

An evaluation of the relative effectiveness of business rescue strategies for declining and distressed industries such as the South African steel industry^{1, 2}

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1. Abstract

When an industry goes into a crisis, the first question that is asked is what causes the crisis, followed by a question of what can be done to save the industry from collapse. This study aims to assess the impact of turnaround interventions used in the distressed South African steel industry. The study demonstrates that business rescue strategies are key enablers for turning around the steel industry from the grips of bankruptcy and transcend towards recovery. Through the lens of the steel industry, the impact of turnaround interventions was assessed by employing an exploratory quantitative research method.

Data from steel companies, business rescue practitioners, and labour unions that are active in the industry, were utilised using a 6-point bipolar rating scale questionnaire. Descriptive and inferential statistical analysis were used to test the study's hypothesis. The statistical results showed a varied degree of association between the different turnaround interventions, which will have policy implications.

2. Introduction

With demise of the feudal socio-political dispensation in Britain and Western Europe and the the emergence of industrialisation, the general populace emerged fromn their serfdom and inexorably became involved in economic activity by means of which to assure their own sustenance and to accumulate wealth. The importance of paid work as a means of economic survival and wealth creation during this time is emphasised by Heitger (2003) when discussing 'classical' economic theory, proposed originally by Adam Smith in his well-known book entitled 'The Wealth of Nations' (1776). Later economic development theorists such as John Mills who published the watershed book entitled 'Principles of Political Economy' in 1848, cited by Jensen

¹ How to cite this paper: Tsebe, A., de Villiers,D., Strydom, J. (2021). An evaluation of the relative effectiveness of business rescue strategies for declining and distressed industries such as the South African steel industry; *PM World Journal*, Vol. X, Issue VII, July.

² This paper is based on research for a PhD thesis at Cranefield College, South Africa by Ms. Andretta Tsebe

(2017:2), suggested that the corollary of the importance of work for the individual, is the optimum utilisation of resources, including that of labour, as the fundamental driver of economic growth and development in any country. The later development of the so called 'mainline theories' of economic development focussed rather on the changing economic environment resulting from the impact of forces such as globalisation, developments in *inter alia* the transport and communications technologies and in more recent time data processing technologies, as the determinant of economic development and growth

A more recent view, expressed by *inter alia* Rustomjee (1993:3), is that one of the enduring axioms of international economic development, is that primary industries are understood to be initiators and drivers of economic development and growth because, (a) they inevitably demand the emergence of so-called 'downstream industries', as well as secondary and tertiary industries that support the optimum performance of their core business and (b) they promote job creation for themselves as well as for the support industries mentioned above, thereby promoting access to employment opportunities for individuals that promotes economic development in the wider community where they live, and by extension also wealth creation for individuals and the society as a whole.

Concomitantly, it is axiomatic that primary industries inevitably require the development of relevant infrastructure with regard to transport and the supply of power and water, that will support their business activities. According to Azolibe and Okonkwo (2020:2) this infrastructure inevitably has to be developed by the governments of the countries where these primary industries are located, as it is seldom viable for the private sector to do so. It is obvious that by stimulating the development of said infrastructure, the primary industry is further promoting economic development and growth in general, as well as job and wealth creation.

The converse of the premise stated above is the theoretical proposition that the socio-economic consequences of the decline or distress of any primary industry are almost never means limited to that industry only, or even to the 'downstream', secondary or tertiary industries related to it, but extent unequivocally even to individual people in the socio-economic environment in which the said industry exists or existed. These socio-economic consequences usually impact even those not directly related to or those dependent on it. This proposition is corroborated by the impact that the distress or decline of business organizations in the iron and steel industry had on the economies of the towns in countries such as the United States of America and the United Kingdom where primary industries went into decline or ended in distress, where primary industries went into decline or ended in distress, and the economic consequences for the people in the local communities of these towns in which these businesses and industries operated.

Equally, the severe negative socio-economic impact of the ailing iron and steel industry in South Africa experienced when Arcelor Mittal closed the Vanderbijlpark mini-steel mill in 2012 and the Vereeniging mini-mill in 2015 when, according to Dondofema, Matope, and Akdogan (2017) 400 employees were retrenched, lost their regular income and were left financially destitute. Equally, Wood and Mashiane (2018) detail the socio-economic impact of the closure of the Cape Town Iron and Steel Works Company in 2010, when 300 employees were retrenched, with the same dire consequences for individual people. Analysts have suggested that these job losses could

have been avoided and the consequential negative socio-economic impact obviated, if the local steel industry companies could have been turned around and rehabilitated to the extent of again being viable, sustainable and globally competitive. Concomitantly, a Solidariteit (2015:4) report states that "...two-thirds of the households in Vanderbijlpark and Newcastle and one-quarter of those in Saldanha are dependent on the local steel industry for their livelihood. If the steel plants were to close, 66% of the labour force in Vanderbijlpark and Newcastle, and 25% of the labour force in Saldanha would become unemployed...".

Despite the negative socio-economic consequences of the decline and distress of a large number of steel companies that were widely reported in the media and academic journals, as well as the ostensible ineffectiveness of the business rescue strategies employed in the steel industry in South Africa to date, little research has been done regarding their impact on the steel industry as a whole or the impact on downstream, secondary industries.

Liebenberg and Spies (1993) note that the establishment of a domestic iron and steel industry in South Africa in 1927 by the then government, in the form of the Iron and Steel Corporation (Iscor in English and Yskor in Afrikaans), was clearly predicated on the abovementioned proposition that primary industries are key drivers of sustainable economic development, as well as on the socio-political policies and objectives that emanated from the following:

- a. Until the early 1930s, the iron and steel needs of South African industry, which included the growing construction and agricultural industries at that time, were satisfied from Britain, which meant that the economic development benefits procured from iron and steel production and beneficiation, devolved to Britain instead of to South Africa points out Pretorius (2014:298).

Faced with a dire need for domestic economic development to support the changing socio-political environment in South Africa in the second half of the 1930s, the establishing of a domestic iron and steel industry in the form of the state-sponsored Iscor organisation was a major step in obviating the dependence on Britain and the building of domestic economic development and growth.

- b. Substantial reserves of the iron ore and other metals required for the manufacture of quality steel, stainless steel and other alloys, had been discovered in South Africa and the local beneficiation of these mineral resources offered substantial development and growth opportunities for the local economy, including for substantial local job creation and skills development, which in turn strongly promoted wealth creation in South Africa.
- c. The political sentiments of nationalism that developed amongst the Afrikaner people against the British colonial rule and the concomitant desire for self-government were leading to a strong anti-British sentiment in a large number of South Africans. Bell (1984:8) and Pretorius (2014:298) indicate a socio-political divide between pro-and anti-British support, specifically in the environment of the growing reality of the looming Second World war in Europe.

The function of primary industry as a promotor of economic development and growth is unequivocally a generally accepted principle for economic development. The recognition and

acceptance of the critically important role of primary industry in the long term and large-scale economic development and growth, brings to light another enduring converse axiom however, that is, as much as the establishment of the primary industry will inevitably promote positive long term and large-scale economic development and growth, the decline and ultimate demise of any existing primary industry will inevitably harm the local and national economy. Similarly, if the said industry is a key factor in the performance of other industries, as is the case with the iron and steel industry, the decline and ultimate demise of such an industry could quite conceivably result in a concomitant decline and if not contained or reversed, in the ultimate collapse of that economy. It is the recognition of this second enduring axiom of economics that has given rise to the construct of business rescue and turn-around strategies, and the related body of scientific knowledge on which this report is predicated.

It is also axiomatic that when a business organisation or an industry goes into decline and eventually into distress, the questions that are inevitably asked by all stakeholders, which includes the public, relate to (a) the causes of the decline or demise and (b) why these causes were not identified timeously, mitigated or obviated by those responsible. In many cases, the said questions include who should be held accountable. These initial questions are usually followed by questions relating to (a) what can or should be done to reverse the decline, (b) how the causes of the decline could be effectively mitigated and ultimately (c) how the imminent demise of the industry can be obviated. It is the propositions emanating from the said questions, that are generally formulated as business rescue or turn-around strategies.

It is common cause that the iron and steel industry in South Africa started going into decline soon after the first democratic government came to power in the wake of the 1994 elections and the change of socio-political and trade policies which the new government introduced in terms of what they referred to as 'market liberalisation', which resulted *inter alia* in the domestic steel industry having to compete with imports from countries in which the competitive industries are heavily subsidised by their governments.

Following the international trend of government response to the decline and distress of a primary industry, the intuitive reaction of the South African government, through its various agencies such as the Department of Trade and Industry, the Development Bank of South Africa, and the Industrial Development Corporation, initially responded to the decline of the South African iron and steel industry by instituting various financial support measures, without properly researching the fundamental causes of the decline and distress of the iron and steel industry. The fact that these measures did not achieve the envisaged outcome of reversing the decline or mitigating the distress of the steel industry in South Africa, promotes conclusion that said rescue and turn-around strategies were not and are still not, effective. Various other strategies, mostly based on financial packages or tax relief allowances, were also introduced without achieving the desired outcome of reversing the decline and mitigating the distress of the industry. At the time of undertaking this investigation, it can be said without fear of contradiction, that the iron and steel industry in South Africa has all but collapsed, in spite of the various strategies employed by the South African government since 1994.

The envisaged investigation was therefore predicated on the perceived need to empirically determine the causes of the decline of the steel industry in South Africa and also to assess the impact of various business rescue and turn-around interventions employed in the steel industry since 1994. Concomitantly, the investigation also aimed at analysing the impact of the strategic decisions made by policymakers regarding the South African steel industry after 1994, compared to the effectiveness of the policies relied on before 1994.

3. The Methodology Used in The Investigation

The investigation aimed at assessing the impact of turnaround interventions that were and still are used in the steel industry, including analysing the impact of the strategic decisions made by policymakers regarding the South African steel industry before and after 1994.

The research methodology decided on was an explorative survey using a questionnaire attached to a quantitative, six interval, bi-polar, Likert-type measurement scale which, according to various academics and research theorists such as Collis and Hussey (2003), De Vos et al. (2005), Welman Kruger and Mitchell (2005), Neuman (2006), and Cooper and Schindler (2011), is generally accepted and widely used as an appropriate research instrument in the social and management sciences. This methodology was used because it was developed to assess the statistical significance of behaviour emanating from the knowledge, experience and perceptions of respondents to a survey questionnaire and has been widely proven to procure scientifically defensible findings and conclusions in this type of investigation. The questions that comprised the questionnaire were developed from the broad spectrum of literature regarding the causes of the decline and imminent distress of companies and industries as well as the effectiveness of various business rescue and turnaround strategies.

Using a non-probability, purposive sampling approach to the selection of a sample of respondents from the defined research population as suggested by *inter alia* Welman, Kruger, and Mitchell (2005), Neuman (2006) and Watkins (2008), a sample of respondents were selected from the defined research population from whom to collect the requisite raw data, consisting of eight (8) of the sixteen (16) executives of steel companies, four (4) of the sixteen (16) business rescue practitioners active in the industry and four (4) of the sixteen (16) labour union representatives, which procured a 33.3% level representativity of the research population, as shown in table 1.

Table 1 Distribution in the research population and sample

Categories	Research population	Respondent sample	%
Steel company executives	16	8	50
Business rescue practitioners	16	4	25
Labour union representatives	16	4	25
Total	48	16	33.3

Whereas thirteen (13) of the sixteen (16) questionnaires that were distributed, were properly completed and returned, resulting in a 27% level of representivity of the original research population, as shown in table 2.

Table 2 Response rate obtained from the research sample

Categories	Research population	Respondent sample	%	Number of sable questionnaires	%
Steel company executives	16	8	50	8	100
Business rescue practitioners	16	4	25	3	75
Labour union representatives	16	4	25	2	50
Total	48	16	33.3	13	27%

Although this level of representiveness allowed the *Prima Facie* acceptance of the representativity of the data, the findings and the conclusion scientific defensibility, the Kaiser-Meyer-Olkin measure of sampling adequacy was used to corroborate this conclusion or not. The finding of a Kaizer-Meyer-Olkin measure of 0.802 against an acceptable adequacy threshold of 0.80, his suggests a confirmation of the sample adequacy and concomitantly the scientific defensibility of the data, findings and ultimately the conclusions that were drawn.

The reliability of the rating scale was determined by the use of the Cronbach’s Alpha methodology which, according to Collis and Hussey (2003), Bryman and Cramer (2005), Neuman (2006), and Cooper and Schindler (2011), procures an appropriate measure of the degree of content and construct reliability of a questionnaire as it indicates the reciprocal inter-dependence of the variables entrenched in the questions comprising the questionnaire. Whereas the Cronbach’s Alpha measures were found to be $\alpha=0.966$ for the financial variables, $\alpha=0.961$ for the non-financial variables and $\alpha=0.964$ for all the variables combined, these findings indicated a substantial level of reliability and validity.

The second analytical methodology that was used to determine either the independence of the variable, that is that there is no causal or interactive relationship between the variables of business distress and business rescue strategy, expressed as a measure of association, was Finally the Chi-square methodology, using the Bartlett’s test of sphericity, was used to determine whether a causal relationship existed between the variables or whether any association was due to chance. The finding of a Chi-square measure of 16.214 suggested that a strong positive causal association were demonstrated between variables and that the association is not due to chance. The findings of significant positive correlation coefficients by using the Spearman’s (Rank Order) Correlation Coefficient methodology also corroborated the finding of correspondence between the variables based on the various business rescue or turn around strategies.

4. Findings Extracted from the Literature

The extensive review of the research findings captured the literature not only served to establish the general academic understanding of the effectiveness of business rescue and turn around strategies, especially in primary industries that are generally understood to be critically important drivers of economic growth and development but also of economic sustainability, but also provided a basis for comparison between the business rescue and turn around strategies employed by the South African government in the ailing steel industry in South Africa and these employed internationally in similar economic and business environments.

It is trite comment that researchers such as Barker and Duhaime (1997), Shein (2011) and Schmuck (2013) recognised that there seemed to be a disparity between management theory and the theoretical dynamics of corporate business rescue and turnaround strategies developed by business rehabilitation practitioners internationally.

Two of the more notable business rescue interventions that have been developed and applied in ailing business organisations, which have incidentally been used in the steel industry and which are often referred to in the literature, are those used in the cases of the British Steel Corporation and the Steel Authority of India. In the 1980s, the British Steel Corporation found itself declining into insolvency and, according to Fair and Raymond (1993), a business rescue process was developed and implemented that (a) decentralised the decision-making at the company's steel mills and (b) introduced various cost reduction and financial austerity measures. A business rescue intervention was implemented at the Steel Authority of India in the early 2000s which, according to Paul (2010), focused mainly on cost reduction measures. Both of these strategic interventions were only partially successful at best.

India and the United Kingdom are not, however, the only countries whose steel sector declined into distress, and even ruin in the recent past. Chinese steel companies, the most noteworthy of which according to Parry and Long (2019) is Chongqing Iron and Steel Company that went bankrupt in 2017, experienced bankruptcies and steel production output challenges in the recent past. Unlike those in the United Kingdom and India referred to above, the business rescue interventions by the Chinese government achieved the desired outcome and the company is reported to become viable within a year and is reported to have achieved a profit in 2018.

Steel companies in Southern Africa such as the Zimbabwe Iron and Steel Company are reported to have declined into distress and having to shut down in 2008 due, according to Chikuhwa (2013), to high levels of debt and operational challenges which obviated its ability to produce steel. After closure of this steel producer the Zimbabwean government went to considerable lengths to revive their domestic steel industry *inter alia* by means of its national industrialisation and trade policies, which can be regarded as being business rescue interventions.

Before a business rescue strategy can be developed and implemented in South Africa, the company must be found to be either declining or in financial distress, as defined in the Companies Act, no.71 of 2008. Section 128(f) of Chapter 6 of the Companies Act (*ibid*) describes financial distress as the reasonable likelihood that the company will be unable to pay its debts within the

six following months immediately following an investigation, or is almost certain to become insolvent within the immediately following six months. Against the background of this legal definition, Tulsian (2002:7) indicates that the financial position and health of a company can be assessed by measuring the ‘solvency ratio’, also referred to as the ‘quick ratio’, which in fact is a reflection of the solvency and liquidity performance of the business. These ratios for the two companies, Highveld Steel and ArcelorMittal, that did publish their annual financial statements for the period between 2007 and 2013, are shown in figures 1 and 2 respectively. The majority of the domestic steel producing companies did not however, publish their financial results in annual reports and therefore information on the solvency ratios of these companies are not available.

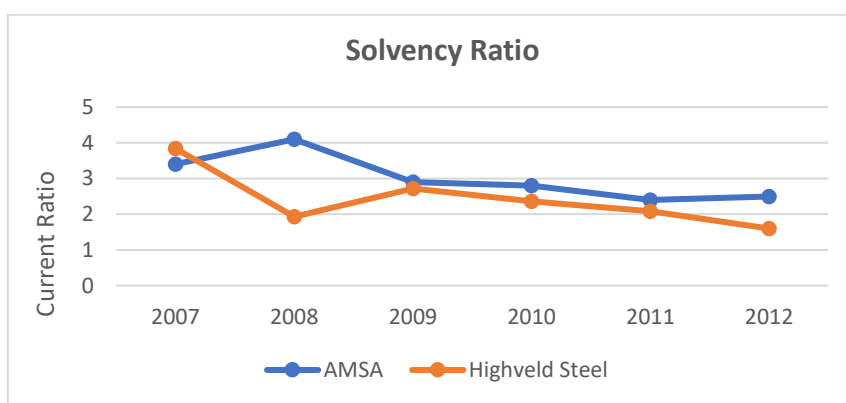


Figure 1 Solvency ratios of domestic steel companies

(Source: The steel companies annual reports)

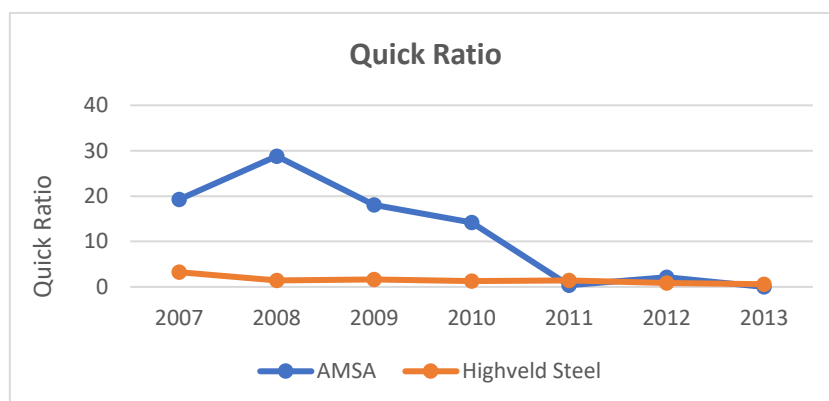


Figure 2. Quick ratios of domestic steel companies

(Source: Steel companies annual reports)

The data in both figures 1 and 2 indicate an overall year-on-year decline in solvency ratios of these two companies, indicating that their short-term liquidity was declining over the specified

period. The higher current ratios for both these two companies in 2007 and 2008, indicate that both companies were almost totally liquid during those two years. This can probably be attributed to the construction projects that South Africa embarked on at the time, including the building of Eskom power stations and the stadiums built for the 2010 Soccer World Cup.

The year-on-year decline in the solvency ratio of Highveld Steel eventually led to the company being declared imminently bankrupt in 2013 and seeking business rescue. ArcelorMittal also mothballed some of its Gauteng mills following a decline in the demand for steel during the same period. The financial performance of these companies and the strategic decisions that were taken, unequivocally had an impact on the economy of the towns where these steel companies were located, as well as on the economy of the country as a whole.

In the context of understanding the dynamics of business decline and distress, Issah (2017) explains that it is imperative that a business organisation must know and understand the micro and macro-economic factors that affect the performance of that business. Similarly, Pandini (2018) explains that all companies are influenced by macro-economic variables and he concludes that industries, such as the iron and steel industries, are directly influenced by the performance and fluctuations in macro-economic variables that are measured as Gross Domestic Product. This logic follows the proposition by Chadha (1989:9) and Ra (2008:2), that there is a direct causal relationship between steel consumption and economic growth, primarily because steel is one of the basic components or building blocks of many, if not all, industries, including but certainly not limited to, the construction industry and the industries that manufacture household machinery and equipment. In support of this proposition, Kapila and Kapila (2007:155) suggest that steel is one of the key sectors of the economy in terms of infrastructure development and therefore that any changes in national economic performance, such as in a recession, could result in volatility of the steel sector. The findings extracted from empirical research data that are shown in figure 3, indicates that between 1960 and 2014 there were substantial fluctuations between the rate of steel production in South Africa and the annual rate of increase in the real Gross Domestic Product.

The fluctuations in steel production over the past five decades correlates positively with the rate of infra-structural investment over the same period, as shown in table 2. This supports the proposition by Yu (2015) that steel is a key feature in economic growth and by Hogan (1999) that its role can be seen in public and private infrastructure investment, including in the average disposable incomes of households. The decline in economic growth between 1977 and 1978 had an immense impact on economic infrastructure investment, which declined by 15.7% during that period. The impact of this negative economic growth and public infrastructure investment on steel production, had a delayed effect as the impact of these factors was not immediately visible.

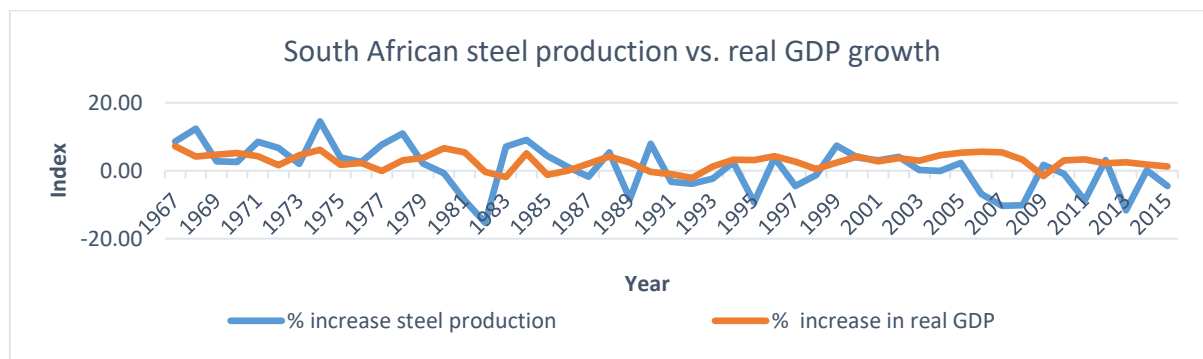


Figure 3. Comparison of the rate of South African steel production versus gross domestic product growth (Source: World Steel Yearbook 1967–2016 and Statistics South Africa)

Table 2 South African real gross domestic product and public sector economic infrastructure investment per capita (Source: Perkins, 2011:2)

Period	GDP per capita, % increase per annum	Economic infrastructure investment per capita, % increase per annum	Domestic steel production, % increase per annum
1961 – 1976	2.2	6.0	6.5
1977 – 1978	-1.0	-15.7	9.3
1979 – 1982	1.5	4.0	-5.7
1983 – 1993	-1.4	-8.1	1.4
1994 – 2002	0.9	0.3	1.1
2003 – 2008	3.2	19.3	-4.1
2009	-2.7	19.5	1.8

Taking into consideration the pattern shown respectively in figure 3 and table 2, of a gradual decline in steel production, it was to be expected that South Africa’s steel production self-sufficiency would follow a similar trend. In this regard, Omoweh (2005) defines the self-sufficiency ratio of a country as a measure of its’ total production capacity, measured against the domestic demand for steel and steel-based products. He proposed the following formula for calculating the self-sufficiency ratio for a country:

$$SSR = \frac{\text{Domestic production}}{\text{Total steel demand (consumption)}}$$

A self-sufficiency ratio of 100 and above suggests a constant and optimum level of steel production, measured against the consumption of steel. This is usually accepted as an indication of an optimum level of economic development and a stable and sustainable steel industry. The self-sufficiency ratios shown in figure 4, indicates that between 1967 and 2015, South Africa had an average self-sufficiency ratio of 146, which means that the country was able to produce sufficient steel and steel-based products to meet the domestic demand and to still have sufficient excess for the exporting of steel.

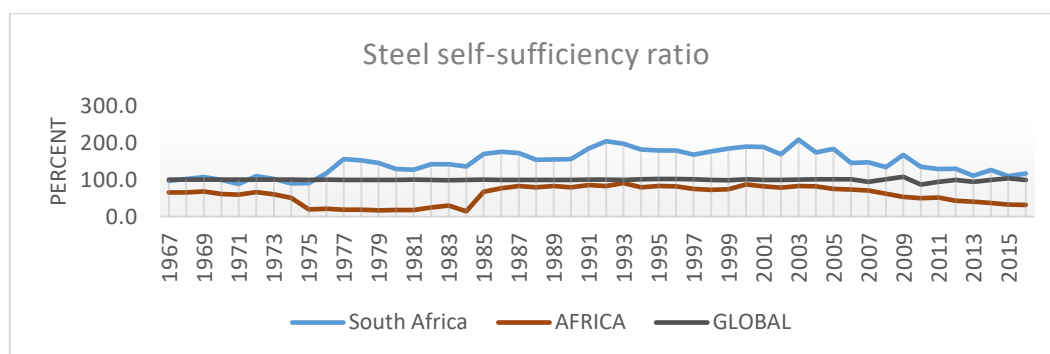


Figure 4 Steel self-sufficiency ratio in South Africa, Africa and globally

(Source: World Steel Organisation, 1967–2016).

By contrast, the African continent as a whole showed an average self-sufficiency ratio of only 59, compared with the threshold of 100 and South Africa’s ratio of 146, which indicates that most African countries were required to import steel from countries with steel export capacity, because their domestic steel production was below their domestic consumption. The data provided by Statistics South Africa confirmed that South Africa was exporting excess steel to other African countries between 1975 and 2015, which shows that South Africa actually dominated the African steel sector during that period.

The market dominance of South Africa’s steel on the continent was based on a steel industry that was dominated by a relatively small number of large steel producers whose operations were established prior to 1994. The South African steel producer’s handbook report (2011) published by the Department of Mineral Resources, indicates that six steel manufacturing companies were working together rather than competing, thereby forming a *de facto* monopoly. These six companies were, ArcelorMittal, Evraz Highveld Steel, Columbus Steel, Scaw Metals, Cape Town Iron and Steel Works and Cape Gate.

This market dominance of the steel companies is explained by Case and Fair (1999) as an imperfectly competitive ability of the companies to raise prices without losing the demand for its product. Therefore, these companies have some degree of price power in the steel industry. The influence over the price of steel was identified following an investigation by the Competition Commission in April 2008 into potential collusion in the steel industry. In support of this premise, Nair (2008), points out that the Competition Commission investigation recommended that the

Competition Tribunal impose administrative penalties against ArcelorMittal-South Africa, Cape Gate, and Cape Town Iron and Steel Works, for fixing the price of steel scrap metal. The three steel companies consequently faced penalties totalling 10% of their annual turnover in South Africa, resulting in a substantial negative impact on their respective revenues.

When companies compete with one another in the sale of an identical final product, where one of the companies has the larger market share of production inputs that is indispensable in the supply of the final product, it creates the problem of how competition in the final product market can be preserved and not tilted to favor either the input materials or the dominant production company. In theory the simple answer is that the production inputs should be made available to all of the production companies, on comparable terms with an appropriate price being charged for it. According to Roberts (2006), the local steel industry enjoyed advantages in terms of input costs such as relatively cheap and readily available raw materials such as steel, electricity, and coal. Schluter (1984) argues that as a result, it could be assumed that the South African steel industry was able to price its steel using the principle of export parity pricing.

From the literature it is evident that South Africa's steel producers did not rely on export parity pricing but tended rather to use the import parity pricing principle. Parr (2005) defines import parity pricing as "...a pricing policy adopted by suppliers of a good for their sales to domestic customers, according to which price is set at the opportunity cost of a unit of an imported substitute good...". The import pricing parity of steel meant that the domestic steel producers fixed prices equivalent to that of similar imported products.

Although South African steel companies had to compete with imported steel for customers, the local price of steel should not have been detrimental to the productivity and sustainability of the downstream manufacturing businesses. Import parity pricing of steel has no advantage to the downstream industries and Black and Hasson (2016) conclude that consumers often bear the brunt of the high commodity prices.

To protect the local steel production industry and stimulate the growth of downstream industries, Howell, Noelert, Kreier, and Wolf (2019), found that between 1964 and 1985 the South African Government maintained control of domestic steel prices with the aim of buffering the inflationary effect of steel price increases on the economy. During the 1960s and 1970s, South Africa's trade policies were characterised by high import tariffs and the protection of local industries. In the early 1990s, South Africa changed to a policy of trade liberalisation and, as a member of the World Trade Organization (WTO), entered into multi-lateral trade agreements with various trading partners. The immediate response to the reduction in steel import tariffs was an unprecedented inflow of cheap Chinese and Indian steel and steel products into the South African market. The trade liberalisation policy resulted in the gradual increase in steel imports shown in figure 5.



Figure 5 South African import and exports of semi-finished and finished steel products

(Source: World Steel Association Annual Performance Reports 1983–2016).

The Department of Trade and Industry’s report to parliament in 2018, indicated that steel imports accounted for 60% of local consumption and that steel imports grew by more than 250% between 2000 and 2016 and furthermore, that South African steel imports from China increased from 12% in 2000 to 54% in 2016.

Imported steel products are taxed by means of a 10% import tariff per kilogram by the South African Revenue Service. The application of an import tariff is allowed in the General Agreement on Trade and Tariffs, of which South Africa is a member. Imported scrap steel and steel powder or granules, however, is not subject to an import tariff according to Section 72 of the tariff book that is administered by the South African Revenue Service.

Article XIX of the General Agreement on Tariffs and Trade allows countries to temporarily raise tariffs for certain products as part of safeguarding fragile industries that are in distress. It is this provision that allowed the United States of America to impose a 25% import tariff on steel imports into America in March 2018, to protect the American steel industry against steel imports from China.

It was reported in the New York Times of the 1 March 2018, that the United States of America was required by the World Trade Organization to apply the same 25% import tariff on all its steel imports from other member countries, including South Africa. South African steel exports to the United States of America were therefore no longer exempt from the 25% import tariff. This blanket approach was informed by the provisions in Article I of the General Agreement on Trade and Tariffs, which indicates that every country that is a member of the World Trade Organization must be treated equally. If an exporting country implements low tariffs for one trading partner, then the said low tariffs must be applied to all member countries of the World Trade Organization in the same sector or industry.

Contrary to expectation, the introduction of import tariffs is yet to show positive results in the sustainability and growth of the South African steel production industry. The Department of Trade and Industry, has introduced strategic interventions embarked upon by the government to rescue the ailing steel industry, issued guidelines in 2012 for companies wishing to apply for grants and

incentives. The impact of the strategic interventions is measured using descriptive and non-parametric statistical analysis.

5. Findings extracted from the empirical investigation

The frequency distribution findings for the perceived effectiveness of the various the business rescue and turn around strategies extracted from the literature and entrenched in the questionnaire are shown in table 3 below. These findings can be interpreted to suggest that the respondents differed substantially with regard to their perceptions of and attitudes towards the relative effectiveness of some of the interventions, as the distribution of the responses to the business rescue interventions showed standard deviation measures in excess of 1.0 ranging from 1.00320 for the variable relating to government equity in steel companies to 1.70970 for the variable relating to the availability and cost of rail and port facilities.

A comparison all the distributions for the various business rescue interventions showed unequivocally that the variable relating to the Manufacturing Competitive Enhancement Programme, shown as the MCEP, was perceived and thought to be the most effective business rescue intervention used in the ailing steel industry in South Africa after 1994, showing the highest mean value of 4.65.

Conversely the intervention promoted by the World Trade Organization and supported by the South African Customs Union showed the lowest mean value of 3.42 and must therefore be considered the least effective business rescue intervention as a means to rescue the ailing steel companies and to reverse the decline of the steel industry as a whole.

Table 3 Summary of the perceptions of the respondents of the effectiveness of the various business rescue strategies and interventions procured from the empirical findings.

	N	Minimum	Maximum	Mean	Std. Deviation
MCEP	13	3.00	6.00	4.6538	1.14354
I21Tax	13	3.00	6.00	4.5385	.85297
Private equity	13	3.00	6.00	4.4231	1.09632
EMIA	13	3.00	6.00	4.4231	1.09632
Company trade agreements	13	2.00	6.00	4.3077	1.33133
IDC	13	2.50	6.00	4.2308	1.16575
IDZ	13	3.00	6.00	4.1923	1.03155
10 -year visa	13	2.00	6.00	4.1538	1.26466

DST	12	2.00	6.00	4.1250	1.29904
Rail and port	13	1.00	6.00	4.1154	1.70970
On-the-job training	13	2.50	6.00	4.0769	1.27224
MIP	13	1.00	6.00	4.0769	1.25576
Import duty	13	1.00	6.00	4.0769	1.52543
Bursaries	13	3.00	6.00	4.0385	1.23257
Corporate bonds	12	3.00	5.00	3.9583	.72169
Government equity	13	3.00	6.00	3.8846	1.00320
Rescue laws	13	2.00	6.00	3.8462	1.12518
Country bilateral trade agreements	13	1.00	6.00	3.5769	1.28851
WTO SACU	13	1.00	6.00	3.4231	1.60528
Valid N (listwise)	12				

5.1 The I21 tax relief business rescue intervention

The I21 tax rescue intervention scored the second-highest mean in its frequency distribution with a value of 4.53 and a standard deviation of 0.85 which being less than 1.0 indicates a strong correlation of the knowledge, experience and perceptions of the respondents to the effectiveness of this business rescue intervention. This finding is supported by the findings shown by the Kruskal Wallis test which shows with a finding of 0.26 where the threshold is 0.50 that the respondents do not differ significantly in their views of the effectiveness of the intervention. These findings are supported also by the results of the Spearman's methodology which showed correlation coefficients of -0.306 at a level of significance of 0.309 between the views of the respondents. The latter findings show that respondents with less years of experience and lower education are not as strongly convinced of the effectiveness of this rescue intervention, compared with those of longer experience and a higher level of education.

Whereas section 128(1)(b) of the Companies Act (op cit.) allows a company in substantial decline or dire distress to restructure its debt, equity, properties valuations and its other assets, accessing a rescue intervention such as the 121 tax relief concession suggests financial relief in terms of both short and long term tax obligations that are deferred and according to Agar (2005), and should have an immediate and positive impact on its cash flow. A rescue intervention such as the 121 tax relief must of necessity reverse, or at least slow, the financial decline of the company.

The literature shows however that ArcelorMittal is the only steel company reported to have been granted the I21A tax relief financial incentive.

Whereas an intervention such as the 121 tax relief concession is a short term solution to financial decline or distress, owners and managers of an ailing company need to realise that the business possibly needs to be restructured in terms of its assets and liabilities, in order to mitigate *inter alia* the company's tax future tax obligations in terms of the Income Tax Act, no. 58 of 1962.

It is common cause that the South African Revenue Services is clearly one of a company's creditors and section 145(1) of the Companies Act (op cit.) provides that the creditors of business must be consulted and must be part of the business rescue process, it is axiomatic that not consulting creditors such as the revenue service will inevitably jeopardise the rescue process.

This suggests that the effectiveness of a business rescue intervention such as the 121 tax relief concession may be determined by the way the executive of a distressed business applies it, rather than the nature and content of the strategy itself. In this context it is unequivocal that the I21A tax relief incentive can be effective in improving the financial situation of a declining or distressed company and therefore that it must be understood to be an effective rescue strategy in many, if not most situations where an ailing business organisation needs to be rescued, conditional on it being implemented correctly and used for the purpose for which it was intended, that is, to rescue the business and not just to alleviate the financial situation in the short term.

It is trite however that there is limited jurisprudence relating to how the South African Revenue Service must be included in the business rescue process. This reality suggests that some of the recommendations emanating from this investigation should be (a) that the agencies of government who recommend rescue interventions for a business in distress, should be to develop detailed action plans for the implementation of the rescue intervention and (b) that said agencies should themselves become directly involved in the implementation of the intervention. This second recommendation is motivated by the matter of Makhura Logistics Pty Ltd (2012) that insisted that the revenue services must not to be treated as a priority creditor, ostensibly in order merely to obviate their recovering outstanding corporate tax.

5.2 Export marketing and investment assistance business rescue intervention

The trade liberation policies that were introduced by the government in the mid-1990s resulted in the removal of import-substitution measures used to by the previous government to protect domestic industries against highly subsidised foreign imports and (b) to underpin the local economy. The abovementioned trade liberalisation policies were ostensibly designed to promote the export of South African products and were supported by the introduction of the Export Marketing and Investment Assistance (EMIA) fund, which subsidised the cost of marketing locally produced products and services as well as the cost of exporting said products and services. The envisaged outcome of this intervention was to increase the revenue received from the sale of export products, which would *inter alia* support South Africa's balance of payments, which according to Loots and Bruggemans (2012) comprises the inflows and outflows of money

in the country and Anderton (2006) can be understood to consist of the visible component in the form of imported raw materials and manufactured goods and the invisible component in the form of services as well as insurance and banking transactions.

According to the report by Statistics South Africa for the period between 2018 and 2020:

- i. The index for the export of basic iron and steel, decreased by 11.9% between April 2017 and April 2018, and the export index for iron and steel products increased by 2.6% during the same period.
- i. Between April 2018 and April 2019 the basic iron and steel exports increased by 10.2% and steel and iron products decreased by 2.4%.
- ii. Between March 2019 and March 2020, the basic iron and steel exports increased by 3.9% and steel and iron products decreased by 7.6%.

These findings suggest that the export of basic iron and steel benefited from the export marketing and investment assistance subsidies, while the export of steel and iron products were negatively impacted by these subsidies. The effect of the subsidies can therefore be said to have changed the focus in the steel industry to the export of steel as a raw material at the cost of the local iron and steel beneficiation industry. Whereas the beneficiation of raw materials is commonly accepted as a primary employment and wealth creator and a substantial promotor of economic growth and sustainability, the conclusion must be that this policy and strategy, in fact had the opposite effect to what was envisaged.

The finding of a mean score of 4.42 of the frequency distributions and standard deviation of 1.09 suggest a statistically significant similarity between the views expressed by the respondents. Similarly, the findings procured by the Kruskal Wallis test of a measure 0.122 against the threshold of 0.05 supported this conclusion that the respondents seem to be in substantial agreement with regard to their views about the probable effectiveness of the export subsidies, which is shown not to have been achieved in the import and export statistics reported above. Findings achieved by means of the Spearman's correlation coefficient methodology of a coefficient -0.269, at a 2-sided significance level of 0.374 suggest that respondents with longer practical experience were less confident of the effectiveness of export subsidies as a business rescue intervention and also a coefficient -0.089, at a 2-sided significance level of 0.76 suggest that respondents with a higher level of education were less confident of the effectiveness of export subsidies as a business rescue intervention.

These findings suggest that policy formulation and business rescue strategies should rather be entrusted to persons with a higher level of education and longer periods of practical experience in business management, especially if the said policies and strategies need to reverse declining and distressed business organisations in the long-term interest of national economic growth and sustainability.

5.3 Industrial development zone incentives as a business rescue intervention

The industrial development zone program of incentives was introduced by the South African government (dti website:2021) with the aim of promoting the competitiveness of domestic industries by attracting foreign direct investment in export-orientated manufacturing industries and thereby promoting the export of locally produced goods and products. Although there is currently no industrial development zone program dedicated specifically to the steel manufacturing industry, the Arcelor Mittal plant at Saldanha Bay is located within the Saldanha Bay industrial development zone, which is part of the industrial development zone program in South Africa. This suggests that Arcelor Mittal plant at Saldanha Bay should have benefitted by the said incentives programme.

The annual reports of Arcelor Mittal at Saldanha Bay indicate that, as this plant was established in 1998, predating the creation of the Saldanha Bay Industrial development Zone by the Department of Trade and Industry in 2012, the incentives implied in this incentive programme did not accrue to Arcelor Mittal although it was already in financial distress and announced in November 2019 that it envisaged closing down the Saldanha Bay plant.

With regards to the descriptive statistical analysis conducted on the effectiveness of the industrial development zone incentives, the outcomes showed a mean score of 4.19 and standard deviation of 1.03, which indicated that the research respondents had high confidence in the ability of the incentives to make a positive contribution as a rescue intervention. The outcomes of the Kruskal Wallis test showed that the research respondents did have significant differing views on the effectiveness of the incentives, as it scores 0.018 against the test significance threshold of 0.05, the business rescue practitioners were the least optimistic as compared to the managers of the steel companies and the representatives of the labour unions.

The findings of the statistical analysis of the raw data indicated a significant dissonance between the views of the respondents regarding the effectiveness of this said programme of financial incentives, with respondents with a lesser level of education and fewer years of practical business experience being more positive with regard to the probable effectiveness of the strategy of financial subsidies, than those with a higher level of education and more practical experience. This also promotes the conclusion that the development and implementation of policies and strategies should be entrusted to persons with an adequate level of education and substantial practical business experience, although all the respondents seemed to be positive about the concept of industrial development zones and related incentives.

5.4 Manufacturing investment programme incentives business rescue intervention

The manufacturing investment program was introduced by the South African government in 2008 with the aim of supporting new and the expansion of existing manufacturing projects owned by small and medium enterprises (dti 2017/18 annual report). The programme comprises a cash reimbursement or grant of up to 30% of the value of investment funds that were used to establish

or expand infrastructure. According to the National Small Enterprises Act, no. 29 of 2004, small and medium enterprises in the manufacturing sector are defined as the following:

“... medium enterprises are enterprises with 250 employees and an annual turnover of R170 million...”

“... small enterprises are enterprises with 50 employees and an annual turnover of R50 million...”,
and

“... micro-enterprises are enterprises with 10 employees and an annual turnover of R10 million...”

None of the six steel manufacturing companies in the country is classified as small or medium enterprises, as they have employees of more than 250 people, with Arcelor Mittal having 9000 employees and revenue of R25.5 billion in 2017 from their Vanderbijlpark operations and Scaw Metals having more than 2000 employees. Therefore, none of the steel manufacturing companies qualified to receive the investment grant from this program, and the fact that the respondents in this investigation appeared to be positive about its effectiveness as a business rescue strategy and intervention, is spurious at best.

5.5 Government equity as a business rescue strategy and intervention

Government equity injection into a company can either come straight from the fiscus or from a state-owned financial institution such as a developmental financing institution. Khadiagala (2015) states that during the apartheid era, developmental financial institutions funded projects in public and private companies, and they have continued to do so after 1994. The Industrial Development Corporation is one of the state-owned developmental financial institutions that was created to provide financing through debt alleviation or equity injection for projects in the industrial manufacturing sector. With regard to the steel industry companies, it is common cause that the Industrial Development Corporation owns a 74% shareholding in Scaw-Metal and owned a 24% shareholding in Columbus Stainless steel before it was closed down due to insolvency. It is unequivocal that this injection of capital by means of acquiring equity in these steel companies contributed substantially to the successful operational performance and financial sustainability of said companies and made the development of new products and production programs viable until recently, and that the recent decline and ultimate distress of these companies are due inter alia to (a) extraneous market forces and (b) a change in government policy that failed to mitigate these extraneous market forces.

It is trite comment that the findings procured by the statistical analysis of the raw data emanating from the responses to the survey questionnaire, shows unequivocally that the respondents were almost totally *Ad Idem* that government equity injections in business organisations even prior to decline or distress for the purpose of expansion programmes that could assure viability and sustainability as well as making a substantial contribution to the growth of the national economy, including companies in the steel industry, has been shown to be a very effective business support strategy, in addition to being a very effective business rescue strategy in a situation of decline or imminent distress.

5.6 Private equity as a business rescue strategy and intervention

Companies usually access capital from the private sector or private individuals, by offering shares that can be purchased that are listed on the stock exchange or that are unlisted and privately held. Vishwanath (2007) argues that industrial and commercial companies often prefer to remain unlisted as listing dilutes executive decision-making as shareholders of listed companies have, by law, to be consulted on strategic business decisions. Conversely, Vishwanath suggest that companies that go public do so in order to facilitate possible mergers or acquisitions in order to access additional capital and often to assure market synergy.

In the South African steel industry, only Arcelor Mittal is listed on the Johannesburg Stock Exchange, enabling access capital by means of new share issues on the stock exchange. Unlisted steel companies are obliged to on the injection capital by their shareholders. The following are the reported private shareholdings in these unlisted steel companies.

- i. 21% of shares in Scaw-Metals are held by a Broad-Based Black Economic Empowerment (BBBEE) consortium;
- ii. 100% of the shares of the Cape Town Iron and Steel Company are held by DTH holdings, which is a Turkish company.
- iii. 76% of the shares of Columbus Stainless-steel are owned by a Spanish company called Acerinox.

The fact that the above-mentioned companies have remained financially viable and sustainable, have apparently not gone into decline like many of their competitors and have declared imminent bankruptcy and have not needed to file for business rescue, is widely attributed to the fact that their total equity is held by individuals and private companies who injected capital funds, when financial decline and imminent distress became apparent.

The above mentioned widely held view regarding the critical important role of private equity in assuring company viability and sustainability is borne out by the findings procured from the statistical analysis of the raw data collected in this investigation, which showed a mean score of the frequency distributions of 4.42 and standard deviation of 1.09, indicating a very substantial similarity of the opinions of the respondents regarding the importance of private equity, also in steel producing companies. A finding of a Kruskal Wallis index of 0.084 at a significance threshold of 0.05 corroborates the above-mentioned findings and this is also supported by a findings of a Spearman's Correlation Coefficient of -0.274 and a 2-sided significance level of 0.366.

These findings again support the conclusion drawn with regard to the abovementioned business rescue strategies that respondents with a more extensive practical business management experience, specifically in the steel industry, appear to have a better grasp of the critical importance as well as the effectiveness of private equity in companies as a means of assuring business viability and sustainability, and concomitantly as a business rescue strategy and intervention.

5.7 Corporate bonds as a business rescue strategy and intervention

The mechanism of corporate bonds enables companies to raise capital from the debt markets without changing the ownership, shareholding or the management of these companies. Depending on the risk and debt profile of the companies, investors buy corporate bonds with an expectation of a predetermined return on investment. According to the Johannesburg Stock Exchange report on the debt market (2014), the first corporate bonds were issued in South Africa in 1992 by the South African Breweries and that more than 1500 corporate bonds are listed on the stock exchange debt market at present.

None of the steel companies have corporate bonds registered on the Johannesburg Stock Exchange debt market. Arcelor Mittal has corporate bonds listed on the Luxembourg Stock Exchange however, with maturity dates ranging from 2020 to 2041. The effect of corporate bonds on the South African steel companies is unknown, though the findings of this investigation indicate that the research respondents have a positive view of the probable effectiveness of this mechanism as a business rescue strategy and intervention for the domestic steel industry.

This conclusion is supported by a finding of a mean value of the frequency distributions of 3.88 and standard deviation of 1.0, a Kruskal Wallis index of 0.057 against the test significance threshold of 0.05. The Spearman's correlation coefficient of -0.135 and a 2-sided significance level of 0.675.

The findings again show that practical business experience and a higher level of education levels, result in a better understanding of the value of corporate bonds in assuring the financial viability and sustainability of a business organisation and concomitantly as a possible rescue strategy in a situation of business decline or distress.

5.8 The manufacturing competitiveness enhancement program as a business rescue intervention

The Department of Trade and Industry launched the manufacturing competitiveness enhancement program in 2012, with the aim of increasing the local and international competitiveness of domestic manufacture companies. The programme provides support for economic activities that are listed under the Standard Industrial Code. number 3. Whereas the manufacturing of basic steel and iron is listed under standard industrial code number 351, is only considered for funding under this program if the applicant company can demonstrate that a manufacturing programme will create jobs in the downstream sector and that the company is experiencing cyclical financial distress.

None of the steel manufacturing companies are reported to have received grants in terms of this initiative, although the Minister of Economic Development mentioned in a budget speech on 21 April 2016 that Arcelor Mittal would invest R4.6 billion over a period of five years to improve the operational performance of their steel mills but little reference to the manufacturing competitiveness enhancement program was made and this remains unclear.

In spite of the findings of the statistical analysis of the data collected during the investigative survey that indicated relatively strong support for the effectiveness of this strategy and intervention as a business rescue, the fact that only respondents from the steel industry provided the data that was analysed and the fact that no steel producing or manufacturing company had been subjected to this business rescue strategy, suggests that the support for the effectiveness of this strategy and intervention is almost entirely based on the general knowledge and experience of business of the respondents and that these findings must be considered to be rather spurious

5.9 The export credit and insurance facilities offered by the Industrial Development Corporation and other banks as a business rescue intervention

The Department of Trade and Industry established an export credit and insurance corporation that provides credit and insurance facilities to companies doing business beyond the borders of South Africa via the Industrial Development Corporation and the major commercial banks. Ostensibly the envisaged benefits of this facility is similar to that of the Export Marketing and Investment Assistance Scheme, to wit, to promote the exports of products manufactured in South Africa, which includes of steel and steel products. Barratt, Brand, Collier and Glaser (2016) suggest that the Industrial Development Corporation plays a key role in promoting investments in neighbouring countries inter alia by means of this export credit and insurance facility which is underwritten by the South African government.

Whereas the literature shows that the exports of steel and steel products declined over the past decade it must be concluded that this export credit and available insurance facilities failed to achieve the purpose for which it was introduced.

The findings obtained by the statistical analysis of the raw data collected during the investigation indicated that this export credit and insurance facility is perceived, at least theoretically or conceptually and specifically by respondents with longer practical experience of business management and with higher levels of education to be potentially effective in achieving the purpose for which it was introduced, and by extension to potentially be an effective business rescue strategy and intervention.

This conclusion drawn from the findings is predicated on the finding of a mean score of 4.23 and a standard deviation of 1.165 extracted from the frequency distributions. This supported by a Kruskal Wallis measure 0.025 at the test significance threshold of 0.05 and a Spearman's Correlation coefficient of -0.078 and a 2-sided significance level of 0.80.

5.10 Steel import duty as a business rescue intervention

Whereas South Africa successfully used import duties on imported products to protect domestic production against highly subsidised similar products from international competitors and these duties were scrapped when the present government changed its policy to promote trade liberalisation, ostensibly with serious negative results, specifically in the steel industry, the government again introduced a 10% import duty on imported steel products in October 2018 with

the intention of protecting the domestic steel industry and reducing the importation of steel and the steel products. The effectiveness of this import duty in reversing the decline in the domestic steel industry, is yet to be published.

The finding of a mean score of 4.07 and a standard deviation of 1.52 from the frequency distributions of the responses to the questions relating to the effectiveness of import duties as a business rescue strategy, suggests that the respondents perceive this strategy to be effective, at least potentially, which in turn suggests that the unreported outcomes of the introduction of import duties between 2018 and the present, has been positive and beneficial. This deduction allows the expectation that when steel imports are reported in the near future, this strategy will be shown to have been effective. A Kruskal Wallis measure of 0.019 at a test significance threshold of 0.05, and a Spearman's Correlation Coefficient of 0.161 and a 2-sided significance of 0.600, serves to support this supposition.

As with all the previous reported findings extracted from this investigation, the findings obtained for this strategy shows the respondents with longer practical experience and higher levels of education returned a more positive perception, and ostensibly a better understanding, of the effectiveness of import duties in protecting domestic production against highly subsidised competitive imports, and concomitantly their effectiveness as a business rescue strategy and intervention.

5.11 On-the-Job training as a business rescue intervention

It is an axiom of the management sciences that both proper and relevancy theoretical or academic and practical training, is an essential differentiator in the management of business organisations. It is perhaps this generally held view that gave rise to the idiom which suggests that "...If you think the cost of training is too high, then consider the converse cost of ignorance and lack of appropriate skills...". It is also ostensibly the understanding of the critical importance of adequate relevant formal training and experiential learning, characterised as simply as experience, in the successful management of business organisations that caused the international popularity of academic training programmes at universities such as the Masters degree in Business administration or leadership, respectively characterised as the MBA or MBL.

On the job training, one version of experiential learning, is perhaps one the oldest of training given consisting of a trainer or a mentor teaching a trainee or learner to perform a certain task which suggests that this type of training is largely skills oriented, although it is trite that even skills training requires the acquisition of some theoretical or academic knowledge. Swanepoel, Erasmus, Van Wyk and Schenk (2003) says that on-the-job training can be categorised as either structured or unstructured informal learning. It is axiomatic that the ultimate aim of training is the acquisition of the knowledge and skill required to perform certain functions or activities.

Although no specific on the job training strategy has been developed or implemented by the government with regard to assuring the continued viability and sustainability of any industries, including the steel industry, or related to the reversal of the decline or distress of any industry, the government does promote training of all sorts by way of the Sector Training Authorities,

characterised as the SETAs and the National Qualifications Framework. All business organisations are required to contribute to the National Skills Fund which finances the SETA system and are then reimbursed for all accredited training that is given to employees in their business organisation and also to job seekers.

A finding obtained from one of the biographical questions is that 46.15% of the respondents had received only on the job training while 38.5% indicated that they had received both relevant academic and on the job training, suggesting that 84.5% of the research respondents had received on the job-related training of some sort. From this it could be concluded that a substantial majority of the respondents should have been competent to manage the steel companies where they are employed and therefore that the decline or distress of their employer companies is probably not the underlying cause of the decline or distress, but this is probably a spurious finding.

The findings obtained from the statistical analysis of the responses of a mean score of 4.07 and standard deviation of 1.27, supported by a Kruskal Wallis measure of 0.028 at a significance threshold of 0.05, and a Spearman's Correlation Coefficient of 0.920 at a 2-sided level of significance of 0.764, allows the conclusion that the respondents perceive on the job training as a critically important differentiator for the successful management of a business, specifically of a steel production company and also that it is, at least potentially, an effective strategy for arresting and reversing the decline or obviating the distress, in a business organisation as well as in a steel production company.

Once again, the findings obtained from the investigation shows that respondents with longer experience of the management of a business organisation and with a higher level of education, have a more positive perception of the effectiveness, even if only potentially, of training in general and on the job training specifically, as a management and by extension also a business rescue strategy and intervention

5.12 Bursaries offered by the steel industry as a business rescue intervention

According to Muchaonyerwa and Choga (2015), labour productivity is an important indicator in the economic business cycle as it predicts the economic outlook of the country. They suggest that if labour productivity decreases, the likelihood is that the economy, and specifically the manufacturing industry will also contract. This premise promotes the understanding that investment in human capital by way of bursaries given to both employees and job seekers, will lead to the increase in the production capacity and yields, specifically in the steel industry, which can mitigate any forces negatively impacting *inter alia* steel production outputs.

This proposition is predicated on the assumption that the said Investment in human capital will increase the skills level and competence of the employees which in turn will result in an increase in labour productivity. According to the annual reports of Arcelor Mittal, the revenue per employee did not change significantly between 2007 when it was R3217-00 and 2012 when it was R3352. A similar trend was reported by Ezrav Highveld Steel showing R1 903 in 2007 and R1 948 in 2012. This apparent stagnation in labour productivity suggests that there was little, if any, investment in human capital that improved the skills levels, skills mix or job-related competencies

of labour in the steel production industry in South Africa. This raises the question whether the general decline of the steel industry and the unequivocal distress of many of the steel producing companies could have been avoided if these companies had invested substantially in human capital by engaging in more training in general, including business management training and development and also more job related skills development, but this question is moot because the amount, extent and type of training that was in fact undertaken by the respective steel production companies was not reported and is therefore unknown.

The abovementioned suppositions regarding the positive impact that proper relevant training, and specifically on-the-job and job-related training, is strongly supported by the findings obtained from the statistical analysis of the raw data. The findings related to the perceived effectiveness of industry bursaries as business rescue strategies and intervention show a mean score of 4.03 and a standard deviation of 1.23 for the frequency distribution of the responses, a Kruskal Wallis measure of 0.035 at the significance threshold of 0.05 and a Spearman's Correlation Coefficient of -0.054 at a 2-sided level of significance of 0.860 promotes the deduction of positive perception amongst the respondents regarding positive contribution to towards increasing productivity in steel production companies of relevant, job related training.

The test findings indicate that respondents with a few years of working experience are not able to comprehend the benefits of companies giving bursaries as a business rescue strategy. The education level of the respondents and the bursaries as business rescue strategy showed a minor weak positive relationship. The outcomes of the test indicated a correlation coefficient of 0.114 and a 2-sided significance level of 0.711. This test finding shows that the more educated the respondents are, the more likely they are to understand the impact of bursaries on the future sustainability of their companies.

5.13 Company-to-Company trade agreements as business rescue interventions

The company-to-company partnerships in the steel sector can be categorized as either transactional or strategic trade agreements, either between raw material suppliers and the steel manufacturers, or between steel manufacturers and downstream metal fabrication companies or industries. Such partnerships are usually established by means of formal contractual agreements which, according to Van der Merwe, du Plessis and Zimmerman (2004), rely on law of the contract to govern the relationship. If the partnership involves a credit arrangement between the partners, the contract must include the provisions in the National Credit Act, no. 34 of 2005. If the partnership involves the supply of raw materials or semi-finished materials, the contract should include of the regulations from the Consumer Protection Act, no. 68 of 2008.

As the Companies Act (op cit.) does not require the publication of the names of the companies that entered into such contractual relationships, there is no record of contractual relationships between companies in the steel industry and any other companies.

The finding of a mean score of 4.3 and a standard deviation of 1.33 obtained from the frequency distributions of the responses to the investigative survey, supported by a finding of a Kruskal Wallis measure of 0.019 at the significance threshold of 0.05 and a Spearman's Correlation

Coefficient with a 2-sided level of significance of 0.308, suggests a positive, although perhaps marginal, perception of the effectiveness of said trade agreements in the management of business organisations, the assurance of continues business viability and sustainability and by extension as a business rescue strategy and intervention.

Whereas these findings were procured mainly from respondents with longer practical experience and a higher level of education, and also because they reflect a reception emanating from a general knowledge and experience of business rather than factual knowledge regarding the steel industry because there are no reported trade agreements in this industry, these findings must be regarded as being rather spurious.

5.14 Business rescue law as a business rescue intervention

It is trite that business rescue is provided for only in Chapter 6 of the Companies Act (op cit.) and that these provisions pertain largely to companies that are not able to meet their short-term debt obligations and other liabilities due to financial distress. To date Ezrav Highveld Steel is the only steel manufacturing company that has engaged in a formal business rescue in terms of these provisions and that could resume operations as their decline was reversed, indicating that the said legal provisions were successful as a business rescue intervention. The fact that other steel companies engaged in such business rescue strategies without achieving the same success suggests that either other business forces obviated the successful rescue and reversal of the decline, or that the legal provisions were mis-managed or the rescue process abused.

The findings of a mean score of 3.84 and standard deviation of 1.125 obtained from the frequency distributions, a Kruskal Wallis measure of 0.035 at the significance threshold of 0.05 and a Spearman's Correlation Coefficient of 0.054 at a 2-sided level of significance of 0.861 suggests that a large majority of the respondents have a positive perception of the effectiveness of the provisions of the law as a business rescue strategy and intervention.

5.15 The 10-year business investor visa as a business rescue intervention

The Immigration Act, no 13 of 2002 provides for foreigners to be granted a business visa to invest or establish a business in South Africa, with multiple entries into South Africa for a period of 10 years. The aim of this provision is ostensibly to motivate an inflow in foreign direct investment into the country and specifically in the domestic steel industry. In 2018 there was foreign investment from Turkey in the form of R550 million that was invested in the Cape Town Iron and Steel Company by a Turkish company called DTH holdings. This investment allowed for the company to refurbish its steel-making equipment and said resume operations, indicating that this business visa was effective in sustaining this one local steel company, which shows unequivocally that this rescue strategy does have the potential to be an effective business rescue strategy. While this supposition is undoubtedly valid, the effectiveness of this business rescue strategy will only be proven beyond doubt if it was applied in different steel manufacturing companies with different business dynamics in a different business environment.

The findings obtained from the statistical analysis of the frequency distributions of a mean score of 4.15 and standard deviation of 1.26, being the second highest mean of all the strategies among

the non-financial variables, indicating that the respondents perceived this strategy to be very effective rescue strategy. This supported by the finding of a Kruskal Wallis measure of 0.036 at the significance threshold of 0.05 and a Spearman's Correlation Coefficient of 0.129 at a 2-sided level of significance of 0.674.

5.16 Inter-country bilateral trade agreements as a business rescue strategy

South Africa has trade agreements with countries that are members of the World Trade Organization as well as regional economic blocks such as the European Union and the Economic Community of West African States. These trade agreements relate to the export and importing of goods and services related to various economic activities. According to the April 2020 statistics publication by the South African Revenue Services, the top five countries that South Africa exports goods to are China (14.9%), United States (8.3%), United Kingdom (5.8%), Netherlands (5.1%) and Japan (5.1%).

The trade balance reports published by the South African Revenue Services show the following iron and steel products export figures from South Africa:

- i. Total exports in 2015 of a custom value of R36 billion;
- ii. In 2016, the total customs value of R44.8 billion;
- iii. In 2018, the total customs value of R43.1 billion; and
- iv. In 2019, the total export custom value of R39 billion.

These reported export figures for the period between 2015 and 2019 show that there was virtually no growth in the monetary value of iron and steel exports to the countries that have trade agreements with South Africa, which puts to question the effectiveness of said trade agreements as a means of supporting economic growth and sustainability in general. Similarly, the widely reported decline and distress of almost the whole of the iron and steel industry in South Africa over the last few decades, especially during the period referred to above, shows unequivocally that these bi-lateral agreements failed also to enhance or even to support the continues viability and sustainability of steel industry in South Africa.

The findings obtained from the statistical analysis of the data procured from the responses to the survey of a mean score of 3.57 and a standard deviation of 1.28, being the lowest mean obtained for all the non-financial variables suggest that the overall perception is that these trade agreements have little benefit for the domestic steel industry and are ineffective as a business rescue or turnaround strategy. This finding is supported by a finding of a Kruskal Wallis measure of 0.074 at the significance threshold of 0.05 and a Spearman's Correlation r Coefficient of -0.06 at the 2-sided level of significance of 0.845. It is significant that even those respondents with longer periods of practical experience of business management and a higher level of education, suggesting a more in-depth understanding of business management economic, consider said trade agreements as effective business management mechanisms or business rescue strategies.

The spurious conclusion that may be drawn from this is that trade agreements are probably better political instruments than economic or business support mechanisms.

5.17 Tariffs restructuring framework within the World Trade Organisation and Customs Unions as a business rescue intervention

In 2012, the Department of Trade and Industry developed a strategy for reforming the tariff structure developed by the World Trade Organization and calling it the Trade Policy and Strategy Framework. The framework creates tariff reforms for each sector of the economy, taking account of the needs and challenges of that sector. The framework ostensibly seeks to increase tariffs for the downstream manufacturing sectors, particularly those that have a high potential for employment and mineral beneficiation, such as the downstream steel sector. The 10% import tariff on steel products that was introduced in October 2018, is an example of this. The benefits of these restructured tariffs on the steel imports are yet to materialise, as discussed above.

The statistical findings obtained from the data indicate that the perception of the effectiveness of the said restructured tariffs is quite negative and correlates quite closely with those discussed in paragraph 4.10 below.

5.18 The research and development fund as a business rescue intervention

In order to remain viable, sustainable and competitive steel production companies, as with most other business organisations must continuously improve their production processes, *inter alia* to maintain or preferably to improve, their input-output cost ratios. The need for continuous improvement requires continuous and innovative research and development with regard to production equipment and processes.

The Department of Science and Technology offers a tax incentive scheme for companies that conduct relevant research and development, which can be claimed as a tax deduction in terms of section 11(d) of the Income Tax Act (op cit.). Companies are allowed to claim the incentive by producing audits for research and development expenditure undertaken by itself or by a third party such as the Council of Scientific Innovation and Research, in terms of

The annual report (2018:17) with respect to the research and development tax program for the period 2017 to 2018 shows that a cumulative total of R4.8 billion of tax revenue was waived between 2006 and 2018 as this incentive and that 58% of this R4.8 billion accrued to the manufacturing sector. As the report does not allocate the expenditure per manufacturing activity, the research expenditure by the steel manufacturing sector cannot be quantified. Irrespective of the amount of the incentive referred to above and the inability to determine the extent of the incentive allocated to the steel industry, the need for said research to assure the continued viability, sustainability and competitiveness of any industry, including the steel industry, is held to be unequivocally axiomatic.

The findings obtained from the statistical analysis of the data procured from the responses to the survey of a mean score of 4.12 and standard deviation of 1.29, indicated unequivocally that all the research respondents perceive the undertaking of relevant research and development to be

a very effective business imperative and also an effective business rescue strategy and intervention. This conclusion is supported by a Kruskal Wallis measure of 0.014 at the significance threshold of 0.05 and a Spearman's Correlation Coefficient of 0.316 at the 2-sided level of significance level of 0.116.

5.19 Rail and ports logistics infrastructure as a business rescue intervention

It is axiomatic that all transport and related infrastructure is of critical importance for economic growth and sustainability in all countries of the world, as it is the critical determinant of the movement of goods between the producers and the markets, both in South Africa and internationally.

In this context it needs to be noted that Transnet dedicated a rail line for the transportation of iron ore from Sishen in the Northern Cape to Saldanha Bay in Western Cape and another rail line from Sishen to the Arcelor Mittal steel mills in Gauteng. Similarly, rail and port infrastructure for semi-finished and finished steel products are prioritised for access to rail transport and port terminal infrastructure for exports via the Durban and Cape Town ports.

Whereas the critical importance of transport infrastructure and facilities for economic growth and sustainability as well as for all individual industry support, universally understood and accepted, it was not unexpected that the findings show strong support for the effectiveness of this strategic component in business organisations in general and also for the iron and steel industry in South Africa, as well as for it as a business rescue and turnaround strategy.

The findings obtained from the statistical analysis of the data procured from the responses to the survey of a mean score of 4.11 and standard deviation of 1.71, indicated unequivocally that all the research respondents perceive rail and port infrastructure to be a very effective business imperative and also an effective business rescue strategy and intervention. This conclusion is supported by a Kruskal Wallis measure of 0.102 at the significance threshold of 0.05 and a Spearman's Correlation Coefficient of 0.716 at the 2-sided level of significance level of 0.091.

6. Conclusion

The importance of the steel industry for the development and sustainability of the economy is demonstrated unequivocally in the literature and previous research findings. Its contribution to job creation, access to economic activity and wealth creation in towns such as Vereeniging and van der Bijlpark where steel production companies operated, indicates that steel companies play a pivotal role in the macro and micro-economics of the country. To ensure the continued viability and sustainability of the industry, various strategic business rescue interventions were investigated and their statistical significance determined relying on the knowledge, attitudes, perceptions and consequential attitudes and perceptions of steel company executives, labour union representatives, and business rescue consultants as these are the knowledgeable sources of relevant information in this regard.

The findings of the investigation show unequivocally that some of the business rescue interventions relied on since 1994, to reverse the decline and distress of steel companies are not

effective, although some might in fact have had a positive impact, depending on the level of debt and the structure of the respective company's shareholding. These findings suggest that the interventions were not specifically designed to meet the demands emanating from the dynamics of the specific companies in the prevailing business socio-economic and socio-political environment in which the company had to operate at the given moment in time. Similarly, most of the rescue interventions that were relied on failed to address the specific objectives of obviating possible, imminent liquidations and the consequential closure of various steel companies.

The recommendation based on the findings of this investigation and which in fact corroborate prior research findings, is that the South African government and its agency the Department of Trade and Industry must develop business rescue and turnaround strategy interventions that are directed at the specific dynamics and unique demands of the respective ailing and distressed steel industry companies rather relying on a one-fits-all approach or generic interventions that have been developed for different environments and different circumstances.

A final, unintended conclusion drawn from the findings of the investigation is that persons with a higher level of education (which ostensibly relates also to relevant job-related experiential training in business management and similar training in the steel industry), added to longer practical experience in both general business management and the management of a steel production company, facilitates a better understanding of the role and Impact of various business management strategies. Moreover, by extension therefore also of business rescue strategies and interventions. This leads to the recommendation that such persons should be employed by the government and its agencies for the development and implementation of business rescue strategies and interventions. This is in the interest of the development and sustainability of the national economy and the critically important industries on which the economy is founded.

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