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Bankruptcy prediction indicators approach: A tool for measuring steinhoff's risk

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Abstract

Research aims: The objective of this article is to ascertain whether Steinhoff International Holdings could have successfully employed the Bankruptcy Prediction Indicators Approach model as an instrument for measuring business continuity risk prior to its significant share price fall in 2012.

Design/Methodology/Approach: The study utilized a qualitative research design and document analysis approach to examine Steinhoff International Holdings' financial data from 2012-2021, using the Integrated Real-time Equity System (IRESS BFA McGregor) and the Bankruptcy Prediction Indicators Approach. In MS Excel, quantile values were determined by dividing the probability distribution into equal segments.

Research findings: The findings of the analysis revealed that the Bankruptcy Prediction Indicators Approach was used to identify Steinhoff International Holdings' business continuity risk in 2012, demonstrating its usefulness in measuring risk and providing investigative tools for management amid COVID-19 challenges. It has been determined that ROE is the primary indicator with the highest predictive power of all the indicators.

Theoretical contribution/Originality: This article adds to the body of knowledge on business continuity risk, and practitioners can use the findings to incorporate the Bankruptcy Prediction Indicators Approach into their annual reporting.

Research limitation/Implication: The limitation consists of the sample from a single retail company listed on the Johannesburg Stock Exchange, and the published annual reports were the primary source of information for the analysis and measurement.

Keywords: Bankruptcy Prediction Indicators Approach (BPIA); Business Continuity Risk; Company Collapse; Financial Distress; Measurement Instrument; Steinhoff International Holdings

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Introduction

Since 2000, there have been more accounting scandals, and according to Bhaskar et al., (2019), some of the symptoms of these scandals include the intentional falsification of financial statements, wrongdoing by the organization and its management, misappropriation of assets (possibly theft), followed by the concealment of the results in the financial reports, and purposeful manipulation of accounting by management to improve financial and annual reports. This has put pressure on both the accounting profession and the firms themselves. To deliver comparable, thorough, and verifiable information, stakeholders are extremely dependent on the accounting profession (Swanepoel, 2018).

Reputable audit companies have been implicated in numerous accounting scandals on a national and worldwide level, regardless of the acceptable standard the accounting industry upholds. Hossari (2006), in unison with Ramizjanovich (2020) and Rahman et al. (2020), claims that Merrill Lynch colluded with Enron to fabricate earnings, overvalue assets, and misrepresent the source of funding during the Enron scandal in 2001. On the other hand, according to Petra and Spieler (2020) in 2002 HIH Insurance and Goldman and Sachs gave the bank mismanaged financial data that was fraudulent and deceptive, which the bank determined to be the genuine value of the assets. Deloitte and Grant Thornton in Europe are accused of aiding Paramalat (2004) in deceiving its investors since they were aware of the management's fraud and the fabrication of accounting records (Petra & Spieler, 2020). Santos (2020) explains that in the Carillion UK scandal, KPMG signed off that the company was a going concern and, just a few months thereafter, went into liquidation. This is after Moody's and Standard & Poors' credit rating pointed out the misclassification of debt with the aim of concealing the true level of debt. All four of the major auditing firms were involved in Carillion, either as administrators, reviewers, or internal or external auditors. Bankruptcy impacts a wide range of stakeholders. Many studies have been conducted on bankruptcy prediction in the fields of economics, accounting, and decision sciences over the past 20 years. Globally, academics and professionals have been discussing bankruptcy forecasts. Alam et al. (2021). In recent years, several traditional methods have been developed, yet bankruptcy prediction models have been unable to curb the rising accounting scandals.(Petra & Spieler, 2020; Trilaksono et al., 2021; Juliyanti & Wibowo, 2021; Brenes et al., 2022; Caniago et al., 2023).

Swanepoel (2018) describes agency theory as a phenomenon by which managers and directors are motivated by wealth creation, much like shareholders and investors are. It seems, however, that in Steinhoff's case, wealth creation may have caused its managers and directors to prioritize their own interests, which could likely lead to greed. Managers' and directors' greed could be harmful to other stakeholders. The Steinhoff empire fell on December 5, 2017, six months after Steinhoff's market valuation hit R240.5 billion on May 23, 2017, according to literature (Rossouw & Styan, 2021; van der Linde, 2020; Haasbroek et al., 2020). Steinhoff also suffered a significant setback after rumors about the company's financial situation appeared in a German magazine. As a result of the rumors, an investigation was provoked in September 2017 after multiple accounting irregularities and possibly fraud were exposed (van der Linde, 2022). Sibiya (2020) claims that even if the German authorities' 2015 raid was unable to establish or suggest probable bankruptcy, the CEO's rapid resignation indicated that bankruptcy was a real possibility. Kew (2020) explains that there were sufficient red flags of financial concern to warrant that stakeholders exercise extreme caution. However, it seems that these did not have a salient effect on the state of things, based on Steinhoff International Holdings' impeccable background given the 55-year-old foundation and Markus Jooste's (the CEO of Steinhoff Holdings) connection with the so-called "Big Boys" in the financial market. Yet, it seems as if history repeated itself and has proven once again that when the management of a large corporation wants to hide questionable dealings from the outside world, getting to the truth is a very difficult matter. It is unfortunate and no longer shocking that companies choose to turn to deception to maintain their businesses, and much of this deception includes accounting fraud. Accounting fraud, according to Nickolas (2022), is the

deliberate issue of false financial statements with the purpose of improving a company's current financial condition. Numerous accounting fraud cases include Theranos, Mozido, Satya Computer, and many more (Nickolas, 2022). Due to alleged reporting accounting irregularities, Steinhoff International Holdings (one of the top 10 listed companies on the Johannesburg Stock Exchange (JSE)) saw a loss of more than 60% of its value in just one day. This has placed a great deal of pressure on the accounting industry both internationally and in South Africa.

Altman (1968) was a pioneer of the multiple discriminant analysis (MDA), a traditional failure detection model whereby all the frequently applied financial ratios proven useful in predicting business failure are considered simultaneously. Cassim (2021), concurring with Gouws and Lucouw (1999) and Ashraf et al. (2019), shows that traditional failure detection models are still helpful as analytical tools, but since these traditional failure detection models are imprecise, they should be considered holistically. The Bankruptcy Prediction Indicators Approach (BPIA) is a failure detection model developed from a South African perspective. Numerous studies have tried forecasting failure, but none have been consistently accurate. The novelty of the bankruptcy prediction indicators method is that it is a straightforward generic model, simple to use, comprehend, and implement in a South African setting. It can forecast bankruptcy or business failure early enough for the company's management to take timely corrective action. The present article aims to determine whether this traditional failure detection model can be used as an effective business continuity risk measurement instrument and, if implemented, could have led those charged with governance in Steinhoff International Holdings to act differently with regard to decision-making. This could have been done by implementing business continuity management.

Kazakova et al. (2020) posit that there is a direct relationship between financial insolvency likely to lead to bankruptcy and business continuity. According to Griffith University (2018), which concurs with Fani and Subriadi (2019), business continuity refers to the ability of the company to continue doing essential tasks both during and after a disaster. For business continuity to be effective, a business continuity plan (BCP) needs to be functional and in place (Rezaei Soufi et al., 2019). A business continuity plan (BCP), according to Fani and Subriadi (2019), in agreement with Dushie (2014), is a plan that is of the utmost importance as companies need to prepare for both internal and external threats and disasters that any company might experience. Management is responsible for managing this plan. Akinbola (2018), echoed by Corrales-Estrada et al. (2021), defines business continuity management as the entire process that detects possible risks that may affect an organization and offers a structure that aids in resilience development and protects an organization's essential interests. This notion motivates the present article, which sets out to determine if Steinhoff International Holdings had a business continuity plan (BCP) in place and whether the BPIA would have been an effective instrument to assist in measuring and managing risk reliably to improve the performance and decision-making of those charged with governance.

Due to accessibility and convenience, the study makes use of Steinhoff International Holdings' financial data for ten years from 2012 to 2021. The study aims to determine if

Steinhoff could have used BPIA as a business continuity risk instrument successfully. The objective is to determine the efficacy of BPIA in determining the business continuity risk faced by Steinhoff International Holding. In achieving this, the study will contribute to the corpus of knowledge by offering a new method for measuring business continuity risk to those in charge of governance. Although the terms "bankruptcy" and "insolvency" have been and are still being used synonymously, they are not the same. According to Pasternak-Malicka et al. (2021), insolvency is a legal term, and bankruptcy is an economic concept. Due to the existence of this research gap, there is still a great deal of disagreement in the research field. One further possibility for the delayed implementation of essential remedial corrective action is a misdiagnosis of the issue**.** The subject of bankruptcy prediction has been a prominent area of study in the accounting and finance fields for about half a century (Qu et al., 2019). Even still, research on bankruptcy is still not very common. Any firm can face bankruptcy; it doesn't care about the size, kind, or age of the organization. For businesses to survive, accurate and prompt bankruptcy prediction is essential. The value of ongoing research on bankruptcy contributes to the advancement of knowledge in this area of study. The paper's theoretical contributions included demonstrating how the BPIA may be utilized as a practical tool to support and guide those responsible for governance in their decision-making, as well as serving as an effective measurement instrument for business continuity.

Literature Review

Regardless of when businesses were founded or the sector they serve, none have been able to resist the mismanagement. Since the beginning of the millennium, there has been an increase in the number of reputable businesses that have closed their doors, from Enron and Worldcom in the US to Parmalat in Europe, HIH in Australia, and Petrobras in Brazil (Hossari, 2006; Prechel, 2022). In the last few years, there have been several new instances of corporate governance malpractices in South Africa, which have led to the demise of prominent entities like Saambou Bank and VBS Mutual. Saambou Bank and VS Mutual have been selected for the analysis in this literature review. Saambou Bank is referred to as having triggered contagion, and VBS Mutual Bank is the great bank heist (Motau & Attorney, 2018; Havemann, 2021).

Saambou Bank was a South African bank that was founded in 1942 and was dissolved in 2005 (Steyn et al., 2004; Fourie (2019). Saambou's financial problems began in 2002 when customers withdrew R1 billion of their investments out of desperation and panic. Two of the senior bank officials, both of whom pleaded guilty, were on trial for fraud, and for being more than R690 million in contravention of the Companies Act 71 of 2008. The prosecutor, Danie Dorfling of the National Prosecuting Authority’s Directorate of Special Operations, said that the accused conducted the business of Saambou Bank in a reckless manner, and false entries were made (Fourie, 2019; Havemann, 2021). Several circumstances, including aggressive lending methods, poor risk management, and a deteriorating economic climate, led to the 2002 collapse of Saambou Bank, a South African bank. Table 1 indicates some particular elements that led to Saambou's demise (International Monetary Fund, 2015; Kerioh, 2019; Kekana, 2021; Havemann, 2021).

Table 1 Contributing Factors to Saambou Bank's Downfall

Factors	Description
Aggressive lending practices	Saambou Bank had a reputation for providing high-risk loans to clients who might not have been able to pay the bank back. Due to this, there was an increase in non-performing loans and a high default rate.
Poor risk management	Saambou Bank had insufficient risk management mechanisms in place to monitor its lending activities and evaluate the creditworthiness of its borrowers, which resulted in poor risk management. As a result, the bank was unable to efficiently manage its loan portfolio and accurately quantify its exposure to risk.
Deteriorating economic climate	Saambou Bank went under as South Africa was experiencing a recession. Property values dropped as a result of the crisis, which made it harder for borrowers to pay back their loans.
Inadequate capitalization	Saambou Bank lacked sufficient funds to cover its losses when borrowers defaulted on their loans since it was undercapitalized. This caused financial instability to cascade downward and ultimately contributed to the bank's collapse.
Overall	Several reasons have contributed to Saambou Bank's bankruptcy, including bad lending practices, insufficient risk management, and an unfavorable economic environment. All of these elements played a part in the bank's inability to manage its loan portfolio and maintain its financial stability successfully.

Source: Adapted from International Monetary Fund (2015); Kerioh (2019); Kekana (2021); Havemann (2021)

From Table 1, a summary of the factors that played a role in Saambou Bank's downfall can be observed. Havemann (2021), in agreement with Fourie (2019) and originally stated by Reinhart and Rogoff (2014), opines that it takes eight years on average for a company to recover from a financial crisis, if ever. International Monetary Fund (2015) revealed that Saambou Bank's financial difficulties caused a stir and triggered contagion quickly, spreading amongst small and medium-sized South African banks. By the end of 2003, half of the country's banks had deregistered from the JSE.

As noted by Madondo (2021), VBS Mutual Bank was a South African financial institution that was placed under curatorship in March 2018 due to liquidity problems. It was later discovered that the bank had engaged in significant fraud and theft of depositors' money, which ultimately caused it to collapse. As detailed in "The Great Bank Heist" report by Motau and Attorneys (2018), major political party affiliates were implicated. One of the largest auditing and professional services companies in the world, KPMG, audited VBS Mutual Bank. According to a study of the bank's financial statements that KPMG published in 2018, they were "free from material misstatement." Later on, it was found that the report was based on erroneous and deceptive information supplied by VBS management (Rossouw & Styan, 2021). Madondo (2021) explains that this resulted in a controversy involving KPMG, which was charged with failing to find and disclose the anomalies at VBS and failing to exercise the necessary level of professional skepticism in its audit work. KPMG received harsh criticism and lost a number of well-known clients in South Africa. KPMG conducted a thorough internal examination in reaction to the scandal, making a number of adjustments to its leadership and governance systems in South Africa. The

company also promised to take a variety of corrective measures, such as providing compensation to impacted parties and improving its quality assurance and risk management procedures (Young, 2019).

Like Saambou Bank and VBS Mutual Bank, Steinhoff International Holding has been one of the topical South African scandals of malpractice, resulting in significant value loss at the cost of various stakeholders within society, and it has been noted as possibly the largest case of corporate fraud in South Africa's business history (Madondo, 2021). After the financial collapse of Steinhoff International Holdings, South Africans are still in shock. The purpose of this literature review is to explain Steinhoff International Holdings' ascent and decline from 1963 to 2017. To this end, a number of highlights over the period were covered.

Bruno Steinhoff, a West German national, spotted an opportunity in 1963 to buy cheap furniture and household items from East Germany and sell them to his wealthier West German neighbors. Mr. Steinhoff had modest origins but was obviously ambitious and had an aptitude for selling furniture. Even while in the early stages of Steinhoff International Holdings' operation, he was not discouraged by the Cold War's escalation (Naudé et al*.,* 2018; Rossouw & Styan, 2021).

The company began obtaining furniture from East Germany around the late 1970s. International sanctions on South Africa were withdrawn in 1994, marking the commencement of democracy in the country. Numerous foreign businesses spotted an opportunity to invest in the nation, gaining access to a sizable, untapped consumer base market and using it as a base of operations for activities throughout the rest of Africa. Additionally, Mr. Steinhoff took advantage of the available opportunity and seized the chance to enlarge his enterprise in South Africa. Having made numerous investments in South Africa, his German friend Claas Daun introduced him to the nation. At that time, Bruno Steinhoff and Markus Jooste would eventually meet because Mr. Steinhoff and Daun were friends from their time living in Germany, and Jooste was the CEO of Daun. Mr. Jooste was the financial director of Gommagomma Holdings when Mr. Steinhoff first met him (Naudé et al., 2018; Rossouw & Styan, 2021).

Jooste proposed combining Daun's South African businesses with Steinhoff International Holdings Europe in 1996. Bruno Steinhoff bought a 35 percent stake in Gommagomma (a furniture retailer) from Daun & Cie in 1997. Mr. Jooste was the company's financial director at the time. Soon after, in 1998, the operations of Steinhoff International Holdings Europe and Steinhoff International Holdings Africa (previously Gommagomma) were combined. In the same year, Gommagomma changed its name to Steinhoff International Holdings Africa and joined Steinhoff International Holdings, the organization that would later become the parent company of Steinhoff International Holdings Europe. According to Rossuw and Styan (2019), Steinhoff International Holdings listed on the JSE in 1998 at a listing price of R4.00 per share (Naudé et al*.,* 2018). The company strengthened its financial standing in 2015 by obtaining a listing on the Frankfurt Stock Exchange listing (FSE), and by this listing, Steinhoff International Holdings expected a German tax probe by the German tax authorities looking into its subsidiary ownership

(Rossouw & Styan, 2021; Hassbrook et al*.,* 2020). Steinhoff International Holdings joined into a 50/50 joint venture in July 2016, and in that same year, Steinhoff International Holding was at its peak. It was part of the respective indices, which included the JSE Top 40 index, JSE Top 25 Industrial index, and JSE Socially Responsible Investment (SRI) index. In 2016, Steinhoff International Holdings employed 130,000 employees and sold general commerce and household items under more than 40 distinct brand names in over 32 nations on four continents. According to Rossuw and Styan (2019), Naudé et al. (2018), and Van der Linde (2022), the company reported revenue of €8 645 million and a net profit of €1 510 million in that year, a growth rate of 11.8 percent year after year. The market capitalization of Steinhoff International Holdings was over R300 billion on March 31, 2016, and the share price reached a high of R96.85. Steinhoff International Holdings and Shoprite were reported to be merging in 2016, with the aim of the merger stated as to develop "the retail champions of Africa."

Steinhoff International Holdings' JSE share price on May 23, 2017, was R50.25. It came down quite a bit from R90, and its market capitalization was R240.5 billion (Haasbroek et al., 2020; van Vuuren, 2020). The year 2017 saw the beginning of financial health rumors for Steinhoff International Holdings. The first claim regarding a dispute between Steinhoff International Holdings and joint venture partner Andreas Seifer was made in a German Manager Magazine article on August 24, 2017. Steinhoff International Holdings instantly denied the accusations in Stock Exchange News Service (SENS), Eita (2012), in accordance with Mey and Lamprecht (2020), explains that SENS is a special service provided by JSE to their users, but they raised a provision for settlement in case the verdict did not turn out in their favor. As they were adamant that the plaintiff's case was weak, Steinhoff International Holdings also reminded the stakeholders of the unqualified audit they had obtained from Deloitte. This was done to help Steinhoff Holdings to maintain their confidence that the action would be rejected (Haasbroek et al., 2020; Van der Linde, 2022).

The second accusation appeared this time in a Reuters piece on November 8, 2017. This accusation concerned Steinhoff International Holdings' hidden ownership stake in GT Branding Holdings, which controlled 100% of the shares in a subsidiary. Steinhoff International Holdings refuted the claim and defended the risk to independence in SENS. On the evening of December 5, 2017, Steinhoff International Holdings was dealt the final straw that proved to be its downfall, namely the announcement of the company's CEO, Markus Jooste, resignation "with immediate effect" (Naudé et al*.,* 2018; Haasbroek et al,2020, Van Wyk, 2020).

The consequences of the initial bombshell in the days that followed were disastrous. In addition to the share price falling by 89% in a single week, numerous investigations into Steinhoff International Holdings' financial affairs were started, and various bodies and authorities instituted legal action or investigations. Additionally, the business was involved in two separate international class action cases in the Netherlands and Germany (Naudé et al*.,* 2018; Van der Linde, 2022). Butters (2019), in conjunction with Van Wyk (2020), claims that warning indications were glaringly clear; the issue was that individuals in charge of governance failed to pay attention to the warning signs. Kew (2020) and Van

Wyk (2022) identified several red flags in the financial practices and governance of Steinhoff International Holdings, highlighting issues beyond complex accounting and off-balance sheet activities. Among the concerns was the dominant leadership style of the CEO, who maintained an iron-fisted control over the organization, while the chairman was seen as ineffective due to excessive support for the CEO, failing to provide necessary checks and balances. Auditors' independence was compromised, as they received intense scrutiny and feedback, even for minor audits. The company's acquisition strategy was described as obsessive and poorly planned, with Magda Wierzycka, CEO of Sygnia Group, noting that the financial structure was unclear, the acquisitions lacked logic, and debt levels were unsustainable. Additionally, Steinhoff faced criticism for failing to comply with Johannesburg Stock Exchange (JSE) requirements for SENS announcements. Although the company did not use tax havens, it operated in low-tax jurisdictions like the UK and Switzerland and benefited from tax incentives in Eastern Europe. At times, Steinhoff's practices raised suspicions of crossing the line from tax avoidance to evasion. Other issues included complex and non-transparent transactions, poor disclosure, and substantial intercompany royalties, which further clouded the financial transparency of the organization.

When it was discovered that Steinhoff had engaged in accounting irregularities in December 2017, Deloitte, the auditor for Steinhoff, was criticized for failing to detect the accounting irregularities and faced sanctions from the country's auditing regulator; it was penalized for its involvement, and investors sued Deloitte for failing to detect the accounting fraud (Rossouw & Styan, 2021). The Steinhoff scandal has highlighted the need for auditors to act with integrity and independence and the importance of effective corporate governance. Additionally, it has prompted demands for increased accountability and transparency in the auditing industry.

Managers, often known as agents, have gradually removed business owners, or principals, from the day-to-day management of their business as managers and are responsible for running businesses. This phenomenon is called the agency theory, according to which managers are motivated by wealth creation in the same way investors and shareholders are (Tekin & Polat, 2020). The goal is to operate in the owners' best interests as managers and directors are appointed for positions in firms that the owners create. For example, managers reported on the state of the business as though the goal had been met. According to the shareholders' understanding, the manager is operating profitably and effectively. Swanepoel (2018) asserts that managers may prioritize their personal interests over the interests of the organization, which is contrary to the intent because managers own some shares in the company, leading to greed. Managers' greed could be harmful to stakeholders. Should the management continue in this manner, the business may face financial difficulties that may ultimately result in bankruptcy or financial distress. This may occur due to a lack of effective oversight by the shareholders (Nugroho et al., 2021). A company is said to be in financial distress if it is unable to satisfy its debtors due to a lack of finances (total assets minus total liabilities) and is unable to reach its profit-making goals. (Cooper & Uzun, 2019).

According to Kiseleva and Efimov (2020), a bankruptcy prediction model that could help avoid financial distress created by business failures would be a valuable aid to businesses, especially its ability to early detection. Many efforts have led to the creation of such bankruptcy predictive analytical models with a high degree of predictive ability that can detect potential failure as early as three to five years in advance. The empirical result indicated that the BPIA was able to detect possible financial distress up to five (5) years prior to actual failure (Davchenco, 2021)

Research Method

This study used a qualitative research design and methodology and a document analysis approach to explore whether BPIA could have served as a useful business continuity risk instrument for Steinhoff International Holding prior to its collapse. Rahman (2016) explained that utilizing qualitative research techniques and procedures has several advantages. Busetto et al. (2020) stated in the beginning that a qualitative research approach results in a dense (deep) description of participants' thoughts, feelings, and experiences as well as an interpretation of the motivations behind their behavior. In contrast to just discovering and interpreting social behaviors and their individual meanings, quantitative research focuses on those parts of social behavior that can be quantified and patterned. Qualitative research is an analytical strategy used to discover, comprehend, and enlighten a contemporary issue by gathering, analyzing, and interpreting qualitative data in accordance with the problem description and study objectives (Swanepoel, 2018; Muzari et al., 2022; Mwita, 2022) and is the instrument and data analysis techniques.

Population and Sampling

The document made use of Steinhoff International Holdings' financial data for ten years from 2012 to 2021. It was decided to concentrate on this time before the suspected accounting fraud that caused the corporation to suffer significant losses from the latest financial data available in order to obtain a clearer picture of the Steinhoff International Holdings saga process. A judgment or purposive sampling technique was used because the data was convenient, available, and easy to access rather than being chosen at random (Harmse, 2017; Zhong et al., 2019; Khan et al., 2020). The subjective judgment can be advantageous when using the non-probability sampling method, but it also raises the possibility of biases because not every unit in the target population has an equal chance of being selected (Turner, 2020; Lehdonvirta et al., 2021).

Data Collection and Instrument

Document analysis is the process of studying a document's content in order to obtain information (Saunders, 2016; Morgan, 2022). As explained by Harmse (2017) and Zhong et al. (2019), several researchers have successfully used this style of data analysis, including Swart et al. (2014) and Saunders (2016). This type of research aids the researcher in gathering background data to comprehend the topic under examination.

The document analysis was found to be appropriate since it is a systematic process for compiling data that is then examined and analyzed for both printed and electronic (computer-based and Internet-transmitted) secondary data (Bowen, 2009; Mackieson et al., 2019). According to Armstrong (2021), in agreement with Swart et al. (2014), document content analysis is successful because it is nonintrusive and non-reactive. After the data has been collected, it is up to the researcher to decide where to pay attention during the analysis and interpretation of the data (Bowen, 2009; Mackieson et al., 2019). Researchers can benefit from secondary data in a number of ways, including cost-effectiveness, efficiency, the ability to build on prior knowledge, and the ability to undertake research in circumstances where primary research may not be feasible or ethical. Not to ignore the disadvantages of secondary data, it is necessary to assess the credibility of the data accessible, even though it is readily available. Not all secondary data is precise or frequently updated enough to accommodate current timelines (Boslaugh, 2007; Bolander et al., 2021). These disadvantages were considered when data was obtained. The corporate market and the financial industry rely on IRESS BFA McGregor (Integrated Real-time Equity System), a JSE portal, as the primary source for news, stock market data, and information from fundamental research data.

Steinhoff's International Holdings published audited annual financial statements that were obtained from the reliable, publicly accessible, and reputable IRESS BFA McGregor database. With a view to obtaining a clear image of how an organization fared over time, the researcher may also look through periodic and final reports. This can be done without affecting the environment in any way. Most publicly available documents are freely available, and document analysis is more time and money-efficient than other research techniques. The following factors, according to Bowen (2009) and resonated by Mackieson et al. (2019), should be considered when deciding which documents to use: the content of the documents and how it will contribute to the study's goals; their authenticity, credibility, accuracy, and representativeness; their completeness; their originality; the reason they were created; and their source.

The published annual financial statements fit the criteria used to assess the consistency of qualitative analysis of authenticity, credibility, and correctness, together with some extra non-financial information (SENS, newspapers, and journal articles) that would be useful for shedding further light on the article's objective. As suggested by Flick (2015) and Mackieson et al. (2019), data was gathered through document analysis, which was felt to be the most pertinent data set in an effort to learn the truth regarding Steinhoff International Holdings. Data obtained for the period from IRESS BFA McGregor (2022) was used due to accessibility, availability, convenience, and the intention to identify a trend.

Financial ratio benchmarks

According to Sekhar (2017), benchmarking is essential for a company to understand its own norms and compare them to those of other businesses or industries. Without a benchmark, a trend analysis is unable to provide a useful picture, according to Lucouw (2013). Table 2 displays the benchmarks, which are, however, merely guidelines that can provide some insight into the state of the ratios (Cassim, 2021).

Table 2 Benchmarks Based On Categories, Ratios, and Zones

Category	Ratio	ZONES		
		Distress (Min)	Grey (Neutral)	Safe (Max)
Profitability	ROE	4.34	18.76	33.16
Risk	EBITI	2.5x	5x	
Profitability	ROA	6.05	13.91	21.77
Financial stability	CFTD	9.71	33.16	56.61
Profitability	TATO	0.86	1.9	2.94

Source: Cassim (2021)

Table 2 indicates the different financial ratio norms. According to Cassim (2021), the minimum level (distress) denotes potential financial troubles. A high likelihood of progressing to the bankruptcy stage and the necessity for a substantial safety net can be traced, and a neutral level (grey) denotes a degree of financial acceptability and substantial danger of insolvency. In contrast, the maximum level (safe) represents a very small chance of going bankrupt and is the ideal state of financial security for every organization. Table 2 was designed to serve as a guide because different industries have varying standards or cut-off points. A benchmark is a tool used to evaluate and compare performance to promote continual improvement. The benchmark was applied to compare Steinhoff International Holdings' financial ratios over the period of investigation and that of the industry. To ascertain if Steinhoff was able to measure business continuity, the BPIA will be used as a measuring tool.

Instrument

The BPIA analysis was done to evaluate how efficiently the BPIA could be employed as a business continuity risk measurement instrument for Steinhoff International Holdings prior to the share price decline, making it possible to determine whether BPIA could be employed as a business continuity risk instrument and its efficacy in identifying business continuity risk.

Bankruptcy prediction indicators approach

Profitability, financial stability, and risk are the three categories of financial measures included in the bankruptcy prediction indicator, which also serve as a representation of the three pillars of a company's financial health, as indicated in Table 3 (Cassim, 2021).

The data was analyzed using the BPIA. The testing of the BPIA was done at two levels, the first level (Level 1) being survival level testing, which will be dealt with next.

Table 3 Pillars of Company Health

Category	Description	Recommended Ratios
Profit Potential	Measures whether company assets and equity are being used profitably to generate returns.	Return on Equity (ROE) Return on Assets (ROA) Total Assets Turnover (TATO)
Financial Stability	It is essential for a business to continue as a going concern and evaluate if cash flow is sufficient to cover debts.	Cash Flow to Total Debt (CFTD)
Risk	Assesses the type of funding used by the company and its ability to meet interest payments.	Interest Coverage Ratio

Source: Cassim (2021)

Data analysis

Document analysis was used to gather data in an effort to get correct information regarding Steinhoff International Holdings, following Flick (2015) suggestion. Applying data analysis to the total of ten consecutive years from 2012 to 2021 was decided upon since this period was determined to be the most pertinent period based on Steinhoff International Holdings' ten-year published annual financial statements.

IRESS BFA McGregor (2022) largely relied on go-to sources for news, fundamental research data, and stock market information used by the financial sector and the corporate market. It is a reputable JSE portal providing data that is accurate and publicly available. Since it fulfills the criteria of authenticity, creditability, and accuracy, the published audited annual financial statements for the period 2012 to 2021 are seen to be valid, reliable, and trustworthy (Saunders, 2006; Swanepoel, 2018; Zhong et al., 2019).

Data analysis is when data is transformed into findings by giving the collected data context, direction, and meaning (De Vos, 2011; Ferraris et al., 2019). Ishtiaq (2019), concurring with Creswell & Creswell (2023), states that there are six steps in the process of analyzing the data that was gathered. Table 4 reveals the procedures required to analyze the data gathered and ascertain whether Steinhoff International might have effectively used the BPIA as a business continuity measuring instrument.

Table 4 Step of The Analysis Process

Steps of Analysis	Application
Arrange data	Sorting of the financial statements according to the years under review, using the IRESS to convert the financial elements to financial ratios. This is to get an understanding of the data in general.
Read and examine data	Data (financial ratios) have been selected and arranged according to the BPIA's statistically determined layout.
Coding of data	Data will be classified and categorized based on the two testing categories (level 1 survival level testing and thriving level, which is level 2). Based on the results of the first level, the necessity of testing at the second level (thriving level, called Level 2) was determined. If the first-level test results are favorable, the second level will commence, and if the results are unfavorable, testing needs to be suspended. Thus, the error needs to be detected and corrected before the second-level testing can continue. If a problem has been detected but cannot be pinpointed in Level 1, Level 2 was used to narrow down the problem area (Cassim 2021).
Description of data	Compare the financial ratios with the benchmarks to determine whether the company's financial pillar falls into one of the three categories. • Minimum: The likelihood of bankruptcy is very high if the company is not already bankrupt. • Neutral: Caution is required as the company is likely to go bankrupt • Maximum: The company is financially stable
Presentation of data	The analysis's conclusions must be discussed
Data interpretation	The last phase, with the goal of achieving the study's objectives

Source: Creswell (2014) and Ishtiaq (2019) adjusted

Descriptive Statistics

For the purpose of this study, descriptive statistics was used to explore the association between bankruptcy prediction approach indicators (BPIA) and the emerging market score model (EMS). For descriptive statistics execution, the central tendency (mean, median, and mode) and variability (ranges and standard deviation) will be employed (Turney, 2023). According to Mishra et al. (2019), descriptive statistics are used to summarize a set of observations. The variability of the data refers to how widely distributed the values are, whereas the central tendency deals with the averages of the numbers. Descriptive statistics were applied in order to determine if the independent variables (financial ratios) are statistically arranged and to evaluate the efficacy of the BPIA as a business continuity risk measurement (dependent variable). Microsoft Excel was used to carry out the quantile probability distribution calculation with the purpose of establishing in which quartile the resulting data obtained by the BPIA fall.

North-West University issued an ethical clearance in 2016, with the ethical clearance number ECONIT-2016-035. The analysis was done by using the financial ratio benchmarks to assess performance and progress by comparing results to industry instruments and data analysis techniques.

Result and Discussion

This section contains the data characteristic of the BPIA in identifying business continuity risk for Steinhoff International Holdings, which is shown in this section, along with whether it could have been used to measure business continuity risk before the share price collapse of Steinhoff International Holdings. The BPIA is structured based on statistical ranking using effective size as the best predictive power. The indicators were ranked from 1 (one), which is ROE, which has the highest predictive power, to 5 (five), which has the lowest predictive power, which is TATO. Additionally, it was substantiated by how frequently the indication appeared in seminal studies (Altman, 1968; Hossari, 2006). This was followed by descriptive statistics that were applied to explore the quartile percentiles. The results of the document analysis are shown in Table 5.

Table 5 Results of The BPIA for The Ten-Year Period 2012-2021

	Ratios	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Level	ROE	12.26	14.04	14.25	10.08	8.75	-394.88	508.08	132.03	78.17	36.12
1:	*BM*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MAX*	*MAX*	*MAX*	*MAX*
SOCI	EBITI	3.15	3.36	4.05	4.65	4.05	-8.75	0.12	-0.36	-0.79	-0.07
	BM	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*
	ROA	9.46	10.52	10.37	9.99	9.51	-34.66	0.72	-4.41	-10.65	-0.88
	BM	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*
Level	CFTD	12.04	13.26	18.27	22.05	12.1	-1	-4.53	-3.27	4.88	8
2:	*BM*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*
SFP	TATO	0.96	1.11	1	0.77	0.88	1.69	1.21	1.73	1.31	1.06
	BM	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*	*MIN*

Source: IRESS BFA McGregor (2022)

Table 5 reveals the key results of the financial ratios obtained for Steinhoff International Holdings over the period of study that was compared to what the industry indicates. When a company is experiencing financial difficulties or its credit profile is at an extremely high risk, this is indicated by its ratios falling below the minimum industry norm value. At the financially acceptable level, an adequate credit profile is indicated at a neutral level, and the company is financially safe or has a strong credit profile when its ratios are at or above the maximum level. The results were explored (each individual ratio included in BPIA) over two successive periods: to the onset of the COVID-19 pandemic (2012 – 2019) and during the pandemic (2020 – 2021), applying the BPIA testing rules as discussed in the next section.

The financial ratios highlight Steinhoff International Holdings' underlying challenges. **Return on Equity (ROE)** exposed the company's inability to convert equity financing into profits, signaling inefficiencies in generating returns for shareholders. Fluctuations between 2012 and 2019, with a dramatic decline in 2017 due to massive losses in net income. Despite brief improvements, ROE remained volatile through the COVID-19 period. The **Interest Coverage Ratio (EBITI)** revealed that Steinhoff had a high level of debt, with insufficient earnings to cover interest payments, indicating financial strain. A gradual increase until 2015 but declined sharply in 2017, reflecting concerns over financial health. This trend continued, with a historic low during the pandemic. **Return on Assets (ROA)** further showed the company's inability to generate substantial earnings from its assets, reflecting poor asset utilization with a sharp drop in 2017 due to declining net income and asset fluctuations. The **Cash Flow to Total Debt (CFTD)** ratio underscored Steinhoff's precarious financial position, suggesting that cash flow was inadequate relative to its debt levels. Steinhoff's CFTD ratios were consistently below industry norms, worsening by 2017 with rising debt and no cash flow. A brief recovery in 2020 during COVID-19 suggested improved cash flow management. Lastly, **Total Assets Turnover (TATO)** highlighted the inefficient use of resources, as the company struggled to convert assets into sales, which experienced a significant decline during the pandemic. Together, these metrics paint a picture of financial instability and inefficiency. This indicates deep-seated financial issues and raises questions about whether early use of the Bankruptcy Prediction Indicators Approach (BPIA) could have mitigated risks before Steinhoff's share price collapsed.

The BPIA As A Business Continuity Risk Measurement Instrument For Steinhoff International Holdings

Data was selected for the period 2012 to 2021. The purpose was to determine whether there was an identifiable trend from 2012 to 2016 before the fall of the company's shares. This was done with the aim of determining whether there were major fluctuations in the ratios compared to those of the industry norms. The aim was to determine whether BPIA could be used as a business continuity risk measurement instrument. Risk is defined by Hayes (2023) as the possibility of losing money, which means that a risk measurement instrument should be able to measure a company's ability for financial success or being under threat. Business continuity, according to Sanchez Dominguez (2016), Akinbola (2018), and Corrales-Estrada et al. (2021), refers to a state when a company is strategically

capable of preparing and responding to business disruptions and incidents in order to continue business operations at an acceptable specified level. Business continuity needs to be planned. Such an approach results in a well-defined and documented plan that outlines the steps, tools, and systems required to carry on or resume an organization's operations in the event of unforeseen business disruptions. When a business interruption occurs, the business continuity plan (BCP) should be implemented as a communication and decision-support mechanism (Griffith University, 2018; Rezaei et al., 2019). Aladejebi and Oladimeji (2021), supported by Fani and Subriadi (2019), explains that this is an ongoing process that is done by business continuity management (BCM). Aladejebi and Oladimeji (2021) defines BCM as an integrated approach to help organizations react against any unexpected event in an effective and timely manner. Sanchez Dominguez (2016) and Fani and Subriadi (2019) concur that a BCM constitutes the entire process of identifying the potential risk that poses a danger to an organization and providing a framework for building resilience while safeguarding the organization's most important interests.

A company must have a plan to ensure smooth and continuous operations, even when facing challenging situations. This can be achieved by using a model capable of predicting financial distress promptly. Such a plan should be overseen and managed by those responsible for governance on an ongoing basis. This article aims to assess whether a BPIA (Business Predictive Intelligence Algorithm) can effectively predict financial distress in a timely manner. The analysis focuses on the results from 2012 to 2016, as presented in Table 6. Results from 2017 to 2021 are not included, since Steinhoff's share price plummeted in 2017 due to revelations that the company had been overstating its assets and profits (Rossouw & Styan, 2021).

Table 6 BPIA Testing Period 2012-2016

Indicator	Details	Comments
Level 1: Testing		
ROE	per R100 invested received. 2012: R12.26 2013: R14.04 2014: R14.25 2015: R10.085 2016: R8.75	ROE increased from 2012 to 2014 but declined by 2015 with a further decline in 2016. Suggests declining profitability. The ratios show how much profit Steinhoff generated for every R100 invested by shareholders. The specific amounts, shown in the details column, represent the returns on equity (ROE), indicating how effectively Steinhoff was able to turn shareholder investments into profits.
EBIT	2012 – 2013: Covered interest 3 times with earnings. 2014-2016: Covered interest 4 times with earnings.	EBIT ratios show an increase in 2012-2013, followed by stable interest coverage from 2014 up to 2016. Ratios remained below industry norms, suggesting high credit risk.
ROA	-per R1 invested in assets received cents (c) in income. 2012: 0.0946c 2013: 0.1052c	The ROA showed a slight increase from 2012 to 2013, followed by a gradual decline starting in 2014, remaining below industry norms throughout. The increase in ROA between 2012 and 2013 indicated that Steinhoff was generating more profit

Table 6 BPIA Testing Period 2012-2016 (Cont.)

Indicator	Details	Comments
	2014: 0.1037c 2015: 0.0999c 2016: 0.0951c	for each rand invested in assets. However, the decline from 2014 to 2016 suggests that Steinhoff may have over-invested in assets that did not lead to corresponding revenue growth
Level 2 testing can proceed after an in-depth investigation is conducted		
CF:TD	2012: 8 years (1/0.1204) 2013: 7.5 years (1/0.1326) 2014: 5 years (1/0.1827) 2015: 4.5 years (1/0.2205) 2016: 8 years (1/0.121)	The number of years needed to pay off debt decreased, indicating improving debt management, but it is still high
TATO	Every R1 invested in assets received - 2012: R0.96 2013: R1.11 2014: R1.00 2015: R0.77 2016: R0.88	Amount generated from sales. Improvement was observed in 2013, but a slight decline in 2014. Indicates efficiency in using assets for sales. (2012 - 2013) indicated that Steinhoff was increasing in profits with each rand spent on assets.
Overall Findings		Testing in 2015 suggested suspension until the reasons for low ratios were determined. High credit risk was identified, leading to suggestions for Level 2 testing. An abnormal decrease in level 1 testing (2017) followed by an abnormal increase in ratios in 2018 indicated possible accounting irregularities

Source: Cassim (2021)

The BPIA's Efficacy in Identifying Business Continuity Risk

The BPIA can identify business continuity risks effectively. Firstly, the ratios for the period were all at a minimum level, indicating that the company's performance was below average for its industry and that insolvency and bankruptcy may be imminent. The low ratios also reflect Steinhoff International Holdings' financial challenges throughout that time. According to Butters (2019), individuals in charge of governance, analysts, or fund managers could have identified the warning signs that were "blatantly evident" if they had bothered to do their homework. According to Cassim (2021), the low financial ratios highlighted several issues within Steinhoff International Holdings. The Return on Equity (ROE) revealed the company's inability to convert equity financing into profits. The Earnings Before Interest and Taxes Interest (EBITI) ratio indicated that Steinhoff had a significant amount of debt, leaving little money to cover interest payments. The Return on Assets (ROA) showed that the company was unable to generate substantial earnings relative to its assets. The Cash Flow to Debt (CFTD) ratio reflected the poor financial state of Steinhoff, while the Total Asset Turnover (TATO) indicated inefficient use of resources to generate sales.

The results from the financial ratios of all three pillars of financial health in Steinhoff indicate the company was in financial trouble, signifying signs of concern as of 2012. Descriptive statistics are summarized in Table 7.

Table 7 indicates the descriptive statistics, the mean, standard deviation, minimum, quartile 1 to 3, and maximum. The results from the financial ratios of all three pillars of financial health in Steinhoff indicate the company was in financial trouble, signifying signs of concern as of 2012. The BPIA is an effective instrument for measuring the business continuity risk from 2012, and a proactive business continuity plan can be implemented. According to Altunkaynak and Gamgam (2019), quartiles are formed when datasets are divided into four equal sections, with each quarter representing 25% of the entire data.

Table 7 Descriptive Statistics of BPIA

Ratio	Mean	Standard deviation	Min	Q1	Q2	Q3	Max
ROE	18.76	14.41	4.34	10.63	14.15	27.66	33.16
EBITI	3.75	1.77	2.50	-0.29	1.64	3.88	5
ROA	13.91	7.86	6.05	-3.53	5.09	9.87	21.77
CFTD	33.16	23.45	9.71	0.47	12.97	12.97	56.61
TATO	1.9	1.04	0.86	0.97	1.09	1.29	2.94

Source: IRESS BFA McGregor (2022)

The descriptive statistics used (see Table 7) are quartiles. The three quartiles are frequently referred to as Q1, Q2 (the median), and Q3. The quartile analysis of financial ratios reveals critical insights into Steinhoff International Holdings' financial health. The **First Quartile (Q1)** represents the bottom 25% of the dataset, with values such as ROE (10.63), EBITI (-0.29), ROA (-3.53), CFTD (0.47), and TATO (0.97). These figures fall below the minimum benchmark, indicating financial distress. The **Second Quartile (Q2)**, or the median, shows that 50% of the data lies below 14.15 for ROE, 1.64 for EBITI, 5.09 for ROA, 12.97 for CFTD, and 1.09 for TATO. This suggests that half of the company's financial performance in the dataset is performing below the neutral mark, indicating potential financial difficulties, while the other half is either stable or in a grey zone, where the situation is less clear. The **Third Quartile (Q3)** covers 75% of the data, with ratios of 27.66 for ROE, 3.88 for EBITI, 9.87 for ROA, 12.97 for CFTD, and 1.29 for TATO. These figures suggest that three-quarters of the data falls below the maximum threshold, placing most companies in a neutral or "grey zone." As Altman (1968) indicated, companies within this grey zone are at a higher risk of bankruptcy within the next two years. This analysis shows that a significant portion of the dataset reflects financial instability, with a small percentage in a safe, favorable range.

The distribution of the data is shown by the standard deviation. A high standard deviation indicates unreliable data, whereas a low standard deviation indicates more accurate data. The standard deviation (SD) of a set of data indicates how dispersed it is in relation to the mean; the lower the SD, the closer to the mean the data is, and the larger the SD, the further from the mean it is (Cassim, 2021). The smallest difference between SD and the mean in Table 7 is for TATO and EBITI, indicating the least unreliable data; as shown in the Table 7, there is a discrepancy between the SD and all the other means.

Table 8 Results of The EMS for The Ten Years of 2012-2021

Ratios	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
EMS	0.46	0.08	1.71	-0.93	-2.21	5.43	6.32	5.57	5.41	5.35
ZONE	DISTRESS	DISTRESS	GREY	DISTRESS	DISTRESS	SAFE	SAFE	SAFE	SAFE	SAFE

Note: EMS = Emerging Market Score; Source: IRESS BFA McGregor (2022)

Table 8 encapsulates the Altman Emerging Market Score Model (EMS). The EMS model is an internationally renowned bankruptcy prediction model that will applied as a benchmarking measure Swalih at al. (2021). The results of the EMS are illustrated in Table 8.

According to Panigrahi (2019), the Altman zone guideline indicates the following. When the zone is below 1.10 (distress zone), failure is certain. Between 1.10 and 2.60 (grey zone), the company may or may not fail, and lastly, above 2.60 (safe zone) illustrates that the company will not fail. Table 8 indicates that for five years (2012 – 2016) of the 10-year sample, the results indicate that Steinhoff will not fail, followed by four years that show failure is certain for Steinhoff's years (2017, 2018, 2020, and 2021). For one year, 2019, it reveals that Steinhoff might or might not fail.

Table 9 displays the descriptive statistics that will be used for the purpose of this study, which is to compare the efficacy of the BPIA as a business continuity risk measurement instrument to a proven prediction power ability.

Table 9 Descriptive Statistics of EMS

Ratio	Mean	Standard deviation	Min	Q1	Q2	Q3	Max
EMS	2.72	3.22	(2.21)	(0.17)	3.53	5.47	6.32

Source: IRESS BFA McGregor (2022)

From Table 9, it can be observed that the first quartile (Q1) is (0.17), which indicates that 25% of the values in the dataset are lower than those in Q1. This means that the statistics for Q1 are less than 25%, and the values fell below the minimum mark, suggesting that, according to the zone guideline, the company's failure is certain.

It can be observed that the second quartile (Q2 or median) is 3.53, which indicates that 50% of the data falls below the second quartile, which is below the half mark, suggesting that the zone guideline company failure might or might not happen.

The third quartile (Q3) is 5.47, as can be seen, meaning that 75% of the values in the dataset are less than Q3. This indicates that the third quartile statistics are less than 75%, and the results fall within the safe zone as per the zone guidelines, which can be interpreted as the company cannot fail.

Table 10 shows the overall summary outcome of the findings. Presenting the results for both BPIA and EMS, the results are based on a sample of ten years, which is the years under review.

From Table 10, it can be observed that BPIA has a 100% accurate classification and 0% inaccuracy classification rate. This means that the BPIA was able to predict failure 100% accurately and had no inaccurate predictions. The EMS has a 50% accurate classification rate and a 50% inaccurate classification rate. This indicates that the EMS was only able to predict failure at 50% accurately, and for the remaining 50%, the EMS was unable to classify it as failed accurately. According to Khumalo (2023), the CEO (agent) of Steinhoff did not behave in the best interests of the founders (principals) when he advised colleagues to sell their stock before the company's 2017 share price fell.

Table 10 Total Results

Results	BPIA	EMS
Accurate classification	10	5
Inaccurate classification	-	5
Percentage of accurate classification (%)	100	50
Percentage of Inaccurate classification (%)	0	50

The findings of this study agree with the study by Cassim and Swanepoel (2021). The empirical findings revealed that the EMS model correctly classified 20% of the sample, detecting failure or financial distress in two of the five years under investigation, with an 80% misclassification. The BPIA was able to correctly classify financial failure at 40% for a portion of the period under evaluation and 60% accurately classifying for the complete years under study. Hossari (2006), backed by Mthombeni et al. (2021), explains that a correct classification is evidence of the applied instruments' capacity to anticipate the business failure of the studies' data set correctly. There were no misclassifications with the BPIA. Within a South African setting, the BPIA outperforms the Emerging Market Score (EMS), a globally renowned bankruptcy prediction model, in terms of prediction accuracy. According to Correia et al. (2015), the EMS is more accurate at predicting financial accuracy than Altman's earlier models.

Those charged with governance could have taken remedial action or ensured that a business continuity risk plan was in place and that the plan was managed effectively. The BPIA has the following limitations: firstly, it does not take the human element into account, according to Hlahla (2010), endorsed by Hidayati and Triyanto (2020), explains the human elements such as leadership, resources, worker ability, and competency, and employee attitudes. It also ignores inflation (Li, 2020)

Conclusion

The article aims to determine whether the BPIA can be used as an effective business continuity risk measurement instrument. The investigation's findings reveal the following. Firstly, the findings agree with the study by Cassim and Swanepoel (2021). Within a South African setting, the BPIA outperforms the Emerging Market Score (EMS), a globally renowned bankruptcy prediction model, in terms of prediction accuracy. According to Correia et al. (2015), the EMS is more accurate at predicting financial accuracy than Altman's earlier models. The empirical findings revealed that the EMS model correctly

classified 50% of the sample, detecting failure or financial distress in two of the five years under investigation, with a 50% misclassification. While the BPIA was able to correctly classify financial failure at 100%, an accurate classification of the complete years under study is indicated in Table 8. Hossari (2006), in consensus with Mthombeni et al. (2021) and Prechel (2022), explains that a correct classification is evidence of the applied instruments' capacity to anticipate the business failure of the studies' data set correctly. There were no misclassifications with the BPIA. It is theoretically possible to suggest that the BPIA can be utilized as a tool for measuring business continuity after considering these results. The findings of this study have implications for prompt corrective or remedial action by management, as it is critical for business continuity management to have a recovery plan in place for challenging circumstances that a firm may encounter. A company's capacity to carry out critical functions in the event of an emergency or other disruption recovers quickly. By adding to the body of knowledge regarding warnings of financial difficulty, a corporation may ensure that it has a backup plan in place.

Following the descriptive statistical analysis, statistically, the data indicated that most of the ratios fall below the maximum benchmark, indicating that the applied model (BPIA) is a good predictor of Steinhoff's business continuity. The BPIA can be a beneficial and analytical instrument for measuring the degree of business continuity risk. Risk assessment could not be determined during the COVID-19 pandemic, which began in South Africa in March 2020. The pandemic did not affect Steinhoff International Holdings' financial health because Steinhoff International Holdings had already collapsed financially by then (2020 – 2021).

To improve bankruptcy prediction accuracy, it is evident that non-financial factors should be considered to increase the accuracy of bankruptcy prediction. More research may be done to create a bankruptcy prediction model that takes non-financial aspects into account; integrating them with financial elements could only strengthen the prediction model's ability and prediction power. This would address the historical shortcomings of most bankruptcy prediction models, which primarily depend on manipulable financial elements. As with all research, this study is also not void of limitations. Because the BPIA is a ratio-based model, not all signs of financial failure are represented by ratios; as a result, alternative kinds of variables may be a better fit in some situations, such as management's integrity. Additionally, the study is very dependent on the accuracy of the audited financial data that is published on IRESS, and any significant errors or misstatements might skew the statistical results.

Overall, the BPIA results could have influenced the way those charged with the governance of Steinhoff International Holdings made decisions. The recommendation of this study is, therefore, that the BPIA should be included in all industries' annual financial decision-making models.

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Conflicts of Interest

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