

**Gordon Institute
of Business Science**
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**Predictors and the effect of earlier entry
into business rescue**

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Abstract

For companies in distress, the option of business rescue, as an alternative to liquidation, is “the difference between resuscitating your business and burying it” (Olivier, 2014, p. 30), business rescue provides a lifeline for distressed companies heading toward failure.

To ensure South African business take full advantage of this lifeline, the research sought to determine the applicability of turnaround literature on business rescue in South Africa through empirically testing the applicability of Z scores on Johannesburg Stock Exchange listed companies, which had entered into business rescue, as a predictor of the outcome of the business rescue process. Subsequently, the research examined the relationship between earlier entry into business rescue and the outcome of the business rescue process.

The research took the form of quantitative research and examined the correlation between Z scores and the outcome of business rescues and the differences in group means of Z scores over fixed time periods prior to entry into business rescue. The initial sample for testing correlations consisted of twelve firms, which was later reduced to eleven, for the difference in group means testing.

The research established a statistically significant, strong, positive correlation between the Altman Z score and the outcome of business rescue. This correlation was then used to examine the inter group differences between the Z score at entry into business rescue and periods prior to entry into business rescue. There were significant differences in Z score at eighteen months and at twenty-four months prior to entry into business rescue. Combining these findings the research is able to conclude that earlier entry into business rescue will lead to significantly better results in a business rescue process.

Keywords

Business rescue, turnaround, prediction, Altman’s Z score

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Richard McDonald

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1. Introduction to research problem

During 2015, one thousand nine hundred and sixty-two entities were liquidated in South Africa (Statistics South Africa, 2016); this equates to over five businesses being liquidated every day. It is common sense that a high number of failed businesses will lead to a decrease in the demand for labour (Miles, Scott, & Breedon, 2013); as a consequence of these failed businesses, the first quarter of 2016 saw an additional 521 000 people unemployed in South Africa. Failed businesses and the resulting job loss is a major concern in South Africa, where a massive twenty-seven per cent of people between the ages of fifteen and sixty-four are unemployed (Statistics South Africa, 2016).

Job creation and preservation is a top priority for the South African Government (The Presidency, Republic of South Africa, 2012) and this cannot take place without stable businesses providing these jobs. For companies in distress, the option of business rescue, as an alternative to liquidation, has been described as “the difference between resuscitating your business and burying it” (Olivier, 2014, p. 30), as such provides a lifeline for distressed companies heading toward failure.

Business rescue aims, firstly, to maximise the prospect of an organisation continuing to be a going concern and, secondly, to provide a better return to the company’s creditors and shareholders than would have been realised through liquidation of the company (The Companies Act, 2008). Successful rescue processes benefit multiple stakeholders, economically and socially, through preservation of the community, suppliers, customers and tax revenues (LoPucki & Doherty, 2015). Estimates are that the implementation of the business rescue process has saved over ten thousand South African jobs from its inception in 2011 to 2015 (Pretorius, 2015).

Business rescue is a recent legal concept in South Africa, made available to distressed companies from the first of May 2011 (Government Gazette, 2011), through the promulgation of the South African Companies Act, number 71 of

2008. The business rescue process was seen as a major innovation, allowing debt and creditors to be placed on hold while stakeholders worked together to save a distressed company. Previously, the only other option for a distressed company was bankruptcy and liquidation (South African government news agency, 2011).

This research sought to ensure South African business takes full advantage of this lifeline by increasing the available literature on the topic by establishing the applicability of turnaround literature on business rescue in South Africa through examining the applicability of turnaround literature through turnaround predictors on the outcomes of business rescue process. Subsequently, the research set out to examine the relationship between earlier entry into business rescue and the outcome of the business rescue process.

Business Rescue: A high level background

A company in distress can elect to be placed into business rescue voluntarily, through resolution by its own board of directors, if the directors believe that the company is in financial distress and that a reasonable prospect of rescuing the company exists (The Companies Act, 2008). Alternatively, any affected person may apply to the courts for an order to place the company under supervision and for business rescue proceedings to commence; affected person include shareholders, creditors, employees or registered trade unions representing employees (The Companies Act, 2008).

Two important terms introduced by the Companies Act which relating to business rescue are *financially distressed* and *reasonable prospect*. Guidance is given around the term financially distressed, which means that:

it appears to be reasonably unlikely that the company will be able to pay all of its debts as they fall due and payable within the immediately ensuing six months; or it appears to be reasonably likely that the company will become insolvent within the immediately ensuing six months. (The Companies Act, 2008, p. 230)

However, there is no guidance on the term reasonable prospect, nor are there any factual measures to determine reasonable prospect. As such, reasonable prospect is a subjective measure which adds confusion to the process and more research is required around reasonable prospect (Pretorius, 2015). Moving beyond the legal process, many stakeholders rely on the assumption of a reasonable prospect of success when making the decision to continue supporting the entity in distress but if stakeholders believe that the business will fail, they may make decisions and act according to their assumption, and their actions will cause a self-fulfilling prophecy and the business is likely to fail (LoPucki & Doherty, 2015).

A business rescue practitioner is appointed by the company's Board of Directors or, if the application was granted through the court, by the Court. Upon entry into the business rescue process, the appointed practitioner takes over full management control of the business and has various obligations and duties placed on him by the Act to complete the business rescue process (Pretorius, 2013) These obligations and duties have been described as vague and complex and involving a range of competencies (Pretorius, 2013). However, one of the main activities of the practitioner is to develop and implement a business rescue plan. The business rescue plan, including the implementation thereof, is accepted or rejected through a vote of the company's creditors (The Companies Act, 2008).

A business rescue is considered successful if a business rescue plan is produced which results in a greater distribution to creditors and shareholders than immediate liquidation would have yielded, while a business rescue is viewed as unsuccessful if it delivers a lower return to creditors and shareholders than immediate liquidation would have provided (Pretorius, 2013). Despite this classification, common sense would indicate that company "survival is virtually always economically preferable to liquidation whenever survival is achievable" (LoPucki & Doherty, 2015, p. 972).

Business Rescue: Status quo

On average, four hundred and fifty companies have entered business rescue proceedings per year since the adoption of the Companies Act in 2011. The majority of companies making use of the process are Private Companies and Closed Corporations. Public companies have not made much use of the process to date (Pretorius, 2015).

Despite the number of companies entering into business rescue, the process is still seen as being in its infancy (Conradie & Lamprecht, 2015), and, with the exception of banks, most stakeholders generally have a poor understanding of the business rescues process and proceedings (Pretorius, 2015). This poor understanding has led to much conflict between the various stakeholders and business rescue practitioners. Many creditors blame business rescue practitioners for pursuing business rescue when it is clear that no reasonable prospect for saving the business exists; creditors believe that most business rescues will ultimately end in liquidation – despite any rescue effort. Business rescue practitioners, on the other hand, blame banks for preferring liquidation to business rescue, essentially securing the banks a larger return (Pretorius, 2015).

A further complication to the rescue process is a lack of Post Commencement Funding (PCF), or funding which is required by the practitioner to fund the business during the rescue process and for the duration of plan implementation. PCF has been described as non-existent in South Africa as banks are unwilling to accept the additional risk associated with this funding (Pretorius & Du Preez, 2013); the top reasons provided for the lack of funding from banks were the “negative impact of the profile and actions of the business rescue practitioner”, “business rescue filing by distressed businesses for wrong purpose and too late” and “inadequate business rescue culture and perceptions of business rescue in South Africa” (Pretorius & Du Preez, 2013, p. 183).

There are many reasons why stakeholders have developed a perception of dissatisfaction around business rescue. In addition to those reasons noted above, it is estimated that the business rescue process has produced a success rate of only 9.4% (Pretorius, 2015), which implies a failure rate of around 90.6%. Factors

contributing to this failure rate include a lack of factual measure of reasonable prospect, firms waiting too long to enter the process, lack of post business rescue commencement funding, data integrity and shareholder disagreements (Pretorius, 2015). Shareholders disagreements are normally viewed as an indicator of long standing problems in the business which would have a direct influence on management decision-making and could be associated with management waiting too long before entering the business rescue process (Pretorius, 2015). This academic view is shared by business; consulting firm PWC identified that one of the most common mistakes companies make when filing for business rescue is filing too late, companies tend to only file for business rescue once there are no cash reserves remaining in the business (Smyth, 2013).

The Companies Act introduces a timeframe for evaluating business rescue as an option by framing financially distressed within a six month period. The Act (The Companies Act, 2008) states:

That it is reasonably unlikely that the company will be able to pay all of its debts as they fall due and payable within the immediately ensuing six months; or it appears to be reasonably likely that the company will become insolvent within the immediately ensuing six months. (p. 230)

This six month window of opportunity theoretically leaves a business rescue practitioner a very short space of time to understand the business, make sense of the distressed state and develop a turnaround strategy. There is consensus amongst business rescue practitioners that the timelines prescribed for business rescue proceedings are unreasonable and not realistic, particularly the twenty-five day time frame allowed for between the first meeting of creditors and the production of the business rescue plan, which is problematic to achieve (Pretorius, Business rescue: Status quo final report, 2015). In comparison, the average duration of a chapter eleven filing, the equivalent formal turnaround procedure in the United States of America, is sixteen months (LoPucki & Doherty, 2015).

Rescue versus turnaround

Academic literature dealing with formal turnarounds under an administrator or business rescue practitioner is available, however, it is limited (Conradie & Lamprecht, 2015), conversely, turnaround literature is readily available (Trahms, Ndofor, & Sirmon, 2013). A recent review of turnaround literature proposes an extended model for firm turnaround (Trahms et al., 2013), the extended model (Trahms et al., 2013) infers that a formal business rescue process follows as an outcome of various failed turnaround attempts by management and classifies a formal turnaround process as a failed outcome of turnaround action.

Pretorius (2013) distinguishes between turnaround literature and rescue literature; turnaround is viewed as an informal process which occurs early in the businesses decline while rescue implies a formal process which takes place when the company is near to failure. Pretorius (2013) states that the underlying approaches between turnaround and rescue are inherently different because of contextual factors.

Routledge and Morrison (2012) view the Australian equivalent of business rescue, Insolvency Administration, as merely a turnaround strategy which can be strategically used by management, to their advantage, in a time of distress. This view is shared by Heine and Rindfleisch (2013) who view formal turnaround as an effective legal option used to improve and optimise an organisation.

Timing

There are several reasons noted in literature as to why managers delay taking action in periods of distress. These include management bias which may delay cognition of the decline (Abatecola, 2012; Rockwell, 2016), a lengthy sense making process of cause of decline (Combe & Carrington, 2015), the time taken for effective stakeholder communication and engagement (Smudde & Courtright, 2011) and the length of time needed to retrench expenses and assets (Guha, 2016). In the case of business rescue specifically, it could also be the negative perception around business rescue or a poor understanding of the process (Pretorius, 2015).

Robbins & Pearce (1992) do not refer to timing directly, but rather to the severity of a decline – a measure of decline over a time period. The most common measure of severity of decline is the change in Altman's Z score (1968) over a twenty-four month period (Robbins & Pearce, 1992). Robbins & Pearce (1992) draw a distinction between high and low levels of severity of decline and the amount of retrenchment necessary for successful turnaround. Other than severity of decline (Robbins & Pearce, 1992), there is limited literature which deals with the timing of turnaround actions and the effect of this timing on successful or unsuccessful turnarounds (Trahms et al., 2013) nor are the impacts of earlier or later actions or timing of these turnaround actions explicitly addressed or empirically investigated (Tangpong, Abebe, & Li, 2015).

It is however clear from literature that earlier entry into formal rescue is usually received favourably by stakeholders, as entry into formal rescue halts decline and maintains resources. The longer a distressed company stays out of the rescue process the more difficult it become for managers to manage the operations of the business (Routledge & Morrison, 2012).

Overture

This research aims to determine the applicability of turnaround literature on business rescue in South Africa. The research will consist of a literature review of current turnaround literature and draw on similarities between turnaround literature and literature available on formal rescue processes, including the legal framework of business rescue. To test the application of turnaround literature on business rescue, a prediction model will be used to empirically test the applicability of the theory on companies listed on the Johannesburg Stock Exchange (JSE) that have entered into business rescue.

Following the establishment of a relationship between the prediction model and the outcome of business rescue, the study will examine the relationship between earlier entry into business rescue and the outcome of the business rescue process.

This study therefore hopes to benefit academia and business by adding to the existing knowledge base of business rescue and turnaround literature in a South African context.

In addition, the research aims to add to the literature and to business knowledge on timing of turnaround actions by investigating the relationship between earlier entry into business rescue. The relationship will be tested by running the same prediction models at multiple specified points prior to entry into business rescue and then comparing the Z scores of these different points in order to obtain an understanding on the change in probability of turnaround at the earlier points. This part of the research is specifically aimed at adding a further temporal aspect to entry into business rescue and turnaround literature.

Context

The following reasons are why the study will focus on JSE listed entities entering into business rescue for.

- Convenience – the entities are public listed entities, therefore the required financial information is available in the public domain.
- Accuracy – the available accounting information would have been subject to independent audit and therefore some level of accuracy exists in this information.
- Size – JSE listed companies are generally larger companies and larger companies entering into a formal rescue are more likely to succeed than smaller companies (LoPucki & Doherty, 2015). Despite this, public companies have not made much use of the business rescue process to date (Pretorius, 2015) which may indicate a lack of knowledge of the process or that the process may not be suitable for these companies.
- Repercussions – The success or failure of publicly listed entities should carry a great impact across a wider stakeholder group.

2. Literature review

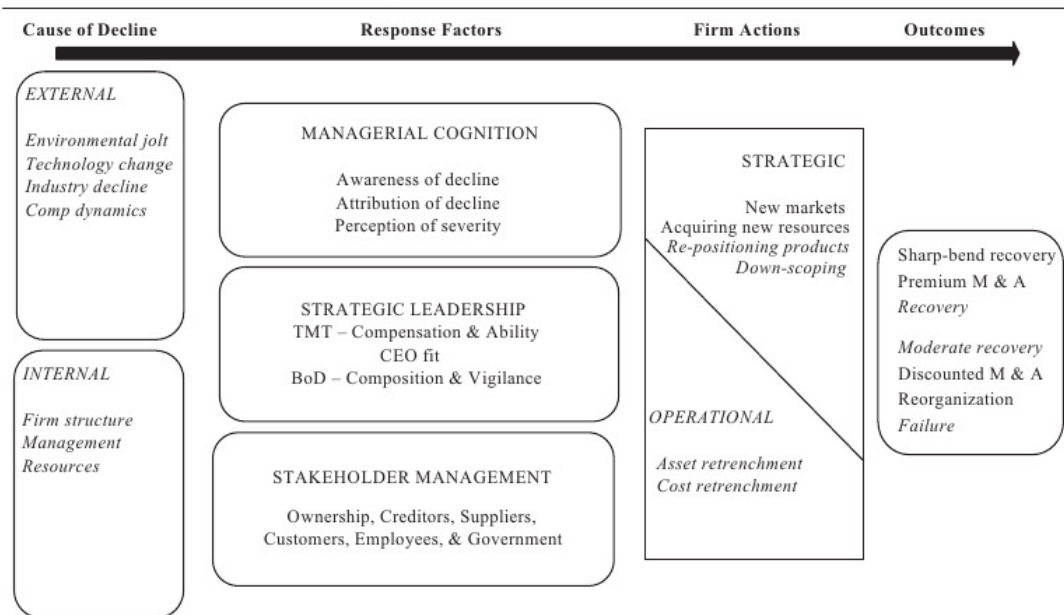
Crisis and distress seriously threaten an organization's survival (Nystrom & Starbuck, 1984).

The response to such situations is almost always a major effort to turn the company around. The key questions that must be answered in all cases are: Are such efforts worthwhile? Can they be successful? And; what type of turnaround strategy has the best prospects for success? (Hofer, 1980, p. 21)

To assist in answering some of these questions, the research considered literature on turnaround, both formal and informal, decline and prediction.

Trahms et al. (2013) undertook a twenty year review of turnaround literature, starting with the Pearce and Robbins two stage model (1992), cataloguing forty empirical studies on turnarounds to develop a descriptive organizational decline and turnaround model. This model was referred to as "the extended model of organisational decline and turnaround" (the extended model) and consists of four stages: cause of decline, response factors, firm actions and outcomes. The extended model (Trahms et al., 2013, p. 1288), shown in Figure 1, was used as an outline to this literature review.

Figure 1: The extended model of organisational decline and turnaround



Source: Trahms et al., 2013, p. 1288

2.1. Cause of decline

Organizational decline is described as a process “ultimately leading to organizational death” (Heine & Rindfleisch, 2013, p. 10) or “to a situation when an organisation’s existence ends” (Heine & Rindfleisch, 2013, p. 10) and “should be taken seriously by all firms” (Heine & Rindfleisch, 2013, p. 10). Although seen as a common fate, recommendations of how organisations are able to avoid this doomed fate are scarce (Rockwell, 2016).

It is important to draw a distinction between a cause of decline and a sign of decline, although the terms were often used interchangeably in literature, a cause of decline was seen to create a sign of decline (Pretorius, 2008). A cause of decline points towards a source of decline or failure, providing reason or variables responsible for the existence of the decline or of the failure (Pretorius, 2008). Signs of decline, sometimes referred to as warning signals, emerge throughout the process of business decline and are followed by either action or inaction by management (Amankwah-Amoah, 2016). Causes of decline in the extended model (Trahms et al., 2013) are categorised into internal and external factors;

external factors consist of environmental jolts, changes in technology, industry decline and competitive dynamics; while firm structure, management and resources make up internal factors (Trahms et al., 2013). External factors are generally factors out of the control of Management (Robbins & Pearce, 1992).

Internal or External Factors

Smith and Graves' (2005) empirical study found that firm size and the existence of free assets (tangible assets over secured loans) play a significant role in firm turnaround. Francis and Desai (2005) point out significant relationships between firm productivity, availability of slack resources and firm retrenchment to determine the likelihood of turnaround.

In line with Smith and Graves (2005) and Francis and Desai (2005), Guha (2016) tested the availability of slack resources over a thirty year period of declining US chemical firms entering bankruptcy. The research differentiates between different types of organisational slack as follows,

- available slack – liquid resources that can be brought to use immediately,
- recoverable slack – resources utilised in the day-to-day running of the business or resources that require time and effort by managers to be made available,
- potential slack – the ability to raise funds from external sources and
- total slack – a combination of available slack, recoverable slack and potential slack.

Guha's (2016) empirical findings suggest that the levels of available slack, potential slack and total slack are lower in declining firms than in surviving firms; further, recoverable slack levels within declining firms and surviving firms does not differ. The finding on potential slack is especially relevant in the context of the business rescue process as the ability to raise funding post business rescue is seen as fundamental to a successful business turnaround. Furthermore, the prevalence of this funding, referred to as post commencement funding in the context of business rescue, is almost non-existent (Pretorius & Du Preez, 2013).

Despite the inclusion of industry decline in the extended model (Trahms et al., 2013), seminal work by Francis and Desai (2005) could not find a significant relationship between industry growth or decline and likelihood of firm turnaround. They found that internal factors under management's control (e.g. firm productivity, availability of slack resources, firm retrenchment) determine the likelihood of turnaround and that these internal factors contribute more to successful turnarounds than external factors do. Robbins and Pearce (1992), on which the extended model (Trahms et al., 2013) is heavily based, had previously concluded that firms which attributed their decline primarily to external factors do not frequently pursue retrenchment in their recovery response. As retrenchment has a positive relationship with turnaround, they infer that firms that attribute decline to internal causes achieved better levels of turnaround performance.

More recently, Panicker and Manimala (2015) have found that external changes only affect organisations that are already internally weak and therefore the primary cause of decline is always an internal weakness. Although the apparent consensus is that internal factors have a greater impact on firm decline, environmental changes as a cause of decline are a growing reality for all firms; and as such firms must pay greater attention to these changes as potential causes of failure (Pretorius, 2008).

Although there is a clear distinction in literature between internal and external factors being the cause of the business' decline, considering them in isolation of each other may be limiting. They are very often interrelated and each category on its own only offers a limited picture as to the cause of the organisations failure (Amankwah-Amoah, 2016). More importantly, signs of decline emerge throughout the process of business decline and are followed by either action or inaction by management (Amankwah-Amoah, 2016), this action or inaction by management is influenced by various response factors (Trahms et al., 2013).

2.2. Response factors

In the extended model (Trahms et al., 2013), response factors addressed managerial cognition, strategic leadership and stakeholder management (Trahms et al., 2013), these are further unpacked below. Common sense would however dictate that a failed firm did not respond, or responded incorrectly, which in turn lead to the failure (Guha, 2016).

Managerial Cognition

Managerial cognition, or how management perceives and interprets the factor or factors which have led to the decline, are affected by three cognitive factors which affect subsequent turnaround actions: awareness of decline, attribution of decline, and severity of decline (Trahms et al., 2013). During their study of stakeholder theory through different life cycle stages of an organisation, Jawahar and McLaughlin (2001) note that organisational decline follows the “mature” stage in an organisations life cycle. The mature stage is therefore often referred to as the pre-decline phase and creates a false sense of security for stakeholders. The organisation would have emerged from an emerging growth phase and then have the misfortune of strong cash flows, a lack of investment opportunities, flat growth and overconfident management whom regard themselves as successful, respected leaders and role models (Jawahar & McLaughlin, 2001); this in itself creates a bias for managers to overcome. This bias is then further weighted with biases of managerial cognition which is due to managers often hiding or ignoring decline after the initial signs of decline have surfaced, which inevitably delays a response to the decline (Abatecola, 2012; Rockwell, 2016).

Bias may therefore be the reason management discount warning signs as erroneous (Nystrom & Starbuck, 1984) or initially attribute warning signs to “environmental disturbances, and why management adopt weathering-the-storm strategies, including postponing investment, reducing maintenance, halting training, centralizing decision making, liquidation of assets, denial of credit to customers, raise prices, leave positions vacant, and so forth” (Nystrom & Starbuck, 1984, p. 55). Gopinath (2005) argued that cognition consists of three

phases; initial awareness of a crisis, followed by management's realisation that the crisis will not be overcome by its current strategy nor standard operating procedures and policies, and finally management matching corrective action to the root cause of the crisis. Nystrom & Starbuck (1984) argued that at this second phase of cognition very few managers are able to unlearn the strategies, operating procedures and responses which have worked successfully in the past. These managers will rationalise failures and cling to redundant ways of doing things, at this stage the only way to ensure turnaround is to replace constricting, hopeless cognitive structures by replacing the managers who hold them.

Sense-making is described as "the process through which individuals work to understand novel, unexpected, or confusing events" (Maitlis & Christianson, 2014, p. 58) and is

triggered by cues - such as issues, events, or situations - for which the meaning is ambiguous and/or outcomes uncertain. Such occurrences, when noticed, interrupt people's ongoing flow, disrupting their understanding of the world and creating uncertainty about how to act. (Maitlis & Christianson, 2014, p. 70)

However, the sense-making process can take a considerable amount of time, especially for leaders in a crisis, to develop consensus around the cause of the crisis and the action required to bring the organisation out of that crisis (Combe & Carrington, 2015).

Panicker & Manimala's (2015) research showed a significant relationship between the number of identified causes of decline and the organisation's ability to turnaround; with the more causes of decline facing the business the less likely that it will turnaround successfully. Based on this finding Panicker & Manimala (2015) inferred that if managers were able to proactively detect causes of decline and address these, the greater the probability of turnaround, as the business would be faced with fewer causes of decline at any one point in time.

The speed and severity of decline is also important to consider, the faster the response to a decline the greater the potential to turnaround the organisation. This was found particularly true for organisations in a severe and rapid decline (Zeni & Ameer, 2010; Lohrke, Ahlstrom, & Bruton, 2011) where it was empirically proved that severity of decline is a significant predictor of turnaround success. The most common measure of severity of decline is the change in Altman's Z score (1968) over a twenty-four month period (Robbins & Pearce, 1992). Manager's personal attributes, including maturity, functional background and locus of control, influence the action taken in response to the perceived severity of decline. This perception of a severe decline is associated with an increase in managers pursuing retrenchment as a turnaround strategy (Musteen, Liang, & Barker, 2011). Robbins and Pearce (1992) established the positive relationship between retrenchment and turnaround and thus we can infer that not only is the severity of decline a predictor of turnaround but the managers own perception of severity, based on his own personal attributes, is a predictor of turnaround performance.

The seminal work by Pearce and Robbins (1992) developed a two stage model to turnaround, simply named "the two stage model". The two stage model framed turnaround response as a phased approach beginning with retrenchment and then recovery; retrenchment in the two stage model took the form of asset and cost reduction. The research found that the degree of retrenchment was positively related to the outcome of the turnaround.

This part of the extended model (Trahms et al., 2013) starts to overlap with the duties and activities required of a business rescue practitioner. Practitioner competencies are seen as central to the success of the business rescue (Pretorius, 2015). The first task of the business rescue practitioner "is taking management control and consists of the following activities: take management control, take financial control, clarify roles, meet with stakeholders, execute feasibility, execute day-to-day actions and communicate openly" (Pretorius, 2013, p. 16), thus effectively taking over the role of management.

Strategic Leadership

The extended model (Trahms et al., 2013) focused on the impact of the Chief Executive Officer (CEO), management team and board of directors on the turnaround process and held the view that leadership could be a facilitator of turnaround or a contributor to failure. Evidence is however conflicting with regard to the replacement of the firm's CEO and management team, and the impact on the success of the turnaround (Trahms et al., 2013).

O'Kane & Cunningham (2014) found that at the onset of the turnaround process companies need to identify the cause of decline. This cause of decline may indicate if the CEO should be retained or replaced. Their findings indicated that leadership should be replaced in the following circumstances,

- leadership has been discredited by previous failed strategies,
- a signal needs to be sent to stakeholders indicating the seriousness of the change turnaround intent, and
- leadership's incompetence has contributed to the performance decline.

While "the media and shareholders frequently place responsibility for the negative position of the firm on the CEO" (Schoenberg, Collier, & Bowman, 2013, p. 251) may be a further reason why CEO's are often replaced, in times of distress.

In addition to these circumstances, leadership and leadership teams who cling to recollections of past successes, who cannot change their cognitive structures and unlearn them, need to be replaced to ensure turnaround (Nystrom & Starbuck, 1984). Successful turnaround managers experiment and deviate from standard practice to test the legitimacy of the assumptions which they have developed (Nystrom & Starbuck, 1984).

O'Kane & Cunningham (2014) further found that considering the encumbered leader's networks, business knowledge and industry specific knowledge is advantageous in decision-making, as these are critical when considering repositioning of the company's strategic direction. Zhu and Shen (2016) noted

that an outside CEO has various challenges, including gaining firm specific knowledge, establishing their role, initiating and implementing actions to bring about strategic change and establishing a positive relationship with the board of Directors; all in a rapid timeframe. Zhu and Shen's (2016) empirical testing noted that new CEOs were more successful at increasing organisational profitability if they had experience in dealing with boards that were more diverse than the board of the distressed company.

CEO and board turnover is, however, not always a consequence of distress, these departures may, in fact, have been possible antecedents or causes of the business entering into distress. There is little empirical testing in literature on this nuance and further refinement is needed for definitive evidence on board or CEO turnover in a turnaround scenario (Abatecola, Farina, & Gordini, 2014). Conversely, the departure of a popular and respected CEO from a distressed firm may signal to stakeholders that the organisation is no longer worthy of their support (Amankwah-Amoah, 2016).

The CEO and the total management team is said to act as a "filter" for the organisation. The management team sets the organisation's strategy using their interpretations of the environment in which the organisation operates and how it is positioned within this environment. It is therefore not inconceivable that misinterpretations by the management team could lead an organisation into distress (Abatecola, 2012). Empirical testing has shown that companies in distress that enter into formal business rescue processes as a strategic action have more independent boards and are more likely to have a constituted and functioning audit committee (Routledge & Morrison, 2012). While total management team tenure has a significant negative relationship with the organisation's ability to stay out of distress, the factors heterogeneity, level of education and core function expertise have significant positive relationships with the probability of organisational turnaround (Abatecola, 2012). Abebe, Angriawan and Ruth (2012) found that there is a positive correlation between the number of the external board appointments and likelihood of corporate turnaround – even if this number is just one additional external appointment. Supporting these findings, Platt & Platt (2012) found that as well as external appointments having

a significant impact on the likelihood of bankruptcy, independence of directors, board size, director age and boards with members currently serving as CEOs of other companies also had a significant relationship with keeping companies out of distress. This finding is applicable to both the main board and its sub committees. This is consistent with the findings of Routledge & Morrison (2012), who found that companies with greater board independence, a dual Chief Executive Officer and Chairperson, and companies with an audit committee were more likely to use the Australian version of Business Rescue, insolvency administration, as a strategic choice to recover from distress.

Should the business enter into formal business rescue, the practitioner effectively takes over the management of the company. Pretorius (2014) has described four higher-order competencies of a business rescue practitioner. These competencies are;

- Decision-making – the rescues process requires the practitioner to make judgements on, and have basic problem solving skills for, various items at various points.
- Collaboration – underlies the key activities of regularly and openly engaging with stakeholders and affected parties.
- Integration – the practitioners’ ability to incorporate various parts of a problem, often seemingly unrelated, to form a sensible whole; firstly to produce a sensible rescue plan and then to successfully implement this plan.
- Sense-making – the practitioner’s constant effort to comprehend the various relationships between people, process and events which are central to investigating and understanding the business.

Although literature prescribes competencies of business rescue practitioners, “at present, proposed selection guidelines for [business rescue practitioners] appear to be aligned with generally-defined competencies of leaders and change agents and can, at best, be described as vague” (Pretorius, 2014, p. 15). Existing literature gives guidance in terms of the experience of practitioners with empirical

evidence that shows a significant positive correlation between experiences of the practitioner charged with the formal turnaround and the outcome of formal turnarounds (LoPucki & Doherty, 2015). The experience referred to by LoPucki and Doherty (2015) is the number of rescue cases the practitioner had presided over as opposed to the length of time that they had been practising. The 2008 Companies Act does not define the specific knowledge, experience, skills, abilities or competencies required to be a business rescue practitioner (Pretorius, 2014), however Pretorius (2014) develops some higher level competencies for practitioners including decision making and integration, sense-making, and collaboration. Although these competencies do not form part of any minimum requirement for a practitioner upon registration as a business rescue practitioner, practitioners are classified in terms of experience as “junior”, “experienced” or “senior” practitioners, in that ranked order (Pretorius, 2015). Practitioners are classified according to the years of experience they have in business rescue or turnaround, a junior practitioner has less than five years of experience while a senior practitioner has more than ten years of experience (Government Gazette, 2011). The ranking forms a basis for what size of business the practitioner may be appointed to undertake the rescue of, e.g. a large company must appoint a senior practitioner to undertake the business rescue. It is however reasonable to infer from LoPucki and Doherty’s (2015) findings that as the business rescue process matures and practitioners are exposed to more cases, the success of the process should increase; although the current ranking in terms of years of experience may not be the most effective.

Despite some uncertainty around the turnover of CEO for a turnaround, evidence points to larger boards, bolstered with independent board members, who possess appropriate domain knowledge and experience to ensure the success of a turnaround. As such the introduction of a specialist in turnarounds, in the form of an experienced business rescue practitioner, to the management team and board of any organisation in distress can only have a positive effect on the likelihood of successful turnaround. Further to this Routledge and Morrison (2012) found that a formal rescue process is enhanced if the incumbent management of the company continue to be active and contribute towards the rescue process.

Stakeholder management

Literature has moved away from merely considering the catastrophe of organisational failure on shareholders and notes that failure affects all stakeholders (Trahms et al., 2013). In crisis the stakeholders with the “greater capacity and bargaining power will ultimately impose their requirements against the rest” (Priego, Manzanque, & Madrid, 2014, p. 76) and it is the intention of a turnaround to preserve value for all stakeholders (James, 2016). The extended model (Trahms et al., 2013) considers that all stakeholders play a crucial role in the turnaround of firms (Trahms et al., 2013) as there is a significant positive relationship between firms which manage stakeholder relationships well and firms that have performed well and have been able to successfully recover from periods of distress (James, 2016).

Management of customer expectation is therefore imperative to the turnaround process (Trahms et al., 2013). Firms must prioritise investments which will improve the goods and services offered to customers (Priego et al., 2014).

When failed businesses are compared to successful businesses, it is noted that in the failed businesses, shareholders were unwilling to direct more equity or investment into the business, indicating mistrust or disbelief in the business. Usually in times of distress profits are reduced and value stops flowing to shareholders, causing further disinterest, particularly as any additional value created at this stage is usually required to be paid to other stakeholders (Priego et al., 2014).

Managing the expectations and perceptions of employees is important to any turnaround process as employees are viewed as a potential source of competitive advantage (Trahms et al., 2013). Employees in failed businesses develop negative attitudes towards the organisation and labour productivity declines approximately two years before a business fails. As a consequence the distressed firm will need to employ more staff to meet productivity requirements, increasing its cost of production and making the organisation less competitive (Priego et al., 2014). Employee engagement as a significant differentiator of turnaround emerged in the work by Panicker & Manimala (2015).

Failed firms are significantly more indebted than successful firms. High levels of debt may result in stricter credit conditions and the cost of debt being increased or credit no longer being extended, particularly if the firm has previously defaulted on payments, leading to financial constraints (Priego et al., 2014). Pretorius (2014) notes that banks are generally powerful stakeholders with resources and capability, and specific to the business rescue process the banks are often sizable creditors of the business which increases their influence over the success of the turnaround. This may lead to banks having an amount of power disproportionate to that of the practitioner, this power stems from banks' reluctance to provide additional, post business rescue finance (Pretorius & Du Preez, 2013). The size of debt in a business, and therefore the power of the bank over a business, was found to have a significant effect on the length of time to liquidation and failure (Balcaen, Manigart, & Ooghe, 2011).

Distressed companies who receive loan funding after the formal rescue has started are more likely to succeed than those that do not receive this funding (LoPucki & Doherty, 2015). This funding, referred to as post commencement financing under the South African business rescue regime, has been described as non-existent in South Africa (Pretorius & Du Preez, 2013) and therefore maybe a major contributor to the low business rescue success rate.

In a business rescue, the creditors are strong a strong stakeholder who vote on the adoption of the business rescue plan. A business rescue process,

allows companies to reorganize their affairs and make arrangements with creditors to the point where they can continue trading. The survival of an ailing business, or at worst improved returns by avoiding immediate liquidation, can be extremely beneficial to stakeholders. (Liou & Smith, 2006, p. 3)

However, formal rescue processes that make use of creditors' committees have been found to be more likely to fail, this finding was described as "puzzling" (LoPucki & Doherty, 2015, p. 997), however it was supported by similar findings

which found that a significant number rescue cases which made use of credit committees ended in liquidation of the business. A possible explanation offered for this was that members of credit committees may act in their own interest and not in the interest of keeping the business a going concern (Harner & Marincic, 2011).

Two way communication is the foundation of stakeholder management, including the total narrative of style, tone, and content. Stakeholder management is rhetorical and involves daily attention to stakeholders to maintain and improve these relationships (Smudde & Courtright, 2011). Organisations with poor stakeholder relationships, or who are faced with stakeholders that have lost trust in the firm or are nervous about its sustainability and are considering terminating their relationship with the distressed business, benefit from formal turnaround processes like business rescue. This is because it allows for unfavourable agreements and contracts with stakeholders to be renegotiated and for stakeholder relationships to be reset (James, 2016).

Companies entering into formal business rescue that announce, or just allude to, an intention to dispose of major parts of the business are more likely to fail. LoPucki and Doherty (2015) believe that the intention to sell signals weakness and desperation to the market, which is why announcing an intention to sell was the largest predictor of success or failure in the empirical testing.

2.3. Firm actions

The extended model (Trahms et al., 2013) was formulated with its foundations on the two stage turnaround model by Robbins & Pearce (1992), which distinguishes between retrenchment – including cost and asset retrenchment – and recovery, or improvements through investment in operational efficiencies and investment in new products or to service new markets; these are all viewed as actions a firm may undertake for turnaround. The two stage model considers cost retrenchment as indispensable in achieving turnaround. When savings from cost retrenchments do not meet the company's short term commitments, the company will be

required to commence with asset retrenchment to achieve turnaround. However, a combination of cost and asset retrenchment results in the greatest turnaround performance.

Retrenchment, in firms that rely on core capabilities of exploration, differentiation, innovation and new product development, is not viewed as an appropriate action for firm turnaround as these firms are vulnerable to the impact of retrenchment and may not recover once compromised (Lim, Nikhil, Morse, & Rowe, 2013). Firms that rely on the core capabilities of exploitation, cost leadership, efficiency and economy of scale are able to recover from retrenchment and therefore large-scale asset retrenchment is a viable turnaround action for these firms (Lim et al., 2013). Capital intensive firms should consider retrenchment of business units or segments which are not core to the organisation's strategy, as this type of action is viewed as least disruptive to the organisation but can significantly increase the probability of turnaround (James, 2016). Temporally, earlier divestments and earlier geographic market exits, also have a significantly positive relationship with successful turnarounds (Tangpong et al., 2015).

The recovery phase of the two stage model starts after retrenchment and continues until the firm's turnaround either succeeds or fails. During the recovery phase, the firm can focus its attention on operational efficiencies over an existing product or market, or combination thereof, known as operational turnaround, or focusing on new products or serving new markets, known as strategic turnaround (Robbins & Pearce, 1992). The extended model (Trahms et al., 2013) differentiates between strategic and operational actions to bring about a turnaround and views the actions taken in this phase as critical to the success of the turnaround (Trahms et al., 2013). Analysis by Panicker & Manimala (2015) found that firms that were able to successfully turnaround made use of many more turnaround actions, irrespective of these being operational or strategic, than firms that failed to turnaround.

Research by Schmitt & Raisch (2013), building on the two stage model, found that that retrenchment and recovery are interrelated and that a firm may have to transition between retrenchment and recovery multiple times as it pursues

turnaround Furthermore, through empirical testing the study showed that integrating retrenchment and recovery creates benefits which positively affects turnaround. Transitioning between actions allows leaders the opportunity for learning and to gain a better understanding of the decline situation; by taking action and then observing reactions on the organisation, managers can adjust their actions to produce the best reactions (Maitlis & Christianson, 2014). In situations where managers have a good understanding of the decline situation, business and environment, transitioning between action and recovery allows managers to validate their assumptions and actions (Nystrom & Starbuck, 1984).

Strategic actions are said to be “the true driver of long-term performance gains after decline” (Trahms et al., 2013, p. 1295). The limiting factor to strategic action is referred to as slack.

Organizational slack is that cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment. (Bourgeois, 1981, p. 30)

Organisational slack has been the focus of several studies (Francis & Desai, 2005; Smith & Graves, 2005; Balcaen et al., 2011; Kazozcu, 2011; Trahms et al., 2013; Guha, 2016), with each study looking at a different nuance of organisational slack. Organisational slack suggests that underutilised resources exist and are available to the business to be used for the turnaround. The following forms of slack have been found to have a significant relationship with turnaround. The more slack a business has the more time it has to implement strategic actions (Kazozcu, 2011).

Available slack resources (Francis & Desai, 2005) calculated as

$$1 - \left(\frac{\text{Total debt}}{\text{Total assets}} \right) \times 100 \quad (1)$$

Available Slack (Guha, 2016) calculated as

$$\frac{\text{Cash+marketable securities}}{\text{Total liabilities}} \quad (2)$$

Potential Slack (Guha, 2016) calculated as

$$\frac{\text{Market value of company}}{\text{Earnings}} \quad (3)$$

While the following forms of slack have not been found to have a significant relationship with turnaround.

Recoverable Slack (Guha, 2016) calculated as

$$\frac{\text{Overheads}}{\text{Revenue}} \quad (4)$$

Free Assets (Smith & Graves, 2005) calculated as

$$\frac{\text{Total assets} - \text{secured liabilities}}{\text{Total assets}} \quad (5)$$

However, Smith and Graves (2005) initially set out to calculate free assets as

$$\frac{\text{Total collateralised assets}}{\text{Total tangible assets}} \quad (6)$$

The initial calculation of free assets (Equation 6) identified the amount of assets available for security to obtain future financing, unfortunately, due to a lack of suitable data, they were forced to change their formula to Equation 5 (Smith & Graves, 2005). The revised formula would therefore include intangible assets and depreciated historic cost prices and would therefore not have been appropriate for the test; these values would not typically be relied on to advance credit. Free assets are particularly important in the context of business rescue as banks require unencumbered assets or surety to advance post commencement

financing (Pretorius & Du Preez, 2013).

Noting that recoverable slack (Guha, 2016) was found to have a significant relationship with turnaround, a conclusion is drawn (Guha, 2016) that the time and effort expended by management to convert this type of slack into cash plays a major role in usefulness in a turnaround situation. This conclusion is supported by the findings of Tangpong et al. (2015) that “declining firms that implement retrenchment actions early have a higher likelihood of successful turnaround” (Tangpong et al., 2015, p. 647) and “early divestments and early geographic market exits significantly contribute to the likelihood of successful turnaround” (Tangpong et al., 2015, p. 647). However, it is important to note that early layoffs of employees do not contribute to successful turnaround.

From the above it can be inferred that in times of distress, management should focus on increasing equity in the firm, either through equity injections or by increased retained earnings, or increasing the levels of cash and liquid assets in relation to total liabilities. This is supported by Altman’s (1968) findings that

$$\frac{\text{Retained earnings}}{\text{Total assets}} \quad (7)$$

and

$$\frac{\text{Market value of equity}}{\text{Total liabilities}} \quad (8)$$

are significant indicators of bankruptcy. Unfortunately, increasing the equity of a firm in distress seems counter intuitive, as in times of distress profits are reduced and value stops flowing to shareholders causing further disinterest, particularly as any additional value created at this stage is usually required to be paid to other stakeholders, therefore shareholders are reluctant to inject further equity into the business (Priego et al., 2014). Becker and Strömberg (2012) found that managers of distressed businesses may be incentivised to “hurt debt and favour equity” (Becker & Strömberg, 2012, p. 1966) but these actions tend to increase the indirect cost of distress and lower firm value. This may be why potential slack (Guha, 2016) is such an important resource in a turnaround; it acts as an indicator of the investors’ optimism in a firm’s future and therefore the ability for the firm to

raise capital in equity markets.

Firms classified as manufacturers were more likely to have a successful formal rescue than other firms (LoPucki & Doherty, 2015), this may be because these firms are larger or because they are less dependent on outside suppliers (LoPucki & Doherty, 2015). Referring to turnaround literature it may also be that the factors of low firm productivity, availability of slack resources and firm retrenchment are simpler to influence in manufacturing firms (Francis & Desai, 2005).

LoPucki and Doherty (2015) also reported that companies with lower shareholder equity are more likely to succeed in a formal rescue scenario. Shareholder equity is the ratio of assets less liabilities and is referred to as the net worth of the business; this would imply that the higher the liabilities in the business the more likely the business is to recover from distress – if formal business rescue is implemented. This finding is contrary to the view held in most turnaround literature, which states that higher levels of slack lead to higher levels of turnaround success (Francis & Desai, 2005; Trahms et al., 2013; Guha, 2016). However, for distressed companies with high debt levels a bankruptcy or business rescue process allows a break from creditor payments and provides the business with time to implement ideas that may increase operating profits. In addition, the bankruptcy or business rescue process may have brought about changes in the management structure which may introduce innovation and efficiencies that have a positive effect on operating profits (LoPucki & Doherty, 2015).

The proposed actions to turnaround an organisation in business rescue are detailed in a formal business rescue plan (Pretorius, 2013), which is compiled by the practitioner using the competencies of decision making, collaboration, integration and sense-making (Pretorius, 2014), as discussed previously. Ultimately the creditors vote on the acceptance of the proposed actions and decide the fate of the business. However, a potential downside to this process is that the practitioner cannot validate the proposed turnaround actions in small increments, so as to allow the practitioner the benefit of tweaking further actions to ensure a higher probability of success (Nystrom & Starbuck, 1984).

Businesses that pre-negotiate their rescue plans have a higher likelihood of success (LoPucki & Doherty, 2015), a plan is deemed to be pre-negotiated if, at very least, a repayment term sheet has been negotiated with a major creditor. This success may be due to a signalling effect to other stakeholders that there is a probability of turnaround. However the relationship between success and the term sheet may in fact not be causal, but rather correlated with the management of companies with a strong probability of success pre-negotiating term sheets and management of companies with low probability of success leaving the term sheet to chance (LoPucki & Doherty, 2015).

2.4. Outcomes

The extended model (Trahms et al., 2013) concludes by focusing on the various outcomes of the turnaround efforts (Trahms et al., 2013). The extended model (Trahms et al., 2013) is based on the general consensus that the outcomes of a successful rescue are positive performance measures yielding above a risk-free rate of return. The extended model (Trahms et al., 2013) proposes outcomes ranging from negative to successful and including partial success. The outcomes, as ranked by the extended model (Trahms et al., 2013), are

- Sharp-bend recovery – whereby a firm recovers with and experiences substantial growth through the turnaround process,
- Premium mergers or acquisition – implying asset retrenchment at a premium,
- Recovery – positive performance at previous performance levels,
- Moderate Recovery – positive performance yielding above a risk free rate of return,
- Discounted mergers or acquisition – implying asset retrenchment at a discount,
- Reorganisation – a firm could voluntary file for an official legal reorganisation, and
- Failure – a worst case outcome, an organisation closes its doors and no longer exists.

Voluntary liquidation is sometimes pursued by firms as an exit strategy, these firms typically have higher available slack resources, a low degree of stakeholder dependence, are less profitable, have low levels of investment and a low wage bill. Owners can therefore walk away from the business easily and still extract value from available slack before it is depleted (Balcaen et al., 2011).

In the context of business rescue, there are essentially three outcomes; a company which continues to be a going concern, in any form, a return to creditors which is greater than an immediate liquidation of the company would have yielded and a liquidation. Conradie & Lamprecht (2015) use three goals to interpret the success of business rescue, a restructured independent company which is a going concern or a return to creditors and shareholders that is greater than the return which would have been received from an immediate liquidation and the protection of all stakeholders. Pretorius (2013) is not as prescriptive on the business being restructured or independent in his evaluation criteria and classifies success as using turnaround procedures to rescuing the distressed business, or alternatively, to deliver a plan that results in a better return for creditors and shareholders than immediate liquidation, which is closely aligned with the Companies Act.

Reorganisation, as referred to in the extended model (Trahms et al., 2013), refers to the bankruptcy filing (colloquially known as chapter eleven) in the United States of America. Chapter eleven is a comparable corporate rescue regime to the South African business rescue process (Conradie & Lamprecht, 2015). Firms are most likely to file for chapter eleven if the firm has large intangible assets, the value of which could only be realised through ongoing operations. Another reason could be that the firm has multiple unfavourable contracts and relationships with stakeholders; chapter eleven provides value here as these contracts can be renegotiated through the process (James, 2016).

Formal reorganisation, as a turnaround option, is considered a turnaround outcome positioned just above total failure and firm closer (Trahms et al., 2013) indicating that entering into business rescue may be seen as a last resort to rescue the business. Routledge and Morrison (2012) viewed formal rescue as a

type of turnaround strategy which can be strategically used by management, to their advantage, in a time of distress. This view was shared by Heine and Rindfleisch (2013) who view formal turnaround as an effective legal option used to improve and optimise an organisation.

Prediction of outcomes

The basis for the extended model by Trahms et al. (2013) is based on the Robbins & Pearce (1992) two stage model. In turn, the two stage model makes extensive use of Altman's (1968) classic Z score model, which uses financial ratios to provide a score to the company, if the calculated score is above 2.99 the firm is classified as having a low probability of bankruptcy in the next twelve months. Firms with a score of below 1.81 are classified as having a high probability of bankruptcy in the following twelve months and firms between 1.81 and 2.99 are classified as having an indeterminate probably of bankruptcy in the next twelve months and are often misdiagnosed. These therefore fall into a grey area of uncertainty, as shown in Table 1.

Table 1: Altman's Z score and firm classification

Altman's Z score	< 1.81	1.81 – 2.99	> 2.99
Firm classification	High probability of bankruptcy in the next twelve months	indeterminate probability of bankruptcy in the next twelve months	low probability of bankruptcy in the next 12 months

There are several iterations and studies building on the original Z score model with the addition of multiple variables and in various contexts (Altman, Iwanicz-Drozowska, Laitinen, & Suvas, 2016).

The classic Z score model makes use of the following accounting ratios (Altman, 1968)

$$\text{Ratio one} = \frac{\text{Working capital}}{\text{Total assets}} \quad (9)$$

$$\text{Ratio two} = \frac{\text{Retained earnings}}{\text{Total assets}} \quad (7)$$

$$\text{Ratio three} = \frac{\text{Earnings before interest and taxes}}{\text{Total assets}} \quad (10)$$

$$\text{Ratio four} = \frac{\text{Market value of equity}}{\text{Book value of total liabilities}} \quad (8)$$

$$\text{Ratio five} = \frac{\text{Sales}}{\text{Total assets}} \quad (11)$$

Besides being accounting ratios, these ratios were selected to be representative of various aspects of turnaround and the success or failure of a business from literature. In ratio one (equation 9), working capital is the difference between current assets and current liabilities and considers liquidity and size dimensions of the business (Altman et al., 2014). Smith and Graves' (2005) empirical study found that firm size plays a significant role in firm turnaround. When measuring companies according to the size of their asset base, larger companies entering into a formal rescue were more likely to succeed than smaller companies (LoPucki & Doherty, 2015).

Ratio two (equation 7) uses cumulative earnings to consider the age of the firm (Altman et al., 2014). Besides the strong correlation between age and failure, Thornhill and Amit (2003) differentiate between younger companies, which are at risk of failure due to a lack of resources and capabilities, and older firms, which are at risk of failure if they were not able to adapt to a changing competitive environment.

Ratio three (equation 10) represents the productivity and profitability of the company's assets and is indicative of the value of assets, the importance of this ratio is emphasised by Thornhill and Amit (2003) who find that "for any firm, bankruptcy will occur when negative cash flow erodes available asset stocks to

the point where creditors cannot be satisfied”(p. 500). While, LoPucki & Doherty (2015) found that companies reporting positive earnings, before interest and tax, prior to entering into formal rescue were more likely to be successful. This is because in a formal rescue debt is placed on hold, if a company can generate sufficient funds to cover its production expenses and depreciation cost, it should be able to survive (LoPucki & Doherty, 2015). Furthermore, the firm would have more time to implement strategic actions (Kazozcu, 2011) and because the firm is seen to be covering its costs and creating value this can act as motivation for shareholders to inject further funding into the business (Priego et al., 2014).

Ratio four (equation 8) adds a market dimension to the equation and examines how much the assets of a firm can be reduced before the company’s liabilities exceed its assets, thereby rendering the company insolvent (Altman et al., 2014). Ratio four (equation 8) is aligned to potential slack (Guha, 2016), which acts as an indicator of the investors’ optimism in a firm’s future, the ability for the firm to raise capital in equity markets.

Ratio five (equation 11) is specific to manufacturing companies and dealt with the capacity and effectiveness of management in dealing with market conditions in a competitive environment (Altman et al., 2014).

Later, Taffler (1983) developed a United Kingdom (UK) specific Z score model that also makes use of accounting ratios. However, the difference between the Taffler Z score model and the classic Z score model is that the classic Z score model used accounting ratios at a point in time, while the final ratio (equation 12) in Taffler’s model, referred to as the No Credit Interval (NCI), took into account the time that the company could continue to operate with the assets that it was holding at the time of measurement (Smith & Graves, 2005). A further difference was that the Z score produced had to be compared to a different measurement scale than the original Z score (Altman, 1968). The measure of the Taffler Z score was simply that if the calculated score was positive then it was unlikely that the company would fail in the following twelve months and if the score was negative then the company was at risk of failure within the next twelve months; the lower this number the higher the probability of failure. The NCI, which took into account

the time that the company could continue to operate with the assets that it was holding at the time of measurement (Smith & Graves, 2005), was based on the following ratio

$$NCI = \frac{\text{Current assets} - \text{inventory} - \text{current liabilities}}{\text{Sales} - \text{profit before tax} + \text{depreciation}} \quad (12)$$

The NCI is a measure of slack, which the Altman Z score did not take into account. As slack, in various forms, has a significant relationship with turnaround (Francis & Desai, 2005; Smith & Graves, 2005; Balcaen et al., 2011; Kazozcu, 2011; Trahms et al., 2013; Guha, 2016) its inclusion in a Z score should have been beneficial. Using the Taffler Z score model as a base, Smith and Graves (2005) added additional variables to the prediction model “sequentially to maximize the [Taffler Z score] model’s explanatory power and classification accuracy” (Smith & Graves, 2005, p. 14); severity of the distressed state, firm size, and existence of free assets were added to the prediction model to increase accuracy as these were found to have a significant relationship with failure.

Consistent with the introduction of slack into the Taffler Z score model (Smith & Graves, 2005), Almamy, Aston, & Ngwa (2016) added a cash flow variable to the classic Altman model (Altman, 1968) to take into account the cash generating ability of the organisation, this model was specifically based on UK listed entities and therefore is seen as specific for UK companies. Altman et al. (2016) note that there is little benefit in changing the coefficients in the Z score to be country specific, however significant increases in prediction ability may occur when additional country specific factors are added to develop country specific Z scores.

At the time of developing the original Z score “Altman did not consider cash flow ratios because of the lack of consistent and precise depreciation data” (Altman et al., 2014, p. 4). Comparative testing was carried out, with the cash flow modified classic model obtaining better results than the classic Altman model but with results constant with the Taffler UK model. The variables and ratios used in the cash flow modified model, known as J UK model (Almamy et al., 2016), where

the same as the classic Altman, except for the addition of a sixth ratio:

$$\text{Ratio six} = \frac{\text{Cashflow from operations}}{\text{Total liabilities}} \quad (13)$$

Ratio six (equation 13) added a cash flow element to the Z score, which resembled available slack (Guha, 2016) (equation 2), which has a significant positive relationship with business turnaround.

When considering ratio four (equation 8), the original Z Score Model (Altman, 1968) used a market value of the firm's equity and was therefore only calculable for publicly traded companies. The Z score model was re-estimated by replacing the book value of equity for the market value (Altman et al., 2014) to make the ratio applicable for non-listed companies, this became known as the Z" score.

The original Z score (Altman, 1968) was based on manufacturing companies, to avoid the industry bias, ratio five (equation 11), was excluded from the Z score and the original Z score model was again re-estimated to come up with a Z" score, which could be used for non-manufacturing firms (Altman et al., 2014).

2.5. Timing

The extended model (Trahms et al., 2013) was formulated with its foundations on the two stage turnaround model by Robbins & Pearce (1992). As the name implies, the two stage model frames turnaround response as a phased approach starting when a firm commits to taking action in response to a period of decline. Although this approach implies a timeline with two distinct phases, there is no reference to the start of the first stage in relation to the start of the decline or managements' cognition thereof. The first phase of the two stage model is essentially to bring costs under control and stabilise performance.

The extended model (Trahms et al., 2013) is based on a flow, including the four stages of a turnaround: causes of decline, response factors, firm actions and outcomes. Although the relationship between these four stages is dissected in

detail by the authors, they note that organisational turnaround is an iterative process that may contain many feedback loops, there is little reference to the impact of timing to the outcomes of the turnaround (Trahms et al., 2013).

The literature has pointed to several factors which can delay the actions taken by management, including management bias delaying cognition of decline (Abatecola, 2012; Rockwell, 2016), a lengthy sense making process (Combe & Carrington, 2015), time taken for effective stakeholder communication and engagement (Smudde & Courtright, 2011) and the length of time to retrench expenses and assets (Guha, 2016). The timing and interplay between these factors are relevant to the outcome of the turnaround. Through empirical testing Tangpong et al. (2015) found that early turnaround action by distressed firms lead to a greater probability of turnaround success; early action, from declining firms, lead to improvements in operating conditions, internal performance, and external capital market support, therefore increasing the probability of turnaround. Further, their empirical testing lead to the conclusion that late implementation of turnaround action had an adverse effect on the likelihood of turnaround.

2.6. Conclusion

There is disagreement of how business rescue, a legislated formal turnaround process in South Africa, related to turnaround literature. Pretorius (2013) differentiated between turnaround literature and rescue literature and viewed turnaround as an informal process which occurred early in the businesses decline while rescue implied a formal process which took place when the company was near to failure. Pretorius (2013) stated that the underlying approach between turnaround and rescue were inherently different because of these contextual factors. Routledge & Morrison (2012) held the view that a formal rescue was a type of turnaround strategy which could be used by management of a company in distress, to the firm's advantage, in a time of distress. Trahms et al. (2013), inferred that a formal business rescue process followed as a consequence of various failed turnaround attempts by management.

Literature which specifically addressed formal turnarounds under an administrator or business rescue practitioner was limited (Conradie & Lamprecht, 2015), while turnaround literature was readily available (Trahms et al., 2013).

Turnaround literature has been used as a basis for various firm failure and success prediction models, the most notable and well known being the Z score model which was developed by Altman (1968; 2016). Alamy et al. (2016) developed the J UK model which added a cash flow variable to the classic Altman model which took into account the cash generating ability of the organisation. Cash flow ratios were never considered in the original Z score (Altman, 1968) due to a “lack of consistent and precise depreciation data” (Altman et al., 2014, p. 4). Cash flow was seen as an important element of any turnaround or formal rescue (LoPucki & Doherty, 2015) and a limiting factor of in business rescues (Pretorius & Du Preez, 2013; Pretorius, 2015).

Despite the varying opinions on the applicability of turnaround literature to business rescue, little was known about the effect of timing on turnarounds (Trahms et al., 2013). Tangpong et al. (2015) added a new temporal dimension onto the extended model (Trahms et al., 2013) which found that turnaround actions are contingent on the timing of their implementation.

There were several reasons noted in literature as to why managers may delay taking action in a period of distress. In the case of business rescue specifically, the reason for delay may be the general negative perception around business rescue and poor understanding of the process by management (Pretorius, 2015).

It is however clear from literature that early entry into formal rescue is usually received favourably by stakeholders, entry into formal rescue halts decline and maintains resources. The longer a distressed company stays out of the rescue process the more difficult it become for managers to manage the operations of the business (Routledge & Morrison, 2012).

3. Hypotheses

Can turnaround literature be applied to business rescue?

Due to the lack of literature on formal turnaround and the relative newness of business rescue in South Africa, this research sought to determine if turnaround literature could be applied to business rescue. This relationship was evaluated by testing correlation between a traditional turnaround predictor, a Z score, and the outcomes of business rescue attempts. Two iterations of the Z score stood out as being suitable for the testing, namely the original and most well-known Z score (Altman, 1968) and the more recent the UK J Z score (Almamy et al., 2016) which incorporated cash flows into the score, which is of utmost importance to a formal rescue (LoPucki & Doherty, 2015; Pretorius & Du Preez, 2013).

3.1. Hypothesis one

Hypothesis one stated:

H₁: There is an association between the J UK Z score and the outcome of business rescue.

While the null hypothesis stated:

H₀: There is no association between the J UK Z score and the outcome of the business rescue.

3.2. Hypothesis two

Hypothesis two stated:

H₂: There is an association between the Altman Z score and the outcome of business rescue.

While the null hypothesis stated:

H₀: There is no association between the Altman Z score and the outcome of the business rescue.

Is there a benefit to earlier entry into business rescue?

The research further sought to determine if earlier entry into business rescue would yield more successful results. The classic Altman (1968) Z score model showed a prediction success rate of ninety-five per cent when examining firms financial ratios one year before filing for bankruptcy and an eighty-three per cent success rate when using financial ratio two years before bankruptcy, at three years the success rate was poor. If either hypothesis one or two was be accepted, Z scores measured at different times prior to entry into the business rescue process could be used to gain an understanding of the impact of earlier entry into business rescue.

3.3. Hypothesis three to six

Hypothesis three to six therefore studied if likelihood of successful business rescue is increased if the firm had enters into the business rescue process earlier by examining significant changes to the Z scores at different intervals before business rescue.

Altman's (1968) classic Z score model uses financial ratios to provide a score to the company, there is an inverse relationship between the probability of bankruptcy in the ensuing twelve months and the Z score, with the probability of bankruptcy decreasing with a higher Z score.

Hypothesis three stated:

H₃: Z scores are significantly higher half a fiscal year before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher half a fiscal year before entry into business rescue.

Hypothesis four stated:

H₄: Z scores are significantly higher a full fiscal year before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher a full fiscal year before entry into business rescue.

Hypothesis five stated:

H₅: Z scores are significantly higher one and a half fiscal years before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher one and a half fiscal years before entry into business rescue.

Hypothesis six stated:

H₆: Z scores are significantly higher two fiscal years before entry into business rescue.

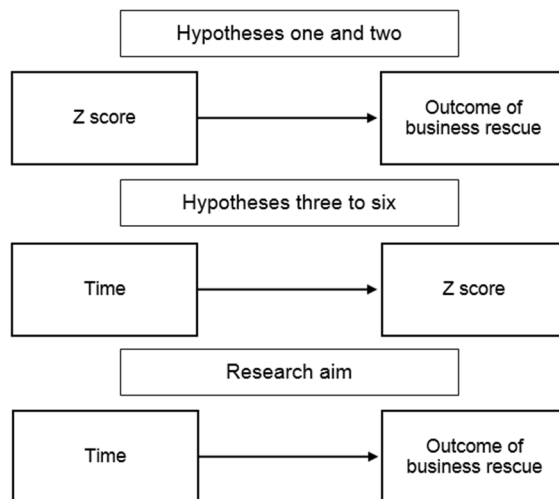
While the null hypothesis stated:

H₀: Z scores are not significantly higher two fiscal years before entry into business rescue.

3.4. Summary of hypotheses

The research aimed to establish the relationship between turnaround literature, through a well know turnaround predictor, the Z score, and the outcome of business rescue. Then the research examined the relationship which time has with the Z score, in an attempt to establish a relationship between earlier entry into business rescue and the outcome of business rescue, this is represented graphically in Figure 2 below.

Figure 2: Summary of hypotheses



Source: Authors own

4. Research Methodology

4.1. Introduction to methodology

The research attempted to establish the applicability of turnaround literature to business rescue by examining the correlation between the Z score of a company entering into business rescue and the outcome of a business rescue process. A Z score is the output of a multivariate bankruptcy prediction model which was initially developed by Edward Altman (1968) and further studied in multiple pieces of research (Taffler, 1983; Altman et al., 2014; Almamy et al., 2016). A Z score is derived from financial ratios. The outcomes of the business rescue cases studied were obtained from various forms of secondary data.

Next, the research examined the effect of earlier entry into business rescue, by examining the relationship between time and the Z scores of business which had entered into business rescue. This was done to determine if any statistically significant differences existed between the mean of the Z scores at fixed periods before entry into business rescue.

The research took the form of quantitative research and examined the correlation between a continuous and ordinal variable, being the Z score of a company entering into business rescue and the outcome of the business rescue process.

The Z score was the independent variable and was continuous data while the outcome of business rescue was the dependant variable, the outcome of business rescue was ranked and therefore took the form of ordinal data. The research then examined differences in group means of Z scores over fixed time periods prior to entry into business rescue.

The methodology, summarised in Table 2, was justified as it was based on the empirical modelling of Altman (1968) while selection of the Z score as a variable was justified due to its occurrence in the turnaround literature (Almamy et al., 2016).

Table 2: Summary of hypotheses and methodology

	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4	Hypothesis 5	Hypothesis 6
Null Hypothesis	There is no association between the J UK Z score and the outcome of the business rescue.	There is no association between the Altman Z score and the outcome of the business rescue.	Z scores are not significantly higher half a fiscal year before entry into business rescue	Z scores are not significantly higher a full fiscal year before entry into business rescue	Z scores are not significantly higher one and a half fiscal years before entry into business rescue	Z scores are not significantly higher two fiscal years before entry into business rescue
Independent variable	J UK Z score	Altman Z score	Time	Time	Time	Time
Dependant variable	Outcome of Business rescue	Outcome of Business rescue	Group Z score mean	Group Z score mean	Group Z score mean	Group Z score mean
Data description	Z scores were be calculated for 12 companies which had gone through a business rescue process. A ranked outcome was assigned each business rescue.		Z scores were calculated at 6 month intervals for 11 companies preceding entry into business rescue, the means of these Z scores were compared.			
Statistical Test	Spearman's rho correlation.	Spearman's rho correlation.	One way repeated measures ANOVA with Bonferroni comparison.	One way repeated measures ANOVA with Bonferroni comparison.	One way repeated measures ANOVA with Bonferroni comparison.	One way repeated measures ANOVA with Bonferroni comparison.
Assumptions	<p>The Z score is a continuous variable and the outcomes of business rescue is an ordinal variable.</p> <p>The two variables have paired observations.</p> <p>A monotonic relationship exists between the two variables.</p>		<p>The Z score was the dependant variable and was measured on a continuous level over five periods.</p> <p>There were no significant outliers in any level of the sample.</p> <p>The Z scores were tested for normality.</p> <p>The variances of the differences between Z scores at the different points in time are equal i.e. sphericity exists in the sample.</p> <p>The data was available for the testing to take place.</p>			

4.2. Unit of analysis

The unit of analysis for this research was companies in business rescue.

4.3. Population

The population consisted of distressed companies which at the time of entering into business rescue were listed on the JSE. The business rescue process must have been substantially complete in order to assign an outcome to the rescue process and to be included in the population. A rescue was deemed substantially complete if a business rescue plan has been presented by the business rescue practitioner, the company was in a process of liquidation, the company had been liquidated or the company had recovered to the point that it was no longer in liquidation or business rescue. Finally, small companies, banks and insurance companies were excluded from the population as the Z score is not a suitable measure for these types of companies (Altman, 1968; 2000).

In order to determine the population the following methodology was applied. When a company is placed into business rescue its shares are suspended from trade on the JSE. A list of JSE suspended equities and warrants was obtained from Standard Bank Group Securities (Pty) Limited (SBG) corporate actions office. The SBG list consisted of various instruments that had been suspended on the JSE from 1 January 2011 to September 2016. The SBG list was filtered to show only suspended ordinary shares, as shown in appendix one – List of JSE suspended ordinary equities – the list was then further filtered to exclude shares suspended with a note ‘scheme of arrangement’ or ‘unsuspended due to error’. The list then consisted of eighty-five suspension transactions.

For each of the eighty-five suspension events, the company Stock Exchange News Service (SENS) announcements were viewed on the McGregor BFA Research Domain (INET BFA, 2016) database to obtain the reason for the trading suspension. Through this process, fifteen companies were identified as being

suspended from trading due to entering into business rescue. These fifteen companies are shown in appendix two.

To ensure completeness, a list of companies suspended from the JSE was also extracted from the Thomson Reuters Eikon platform (Thomson Reuters, 2016), for the period 1 January 2011 to 2 September 2016. No additional companies were identified from the original SBG list of suspended equities and warrants.

4.4. Sampling size and method

Due to the small population size, the research intended to include the entire population of companies into the sample for testing. However, in the development of the Z score, Altman (1968) excluded small companies – companies with assets below US\$1million – from his modelling. Of the fifteen companies, all but one of the companies had assets exceeding R100million; Total Client Services Limited was excluded from the sample, as, at the time of entering into business rescue, it had assets of R17million, a clear outlier from the remainder of the population.

African Bank Investments Limited was also excluded from the population as Z scores are not suitable predictors for banking or insurance institutions (Altman, 1968; 2000) .

Finally, to be considered in the testing the company had to have had some type of outcome to the process of business rescue. RBA Holdings Limited was thus excluded as the practitioner had not yet issued a business rescue plan for the company and was in the process of compiling the plan.

Twelve companies remained in the sample after their suitability was considered, the small sample size places a limitation on the study,

as the sample size increases, the standard error becomes smaller resulting in a narrower confidence interval. This leads to a more precise estimate of the population

parameter. Conversely, smaller sample sizes result in larger standard error and consequently wider, and therefore less precise, confidence levels. (Wegner, 2012, p. 172).

The original Z score model was developed with sixty-six firms, with only thirty-three being bankrupt firms (Altman et al., 2014). The short period of time and limited uptake of business rescue by listed companies (Pretorius, 2015) has placed a limitation on the sample size, however, the sample consists of the entire population with the outliers excluded. The procedures to identify the population and sample are summarised in Table 3.

Table 3: Summary of procedures followed to identify sample

Methodology	Procedure followed	Results
Obtaining Population	A list of JSE suspended equities and warrants was obtained from SBG corporate actions office.	The list contained 2291 suspension events for the period 1 January 2011 to 16 September 2016.
Obtaining Population	The SBG list was filtered to show only suspended ordinary shares.	The list showed that 147 suspension events had occurred for ordinary shares – as shown in appendix one.
Obtaining Population	Shares with the note ‘scheme of arrangement’ or ‘unsuspended due to error’ were excluded from the population.	The list now contained 85 suspension events.
Obtaining Population	SENS announcements were then viewed on the McGregor BFA Research Domain (INET BFA, 2016) database to obtain the reason for the trading suspension.	15 companies were identified as being suspended from trading due to entering into business rescue as shown in appendix two.
Obtaining Population	A list of companies suspended from the JSE was extracted from the Thomson Reuters Eikon platform for the period 1 January 2011 to 2 September 2016.	No additional companies were identified from the original SBG list of suspended equities and warrants.
Obtaining Sample	In line with development of the Z score (Altman, 1968), small companies were excluded from the sample.	Total Client Services Limited was excluded from the sample.
Obtaining Sample	In line with development of the Z score (Altman, 1968), banks and insurance companies were excluded from the population.	African Bank Investments Limited was excluded from the sample.
Obtaining Sample	Companies which were still early in business rescue process were excluded from the sample.	RBA Holdings Limited was excluded as the practitioner had not yet issued a business rescue plan.

The companies making up the entire sample were

- 1time Holdings Limited,
- Brikor Limited,
- Chemical Specialities Limited,
- Erbacon Investment Holdings Limited,
- Evraz Highveld Steel & Vanadium Limited,
- Masonite Africa Limited,
- Protech Khuthele Holdings Limited,
- Quantum Prop Group Limited,
- Alert Steel Holdings Limited,
- Sanyati Holdings Limited,
- Ububele Holdings Limited, and
- Pinnacle Point Group Limited.

4.5. Data gathering process

The research made use of data from published business rescue plans, company financial statements and SENS announcements, this data is regarded as secondary data (Saunders & Lewis, 2012).

Business rescue plans were sourced from company websites and in some instances directly from practitioners. Financial statements were sourced from the McGregor BFA Research Domain: Financial Statements Product Module (INET BFA, 2016) and SENS announcements were sourced from McGregor BFA Research Domain: News Product Module (INET BFA, 2016).

4.6. Analysis approach

For all analysis the confidence level was set at 0.95 which was in line with the recent testing and development of Z Scores by Almamy et al. (2016), alpha was therefore $p < 0.05$.

Companies were then divided into two groups, manufacturing and non-manufacturing, as different Altman Z scores are applied to these two groups (Altman et al., 2014). The classification between manufacturing and non-manufacturing was obtained from the nature of business section per company

from a report drawn from McGregor BFA Research Domain: Fact Sheet Report (INET BFA, 2016).

4.6.1. Hypotheses one and two

Both hypotheses one and two examined the correlation between Z scores and the outcome of business rescue. The analysis was identical for both hypotheses except that, for testing purposes, the Z score used was based on different financial ratios from the same set of data. Hypothesis one made use of the J UK model Z score (Almamy et al., 2016), which included a cash flow element, while hypotheses two made use of Altman's Z scores and Z'' scores (Altman et al., 2014).

Variables

The independent variable is the Z score while the dependent variable is the outcome of the business rescue.

Test Selection

Altman (1968) and, more recently, Almamy et al. (2016) made use of a Chi Squared to test relationships between the Z score and other variables. The Chi Squared was used to show the association between two categorical random variables (Wegner, 2012). In testing the Z score by Taffler (1983), Smith and Graves (2005) used a Pearson correlation coefficient, more specifically a point-biserial correlation, as they classified the dependent variable as dichotomous, with the firm either recovering or failing. This test was unsuitable as the dependant variable for this research was classified as ordinal data due to the ranking applied.

As the outcomes of a business rescues could be ranked, the data, referred to now as ordinal data, was stronger than nominal data due to the property of order

that was assigned to the data (Wegner, 2012). At the time of the research there was “no dedicated test for testing or measuring an association between an ordinal and continuous variable” (Laerd Statistics, 2015).

Because the research analysed one ordinal and one continuous variable a Spearman's rank-order correlation (Spearman's) was used to test association between the variables. This provided additional information due to the order of the categories, the test could therefore distinguish between dependent and independent variables which Chi Squared test cannot provide (Laerd Statistics, 2015).

Procedure

In order to make use of Spearman's test of correlation the data had to comply with three basic assumptions.

- The pair of variables consisted of a continuous and an ordinal variable (Laerd Statistics, 2015) – in this case the Z score is a continuous variable and the outcomes of business rescue is an ordinal variable.
- The two variables must have represented paired observations (Laerd Statistics, 2015) – each company in the population had one pair of variables, a Z score and an outcome.
- A monotonic relationship needed to exist between the two variables (Laerd Statistics, 2015) – to test this assumption a scatterplot was drawn in SPSS.

The independent variable, the various iterations of the Z score, was calculated from secondary financial data sourced from the McGregor BFA Research Domain: Financial Statements Product Module (INET BFA, 2016), this data could be described as quantitative, numeric, ratio and continuous data (Buglear, 2013). Market capitalisation values, as required by the Z scores (Altman, 1968), was obtained from McGregor BFA Research Domain: Price Data Product Module (INET BFA, 2016).

The formula to calculate the Z scores are shown in equations 14, 15 and 16.

UK J Z score (Almamy et al., 2016) calculated as:

$$\begin{aligned}
 ZJ = & (1.484 \frac{\text{Working capital}}{\text{Total assets}}) + (0.043 \frac{\text{Retained earnings}}{\text{Total assets}}) + \\
 & (0.39 \frac{\text{Earnings before interest and taxes}}{\text{Total assets}}) + (.004 \frac{\text{Market value of equity}}{\text{Book value of total liabilities}}) + \\
 & (-0.424 \frac{\text{Sales}}{\text{Total assets}}) + (0.75 \frac{\text{Cash flow from operations}}{\text{Total liabilities}}). \quad (14)
 \end{aligned}$$

Classic Altman (1968) Z score, for manufacturing firms, calculated as:

$$\begin{aligned}
 Z = & (0.012 \frac{\text{Working capital}}{\text{Total assets}}) + (0.014 \frac{\text{Retained earnings}}{\text{Total assets}}) + \\
 & (0.033 \frac{\text{Earnings before interest and taxes}}{\text{Total assets}}) + (0.006 \frac{\text{Market value of equity}}{\text{Book value of total liabilities}}) + \\
 & (0.999 \frac{\text{Sales}}{\text{Total assets}}). \quad (15)
 \end{aligned}$$

Altman Z" Score (Altman et al., 2014), for non-manufacturing firms, calculated as:

$$\begin{aligned}
 Z'' = & (6.56 \frac{\text{Working capital}}{\text{Total assets}}) + (3.26 \frac{\text{Retained earnings}}{\text{Total assets}}) + \\
 & (6.72 \frac{\text{Earnings before interest and taxes}}{\text{Total assets}}) + \\
 & (1.05 \frac{\text{Book value of equity}}{\text{Book value of total liabilities}}). \quad (16)
 \end{aligned}$$

The date of entry into business rescue for each company was confirmed from SENS announcements (INET BFA, 2016). The Z score was calculated from the closest set of financial statements available before the date of entry into business rescue, from preliminary, interim or annual financial statements. These numbers were selected as they would have been the numbers which the management of the company would have used to base decisions on and the numbers would have been calculated on the basis of the business continuing as a going concern.

The dependent variable used in the research was the outcome of the business rescue process. Based on definitions by Conradie and Lamprecht (2015) and Pretorius (2013), for the purpose of the analysis, the outcome of a business rescue ranked from the best possible outcome to the worst possible outcome, are listed in Table 4.

Table 4: Ranked outcomes of a business rescue

Outcome	Classification	Rank
The company which continued to be a going concern, in any form.	Recovery (most favourable)	Three
A return to creditors and shareholders that was greater than the return which would have been received from an immediate liquidation.	Better than liquidation	Two
An immediate liquidation or a return to creditors and shareholders which was lower than the return which would have been received from an immediate liquidation.	Failed (least favourable)	One

The outcomes were assigned to each rescue after consideration of the approved business rescue plan and SENS announcement giving business updates. Each outcome was sorted into the ranked criteria and a one, two or three assigned to the company. The independent variable was qualitative, categorical and ordinal (Buglear, 2013), with a discrete number being assigned to each rank for testing purposes.

Modifications to the data

Interim earnings before interest and tax were annualised for all interim financial statements.

Where identified, and in line with the guidance given by Altman (2000), contingent assets were excluded from the accounting numbers and contingent liabilities included in the accounting numbers. This was the case for Sanyati Holdings Limited which had material assets on their balance sheet which were contingent on the outcomes of a separate business rescue processes.

In line with the guidance provided by Altman (2000), goodwill and intangibles

were deducted from assets and equity because of the subjectivity in assigning values to these, this was the case for almost the entire population.

Preliminary finance statements retrieved from McGregor BFA Research Domain: Financial Statements Product Module (INET BFA, 2016), where used to calculate the Z scores for Protech Khuthele Holdings Limited as annual financial statements were not available.

Due to the format of the interim financial statements retrieved from McGregor BFA Research Domain: Financial Statements Product Module (INET BFA, 2016), retained earnings has to be calculated as this figure was not disclosed separately. This was calculated using the net profit after tax for the period and retained earnings as per the prior period annual financial statements, adjusted for intangible and contingent assets.

Alert Steel Limited disclosed prior year adjustments to retained earnings of R15.28m in 2012, this adjustment was passed in the June 2011 retained earnings figure in the sample data as the adjustment related to this period.

4.6.2. Hypotheses three to six

Tangpong et al. (2015) found that early turnaround action by distressed firms lead to a significantly higher probability of successful turnaround. Early action from declining firms lead to improvements in operating conditions, internal performance and external capital market support, therefore increasing the probability of turnaround. Based on the finding on hypotheses two, the research sets to determine if the Z scores are significantly different at fixed time periods before the company entered into business rescue. The analysis was identical for hypotheses three to six, except for Z scores being generated at different time intervals.

Variables

The dependant variable is the Z score closest to the company entering into business rescue, referred to as n.

Test Selection

Tangpong et al. (2015) made use of binary logistic regression analyses with maximum likelihood estimation in their tests of timing and its effect on recovery.

The research made use of one-way repeated measures analysis of variance (ANOVA) to test the difference in means between the populations at the different time intervals (Wegner, 2012; Laerd Statistics, 2015) before entering into business rescue. This test was selected as the Z scores of the same companies are calculated and compared on five occasions on the same dependent variable or the same individuals tested under three or more different conditions on the same dependent variable.

A Bonferroni post hoc test was then run to further investigate differences between the means of the various points of time at which the Z scores were calculated. This was done to gain a better understanding of the data and possible pairwise comparisons which may or may not exist (Laerd Statistics, 2015).

Procedure

The within subject factor for the ANOVA, time, was represented by Z scores taken at set periods before n, therefore referred to as n-6, n-12, n-18 and n-24, with each interval equalling 6 months. These six month intervals are chosen due to the availability of data, as JSE listed companies are required to publish year end and interim financial results. The time period was limited to two years as, in the development of the classic Z score, Altman (1968) noted that the Z score model becomes unreliable after two years.

The dependent variable – the various iteration of Z score – were calculated from secondary financial data sourced from the McGregor BFA Research Domain:

Financial Statements Product Module (INET BFA, 2016), this data could be described as quantitative, numeric, ratio and continuous data (Buglear, 2013). Market capitalisation values, as required by the Z scores (Altman, 1968), was obtained from McGregor BFA Research Domain: Price Data Product Module (INET BFA, 2016).

The Altman (1968) Z score and Altman Z” score (Altman et al., 2014) were used respectively in the calculation for manufacturing and non-manufacturing companies.

The following assumptions are made in order to use the one way repeated measures ANOVA;

- The Z score – the dependant variable – was measured on a continuous level over five periods (Laerd Statistics, 2015).
- There were no significant outliers in any level of the within-subjects factors, to achieve this assumption, a boxplot was used to determine if any outliers existed in the data, being values greater than 1.5 box-lengths from the edge of the box (Laerd Statistics, 2015).
- The Z scores were tested for normality as dependant variables are assumed to be normally distributed (Laerd Statistics, 2015).
- The variances of the differences between Z scores at the different points in time are equal, this assumption was verified with Mauchly's test of sphericity (Laerd Statistics, 2015).
- The data was available for the testing to take place. Brikor Limited was excluded from the sample for testing hypothesis three to six as the year end had been changed and therefore the financial information was not available in six month intervals, but rather three and nine month intervals, this exclusion reduced the sample further to eleven.

4.7. Limitations

In calculating the Z scores at different periods the assumption had to be made that there were no material classification errors or movements between periods. When examining outliers for the purpose of the ANOVA testing we noted that some adjustments had to be made to the data due to financial misstatements in the company records between periods.

The testing ignores the effect on the outcome of the business rescue introduced by the business rescue practitioner. LoPucki and Doherty (2015) have found that experience in terms of number of formal rescue cases increases the likely success of business rescue. South African business rescue practitioners are ranked according to experience based on a time factor (The Companies Act, 2008). The business rescues dealt with in the populations would have been led by practitioners classified as experienced, the research thus assumes the impact on the outcome would be similar and therefore does not take this into account, although assuming that the practitioner had not impact on the rescue places a limitation on the research.

Outcomes of business rescue were based on various pieces of secondary data and a ranked outcome was assigned to each company. Ideally the long term sustainability of the business rescue should have be considered to ensure that assigned business rescue outcomes were correctly classified.

The relative newness and limited uptake of business rescue by listed companies lead to a small sample which placed a limitation on the research as “smaller sample sizes result in larger standard error and consequently wider, and therefore less precise, confidence levels” (Wegner, 2012, p. 172).

5. Results

IBM SPSS Statistics software was used for testing the correlation between the dependent and independent variable and testing the inter group differences between sample means.

Where methodology assumptions had to be tested, these tests are shown before the results of the hypotheses which they are testing. Where necessary, if the data needed to be modified to meet an assumption, these adjustments are detailed with the assumptions tested.

The results from hypotheses one and two are shown first, these tests followed the same methodology, however the independent variables were calculated using different Z scores, as such the results are presented together.

Hypotheses three to six were tested together are therefore presented as such.

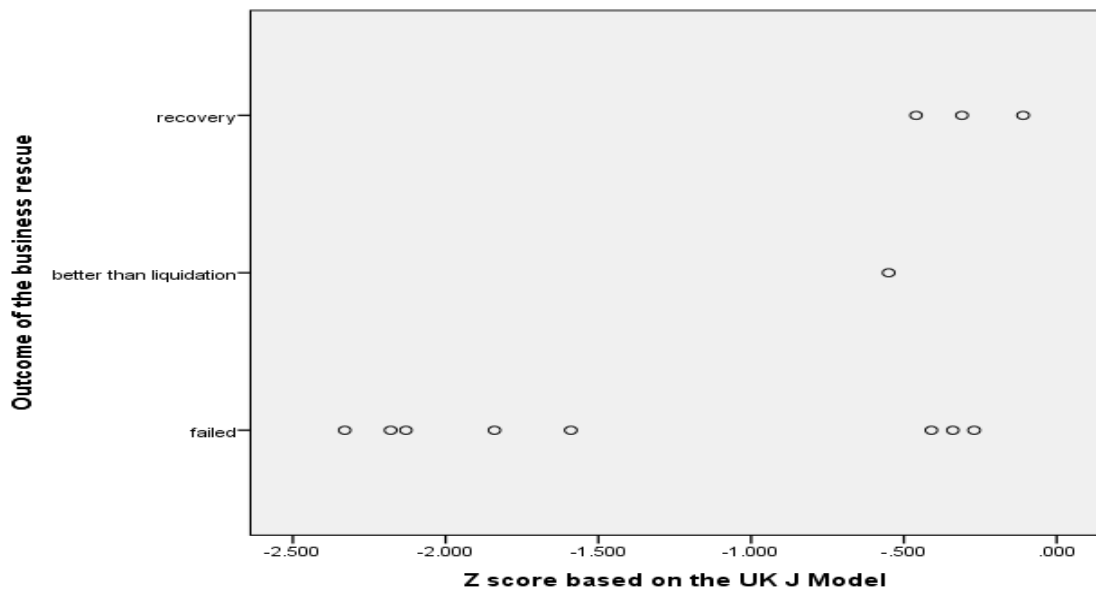
5.1. Hypotheses one and two: Sample

The sample consisted of twelve companies which had entered into business rescue. Eight of these companies were classified as non-manufacturing and four as manufacturing companies. Of the sample eight recuses were classified as category one – failed, one company was classified as category two – better result than liquidation, and three companies were classified as category three – recovery.

5.2. Hypothesis one results

To test the third assumption of the Spearman test the relationship of the two variables was plotted on a scatterplot in SPSS. A monotonic relationship was observed as shown in Figure 3.

Figure 3: SPSS output, scatter plot showing the correlation between the UK J Z scores and the outcomes of business rescue



H₁: There is an association between the J UK model Z score and the outcome of business rescue.

While the null hypothesis stated:

H₀: There is no association between the J UK model Z score and the outcome of the business rescue.

The results of the SPSS analysis of hypothesis one are shown in Figure 4.

Figure 4: SPSS output, correlation between the UK J Z scores and the outcomes of business rescue using Spearman's rho

		Z score based on the UK J Model	Outcome of the business rescue
Spearman's rho	Z score based on the UK J Model	Correlation Coefficient	0,500
		Sig. (2-tailed)	0,098
		N	12
	Outcome of the business rescue	Correlation Coefficient	1,000
		Sig. (2-tailed)	0,098
		N	12

The strength of association is summarised as;

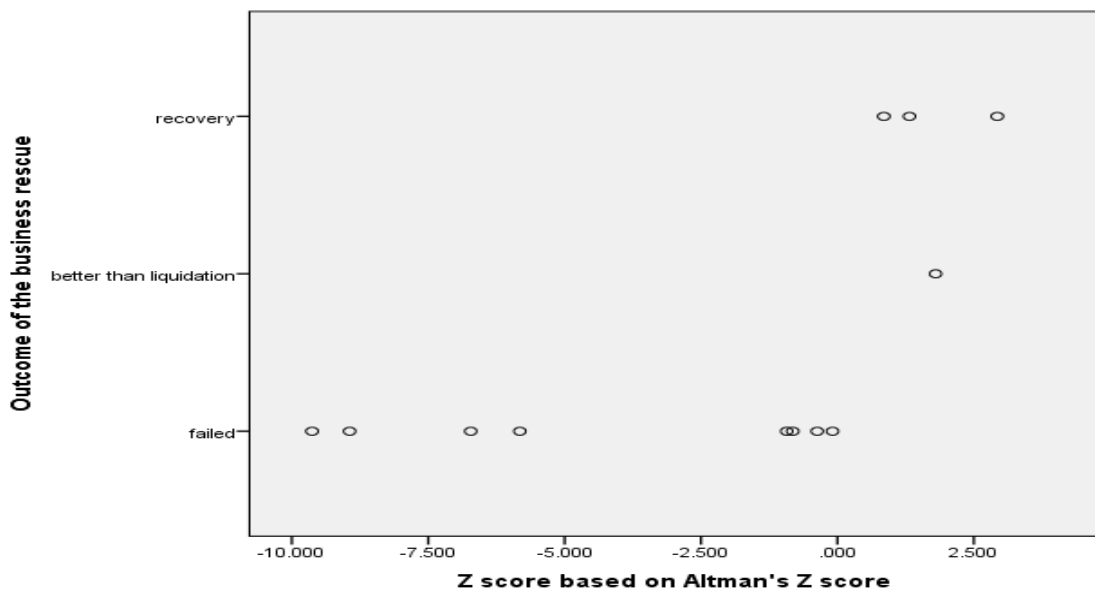
Coefficient Value	Strength of Association
$0.1 < r < 0.3$	small correlation,
$0.3 < r < 0.5$	medium/moderate correlation, and
$ r > 0.5$	large/strong correlation.

There was a moderate positive correlation between the UK J Z score and the outcome of business rescue, which indicated that as the Z score increases the outcome of business also rescues increases. The Spearman correlation coefficient is 0.5, which indicates a moderate correlation. The level of statistical significance is 0.098 and therefore the null hypothesis cannot be rejected – there is no association between the J UK model Z score and the outcome of the business rescue.

5.3. Hypothesis two results

To test the third assumption of the Spearman test the relationship of the two variables was plotted on a scatterplot in SPSS. A monotonic relationship was observed as shown in Figure 5.

Figure 5: SPSS output, scatter plot showing the correlation between the Altman Z scores and the outcomes of business rescue



H₂: There is an association between the Altman Z score and the outcome of business rescue.

While the null hypothesis stated:

H₀: There is no association between the Altman Z score and the outcome of the business rescue.

The results of the SPSS analysis of hypothesis two are shown in Figure 6.

Figure 6: SPSS output, correlation between the Altman Z scores and the outcomes of business rescue using Spearman's rho

Correlations			Z score based on Altman's Z score	Outcome of the business rescue
Spearman's rho	Z score based on Altman's Z score	Correlation Coefficient	1,000	.798**
		Sig. (2-tailed)		0,002
		N	12	12
	Outcome of the business rescue	Correlation Coefficient	.798**	1,000
		Sig. (2-tailed)	0,002	
		N	12	12

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

The strength of association is summarised as;

Coefficient Value	Strength of Association
$0.1 < r < 0.3$	small correlation,
$0.3 < r < 0.5$	medium/moderate correlation, and
$ r > 0.5$	large/strong correlation.

There was a thus a strong positive correlation between the Altman Z scores and the outcome of business rescue, which indicated that as the Z score increases, the outcome of business rescues also increases. The Spearman correlation coefficient is 0.798, which indicates a strong correlation. The level of statistical significance is 0.002, the null hypothesis is therefore rejected and hypothesis two is accepted.

5.4. Hypotheses three to six: Sample

The sample consisted of eleven companies which had entered into business rescue. Eight of these companies were classified as non-manufacturing and three as manufacturing companies. Of the sample eight rescues were classified as category one – failed, one company was classified as category two – better result than liquidation, and two companies were classified as category three – recovery.

Hypotheses three to six: reliability of data

Outliers

A boxplot was used to determine if any outliers existed in the data, being values greater than 1.5 box-lengths from the edge of the box. Alert Steel holdings (Alert) and Erbacon Investment Holdings (Erbacon) both showed outliers in their data. The Annual Financial Statements for these two companies were inspected for possible reasons for the data producing outliers.

During 2012, Erbacon reclassified a large non-distributable reserve to retained earnings and the interim earnings for the periods 2012 and 2011 were vastly different from the final reported result for the financial year. The financial statements used to calculate the Z score were thus adjusted to exclude this restatement. This was done by deducting the reclassified R177.2m from distributable reserves and adding the R177.2m back to non-distributable reserves, and in doing so the reclassification was excluded from all of the reporting periods. The interim earnings before interest and tax for 2012 and 2011 were materially different to the full year annual financial statements for those periods. The interim numbers reflected substantial profits while the final annual financial statements showed losses. The interim numbers were thus adjusted to reflect half of the loss realised in the annual financial statements.

In 2013, Alert restructured its lending facilities to long-term. This debt was previously reported as a part of current liabilities, the reclassification had a substantial impact on the working capital ratios. Assuming that Alert was never in

a position to repay these facilities in the short-term, these short-term facilities were reclassified for each reporting period to long term liabilities. As such the effects of the restructure were removed from the working capital ratio, in order to reflect the situation as at entry into business rescue.

Following these adjustments to the data, a boxplot was rerun and based on the adjusted data no outliers – values greater than 1.5 box-lengths from the edge of the box – were observed.

Normality

For determining if the data was normally distributed, a Shapiro-Wilk test was used due to the small sample size (Laerd Statistics, 2015). The results of the Shapiro-Wilk test are laid out in Figure 7.

Figure 7: SPSS output, test of normality using Shapiro-Wilk

Tests of Normality			
	Statistic	Shapiro-Wilk df	Sig.
Z Score before business rescue "t"	0,912	11	0,260
Z Score "t - 6"	0,915	11	0,276
Z Score "t - 12"	0,905	11	0,214
Z Score "t - 18"	0,909	11	0,235
Z Score "t - 24"	0,883	11	0,114

From Figure 7, all "Sig." values are greater than .05. In other words, Z score concentration was normally distributed at each time point, as assessed by Shapiro-Wilk's test ($p > .05$).

Sphericity

To test the assumption of sphericity of the data Mauchly's test of sphericity was considered, see Figure 8.

Figure 8: SPSS output, Mauchly's Test of Sphericity

Mauchly's Test of Sphericity ^a							
Measure: Z score							
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^b		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
time	0,052	24,941	9	0,004	0,553	0,718	0,250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Mauchly's test of sphericity indicated that the assumption of sphericity had been violated as sig. was 0.004, or less than 0.05, $p < 0.05$.

As the assumption of sphericity was not met, the Greenhouse-Geisser correction was used to interpret the data. Maxwell and Delaney (2004) suggest using the Greenhouse-Geisser correction especially if the estimated epsilon was less than 0.75, in this case it was 0.553. By applying the Greenhouse-Geisser correction, output was adjusted for degrees of freedom for both the time and error effect.

5.5. Hypotheses three to six: results

H₃: Z scores are significantly higher half a fiscal year before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher half a fiscal year before entry into business rescue.

H₄: Z scores are significantly higher a full fiscal year before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher a full fiscal year before entry into business rescue.

H₅: Z scores are significantly higher one and a half fiscal years before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher one and a half fiscal years before entry into business rescue.

H₆: Z scores are significantly higher two fiscal years before entry into business rescue.

While the null hypothesis stated:

H₀: Z scores are not significantly higher two fiscal years before entry into business rescue.

The descriptive statistics, shown below in Figure 9, illustrate that the mean across the groups, at different points in time, did differ. Further it is noted that the mean scores are increasing over time, from -1,9255 (t) to 1,1118 (t-24).

Figure 9: SPSS output, ANOVA descriptive statistics showing mean and standard deviation

Descriptive Statistics			
	Mean	Std. Deviation	N
Z Score before business rescue "t"	-1,9255	3,5960	11
Z Score "t - 6"	-0,5227	2,7675	11
Z Score "t - 12"	0,2727	2,4175	11
Z Score "t - 18"	0,9445	2,1536	11
Z Score "t - 24"	1,1118	1,6269	11

Figure 10 indicates that Sig. was 0.001; Sig. was therefore less than 0.05, which indicated that statistically significant changes in Z score occur over time.

Figure 10: SPSS output, ANOVA within subject effects

Test of Within-Subjects Effects							
Measure: Z_score							
Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Greenhouse-Geisser	67,985	2,214	30,711	9,408	0,001	0,485
Error(time)	Greenhouse-Geisser	72,260	22,137	3,264			

To examine the pairwise combinations of levels of the within-subjects factor the Bonferroni post hoc test results are shown below in Figure 11.

Figure 11: SPSS output, ANOVA Bonferroni pairwise comparison

Pairwise Comparisons						
Measure: Z_score						
(I) time		Mean Difference (I-J)	Std. Error	Sig. ^b	Difference ^b	
					Lower Bound	Upper Bound
1	2	-1,403	0,813	1,000	-4,313	1,507
	3	-2,198	0,726	0,128	-4,800	0,403
	4	-2,870 [*]	0,656	0,014	-5,221	-0,519
	5	-3,037 [*]	0,771	0,028	-5,799	-0,275
2	1	1,403	0,813	1,000	-1,507	4,313
	3	-0,795	0,403	0,767	-2,239	0,648
	4	-1,467 [*]	0,378	0,030	-2,820	-0,115
	5	-1,635	0,493	0,078	-3,401	0,132
3	1	2,198	0,726	0,128	-0,403	4,800
	2	0,795	0,403	0,767	-0,648	2,239
	4	-.672 [*]	0,180	0,039	-1,317	-0,026
	5	-0,839	0,553	1,000	-2,819	1,141
4	1	2,870 [*]	0,656	0,014	0,519	5,221
	2	1,467 [*]	0,378	0,030	0,115	2,820
	3	.672 [*]	0,180	0,039	0,026	1,317
	5	-0,167	0,430	1,000	-1,706	1,372
5	1	3,037 [*]	0,771	0,028	0,275	5,799
	2	1,635	0,493	0,078	-0,132	3,401
	3	0,839	0,553	1,000	-1,141	2,819
	4	0,167	0,430	1,000	-1,372	1,706

Based on estimated marginal means

*. The mean difference is significant at the ,05 level.

b. Adjustment for multiple comparisons: Bonferroni.

The post hoc analysis revealed significant differences in means between entry into business rescue (1) and eighteen months before entry (4) and between entry into business rescue (1) and twenty-four months before entry (5).

Therefore;

H₃: The null hypothesis could not be rejected,

H₄: The null hypothesis could not be rejected,

H₅: Hypothesis 5 was accepted and the null hypothesis rejected, and

H₆: Hypothesis 6 was accepted and the null hypothesis rejected.

The post hoc further revealed a significant difference in the mean between six months before entering into business rescue (2) and eighteen months before entry (4), as well as twelve months before entry into business rescue (3) and twenty-four months before entering into business rescue (5).

6. Discussion of results

Can turnaround literature be applied to business rescue?

The research sought to determine if turnaround literature could be applied to business rescue by evaluating the correlation between a Z score and the outcomes of business rescues as there exists opposing views in academia and literature which specifically addresses formal turnarounds under an administrator or business rescue practitioner is limited (Conradie & Lamprecht, 2015). Pretorius (2013) distinguishes between turnaround literature and rescue literature and views turnaround as an informal process which occurs early in the businesses decline while rescue implies a formal process which takes place when the company is near to failure; Pretorius (2013) states that the underlying approaches between turnaround and rescue are inherently different because of these contextual factors. Routledge & Morrison (2012) hold the view that a formal rescue is a type of turnaround strategy which can be used by the management of a company in distress, to the firm's advantage, in a time of distress. Trahms et al. (2013) infer that a formal business rescue process follows as an outcome of various failed turnaround attempts by management.

6.1. Hypothesis one

A Spearman's rank-order correlation was run to assess the relationship between the UK J Z score (Almamy et al., 2016) and the outcomes of business rescue for JSE listed companies. There was a moderate positive correlation between the UK J Z score and the outcome of business rescue, however the correlation was not significant and thus we could not reject the null hypothesis.

This finding is inconsistent with the findings of Almamy et al. (2016) in their development of the UK J Z score and Guha's (2016) findings on available slack (equation 2), which was found to have a significant positive relationship with business turnaround. This finding could discount the importance of cash flows and post business rescue commencement funding an important variable in business rescue (Pretorius & Du Preez, 2013; Pretorius, 2015; LoPucki & Doherty, 2015).

However the UK J Z score makes use of a manufacturing industry ratio (equation 11) for all companies, this ratio (equation 11) was specifically excluded by Altman (Altman et al., 2014) for non-manufacturing companies, the inclusion of this ratio in the UK J model may make it unsuitable as a predictor for all types of companies.

Future studies on business rescue could focus on the correlation between the cash generation of a business going into business rescue and the outcome of that business rescue.

6.2. Hypothesis two

A Spearman's rank-order correlation was run to assess the relationship between Altman's Z score (Altman et al., 2014), for manufacturing and non-manufacturing companies, and the outcomes of business rescue for JSE listed companies. There was a strong statistical positive correlation between the Altman's Z score and the outcome of business rescue.

The Z score is developed from various parts of turnaround literature and shows correlation to the outcomes of business rescue. The research therefore infers that turnaround literature is applicable to a business rescue scenario, in line with Routledge & Morrison's (2012) view that a formal rescue is a type of turnaround strategy and is a departure from the current view that turnaround and rescue are inherently different because of the contextual factors (Pretorius, 2013).

The correlation found in this hypothesis was important to the context of the study, as by establishing a correlation, the study was able to test hypotheses three to six. These are time-based hypotheses, designed to establish if earlier entry into business rescue would have a significant impact on the outcome of the rescue process.

Is there a benefit to earlier entry into business rescue?

Tangpong et al. (2015) added a temporal dimension to turnaround literature, through empirical testing they found that early turnaround action by distressed

firms lead to a significantly higher likelihood of turnaround success.

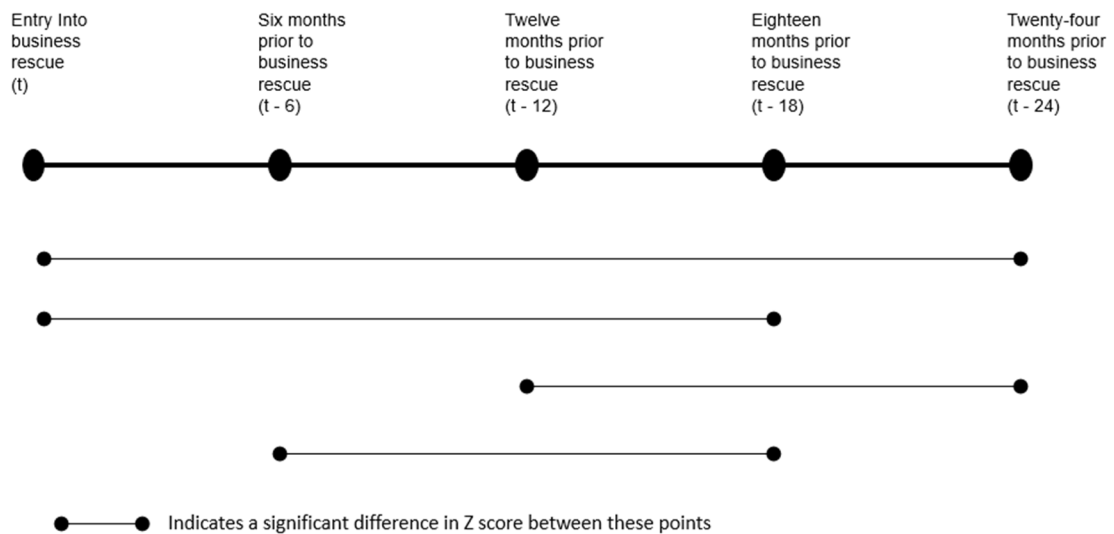
Using the established correlation between the Altman's Z score (Altman, 1968) and the outcomes of business rescue from hypothesis two, the research examined the relationship between the Z scores at 6 month intervals, starting with the Z score used prior to entry into business rescue and ending at the Z score twenty-four months prior.

6.3. Hypotheses three to six

A one-way repeated measures ANOVA was performed to evaluate differences in Altman's Z scores (Altman et al., 2014) over four six month intervals preceding entry into business rescue. After adjusting the data for reclassifications, there were no outliers and the data was normally distributed, as assessed by boxplot and Shapiro-Wilk test (Laerd Statistics, 2015). Mauchly's test of sphericity was used to evaluate the assumption of sphericity, which was violated (Laerd Statistics, 2015), therefore a Greenhouse-Geisser correction was applied (Laerd Statistics, 2015). The exercise intervention elicited statistically significant changes in Z scores over time.

Post hoc analysis with a Bonferroni adjustment (Laerd Statistics, 2015) revealed that Z scores are significantly higher at eighteen and twenty-four months prior to entry into business rescue but not at six months or twelve months prior to business rescue. It was further noted that there exists significant differences in Z score between twelve months and twenty-four months and between 6 months and 18months respectively, as illustrated in Figure 12.

Figure 12: Significant differences in Z score over time



Source: Authors own

These results indicate that the Z score would be significantly different at eighteen months and twenty-four months before entering into business rescue. The significant change one year after this date may indicate that once this date is passed the Z score of the business deteriorates rapidly over the next twelve months to a point that the difference is statistically significant. This deterioration is referred to as severity of a decline (Robbins & Pearce, 1992), with a high severity of decline associated with successful turnaround. It is known that entry into formal rescue halts decline and maintains resources and the longer a distressed company stays out of the rescue process the more difficult it becomes for managers to manage the operations of the business (Routledge & Morrison, 2012). Employees in failing businesses develop negative attitudes towards the organisation and labour productivity declines approximately two years before a business fails (Priego et al., 2014).

The results indicate that timing of entry into business rescue will have a significant impact on the Z score, which in turn has a strong significant positive correlation with the outcome of the business rescue. The research therefore indicates that earlier entry into business rescue will lead to better outcomes of the process. Which is in line with the findings of Routledge & Morrison (2012) and Panicker &

Manimala's (2015) findings that managers who are able to proactively detect causes of decline, and address these earlier, have a greater probability of turnaround.

Interestingly the findings indicate a twelve month window in which the Z scores significantly deteriorate. Of greater importance is that the evidence points to no significant difference in Z scores at six months prior to entry into business rescue, and only at eighteen months prior to business rescue is there a change in Z score. This supports Pretorius' (2015) finding that firms waiting too long to enter the business rescue process as a reason for the poor performance of the business rescue process.

Turnaround literature has been used as a basis for various firm failure and success prediction models, the most notable and well known being the Z scores model which was developed by Altman (1968). Almamy et al. (2016). added a cash flow variable to the classic Altman model which took into account the cash generating ability of the organisation known as J UK model. Altman did not consider cash flow ratios because of the "lack of consistent and precise depreciation data" (Altman et al., 2014, p. 4). Cash flow is seen as an important element of any turnaround or formal rescue (LoPucki & Doherty, 2015); while a lack of cash flow is a major limiting factor in business rescue (Pretorius & Du Preez, 2013; Pretorius, 2015). The research therefore made use of the J UK model Z score model as developed by Almamy et al. (2016) due to its inclusion of cash flow in its calculation.

7. Conclusion

7.1. Principal findings

This research is the first to establish a statistically significant, strong positive correlation between the Altman (1968) Z score and the outcome of business rescue processes for listed companies and therefore establishes a significant relationship between turnaround literature and business rescue in South Africa.

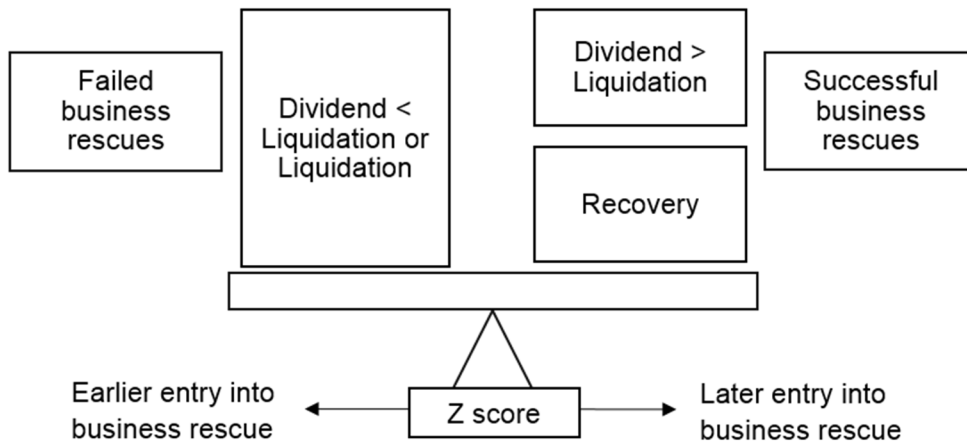
This correlation was then used to empirically assess the intergroup differences between the Z score at entry into business rescue and set periods prior to entry into business rescue. There were significant differences in Z score at eighteen months prior to entry into business rescue and at twenty-four months prior to entry into business rescue. This research therefore confirmed the sentiment that companies are using the business rescue process too late (Pretorius & Du Preez, 2013) or as a last resort (Smyth, 2013).

By combining these findings, the research is able to conclude that earlier entry into business rescue will lead to significantly better results of the business rescue process. The research therefore extends the findings by Tangpong et al. (2015) that earlier turnaround actions result in higher incidents of turnaround success by including business rescue, a formal turnaround scenario, into these findings.

This research shows that decline accelerates over a period of twelve months to a point where the outcome of business rescue will be significantly different, indicating that the speed of action by management in a time of distress is an important factor in the success of the business rescue. This finding is supported in turnaround literature as the faster management's response to decline, the greater the potential to turnaround the organisation (Zeni & Ameer, 2010; Lohrke et al., 2011).

The findings of this research are summarised in Figure 13 below.

Figure 13: Summary of research findings



Source: Author's own

Figure 13 graphically shows the research findings, earlier entry into business rescue will provide a company in distress a greater probability of successful recovery. Distresses companies that delay entry into business rescue have a reduced the probability of recovery. The research has shown decline accelerates over a period of twelve months before there is little to no chance of a successful recovery.

7.2. Implications for academia

Business rescue is a new topic in literature and there is a limited amount of literature available on the topic. The research establishes a link between turnaround literature and formal turnaround scenarios in a South African context – business rescue. This link is important as previously the literature was viewed as inherently different (Pretorius, 2013) but this link now allows academics to tap into a much great pool of literature when studying the subject, particularly the large amount of research that has been carried out on Z scores and similar prediction models.

Further this research adds a temporal aspect to existing business rescue

literature, which had not been empirically tested before. The timing of entry having an effect on the outcome of business rescue has been subject to much speculation but now has been confirmed as having a strong correlation to the outcome of the business rescue.

7.3. Implications for management

The research shares the view of Routledge and Morrison (2012) and Heine and Rindfleisch (2013) that business rescue can be used as an effective turnaround strategy which can be strategically used by management, to their advantage, in a time of distress. Furthermore, the research empirically proves that earlier entry by management into business rescue will yield significantly better results.

The research indicates that there is no significant change in financial ratios six months prior to entry into business rescue. This finding shows that the guidance provided in the Companies Act, to assess a distressed business in a six month period for consideration of entry into business rescue, is too short a period. In making a decision to enter into business rescue, management must base their decision on forecasts spanning at least eighteen to twenty four months.

7.4. Implications for business rescue practitioners

The research establishes a link between turnaround literature and business rescue, as such, practitioners can now make use of turnaround literature when evaluating business rescues and developing business rescue plans. Previously the view of literature was that the underlying approaches between turnaround and rescue are inherently different because of contextual factors (Pretorius, 2013).

Further, practitioners may consider the use of Altman's Z scores in evaluating the reasonable prospect of rescuing the business. Although the research did not

specifically set out to find a tool to measure reasonable prospect, future research could consider the applicability of the Z score as a measure of reasonable prospect.

7.5. Limitations of the research

In calculating the Z scores at different periods the assumption had to be made that there were no material classification errors or movements between periods. When examining outliers for the purpose of the ANOVA testing we noted that some adjustments had to be made to the data due to financial misstatements in the company records between periods.

The testing ignores the effect on the outcome of the business rescue introduced by the business rescue practitioner. LoPucki and Doherty (2015) have found that experience in terms of number of formal rescue cases increases the likely success of business rescue. South African business rescue practitioners are ranked according to experience based on a time factor (The Companies Act, 2008). The business rescues dealt with in the populations would have been led by practitioners classified as experienced, the research thus assumes the impact on the outcome would be similar and therefore does not take this into account, although assuming that the practitioner had not impact on the rescue places a limitation on the research.

Outcomes of business rescue were based on various pieces of secondary data and a ranked outcome was assigned to each company. Ideally the long term sustainability of the business rescue should have be considered to ensure that assigned business rescue outcomes were correctly classified.

The relative newness and limited uptake of business rescue by listed companies lead to a small sample which placed a limitation on the research as “smaller sample sizes result in larger standard error and consequently wider, and therefore less precise, confidence levels” (Wegner, 2012, p. 172).

7.6. Suggestions for future research

As we have determined a strong positive correlation between Altman's (1968) Z score and the outcome of business rescue, future research could focus on the use of Altman's (1968) Z score as a possible determinant of reasonable prospect, as there is currently no guidance on the term *reasonable prospect* nor are there any factual measures to determine reasonable prospect. As such reasonable prospect is a subjective measure which adds confusion to the business rescue process (Pretorius, 2015). A reliable indicator or measure of reasonable prospect may provide stakeholders with additional comfort of the success of the rescue which, in turn, has a significant impact on the outcomes of a rescue process (LoPucki & Doherty, 2015).

The research focused on listed companies; if reliable financial data can be sourced, future research could be performed to consider the relationship of the Z score with the business rescue outcomes for unlisted companies as well as the impact of timing of entry into business rescue for unlisted companies.

The focus on listed companies placed an additional limitation on the study due to the small sample size, as the rescue process is relatively new and there has been limited uptake of business rescue by listed companies. As additional companies go through the business rescue process and more data can be sourced, future research could perform the same testing but on a larger sample size to ensure that this limitation of this research is reduced. A larger sample may also allow multiple discriminate analyses to determine which individual ratios of the Z score have a significant impact on the outcome of business rescue and potentially develop a business rescue specific Z score, similar to the UK specific J Z score (Almamy et al., 2016).

The impact of the Business rescue practitioner, including experience and competencies, and their impact on the outcomes of business rescue would be a valuable future research topic, particularly in combination with this research. This future research could aim to develop a business rescue model showing the various attributes of a business entering into rescue through applying a

combination of Z scores and business rescue practitioners' skills, competencies and experience on the outcomes of business rescue.

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Appendix one: List of JSE suspended ordinary equities

Effective Date	Alpha	Name	Ins Type	Notes
2011-01-17	SPS	Spescom Ltd	Ordinary	Part of Scheme Of Arrangement
2011-02-08	BAU	Bauba Platinum Ltd	Ordinary	Voluntary suspension
2011-02-21	MTE	Marshall Monteagle Hd Sa	Ordinary	Part of Conversion
2011-02-21	MTE	Marshall Monteagle Hd Sa	Ordinary	Part of Conversion
2011-04-15	GMB	Glenrand M.I.B. Ltd	Ordinary	Scheme of Arrangement
2011-05-30	MVL	Mvelaphanda Resources Ld	Ordinary	Scheme of Arrangement
2011-06-21	CPN	Capricorn Inv Hldgs Ltd	Ordinary	Capricorn has failed to enter into an agreement and make an announcement relating to the acquisition of viable assets that satisfy the conditions for listing as set out in Section 4 of the JSE Listings Requirements. The company is a cash shell.
2011-09-19	DLG	Dialogue Group Hldgs Ltd	Ordinary	Failure to acquire viable assets within a 6 month period, subsequent to classification of the company as a cash shell by the JSE.
2011-09-28	PNG	Pinnacle Point Group Ld	Ordinary	A provisional liquidation was granted on 27 September 2011 and the company has requested a voluntary suspension as per paragraph 1.9(a) of the JSE Listings Requirements.
2011-10-17	UCS	Ucs Group Ltd	Ordinary	Scheme of Arrangement
2011-10-17	PLD	Paladin Capital Ltd	Ordinary	Scheme of Arrangement
2011-10-17	THX	Trans Hex Group Ltd Nm	Ordinary	The Board of Directors has decided that due to the Company no longer having operations in Namibia, there is no longer justification for a listing on the NSX.
2011-10-24	UNI	Universal Indus Corp Ltd	Ordinary	Scheme of Arrangement

2011-11-01	AWT	Awethu Breweries Ltd Ord	Ordinary	Failure to submit a provisional report within the three-month period stipulated in the Listings Requirements.
2011-11-07	VOX	Vox Telecom Ltd	Ordinary	Scheme of Arrangement
2011-11-14	MIP	Merchant & Ind Prop Ltd	Ordinary	Scheme of Arrangement
2011-11-28	PCN	Paracon Holdings Ltd	Ordinary	Scheme of Arrangement
2011-12-09	SAL	Sallies Ltd	Ordinary	Scheme of arrangement
2011-12-15	KIR	Kairos Industrial Hldgs	Ordinary	Failure to comply with JSE Listings Requirements.
2011-12-19	FWD	Freeworld Coatings Ltd	Ordinary	Scheme of Arrangement
2011-12-22	PLN	Platmin Ltd	Ordinary	Voluntary Delisting
2011-12-28	AYX	Auryx Gold Corporation	Ordinary	AYX has become a wholly owned subsidiary of B2Gold Corporation and the sole shareholder has requested an immediate delisting.
2011-12-30	ABK	African Brick Centre Ltd	Ordinary	Scheme of Arrangement
2012-01-09	MTX	Metorex Ltd	Ordinary	Scheme of Arrangement.
2012-01-12	MMH	Miranda Mineral Hldgs Ld	Ordinary	Voluntary suspension – directors request
2012-01-23	MOB	Mobile Industries Ord	Ordinary	Voluntary suspension – directors request
2012-01-30	RAH	Real Africa Hldgs Ltd	Ordinary	Offer
2012-03-05	KAH	Kalahari Minerals Plc	Ordinary	Directors request
2012-04-13	EXT	Extract Resources Ltd	Ordinary	Chinese company takeover
2012-04-17	MMS	Minemakers Limited	Ordinary	Pending an announcement regarding the Company's Sandpiper Phosphate Project.
2012-05-03	FSE	Firestone Energy Ltd	Ordinary	Financial restructuring
2012-05-03	SAH	South African Coal Min	Ordinary	The company did not submit its provisional report within the three-month period stipulated in the Listings Requirements.
2012-05-11	KBO	Kibomining Plc	Ordinary	Pending publication of the admission document in respect of the acquisition of Mzuri Energy Limited and Mayborn Resource Investments (Pty) Ltd.
2012-05-14	MTL	Mercantile Bank Hldgs Ld	Ordinary	Scheme of Arrangement

2012-05-23	SAN	Sanyati Holdings Ltd	Ordinary	Funding/financial constraints
2012-05-31	ATR	Africa Cellular Towers	Ordinary	The company has made a request for suspension.
2012-06-15	DYL	Deep Yellow Ltd Nm	Ordinary	Voluntary suspension to allow time to finalise its capital raising.
2012-06-25	OLI	O-Line Holdings Ltd	Ordinary	Scheme of Arrangement
2012-07-02	OPT	Optimum Coal Hldgs Ltd	Ordinary	Unconditional offer
2012-08-03	CVI	Capevin Investments Ltd	Ordinary	Scheme of Arrangement
2012-08-27	QPG	Quantum Prop Group Ltd	Ordinary	Placing of its assets into final liquidation.
2012-09-17	AVU	Avusa Ltd	Ordinary	Part of Scheme of Arrangement
2012-09-20	GBG	Great Basin Gold Ltd	Ordinary	Debt restructure
2012-09-27	WTL	William Tell Holdings Ltd	Ordinary	Conflicting information regarding the finance of the company.
2012-10-01	EXL	Excellerate Holdings Ltd	Ordinary	Scheme of Arrangement
2012-10-17	SKY	Sea Kay Holdings Ltd	Ordinary	Provisional liquidation
2012-11-01	DLV	Dorbyl Ltd	Ordinary	The company has failed to comply with the JSE's Listings Requirements by not submitting its annual financial statements timeously.
2012-11-05	1TM	1time Holdings Ltd	Ordinary	Voluntary liquidation
2012-11-19	IQG	Iquad Group Ltd	Ordinary	Scheme of Arrangement
2012-11-19	CRM	Ceramic Industries Ltd	Ordinary	Conditional offer
2012-11-26	SFH	Sa French Ltd	Ordinary	Scheme of Arrangement
2012-12-20	SIM	Simmer & Jack Mines	Ordinary	Simmers is a cash shell company and has failed to enter into an agreement and make an announcement relating to the acquisition of viable assets that satisfy the conditions for listing as set out in Section 4 of the JSE Listings Requirements.
2013-01-02	ZPT	Zaptronix Ltd	Ordinary	Failure to submit a provisional report
2013-02-18	HWW	Hardware Warehouse Ltd	Ordinary	Scheme of Arrangement
2013-02-20	SAN	Sanyati Holdings Ltd	Ordinary	The instrument unsuspending due to the charge code being amended.

2013-02-20	QPG	Quantum Prop Group Ltd	Ordinary	The instrument unsuspended due to the charge code being amended.
2013-03-04	MMS	Minemakers Limited	Ordinary	Board of directors decision
2013-03-05	SHB	Sherbourne Capital Ltd	Ordinary	Subsequent to the Arkein acquisition not being successfully completed.
2013-03-15	FSE	Firestone Energy Limited	Ordinary	Pending discussions for completion of restated investment agreement with Ariona.
2013-03-20	SKY	Sea Kay Holdings Ltd	Ordinary	The suspended was lifted in error due a bug in the system.
2013-05-06	CAP	Cape Empowerment Limited	Ordinary	Scheme of Arrangement
2013-05-27	NBC	New Bond Capital Ltd	Ordinary	Scheme of Arrangement
2013-05-31	SCL	Sacoil Holdings Ltd	Ordinary	Resignation of Directors and application of suspension to trading of shares on AIM and the JSE.
2013-06-20	ERB	Erbacon Inv Hldgs Ltd	Ordinary	Business rescue proceedings by its major operating subsidiary.
2013-06-24	AMA	Amalgamated App Hldgs Ltd	Ordinary	Scheme of Arrangement
2013-06-26	BFS	Blue Financial Services	Ordinary	Late submission of financial results
2013-07-01	PLL	Platfields Limited	Ordinary	Failure to submit the provisional report timeously.
2013-07-08	CMP	Cipla Medpro Sa Ltd	Ordinary	Scheme of Arrangement
2013-07-19	LAF	Lonrho Plc	Ordinary	Scheme of Arrangement
2013-07-22	MTG	Muvoni Tech Group Ltd	Ordinary	Scheme of Arrangement
2013-07-22	SHB	Sherbourne Capital Ltd	Ordinary	Instrument unsuspended due to a system error
2013-07-22	RGT	Rgt Smart Market Int Ltd	Ordinary	Scheme of Arrangement
2013-07-24	ARD	Ardor Sa Ltd	Ordinary	Unsuspended in error
2013-07-24	ERB	Erbacon Inv Hldgs Ltd	Ordinary	Unsuspended in error
2013-07-31	BIK	Brikor Ltd	Ordinary	Provisional Liquidation
2013-08-12	ALT	Allied Technologies Ltd	Ordinary	Part of Scheme of Arrangement
2013-08-26	SBL	Sable Holdings Ltd	Ordinary	Scheme of Arrangement
2013-09-02	IFH	Ifa Hotels And Resorts	Ordinary	Scheme of Arrangement
2013-09-18	BIO	Bioscience Brands Ltd	Ordinary	Liquidation

2013-10-14	UUU	Uranium One Inc	Ordinary	Scheme of Arrangement
2013-10-28	RAC	Racec Group Ltd	Ordinary	See CP for details. Scheme of Arrangement
2013-11-04	MVS	Mvelaserve Limited	Ordinary	Scheme of Arrangement
2013-12-02	KGM	Kagiso Media Ltd	Ordinary	Scheme of Arrangement
2013-12-18	FUU	First Uranium Corp	Ordinary	Scheme of Arrangement
2013-12-23	TCS	Total Client Services Ld	Ordinary	Voluntary suspension
2013-12-27	SLO	Southern Electricity Co	Ordinary	Scheme of Arrangement
2014-01-13	SLL	Stella Vista Tech Ltd	Ordinary	Scheme of Arrangement
2014-01-17	GDO	Gold One Int Ltd	Ordinary	Compulsory acquisition by BCX Gold Investment Holdings.
2014-02-10	PAM	Palabora Mining Co Ltd	Ordinary	Section 124(1) of the Companies Act
2014-02-19	DON	Don Group Ltd	Ordinary	Non fulfilment of acquisition agreement
2014-03-10	SDH	Securedata Holdings Ltd	Ordinary	Scheme of Arrangement
2014-03-24	AFR	Afgri Limited	Ordinary	Scheme of Arrangement
2014-04-07	WGR	Witwatersrand Cons Gold	Ordinary	Scheme of Arrangement
2014-04-11	XEM	Xemplar Energy Corp Nm	Ordinary	Non-payment of fees
2014-04-11	BWI	B&W Instrument & Elec Ld	Ordinary	Scheme of Arrangement
2014-05-12	CNL	Control Instruments Grp	Ordinary	Scheme of Arrangement
2014-05-30	CRD	Central Rand Gold Ltd	Ordinary	Clarification on the company's financial results.
2014-06-12	PKH	Protech Khuthele Hldgs	Ordinary	Voluntary suspension by the board
2014-07-03	AET	Alert Steel Holdings Ltd	Ordinary	The company (acting through the business rescue practitioner) has requested a suspension on the JSE due to business proceedings and the resignation of board members including the CEO and CFO.
2014-08-11	ABL	African Bank Inv Ltd	Ordinary	Placed under curatorship
2014-08-11	AEA	African Eagle Res Plc	Ordinary	The Company did not complete an acquisition or acquisitions which constitute a reverse takeover under the AIM Rules.
2014-08-25	UBU	Ububele Holdings Ltd	Ordinary	Non-compliance with the JSE Listings Requirements as a result of Business Rescue.

2014-09-23	MMH	Miranda Mineral Hldgs Ld	Ordinary	Directors request
2014-11-10	KEL	Kelly Group Ltd	Ordinary	Part of Scheme of Arrangement
2014-11-28	NCT	Nictus Ltd Nm	Ordinary	Cancellation of secondary listing on the Namibian Stock Exchange
2014-12-08	CBH	Country Bird Hldgs Ltd	Ordinary	Scheme of Arrangement
2014-12-08	BCK	Blackstar Group Se	Ordinary	Scheme of arrangement being proposed
2015-02-02	LHG	Litha Healthcare Grp Ltd	Ordinary	Scheme of Arrangement
2015-02-02	AWT	Awethu Breweries Ltd	Ordinary	Failing to issue its audited annual financial statements for the year ended 30 June 2014.
2015-03-11	CSP	Chemical Specialities Ld	Ordinary	At the request of the directors of the issuer, announcement to follow.
2015-03-19	FSE	Firestone Energy Limited	Ordinary	Voluntary suspension pending the release of an announcement.
2015-04-14	EHS	Evraz Highveld Steel & Van	Ordinary	Business rescue
2015-04-20	ACP	Acucap Properties Ltd	Ordinary	Scheme of Arrangement
2015-05-04	GIJ	Gijima Group Limited	Ordinary	Scheme of Arrangement
2015-05-04	SAH	South African Coal Mining	Ordinary	Failure to publish its provisional report
2015-05-25	VIL	Village Main Reef Gm Co	Ordinary	Scheme of Arrangement
2015-06-01	TMG	Times Media Group Ltd	Ordinary	Scheme of Arrangement
2015-06-29	JDG	Jd Group Ltd	Ordinary	Scheme of Arrangement
2015-07-01	ADW	African Dawn Capital Ltd	Ordinary	Failure to submit financial statements
2015-08-03	MOR	Morvest Group Ltd	Ordinary	Scheme of Arrangement
2015-08-03	ZCI	Zci Limited	Ordinary	Non-submission of Provisional financial statements
2015-08-07	AIB	Ascension Prop Ltd B	Ordinary	Scheme of Arrangement
2015-08-17	BCX	Business Connexion Grp Ltd	Ordinary	Scheme of Arrangement
2015-09-14	CCL	Compu Clearing Outs Ltd	Ordinary	Part of Scheme of Arrangement
2015-09-14	ZSA	Zurich Insurance Co Sa	Ordinary	Scheme of Arrangement
2015-09-25	IPS	IPSA Group Plc	Ordinary	Unable to publish its financial statements timeously
2015-09-28	DGC	Digicore Holdings Limited	Ordinary	Scheme of Arrangement

2015-10-05	IRA	Infrasors Holdings Ltd	Ordinary	General Offer
2015-10-19	MML	Metmar Ltd	Ordinary	Scheme of Arrangement
2015-10-26	CDZ	Cadiz Hldgs Ltd	Ordinary	Part of Scheme of Arrangement
2015-10-27	BMN	Bannerman Resources Ltd	Ordinary	Request of the Company, pending the release of an announcement.
2015-11-23	CPF	Capital Property Fund Ltd	Ordinary	Scheme of Arrangement
2015-11-30	GGM	Goliath Gold Mining Ltd	Ordinary	Scheme of Arrangement
2015-12-23	MAS	Masonite Africa Ltd	Ordinary	Voluntary business rescue
2016-01-04	ILA	Iliad Africa Ltd	Ordinary	Scheme of Arrangement
2016-02-08	MDC	Mediclinic Internat Ltd	Ordinary	Scheme of Arrangement
2016-02-08	MCI	Mediclinic Internat Ltd Nm	Ordinary	Scheme of Arrangement
2016-02-09	RBA	Rba Holdings Ltd	Ordinary	The company has applied for business rescue proceedings in terms of Companies Act.
2016-02-22	AWB	Arrowhead Properties B	Ordinary	Conversion to a single class of shares.
2016-04-04	AQP	Aquarius Platinum Ltd	Ordinary	Amalgamation agreement with Sibanye
2016-04-18	EOG	Eco (Atlantic) Oil & Gas	Ordinary	Termination of Secondary listing on NSX. It will only maintain its International listing in Canada.
2016-06-20	ILV	Illovo Sugar Ltd	Ordinary	Scheme of Arrangement
2016-07-01	FDP	Freedom Prop Fund Ltd	Ordinary	Failure to submit annual financial statements
2016-07-01	VIS	Visual International Hldgs Ltd	Ordinary	Failure to submit annual financial statements
2016-07-07	TAW	Tawana Resources NI	Ordinary	Voluntary Suspension
2016-07-29	MRI	Mine Restoration Inv Ltd	Ordinary	As per the issuer's request.
2016-08-24	PWK	Pick N Pay Holdings Ltd	Ordinary	Scheme of Arrangement

Appendix two: JSE listed companies that have entered business rescue

Company Name

1time Holdings Limited
Brikor Limited
Chemical Specialities Limited
Erbacon Inv Holdings Limited
Evraz Highveld Steel & Vanadium Limited
Masonite Africa Limited
Protech Khuthele Holdings Limited
Quantum Property Group Limited
Alert Steel Holdings Limited
Sanyati Holdings Limited
Ububele Holdings Limited
Pinnacle Point Group Limited
African Bank Investments Limited
Rba Holdings Limited
Total Client Services Limited

Appendix three: Ethical clearance

Dear Richard McDonald

Protocol Number: **Temp2016-01088**

Title: **The use of predictors to anticipate success, for listed companies entering into business rescue**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker