table 5.21 (continued): Findings regarding the shareholding structure of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Nieschwietz, Schultz Jr and Zimbelman (2000)	<ul style="list-style-type: none"> <li>Publicly-owned companies</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>High level of share ownership by management</li> <li>Low stockholding by outside directors (no incentive for them to exert stronger control)</li> </ul>

**Source:** Du Toit (2008)

### 5.3.21 Stock market performance

For the same assumed reasons that research results are inconclusive for company profitability, the results are also inconclusive for stock market performance. On the one hand poor performance may give rise to pressures to improve the financial position and performance displayed by the financial statements through manipulation. On the other hand, good performance may lead to pressures to keep it up.

Since information about stock performance is readily available, it is worthwhile to look out for exceptionally poor or exceptionally good performance as an indicator of an increased risk for occurrences of accounting irregularities.

**Table 5.22: Findings regarding the stock market performance of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>Suspension or delisting</li> </ul>
Beneish (1997)	<ul style="list-style-type: none"> <li>Poor stock market performance</li> </ul>
Dechow, Sloan and Sweeney (1996)	<ul style="list-style-type: none"> <li>Poor performance</li> <li>High market to book ratios</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>Not meeting expectations</li> </ul>
Lee, Ingram and Howard (1999)	<ul style="list-style-type: none"> <li>Poor stock market performance</li> <li>Large market values relative to assets</li> </ul>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>Sudden decreases</li> </ul>

**Table 5.22 (continued): Findings regarding the stock market performance of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Recently started trading publicly</li> <li>• High prices (need more earnings to support it)</li> <li>• Suspension or delisting from stock exchange</li> </ul>

**Source:** Du Toit (2008)

### 5.3.22 Structure

According to research, companies with complex structures appear to be more at risk of experiencing accounting irregularities. This relates to the characteristic of geographical location as discussed previously.

In a complex structure, it may be more difficult for top management to maintain an appropriate level of control. However, information about the structure of a company may be difficult to assess accurately. If possible, it appears to be a useful indicator of a company's accounting irregularity risk.

**Table 5.23: Findings regarding the structure of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
Albrecht, Cherrington, Payne, Roe and Romney (1982)	<ul style="list-style-type: none"> <li>• Complex structure</li> </ul>
Apostolou, Hassell and Webber (2001)	<ul style="list-style-type: none"> <li>• Complex structure</li> </ul>
Du Plessis (1999b)	<ul style="list-style-type: none"> <li>• Complex structure</li> </ul>
Ernst and Young South Africa (2003)	<ul style="list-style-type: none"> <li>• Complex corporate structure</li> </ul>
ISA 240 (IAASB, 2012)	<ul style="list-style-type: none"> <li>• Complex structure</li> </ul>
Kinney and McDaniel (1989)	<ul style="list-style-type: none"> <li>• Changes in business conditions and structure</li> </ul>
Lendez and Korevec (1999)	<ul style="list-style-type: none"> <li>• Complex structure</li> </ul>
Mitchell (1997)	<ul style="list-style-type: none"> <li>• Complex business structure</li> </ul>

**Table 5.23 (continued): Findings regarding the structure of firms that have an increased accounting irregularity risk**

<b>Researchers</b>	<b>Characteristics</b>
National Commission on Fraudulent Financial Reporting (1987)	<ul style="list-style-type: none"> <li>• Complex structure</li> <li>• Structure changes</li> </ul>
Rezaee (2002), Rezaee and Riley (2010)	<ul style="list-style-type: none"> <li>• Complex structure</li> <li>• Frequent changes</li> </ul>
Robertson (2002)	<ul style="list-style-type: none"> <li>• Complex structure</li> </ul>
Sherman, Young and Collingwood (2003)	<ul style="list-style-type: none"> <li>• Complex ownership and financial structures</li> </ul>
Van Wyk (2004)	<ul style="list-style-type: none"> <li>• Inadequate corporate governance structures</li> </ul>

**Source:** Du Toit (2008)

## 5.4 THE RESULTS

The authors whose research was considered did not all report on each of the 22 characteristics identified in Table 5.1. Also, as may be expected, the various authors did not come to the same conclusions on all the categories that they considered. However, there are a number of cases where the results can be condensed into a single conclusion, which can therefore be considered to be a characteristic of the type of company that may have an increased risk of accounting irregularities or perhaps be inclined to inappropriate activities.

Despite a few inconsistencies, it is possible to establish a number of characteristics and relationships that can be observed in order to determine the level of a risk for accounting irregularities. These characteristics can be monitored closely in order to detect an increased risk and therefore to detect and identify accounting irregularities earlier. In some cases, the problem characteristics are observable from the publicly available annual reports of companies, but in other cases the relevant information can only be obtained by inside parties such as managers, employees and auditors.

The following 18 characteristics were consistently present in the reviewed studies and ought to be included in an analysis of company information for accounting irregularities.

1. Complex accounting transactions often involving subjective judgements and significant related-party transactions
2. Problematic relationships with auditors
3. Poor cash flow patterns
4. Companies that are younger than the average age in the industry
5. Inadequate control systems and procedures
6. Non-formalised company culture
7. High debt levels
8. Problematic behaviour by directors and dubious character of leadership
9. Financial distress
10. Decentralised geographic location
11. Volatile industries and/or a high level of competition
12. Poor liquidity
13. Autocratic management behaviour and character and/or high turnover of management staff, an emphasis on short-term performance and/or the presence of conflicts of interest
14. Problematic personnel behaviour and character
15. Unexplained changes in receivables and inventory levels
16. Remuneration policies based on shorter-term performance
17. A shareholding structure with high levels of internal shareholding and
18. Complex organisational structures

The list may be shortened even more, depending on the parties that are supposed to use it. Not all outside parties have access to the necessary information needed in order to analyse all the characteristics. One example is analysing the control environment, since information related to the internal functions and internal control environment of a company is not readily available to outsiders. Information about relationships with auditors and the lifestyles of personnel is also not available to the public.

Other characteristics focus on information which can be obtained more easily. A problem is, however, that some information may be difficult to analyse. An example of

such a category is the industry a company operates in. The criteria for determining what factors indicate a volatile industry have not yet been formally defined.

After further sifting, it is possible that some of the characteristics have the potential to be applied successfully in assessing the risk for accounting irregularities a company faces, as well as indicating the likelihood that accounting irregularities will occur.

## **5.5 SUMMARY**

It is not enough to analyse only quantitative information about a company in order to determine its risk and propensity for accounting irregularities. Aspects of qualitative information may also have important additional predictive power, because there are a number of characteristics that tend to occur in companies with a higher risk for accounting irregularities. From the above analysis of the findings of a number of authors, it is clear that some characteristics of companies can be regarded as warning signals about the level of risk for accounting irregularities and the possibility of accounting irregularities in companies. These characteristics have the potential to be used for identifying companies with a higher risk of defrauding investors and the public.

It is important to note that the presence of the characteristics in a company, as identified from the research, is not necessarily a sure sign of accounting irregularities. Many of the characteristics or relationships may arise from normal circumstances. Also, many of the actions taken by managers are totally within the law, and are only so-called “accounting games” or forms of “creative accounting” with the objective of creating improved financial performance and position (Sherman et al., 2003:5). It is worthwhile to note, however, that normal circumstances in a company and accounting games increase the risk for accounting irregularities and have the potential to develop into accounting irregularities. The presence of some of the characteristics identified from the literature may also be the reason for misconduct; for example, a high financial distress position that managers may feel compelled to minimise or cover up artificially. Therefore it stays useful to observe these characteristics and relationships closely in order to identify at least a situation of increased risk.

In Chapter Six five companies are identified by means of media searches as having had allegations of accounting irregularities against them. The identified companies are to form the basis for the empirical research that follows in Chapter Seven.