UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI
Graduate School of Business and Leadership

An application of corporate turnaround strategies to overturn the declining business in sugar industry: A case study of a factory in Central Mozambique

By: Ephraim Mafika Dlamini

Student No. 216071055

A dissertation submitted in partial fulfilment of the requirement for the degree of Master of Business Administration

Graduate School of Business and Leadership

College of Law & Management Studies

Supervisor: Professor. Theuns Pelser

2018

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

Permission to Submit

College of Law and Management Studies

Supervisors Permission to Submit Thesis/ Dissertation for Examination

Name: Mafika Dlamini	No: 216071055	
Title: An application of corporate turnaround strategies to overturn the declining business in sugar industry: A case study of a factory in Central Mozambique		
Qualification: Master of Business Administration	School: Graduate School of Business and Leadership	
	Yes	No
To the best of my knowledge, the thesis/dissertation is primarily the student's own work and the student has acknowledged all reference sources	X	
The English language is of a suitable standard for examination without going for professional editing.	X	
Turnitin Report %	1%	
Comment if % is over 10%:		
I agree to the submission of this thesis/dissertation for examination	X	
Supervisors Name: Prof Theuns Pelser		
Supervisors Signature:	[redacted]	
Date:	13/12/2018	

Declaration

I, Mafika Dlamini declare that:

- The research reported in this thesis, except where otherwise indicated, is my original work.
- This thesis has not been submitted for any degree or examination at any other university.
- This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
- This thesis does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:

    a) their words have been re-written but the general information attributed to them has been referenced;

    b) where their exact words have been used, their writing has been placed inside quotation marks, and referenced;

    c) where I have reproduced a publication of which I am author, co-author or editor, I have indicated in detail which part of the publication was actually written by myself alone and have fully referenced such publications;

    d) this thesis does not contain text, graphics or tables copied and pasted from the Internet, unless specifically acknowledged, and the source being detailed in the thesis and in the References sections.

Signed at:

Signature:

Date:

Acknowledgements

I firstly wish the thank the Grace of God Almighty for taking this far. There were challenging times but the trust in God kept me going and I'm still willing to go further. I further extend my gratitude and appreciation to the following people whom this work would not be possible:

- To my lovely wife Babongiwe for firstly ensuring that in stressful times I maintain a balanced diet. I appreciate the unconditional support and the understanding throughout the MBA programme.
- To my kids, triple "K", Kwandokuhle; Kuhlekonke and Khethokuhle. Thank you for keeping my energy levels high.
- A special thanks to a factory team I worked with in a turnaround project. The hard work, the hunger to succeed and willingness, I appreciate. I so wished I could name you.
- My dissertation supervisor Professor Theuns Pelser, thank you for your unlimited availability to my queries. Those instant responses are very much appreciated.
- My employers Tongaat Hulett Sugar, especially my manager, I appreciate the opportunity to lead the turnaround project and allowing me to write my thesis on.
- I thank my colleagues for encouragement and holding the reins while I was away to school. A special thanks to young Ntobeko, I noted a benefit of having a millennial in your team.
- I thank the MBA class of 2017/18. Leading a group of intellects kept me on my A-game. I thank you for trusting my leadership.

Abstract

Sugar industry is one of those traditional industries which have antiquated strategies to conduct business. These strategies are however narrow as they tend to focus on one problem at a time. They lack multi-dimension and often consume time and resources. Business turnaround is a multi-disciplinary or functional approach which has a global view into the whole situation. This approach has been in existence for many decades. Literature has however showed no evidence of it being formally applied in sugar industry in Southern Africa. The study addresses the literature gap on turnaround strategies in sugar industry. It also provides a diversified approach and flexibility in problem solving for the industry. This study was looking at testing the impact of corporate turnaround strategies in sugar industry. An opportunity presented itself to the researcher to apply turnaround strategies to upturn the declining performance of one of the factories in a sugar manufacturing organisation. After application of turnaround strategies an evaluation was done to measure the impact on performance and quality. An experiment research strategy was used to test the cause and effect of turnaround strategies on both factory performance and product quality. This quantitative study used the secondary data of quality and factory performance parameters to test hypothesis. A comparison of data for seasons before and after turnaround project was done using statistics analysis tools to measure significance. Testing causal effect was the first objective of the research. The results of the statistical analysis showed a null hypothesis in 3 out of 5 tested parameters. This study was done while the last part of the project was being commissioned. That could be the contributing factor to the results, of which the literature suggests that some organisational turnarounds can take even years before yielding positive results. Season to season comparison showed positive trends of change. It was therefore recommended that this project should be given time and re-evaluated after few seasons. After the cause and effect test, a turnaround model was developed for the use by any other factory which might experience multi-effect problems and that was the second objective. Based on the available literature and the experiment, a suggestion was made on when to embark into turnaround strategies in a sugar factory as a third objective. This study presented opportunities for future work. There are 4 recommended future studies that can be expanded in relation to this study.

Table of Contents

List of Figures

List of Tables

List of Acronyms

Acronym	Description
ABF	Associated British Foods
BHR	Boiling House Recovery
CEO	Chief Executive Officer
FSSC	Food Safety System Certification
HR	Human Resources
ISSCT	International Society of Sugar Cane Technologists
KPI	Key Performance Indicator
LIMS	Laboratory Information Management System
PESTEL	Politic, Economy, Social, Technology, Environment, Legislation
RCA	Root Cause Analysis
ROE	Return on Equity
ROI	Return on Investment
SAB	South African Breweries
SADC	Southern African Development Community
SASTA	South African Sugar Technologists Association
SIT	Sugar Industry Technologists
SMRI	Sugar Milling Research Institute
SSB	Sugar Sweetened Beverage
SWOT	Strength, Weakness, Opportunity, Threats
THS	Tongaat Hulett Sugar

TSB	Transvaal Sugar Board
VUCA	Volatility, Uncertainty, Complexity, Ambiguity

Chapter 1

Introduction

1.1 The background

The sugar industry is one of the old industries in Southern Africa which is dating back in mid 1800s (Deerr, 1949; Osborn, 1964). It is one of those traditional industries which have antiquated strategies to conduct business. For example, sugar factories operate mainly during winter months to accommodate cane harvest and they shut down completely in wet summer months. Whereas some modern industries swap product to utilise installed equipment. These strategies are effective mainly in more stable conditions. They are however one-dimension and narrow as they are focusing on one problem at a time. They lack consume time and resources.

In the past few decades, there has been some factories which were acquired amongst the companies and some were shut down. One of the most contributing factors to shut down was the reduced supply of raw material (cane) due to urbanisation. However, some of these factories were closed or sold due to poor performance as a result of multiple internal factors like equipment failure; culture; lack of transformation and human resources (Anonymous, 2017). In addition, the industry is recently facing external factors such as competition; market dynamics; climate and government interventions e.g. low tariffs which allow import sugar and introduction of sugar tax in South Africa. All these challenges exert pressure and require suitable responses. Different strategies may be applied in sorting these challenges out, of which organisational turnaround is one of them.

Turnaround strategies have been implemented by many organisations around the world. When implemented properly they save the falling organisations and help them sustain. Hoffman (1989, p. 46) argues that many researchers have covered the theory of what to be done but there are very few reports on how to do it. Each scenario is different, there is no one-size-fit-all solution. The causes of failure must be clearly understood and a specific solution be implemented and then tested. It is very important for a turnaround manager or team to understand the nature of the decline and the stage at which the decline is in so that the correct strategy can be applied in an effective manner (Teng, 2002).

Big companies like Dunlop, Peugeot, Walt Disney Co., and United Airlines have successfully implemented turnaround strategies and are sustainable (Hoffman, 1989, p. 46). However, some scholars have reported failures of turnaround or post-turnaround (Lumadi, 2015; Mbele, 2010; Wild & Lockett, 2015).

There is sugar manufacturing factory in Mozambique which had been operating at a loss for previous few years. The main contributor to the business loss was poor factory performance. There have been few different attempts to improve the performance. However, the results were not improving. Those attempts were applied on specific problems, whereas there are many other different problems contributing into poor performance.

This firm plays a significant role in helping with socio-economic issues in the region, as mentioned by one of the senior staff members. Factory shut-down will prove disastrous, so turning it around is vital. Turnaround strategies were applied to address the multiple problems that were slowing down the performance and turn the firm into a profitable unit of the organisation. The strategies entail few plant modifications which were done to improve production line and a niche product after establishing a new market. With a new product, quality standards were automatically raised. More modifications were done to achieve product quality requirements.

This research is conducted in practical manner such that it tests the usefulness of turnaround strategies in the sugar industry. The outcome of the research may be an answer to some factories which might experience similar challenges. However, it may not be a blanket solution to every firms but a model that can be tailored for each factory.

1.2 Motivation for the study

This study was motivated by work carried out by the researcher. The work was initiated internally in an organisation and the researcher was tasked to lead the project. In reviewing the literature as part of the project, the researcher identified a gap between the current problem-solving strategies in the industry and turnaround strategies. There was no evidence of turnaround strategies ever been applied in the industry, based on industry literature. There was therefore an opportunity to evaluate the applied turnaround strategies to generate a new body of knowledge. The advantage of organisational turnaround is its ability to address multi-functional challenges rather

than targeting one issue at a time. It applies multiple subprojects which focus on individual issues. The success of the project would mean a sustainable future for the factory and therefore job security for employees. As a profitable business unit, the organisation also benefits. The researcher identified the opportunity of developing a turnaround model that can be used in ailing times. However, the development of that model depends entirely on the success of the turnaround project. The failed turnaround cannot be sold as an alternative problem-solving tool.

1.3 Focus of the study

Organisational turnaround is normally applied across the entire firm. This study focuses on the factory performance after identifying the decline. Administration; Human resources; Logistics; etc, were not covered. Also within the factory itself, utilities and services departments were left out. The main focus was in the heart of the factory where the product is made. However, communication channels were widened with all these other departments since they are playing a support role to production.

1.4 Problem statement

A business unit has been experiencing a continual decline in performance which affected the profits. Profit margins were negative for few consecutive years and required intervention. Raw material was available and the market was very much open but the firm battled to take advantage. This factory has a limited season length due to wet weather patterns. Weather allows the factory to operate between May and November. The season cannot be extended to allow extra production. The reasonable option was to maximise performance during the crushing window and recover as much product as possible. Also, to improve profit for this specific business unit, a niche product was established and a market was secured. However, a niche product came with high quality standards. At some point in 2017/18 season this product failed quality specification and customers were threatening to pull out.

It was imperative to improve the factory performance in this firm to maximise throughput and efficiencies. The impact of niche product on business was noticeable and the market needed to be protected by the supplying a consistently good quality and adequate volumes. In addressing these challenges, corporate turnaround strategies were applied. These strategies have been applied in many industries and organisations but there was no evidence of its application in sugar industry. The sugar

industry in Southern Africa has not used this multi-functional problem-solving approach but they rather prefer solving individual problems which consumes more time and resources. This gap necessitated the development of turnaround model for a sugar factory. However, before a model, evaluation of the impact of turnaround strategies on factory performance and product quality was conducted.

1.5 Research objectives

- To assess the impact of organisational turnaround strategies on factory performance and product quality.
- To develop a turnaround model that can be used across the organisation which the piloted factory falls under.
- To establish at what point in business cycle should each sugar factory embark into a turnaround.

1.6 Hypothesis

- H_0 -Implementation of turnaround strategies have no effect on factory performance and product quality.
- H_1 -Implementation of turnaround strategies have positive effect on factory performance and product quality.

1.7 Theoretical framework

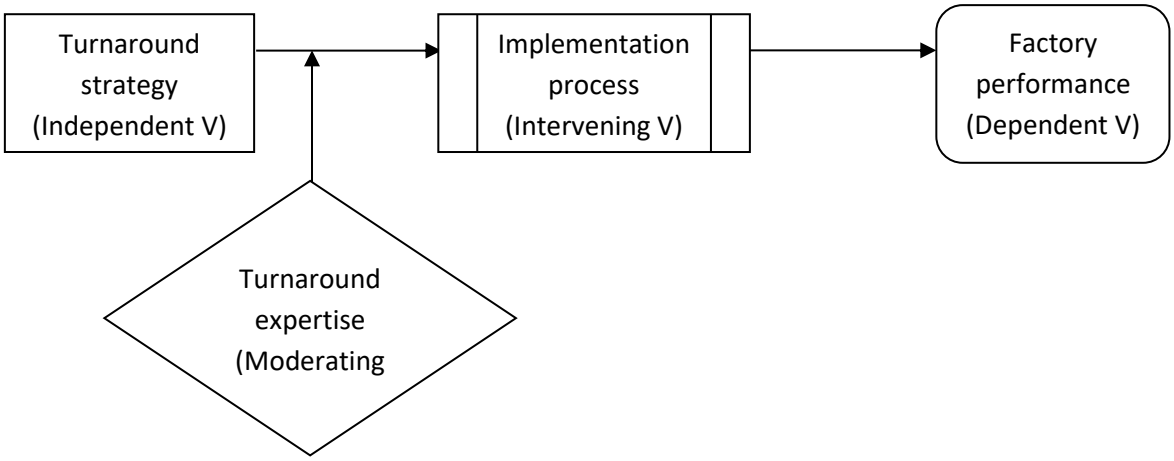

Figure 1.1. Theoretical framework

Turnaround strategy is the independent variable which was applied to influence the factory performance, which is the dependent variable. However, the turnaround needed to be properly implemented in order to have a positive impact on performance. Therefore, a turnaround manager as a moderating variable, was employed for an

effective rollout of the project. Poor implementation might suppress the usefulness of turnaround and it means a continuing poor performance. The implementation process as an intervening variable includes multiple tasks, responsibilities, targets and deadlines.

1.8 Assumptions

The major assumptions to this study are as follows:

- Any scholarly turnaround strategies applied in the Southern Africa sugar industry would have been published on SASTA, SIT and ISSCT proceedings. If it is not appearing on these archives it is not published.
- It was assumed that the capital contributor to business loss in the piloted factory is factory performance. Low performance means less production, less sales and therefore low profit or loss.
- Due to poor performance year-on-year despite interventions, it was assumed that any change in performance after implementation would be an effect of turnaround.

1.9 Scope of the study

This quantitative study looks to evaluate the relationship between variables. This is an experiment research which used secondary data over longitudinal time horizon. There are no research questions since this study uses hypothesis. In this study, the researcher is employed as a turnaround manager and was influencing the independent variable in order to get positive results on the dependent variable. The performance of the pilot factory was monitored across the full production campaign and census data was analysed. Literature review for this study was done in two folds; the sugar industry in perspective and turnaround strategies at large. Data analyses was done through MS-Excel & XLSTAT and discussion of findings are thoroughly covered in later chapters.

1.10 Limitations

Due to time and resources constraints, this study was confined in factory only. Other supporting departments were not investigated while there might be opportunities of financial savings in those departments. Those savings could further improve profit margins. The pilot factory is on a different country to the researcher, there was limited

time for a researcher to observe production line for any other external matters that might affect the project.

1.11 Dissertation outline

This study comprises of 6 chapters. Chapter 1 is introductory of the study which includes the background of sugar industry in Southern Africa. The groundwork of academic business research follows the background. This groundwork includes motivation, focus, scope, assumptions & limitations of the study; problem statement; research objectives; hypothesis and theoretical framework. Chapter 2 is an intense literature on both sugar industry and turnaround strategies. These 2 spheres are therefore fused together in a conceptual framework. Chapter 3 presents the design of research and method followed when conducting this study. Chapter 4 is the presentation of the results. This chapter presents the results of each parameter tested in a statistical analysis tool with no much elaboration. Chapter 5 goes in deep analysis of results and further elaborate the practicality of results obtained. Chapter 6 concludes the whole study and makes recommendations on both research objectives and future work that can be expanded from this study.

1.12 Summary

The antiquated strategies in sugar industry may be still useful but it is also important to diversify problem solving strategies to ensure the sustainability of business. This study aims to offer an alternative method which is more efficient and effective. The focus was mainly in the production line, supporting departments were left out. Production line needed attention to upturn the continuously declining performance. Objectives of the study were outlined clearly and the limitations were stated. Three reasonable assumptions were made for this study as mentioned earlier. This study involves two spheres which had not met before, i.e. sugar production and turnaround strategies. As a result, the two-sided literature review was carried out as shown in the next Chapter.

Chapter 2

Literature review

2.1 Introduction

This study was conducted from a well-established sugar industry which generates lots of knowledge and publish it regularly within its own spheres. However, the study is not industry based but a scholarly approach. The literature review of this study is therefore coming in two folds. Firstly, the industry and the sampled factory are reviewed through published journals and papers. The personal interviews were also conducted for further clarity in some specific areas of the literature. Secondly, an academic literature using peer reviewed journal articles and books was utilised to review the subject of cooperate turnaround.

In this study, a problem-solving tool (turnaround strategy) was put into practice in a real world. It was vitally important that the application of this tool is successful as that would lay foundation in the industry. However, only a best-fit tool, applied in a correct method, can yield positive results. It was therefore imperative to get a clear understanding of the problem and then identify a justifiable solution. So in that case, a problem (ailing sugar factory) was scholarly reviewed. An identified solution (organisational turnaround) was thoroughly examined to assess its suitability to solve the problem.

2.2 Sugar industry in Southern Africa

2.2.1 History

The production of crystal sugar dates centuries back. Deerr, (1949) describes worldwide sugar factories which were built as early as in 1500s. History shows that only from mid 1800 the crystal sugar was made in the then Natal, South Africa (Osborn, 1964). This first sugar was made by Mr. Edmund Morewood in his farm named Compensation and this was declared as the very first sugar mill in South Africa (Osborn, 1964). More history shows between the late 1800 and early 1900 sugar was already in production in Egypt, Angola and Zambesi in Mozambique (Deerr, 1949).

As compared to the today's modernised factories, the historic factories were very manual and driven by human beings and oxen (Osborn, 1964). Only a single stage

juice extraction was used to make sugar, whereas the modern factories are utilising multi-stage equipment. As a result, the production efficiency has increased significantly compared to early factories. Osborn, (1964) mentions 75% juice extracted from cane back then. In recent years, juice extraction ranges between 95 and 98% on average. Efficiencies have taken a centre stage in recent years due to the dynamics in sugar business. Hewitt, (1996, p. ix) qoutes 25 mills crushing 800 tons of cane per hour combined for the year 1926 as compared to 16 mills crushing 4700 tons per hour in 1996. Also the sugar recovery efficiency increased from 75 to 87% for the respective years. With all the business dynamics, what remained important for a sugar firm all these years are the production and energy efficiencies which are internal controls. Hence these efficiencies are the core part of this study.

2.2.2 Challenges facing sugar industry

Sugar industry in Southern African Development Community (SADC) region has ever been coming across newer challenges. Some countries of this region have lower tariffs which allows big producing countries like Brazil and India to take advantage of the market. In South Africa alone import sugar for a year 2017 was 520 000 tons (Tongaat-Hulett, 2018, p. 35). This reduced the local sales from 1.64 to 1.18 million tons (Tongaat-Hulett, 2018, p. 35). South Africa produced just below 2 million tons of sugar (using cane to sugar ratio of 8.68) in 2017/18 crushing season (Madho, et al., 2018, p. 35). So the sugar import for the year was above 25% of the country's overall production. The countries with the surplus sugar are then forced to send it into world market. However, the sugar price in this market has been suppressed (Tongaat-Hulett, 2018, p. 19).

Prior to the massive sugar imports, the SADC sugar industry had been hit by the severe drought for two crushing seasons, 2014/15 and 2015/16 (Smith, et al., 2016, p. 22). This resulted in a shortage of raw material, sugar cane. Two mills in South Africa did not crush in 2015/16 season due to the shortage of cane and those which were crushing operated below capacity (Smith, et al., 2016, p. 21). The available cane was of poor quality which comes with processing difficulties. There was no water for operation in some factories (Manqele, et al., 2016, p. 85). Drastic measures and abnormal practices were carried out just to keep afloat. Manqele, et al., (2016, pp. 86-93) discuss measures taken to avail water in order to operate the factory and the respective repercussions as a result of using this poor quality water.

Hoffman, (1989 p.56) describes five external causes of organisational decline identified in his study. One of these causes is lifestyle and social changes. One other challenge facing the sugar industry was low consumption per capita in some countries of the region which lowers the local sales. In year 2017 Zimbabwe recorded a consumption of 22kg per capita per annum while Mozambique recorded 20kg (Tongaat-Hulett, 2018, pp. 16-17). Zimbabwe has dropped if compared to historic levels whereas Mozambique showed signs of increase (Tongaat-Hulett, 2018, pp. 16-17). South Africa remains stable at 33kg per capita per annum (Tongaat-Hulett, 2018, p. 17).

Changes in government regulations can cause an adverse effect on market demand (Hoffman, 1989, p. 56). South African government has introduced sugar tax on sugar sweetened beverages (SSB) in an attempt to reduce non-communicable diseases (Gordhan, 2016, p. 16). This action has created uncertainty amongst the community members. Some professionals are anticipating drop in industrial sugar sales and therefore loss of jobs (Verum, 2017, p. 60). In contrast, Tongaat-Hulett, (2018, p.17) argues that reduction of sugar sales due to the reduced sugar content on SSBs may be counter-actioned by the population growth. Sugar tax only came into effect in 2018 though, all the uncertainity and ambiguity will be cleared in a year or two. However sugar producers remain in dark on what to plan for future.

2.2.3 Addressing the challenges

Although many organisations may able to deal swiftly with internal challenges, external challenges are mostly outside of their control. Sugar industry is currently facing more of macroenvironmental challenges as examples mentioned above. It is therefore imperative for individual organisation to maximise their respective business from inside out in order to realise the profit margins. Bennett & Lemoine, (2014, p. 3) describe ways of effectively address volatility; uncertainty; complexity and ambiguity (VUCA) which may benefit sugar producing companies to project the future.

There are few big companies producing sugar in the SADC region. These companies own more than just one sugar. Each sugar mill operates as an individual business unit and must be profitable. Key performance indicators (KPIs) for each factory are published annually through SASTA after being presented in the congress (Smith, et al., 2016; Madho, et al., 2018). Organisations face both internal and external factors

which affect the performance (Hoffman, 1989, p. 48). As mentioned earlier the external factors affecting the industry, individual factories also experience internal factors which affect their respective KPIs (Dlamini, 2016, p. 416). In this award winning technical paper, Dlamini (2016, p. 417) argues the lack of systemic approach in addressing challenges within sugar factories. The scholarly approach in addressing the challenges may go a long way in benefiting the sugar industry. An application of turnaround strategy is one of the systemic approaches to upturn the poorly performing organisation or business unit (Teng, 2002).

2.3 Theoretical review

Organisations often face the decline in performance which leads to financial crisis or even failure. Santana, et al. (2017, p. 207) define organisational decline as the deterioration of company's performance due to a consistent decrease of internal resources. The causes of decline may be internal or external factors like recession; declining industry, deregulation and simply mismanagement (Hoffman, 1989, p. 46). In trying to recuperate from decline some companies apply corporate turnaround strategies. Turnaround strategies may vary from internal cost cutting to government bailout (Hoffman, 1989, p. 46), depending on the type of crisis. Wild (2010, p. 617) suggests that firms that sustain success from failure are rare. However few other scholars wrote about the successes of turnaround strategies as highlighted later in this study. Each turnaround strategy employed might face challenges. The design, implementation and support of a turnaround strategy determine its success (Mbele, 2010, p. 52).

The theory of corporate turnaround is basically the application of specific measures to escape the crisis. Teng, (2002) refers to it as resuscitating the ailing businesses back to life. The measures being applied can be succesful or unsuccesful depending on factors outlined in this literature review. This is an output based theory which looks at cause and effect relationship. The exact set-up is applied in this study. An independent factor is applied with a view of effecting the outcome/s. Okwir, et al. (2017, p. 183) describes multiple variable affected by the application of one independent variable (Collaborative Decision Making) which leads into an overall performance enhancement.

2.4 The turnaround in perspective

2.4.1 Cyclical changes of business and the turnaround

The business world is venturing into an era of unprecedented turbulence and challenges. Industries rise and descent in performances as a response to economic factors. That is a business cycle in economic terms. Reilly & Brown (2016) illustrate the economic behaviour and explain the responses of different industries. What comes out in that explanation is that each industry looks at the existing situation, predict the near future and implement strategies of response.

Beside the business cycle, also there is an individual industry cycle (Reilly & Brown, 2016). It is of great interest to note that stage 5 of the industry cycle (as illustrated) is deceleration of growth and decline. Is the SADC sugar industry at this stage already? The reality is that the industry has been in existance for more than a century, (Deerr, 1949) & (Osborn, 1964), and it has gone beyond the growth stages. Some firms within the industry can stay in a maturity stage for an extended period (Nieman, 2014). Like these firms, SADC sugar industry has been on maturity stage for a very long time. What could help the industry from declining is the fact that sugar consumption is essential as a primary source of energy. Again, the consumption is dependent on population as it is often calculated per capita (Tongaat-Hulett, 2018, pp. 16-17). The population growth would therefore help the sales.

Business and industry cycles are common in that they both highlight the rise and fall in business performance due to external challenges. The SADC sugar industry might have said to be on maturity stage of the industry cycle, the individual firms within the industry are however exposed to decline and failure. For example; Hewitt (1996, p. ix) mentions 16 sugar mills in existance in South Africa whereas Madho, et al., (2018, p. 20) decribes 14. The last 2 decades saw the shutdown of 2 factories in South Africa alone. Nieman (2014) illustrates 5-staged life cycle of a firm. This cycle is very similar to that of industry cycle. However, Nieman (2014) goes on and describe the possibility of rejuvenation during decline stage which can reignite the performance. So when the industries are rising during either business or industry cycles, it is the individual firms in that particular sphere that effected the change. Each firm applies internal strategies to upturn the performance. This is where corporate turnaround strategies may have been applied.

The United States terrorist attack of 11 September 2001 left the country in a devastating state (Teng, 2002). Many businesses shut down. This was a sudden crisis which is unlikely to be revived through corporate turnaround strategies by the directly affected organisations. This study isolates the organisation revivals from the sudden crisis but focuses on descending performances and the upturn. The failing businesses go through different stages of decline before a complete failure (Marius, 2014). Teng (2002) argues that many of the corporate potential failures can be nursed back into life. It is however vitally important to identify failure at an early stage. Marius (2014) suggests that the earlier the failure is observed, the easier it is for turnaround process to be effective.

Failures and turnarounds are not ideal for businesses as upturn cannot be guaranteed. Teng (2002, p.12) states that one does not need to fall sick in order to get well. Even relatively healthy companies need to strengthen and fortify. Big organisations which have been on maturity stage for a long time can often decline if they are not creative and innovative (Nieman, 2014). Sustainability is the key factor for survival in any organisation. An organisations can fall and then rise through turnaround strategies. However, if the strategy employed is not sustainable, there is a huge chance of failure in the near future. Wild & Lockett, (2015, pp. 834-843) discuss in depth details the firm that has had a great turnaround which was followed by a catastrophic failure.

The firm's performance is not only dependent on its strengths but also on weaknesses and is the interaction of these two opposing factors that influence the organisational outcomes (Wild & Lockett, 2015, p. 830). Wild & Lockett, (2015) used resource-based view to explore the emergence of resource weaknesses, their nature and the ability to combine to create a fatal organisational outcome. It might prove suicidal to assume that every turnaround yields only a positive change. It is important to investigate the organisational weaknesses and action them as part of ensuring sustainable future. In addition, Teng (2002) describes the third phase of turnaround as nursing. This is the rehabilitation stage to build a strong and healthy corporate immune system in order to sustain long-term growth. Moreover, Lumadi (2015, p. 19) discusses the successful turnaround strategy which was implemented using temporal measures. The crisis recurred soon after the turnaround.

2.4.2 Performance measurement

Santana, et al. (2017, p. 207) define the organisational decline as the deterioration of a company's performance due to a constant decrease in its internal resources. All businesses measure a certain form of performance to observe how well they are doing. It is also the performance which informs the business decisions. It is however not so clear how to measure the declining performance (Santana, et al., 2017, p. 207). According to Wild (2010, p. 623), industry effects may dilute each firm's profitability when compared againts industry compatriots. Some firms may be identified as turnarounds while they have not implemented any internal changes but by only the virtue of cyclical change in industry (Wild, 2010, p. 623). It is important to consider both industry and economy when measuring performance.

Performance can be measured in many ways depending on the characteristics of the firms targeted. General accounting ratios like return on investment (ROI) and return on equity (ROE) provide more reasonable measure (Wild, 2010, p. 623) & (Santana, et al., 2017, p. 207). Wild (2010, p. 623) argues that should the firm change the accounting procedure the ratios will be affected. Also in a case of divestment, assessment might mislead (Wild, 2010, p. 623). It is therefore important to study what is happening in and around the firm before carry out performance measurement. According to Santana, et al. (2017, p. 207), accounting ratios of previous 2 to 3 years are more reasonable to paint a clear picture of the performance. Wild (2010, p. 624) also suggests 3 years of poor performance and further elaborated on more years during and post the turnaround. Overall it might take 10 or more years of performance evaluation for pre and post turnaround.

2.4.3 Causes of performance decline in business

It is important to firstly understand the causes of failure before structuring and implanting the solution. A wrong solution might lead to a continual failure. The primary causes may be classified as both internal and external factors. In his study about strategies of corporate turnaround, Hoffman (1989, p. 48) argue that 67% of the investigated turnarounds were caused by internal factors. This was mainly due to management errors of omission and commission or defects in top management. Errors of omission reflect management neglect of certain key activities like poor budgeting and cost control; failure to adjust prices and failure to respond to the changes in the market place (Hoffman, 1989, p. 56).

Teng (2002) has listed internal factors as management problems; bad financial control; operational weaknesses; human resource problems; major project fiasco and over-leveraging. This literature may be old but it is still relevant. It shows a clear view of how significant internal factors may be. Other scholars have recently described similar internal causes of failure. Santana, et al., (2017, p. 207) describe the internal causes as firm-based decline. This type of decline is defined as a poor performance of the company that operates in a growing industry. The causes of decline include governance; HR policies; employees' attributes and stractural characteristics of an organisation (Santana, et al., 2017, p. 207). Ravaghi, et al., (2017, p. 4) include organisational culture over the aforementioned causes. Cash flow problem is common in many studies (Li, 2012, p. 738); (Mann & Byun, 2017, p. 24); (Szymanski, 2017, p. 431).

Organisational decline may differ from firm to firm and from situation to situation. Mbele (2010, p. 54) argues that the internal politics may also cause performance decline in an organisation. The internal politic is worse in government institutions as top management is often linked to the national politics. These incumbents are normally the deployees with compromised compitencies (Mbele, 2010, p. 53). Mutunga (2013, p. 16) further elaborates the managerial incompetency which can cause strategic misalignment. Ravaghi, et al.,(2017, p. 6) interestingly identify simple but detrimental internal causes of decline: organisational "eyes off the ball"; arrogance; resistance to external pressure; lack of appropriate response to external environment and lack of learning from the poorly performaning organisations.

The external factors may include but not limited to PESTEL issues; government interventions; competition; customer behaviour; lifestyle; supply/demand; terrorism and natural disasters. In the business world economy leads the business declines. As mentioned earlier, business cycles and industry cycles are all responses of economy. Mann & Byun (2017, p. 24) discuss the Great Recession of 2007-2009 and its effect on business. Retail business are severely sensitive to recession and should strategies to mitigate the decline (Mann & Byun, 2017, p. 24). Hoffman (1989, p. 56) also highlights recession as an external cause of decline.

Hoffman (1989, p. 56) argue the combination of internal and external causes of decline. In agreement, Wild & Lockett (2015, p. 838) discuss the bad publicity that

ended up affecting the business. This started with internal poor performances that affected the general public. As Mann & Byun (2017, p. 25) suggest, media has a tendency to cover more closely the negetive conditions than positive. Some incidents may not worth the news print but some journalists may be after every little incident on certain companies (Wild & Lockett, 2015, p. 838). Still on the combination of internal and external causes, Li (2012, p. 738) mentions violation of law as one causes of failure. Laws are normally laid by an external part and companies affected should put controls in place for compliance, failure which attracts the law-makers.

In most of these external factors, an organisations have minimum chances of controlling them. All what the organisation can do is to adjust from within in order to sustain the outside volatile and dynamic world. In such situations, the organisation must have strong core values but be flexible to adapt with the changes. Teng (2002) uses the analogy of a human health system and states that, "The immune system produces antibodies to eradicate the viruses. In accordance with medical science, developing a strong immune system is the best way to fight viruses, even better than taking drugs". This analogy basically means it is better to prevent than cure. However, should the virus get into the body one must take treatment to treat the symptoms while cannot eliminate the virus. In this case, corporate must be adaptable to a changing environment. When the challenges come, organisation must be able to take necessary measures to survive. Some of those measures, are turnaround strategies.

2.4.4 Some common turnaround strategies

The success of each turnaround strategy relies on planning; implementation and sustainability. Warnich, et al., (2014) discuss a 3-step Lewin-Shein change model:

Figure 2.1. Lewin-Shein change model ***Source:*** (Werner, 2016, p. 428)

This can be applied on a turnaround; unfreezing being planning; moving is implementation and refreezing as applying sustainability measures. The planning part of this process includes identifying the real cause of decline; identifying the best-suited strategy; a thorough analysis of resources required and the allocation of resources. Turnaround strategies vary with the causes of decline. The following are the few common strategies that have been applied:

a) Restructuring

Strong leadership plays an important role in the success of turnaround process. Hoffman (1989, p. 59) claims that if the causes of downturn are internal, top managers are replaced by outsiders 90% of the time. Whereas if the causes are external 90% of the time top managers are replaced by insiders. These changes occur normally during the preperatory stages. Of the 17 turnaround studies reviewed (Ravaghi, et al., 2017, p. 7), 11 CEOs were replaced and 10 counts of senior management replacement. Wild & Lockett (2015, p. 835) also discuss the recruitment of the new CEO and directors as part of turnaround strategy. Further to that, Wild & Lockett (2015, p. 835) describe organisational restructuring. It is important to change organisational culture when changing leadership. Organisational cultures often become barriers to turnarounds simply because they have been shaped by the previously failed management (Hoffman, 1989, p. 60).

b) Cost reduction

Retrenchment is the common theme for cost reduction or to improve cash flow in many turnaround studies. Mann & Byun (2017, p. 26) discuss in detail the cost reduction by form of retrechment in the retail industry. Evans, et al., (2013); Ravaghi, et al. (2017, p. 7); Mutunga (2013, p. 26); Wild & Lockett (2015, p. 835) and Hoffman (1989, p. 61) all mention retrechment as cost cutting exercise for a declining organisation. However, retrechment is limited in the public organisation (Mutunga, 2013, p. 26). In contrast to retrechment, Santana, et al. (2017, p. 207) argue that many scholar point to the universality of retrechment without considering the underlying issues. Some particular causes of decline can be postponed until the recovery period (Santana, et al., 2017, p. 207). A careful consideration should be taken before jumping into retrechment. Staff reduction my worsen employee performance during the worst period of organisation's vulnerability (Santana, et al., 2017, p. 207). Hoffman (1989, p. 61) further discusses other methods of cost reduction, e.g. cost control; improve creditors relationship; management control to eliminate errors and the use of the latest technology.

c) Asset redeployment

Mergers; acquisations; partnerships; refocusing; investing; devesting and expansion, are common terms (to name a few) used when redeploying assets to turnaround the organisation. This strategy includes eliminating or redeploying assets to improve operating efficiencies; capacity utilisation and employee productivity, claims Hoffman

(1989, p. 62). Santana, et al., (2017, p. 207) suggest that employee productivity can be improved by intesive training to improve the current job related skills, espacially for production units. Although training is very important to improve the firm's performance, alone it might take longer to yield result but it might work quicker if combined with culture and employee attitude changes.

Disposal of non-core asset (Evans, et al., 2013) is another form of asset redoplyment. This is often referred to as devesting. The diversified firms sell less profitable units (Hoffman, 1989, p. 62). Selling assets is more common during organisational decline. In contrary to devesting, some companies acquire more during the decline, taking advantage of prices. Mann & Byun (2017, p. 29) discuss turnaround strategies during recession which see some financially muscled companies acquire the struggling ones within the same industry. Wild & Lockett (2015, pp. 835 & 836) mention the "bullying" approach of a strong company acquiring during the decline period. The close by examples are acquisition of TSB by RCL Foods in 2013 (RCL Foods, 2018). ABF acquired the remainer of shares at Illovo Sugar Ltd (Illovo Sugar Ltd, 2016). Both these acquisitions occurred when the SADC sugar industry was battling as mentioned in earlier topics.

Relocation of resources, plant and equipment is another form of redeployment of assets. Lumadi (2015, p. 19) illustrates the positve results of redeploying personal to intervene in poor performing units. Relocation of plants can afford better cost advantage and merging branch operations (Hoffman, 1989, p. 62).

d) Selective product or market

This is one of the common turnaround strategies which involves niche products/market; marketing mix; market expansion; diversification; etc. Free opportunities or those taken by weak competitors must be exploited. That is another form of turnaround strategy (Santana, et al., 2017) which is regarded as niche market. Mann & Byun (2017, p. 30) refer to niche market as the underserved. Taking advantage of this market is fulfilling the much needed gap. Expanding into different markets or diversification can also turnaround the firm. This may be an opposite of devesting which is explained earlier and may raise concerns on how can an organisation expand during decline. However, what is more critical with this strategy is the organisation's ability to identify the underserved markets (Mann & Byun, 2017,

p. 30) and fulfill the gap. Mann & Byun (2017, p. 30) list 5 different production lines as options for diversification: 1. New/upgraded line. 2. Health and environmentally conscious line. 3. Exclusive/primium lines. 4. Niche lines. 5 Lower priced lines.

e) Repositioning

According to Hoffman (1989, p. 63), repositioning strategies aim at ensuring that the firm is repositioned either in its current market or the new ones to ensure future growth or profits. Mutunga (2013, p. 21) define repositioning as the exploitationg of alternative sources of revanue and modifying the image or the mission of the company. Ravaghi, et al. (2017, p. 7) describe 3 types of repostioning the organisation: 1. Repositioning as innovative services, which refers increasing variety and accessibility of services. 2. Repositioning as reaching out, when the organisational is intending to reach out on new segments of customers. 3. Repositioning as renewed relationship which involves rebuilding relationship with key stakeholders. Mann & Byun (2017, p. 31) discuss in depth the strategic partnerships. These partnerships also incorporate type 2 &3 of repositioning as described by Ravaghi, et al. (2017, p. 7).

2.4.5 Challenges to turnaround

Like any other project, turnaround might also come across challenges. Mbele (2010, p. 52) argues that not only the design of the turnaround that might be a challenge but also its implementation; governance; finance; human resources and communication. It has been elaborated few times within this review the criticality of implementation. Turnaround needs to be supported in management, financially and personnel. These are the key factors needed from within the organisation. Change in an organisation bring about the uncertainty and people unsettle and to a certain extent, they get demotivated. It is very important to communicate the importance of turnaround, the roll-out plan and progress. Therefore, communication must be constant and consistent. Turnaround strategies might introduce a range of unintended, adverse and dysfunctional consequences to staff and customers (Ravaghi, et al., 2017, p. 8). Workload; long working hours and working in unfamiliar positions may all come with turnaround. Discontinuing product line and changing marketing strategy may result in negative perceptions with customers. SAB rebranded Lion Lager by changing labelling and alcohol content in trying to resuscitate the brand (Hurst, 2000). This move went horribly wrong as the product ended up by being removed from the shelves.

According to Hoffman (1989, p. 46), organisational cultures can be a barrier to turnarounds because they are shaped by autocratic or narrow industry values, especially from the previously failed management. Changing people's attitude is very challenging. There are two efforts that can be used to change the culture, i.e. defensive and offensive efforts (Hoffman, 1989, p. 46). Defensive efforts refer to change in leadership. New leadership can change people's attitude from a losing to a winning one and instilling sense of fairness and integrity. Offensive efforts are those involving coaching; outside training and building shared goals. In certain organisations, especially in the public sector, turnaround process may be hindered by culture. For an example; retrenchment is limited in public organisations, as argued by Mutunga (2013, p. 26). Mbele (2010, p. 53) highlights political deployment in top management in public sector. A leadership restructuring strategy may be limited in such a case. Also, redeployment undermines HR recruitment policies (Mbele, 2010, p. 53) to some extent.

2.5 Conceptual framework

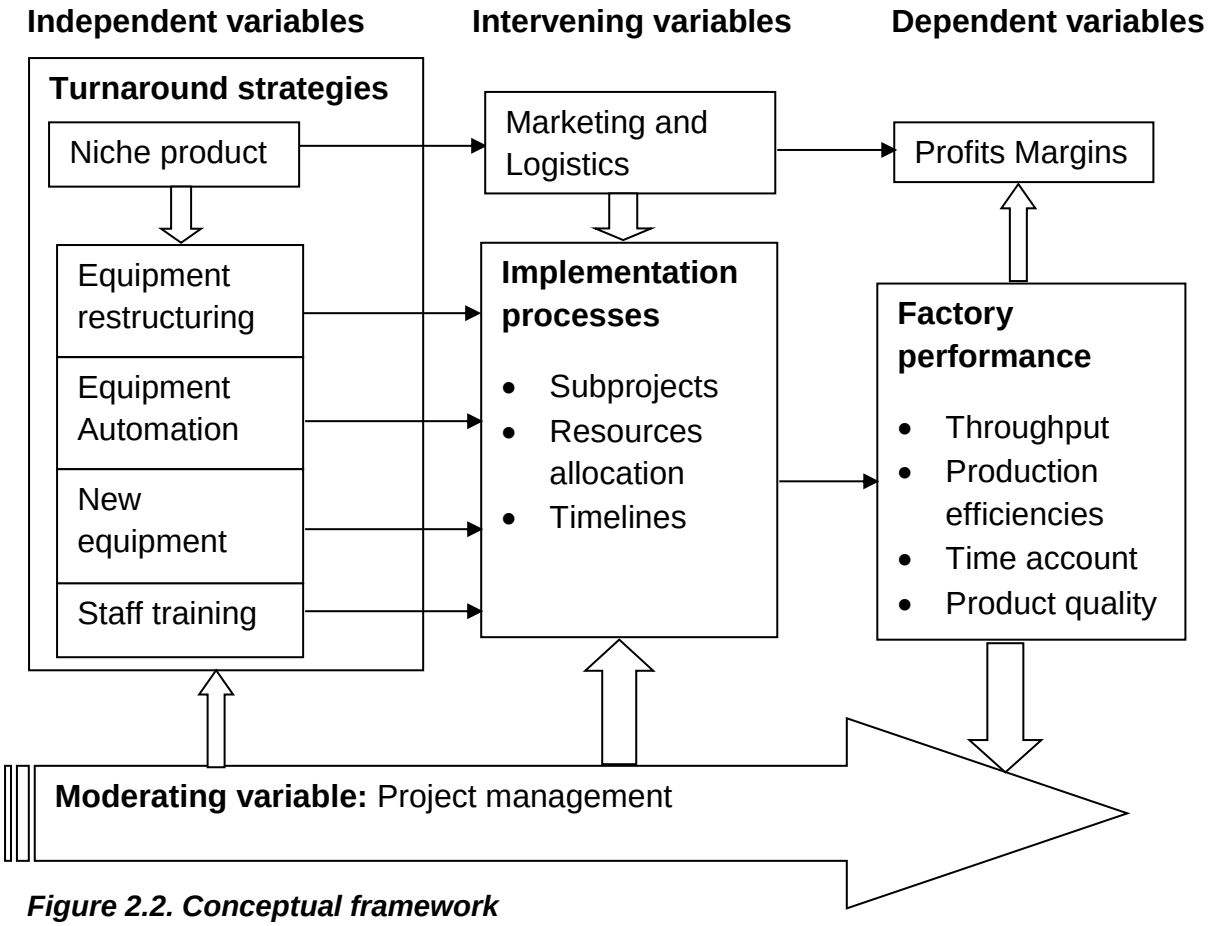

Figure 2.2. Conceptual framework

Taking from the reviewed literature, two strategies were applied in this case. Those are selective product or market and the assert redeployment. As briefly mentioned in Chapter 1, a niche market was secured through intense marketing strategy after which the product was made and supplied. This product was sold at a premium price while its production is not so sophisticated. The second strategy was employed to improve operating efficiencies; capacity utilisation and employee productivity.

The conceptual approach in this turnaround project was to firstly identify what needs to be done to improve the performance. This is obviously after root cause analysis. It was established that the introduction of niche product was somehow suppressing the production line. Therefore, to a certain extent the niche product influenced the implementation of asset redeployment. Also it should be noted that factory performance has an impact on the production of this niche product. In such that the quality standards are very high; its production volumes depend on factory throughput and production efficiency informs its production rate. The second step was to break

the implementation into subprojects; allocate resources to these subprojects. Each project had time frame. Project management team was involved in planning and implementation in order to influence the much-anticipated outcomes. Factory performance informs the project team if there is any influence.

2.6 Literature review summary and research gap

Corporate turnaround strategies have been in practise for a number of decades. They have been successfully implemented in many organisations. Even some world's biggest companies have gone through turnaround at some point. With a thorough analysis of causes of failure and proper implementation plan, turnaround may be an answer to any ailing business. However, it needs a support in both pre- and post-stages. At pre-stages it is supported for success whereas at post is for sustainability. Therefore it is important to start the turnaround process with all key stakeholder on board.

Sugar industry in the SADC region has continued with its conventional approach into problem solving while the world and the business itself have evolved. The strategy has always been solving specific performance indicators. In some instances, this approach falls short to address the newer challenges. There was no evidence in literature that turnaround strategy had ever been used to upturn the firm’s performance in sugar industry. It is this gap in literature that the researcher wanted to explore. Applying turnaround strategies would provide all-in-one approach which should save time and money. The two turnaround strategies were adopted and implemented in the pilot firm. Evaluation of performance was then done to test the effectiveness of strategies. The following Chapter outlines how this evaluation was done.

Chapter 3

Research design and methodology

3.1 Introduction

This is both scientific and technical study which intends to test the cause-effect relationship in a factory environment. The purpose of this study was to measure the effectiveness of turnaround strategies on performance and quality. Therefore, it is a causal study. The organisation employed a turnaround expertise to identify the causes of decline and implement relevant turnaround strategies. Thereafter the performance of the factory was monitored on weekly basis throughout the production campaign with an expectation of positive influence.

Few mini-projects were implemented in this factory with an aim to improve performance. Data for seasons pre- and post-implementation analysed to assess the difference which could an impact of the project. SADC sugar season campaign begins on the first week of March to end of February the following year. Each week every factory release its performance data through Sugar Milling Research Institute (SMRI) to the industry. This is validated by each factory before released, so it is reliable. In this study, the same data is used. However, the data is extracted internally from Laboratory Information Management System (LIMS) database. The study uses secondary data. This is numeric data, so it is a quantitative study.

3.2 Research design

The scientific nature of this study which intends to test the cause and effects makes it a positivism as best defined by Sekaran & Bougie (2014). In this study, a theory of turnaround was applied on a declining firm with an expectation of improving performance. Testing a general theory is deductive reasoning (Sekaran & Bougie, 2014). Saunders, et al., (2016) associate positivism and deductive approach with a quantitative study. The study also covers large quantities of numerical data which further qualifies it as a quantitative study.

As mentioned above, this is a deductive reasoning study which aim to test the theory. However, the set-up is within an organisation which has an existing problem they looking to solve or a change to be implemented. Also being an employee of the organisation, this study is therefore very close to action research. However, based on

the main objective of the study which is to test the effects of the independent variable on dependent variables, this is an experiment study (Sekaran & Bougie, 2014, p. 102). Whereas action research is mainly a problem-solving approach which may change focus depending on short term outcomes.

This is the field experiment as the study was done in a natural environment where work carried on as normal (Sekaran & Bougie, 2014). There are few factors affecting the validity of experiments. Within this study, those factors were noted and their effects were discussed. Examples of those factors would be material quality which can affect production efficiency (history effect); also the maturation effect where operation gets more effective with experience.

Saunders, et al., (2016) define cross sectional studies as snapshot taken on a specific time while longitudinal studies are referred as diary since data is taken over time. The data used in this research is spread over few years, so it is a longitudinal study.

3.3 Study site

The study was conducted in a standard sugar factory in Mozambique. The opportunity to conduct this study in this factory presented itself as the factory management was looking for the ways and means to upturn the ailing business. The factory has been experiencing massive business losses for few years. Modifications were done in production department and performance was expected to improve.

3.4 Target population

The study compares data before and after the implementation of turnaround. The sets of key performance indicators (KPIs) for production campaigns prior and post changes were collected. There are few other KPIs for the factory but the focus was more on the production line where modifications were done.

3.5 Sampling strategy

The researcher aims to analyse the factory performance across full season campaign. Sampling the selective parts of the campaign could misrepresent the data and the study as a whole. For that main reason, census was used. This approach gave a true reflection of the impact of turnaround and it eliminated manipulation. The disadvantages of census as highlighted by many scholars include time; money and access to information. This study used secondary data from the pre-collected data which is done as normal operation. Researcher has a free and direct access to this

data. It was therefore reasonable to use census as there were no costs related to sampling.

Production campaigns in SADC sugar industry run between autumn and early summer. The rest of summer months to early autumn is utilised for maintenance. When closing the season and shutting down for maintenance, factories tend to priorities shutdown procedures over performance. On start-up, factories are pretty much on commissioning mode after shutdown. Performance at these points maybe diluted. Therefore, the first and the last 2 weeks of each campaign were considered extremes on this study and they were excluded. This reasoning is inline with normality of distribution as discussed by Sekaran & Bougie (2014). The data being analysed was grouped into clusters, namely, throughput; time account; production efficiency and product quality. However, these clusters were not sampled but rather analysed in full (census). So the data grouping in this study follows the single-stage cluster sampling method except that no sampling was done from clusters.

3.6 Sample size

There is no sample on this study but rather a large census data which cover 22-26 weeks of each campaign. This factory's season roughly runs normally from mid-May to end of October or even November depending on sugar cane availability. This sample size alleviates selection bias which is one of factors affecting experiments.

3.7 Research instrument

This experiment research tested the alternative hypothesis by measuring the significance of difference between similar variables but at different conditions (pre- and post). Dependent variables were measured before and after intervention to ascertain the effect of independent variable. Data collection was done in a form of a documentary secondary data. In this case data, was harvested of LIMS database into MS-Excel spreadsheet. The data was grouped into clusters and then analysed. The quality related data was retrieved from customer liaising office which is basically a customer feedback specifically on quality.

Suitability

Time lost due to operational stoppages gave time efficiency of the section where modifications were done. Tons sugar made and estimated measures the throughput. This parameter measures both liquid stock and sugar produced. Using packed or

dispatched sugar only would undermine the effect of stock accumulation which might distort the weekly throughput. Boiling house recovery (BHR) is a term used for production efficiency. It measures sugar recovered from the cane juice received. Customer complaints were used to measure the effect of turnaround on quality. This method eliminates internal laboratory inaccuracies. All this data for dependent variables is numeric while the independent variable (turnaround strategies) is not. So to test the impact of independent variable, the paired t-Test method was the most suitable method. This method measures similar variables at different conditions (Saunders, et al., 2016).

Validity and reliability

The data used measures how well the production section is doing as part of the business in daily basis. It is then consolidated weekly and reported in higher levels of the organisation. It is a highly accurate data for two reasons: 1. It forms KPIs for a section manager and the firm at large. 2. Part of this data is published in the industry, misrepresentation may have negative consequences. This data is therefore reviewed every week by the senior management and signed off before being released. Performance calculations are standardised across the whole SADC sugar industry. Manipulation of calculation or data recording is deemed dishonest within the organisation and it may lead to disciplinary. There is high confidence on the validity and reliability of the data used in this study. As for the reliability of results, reputable data analysis tools were used as mention below.

3.8 Data analysis

The statistical data analysis was done using two MS-Excel tools, i.e. Excel add-ins (Data analysis) and XLSTAT. The analysis was done in parallel using both tools to ensure reliability. Line charts were used for comparison purposes. To test the effect of intervention, paired t-Test is recommended to test two variables that measure one feature but in different conditions (Saunders, et al., 2016). This study examines the cause and effect relationship, t-Tests were done in both programs. Regression analysis between customer complaint and related costs was done to assess the strength of cause and effect relationship. Descriptive data was done for all samples tested.

3.9 Access to data and Ethical considerations

An approval from the organisation was granted to use this project as requested by the researcher. However, the study was limited on factory performance data only. No information deemed confidential was used in the study. Financial figures used are just estimates as this information is only published through dedicated channels. The name of the factory and those of staff remain anonymous. Data access was in the form of hybrid which combines both traditional and internet-mediated types. No sensitive data was included on this study. Internet site used here is governed by the organisation, so it has high protection to internet ethical issues. Data was fully and accurately collected, and then analysed solely for the objectives of the research.

3.10 Summary

An academic approach was used to solve problems in a traditional set-up. This was a new dimension altogether. The research principles were applied while the main focus remained at solving the declining performance. Chapter 4 presents the clusters of results for pre- and post-intervention conditions.

Chapter 4

Results

4.1 Introduction

This Chapter presents the results of the quantitative data collected from pilot factory. Each table or graph presented is elaborated for clarity. The data comes from a sophisticated industry where some terminology is confined within the industry. However, common terms were used to convey a clear message. Also the calculations and assumptions are clarified.

The study itself was about testing the cause and effect. So these results revolve around comparison of year-on-year data. Later, the cause and effect was tested statistically and the results are elaborated. There was also a benchmark year which was believed by the factory management to be the good year in recent climate conditions. All data presented in this Chapter comes from THS for production season 2016/17 to the current 2018/19. It must be noted that season 2018/19 had not yet ended when data was extracted. About one and half weeks was still remaining for this season. The data was however comparable to other seasons on weekly basis.

4.2 Impact of niche product on sales

The introduction of niche product aimed at improving the profit margins as this product was sold at premium price above the standard product. In 2016/17 season only standard product was produced. The seasons of 2017/18 and 2018/19 (current) saw the full production of this new product. Sales were calculated as production (tons) multiplied by the price (R6500/ton) of standard product and €530/ton of new product. Total sales for 2017/18 and 2018/19 include both products; standard and new, whereas 2016/17 and the benchmark seasons only have a standard product.

Table 4.1. Production and sales for different seasons

Season	***Total production (Tons)***	***Total Sales***
Benchmark	62334	R 405,173,581
2016/17	48516	R 315,402,311
2017/18	50642	R 341,471,631
2018/19	49941	R 335,675,480

It was a good year in total production for the benchmark year with the total sales the highest compared to the subsequent years. 2016/17 was the lowest in production and therefore the sales. 2017/18 and 2018/19 had much improved sales without significant change in total productions. These two seasons benefited from the premium sales of a niche product. Season 2017/18 had almost the same total production as 2018/19 but the sales were slightly higher. The measure difference on these seasons is the higher niche product sales in 2017/18. Figure 4.1 below compares separate product sales per season to illustrate the impact of the niche product sales.

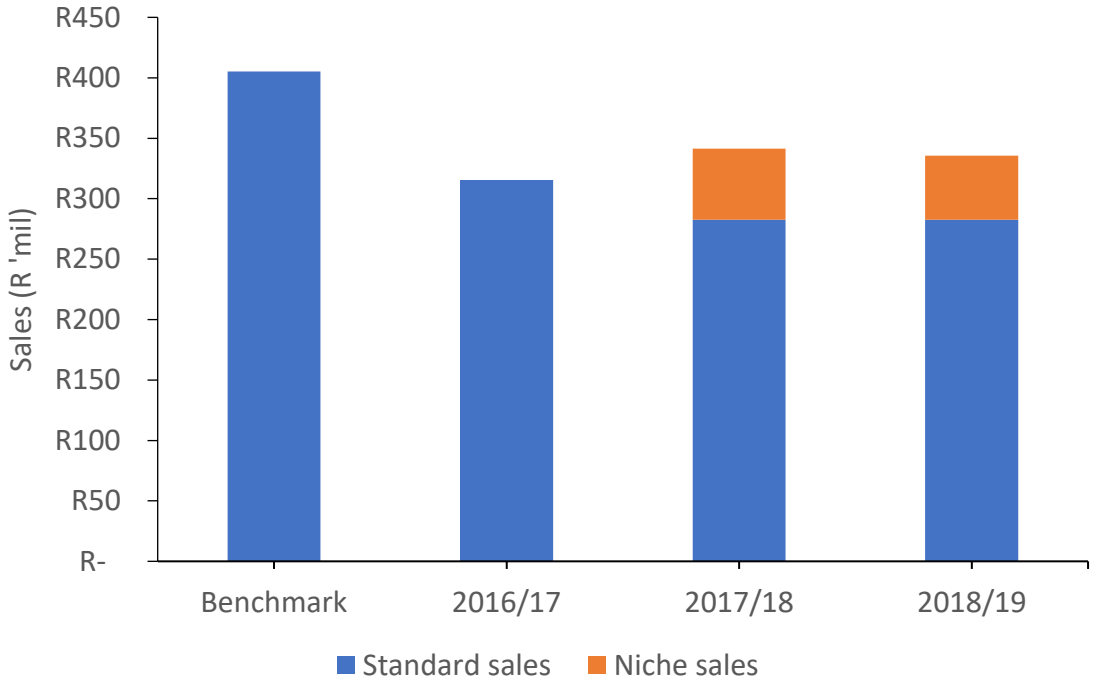

Figure 4.1. Separated sales for different seasons

Figure 4.2 below compares the weekly production of the niche product across the season for 2017/18 and 2018/19. It must be noted that during the pick period of 2017/18 there were huge swings in weekly production. The swings were also present in 2018/19 but at lesser magnitude. Data analysis was done to test the magnitude of these swings. The resultant coefficients of variation were very high at 90 and 77 for 2017/18 and 2018/19 respectively. Zero production weeks were removed as extreme ends when calculating the variation.

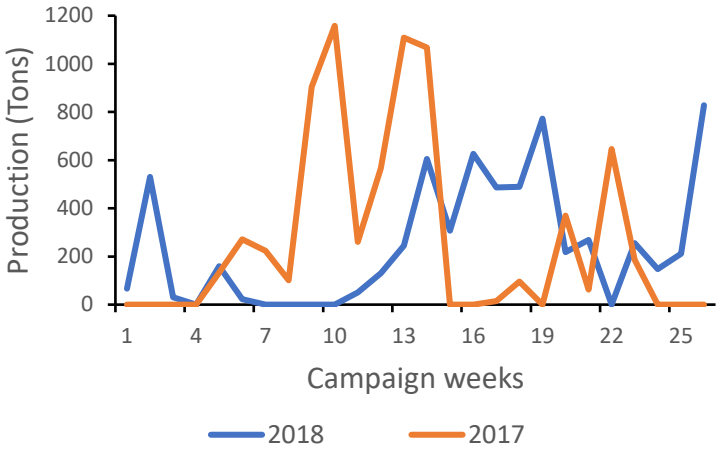

Figure 4.2. Weekly trends for niche product

More statistics analysis was done to test the overall impact of the introduction of niche product in the firm. Firstly, the paired t-Test was done on 2016/17 and 2017/18 weekly sales. These were the seasons just before and after the introduction of this product. The t-value was low at 1.04 and the probability was 0.308 which indicate insignificant impact of niche product. This method was further tested on the benchmark season versus 2016/17, the poor season. A t-value of 3.996 was achieved and the corresponding probability of 0.0005 which translate statistical significance. This data analysis was done through both MS-Excel Data Analysis and XLSTAT and the results were collaborative as shown in figure 4.3.

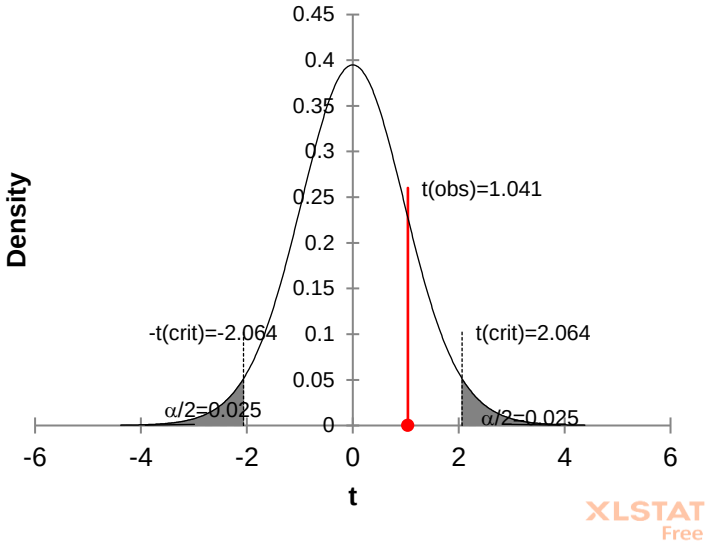

Figure 4.3. t-Test chart for 2016/17 and 2017/18

Table 4.2 presents the summary of descriptive statistics of the four seasons in consideration for this study. On average, the benchmark season remains the best season followed far by 2017/18 and the closely comes 2018/19, even though this season might still surpass 2017/18 with a remaining 1,5 weeks.

Table 4.2. Descriptive data of the four seasons in consideration

Descriptive data of sales				
Statistic	***Benchmark***	***2016/17***	***2017/18***	***2018/19***
Count	26	26	26	26
Mean	16206943	12130858	13128771	12910595
Median	16437244	13848250	13598836	13872948
Standard Deviation	2721442	4924147	3443064	3617091
Kurtosis	-0.6913	0.3079	2.1143	2.1508
Skewness	-0.5052	-1.1807	-1.1823	-1.5194
Range	9450050	17147000	15723005	15126045
Minimum	10315500	305500	3013107	2205549
Maximum	19765550	17452500	18736112	17331594
Standard Error	544288	965705	675240	709370

4.3 Evaluation of turnaround impact on boiling house recovery (BHR)

BHR is the measure of how well the sugar is recovered from the raw cane juice. It is the ratio by mass of sucrose (sugar) content in inlet (juice) to outlet stream (sugar). This ratio is presented in percentage and the higher is the better. Since some sugar is taken of out with the by-product (molasses), 100% BHR is impractical. 90% is a very good achievement, whereas anything below 85% is poor. BHR however depends significantly of the quality of cane juice entering the factory (history effect). This performance parameter is one of the key performance indicators in the factory. A lower BHR basically indicates the loss of product. Sucrose loss occurs in two forms in the factory, i.e. chemical loss, breaking down into glucose and fructose, and physical loss, vessel overflows and inaccurate weighing scales to make an example.

Firstly, BHR was trended across the full season length using a moving average to smoothen the extreme ends. The trends were then compared for all seasons in consideration. Figure 4.4 shows all the trends in comparison. In most of the campaign

weeks the trends are between 85 and 90%. It must be noted that only the benchmark season had BHR above 91% which occurred between week 4. The first 5 weeks of 2018/19 were poor with week 7 and 8 hitting lower 80s. There was however a significant improvement after week 9 which saw 2018/19 overlapping even the benchmark season. BHR drops in the tail end of each season. This period falls in summer months where cane quality also drops. It was mentioned earlier that BHR is dependent of cane juice quality. The trends are just confirming that. 2018/19 season had a better BHR in the tail end compared to all seasons.

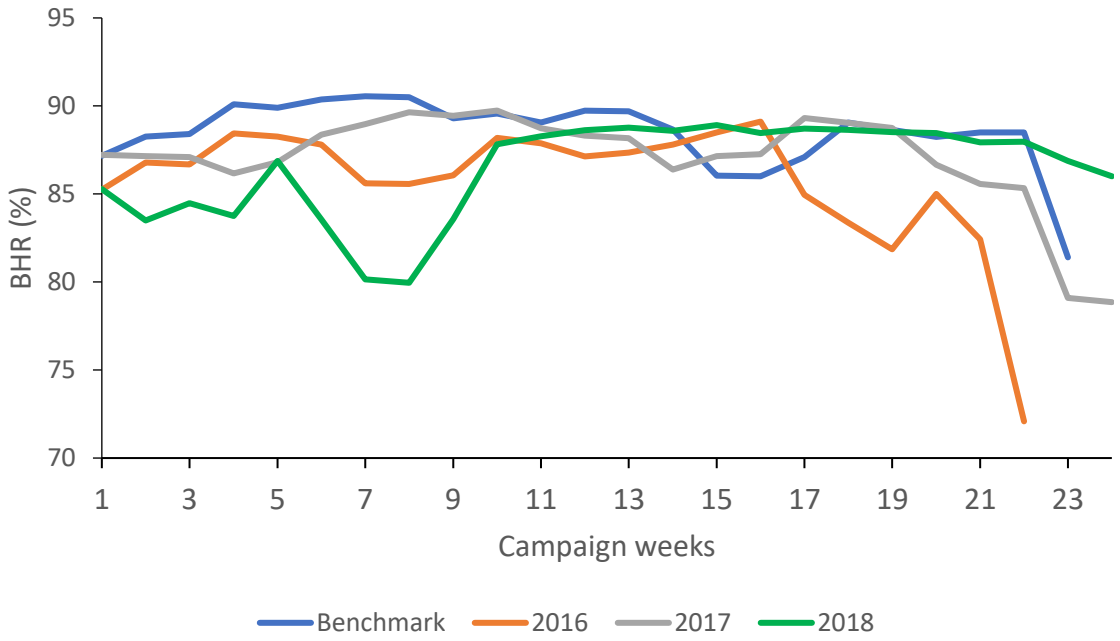

Figure 4.4. Season trends of BHR

Weekly data of all seasons' BHR was put on data analysis program for descriptive analysis. The following Tables 4.3 presents the descriptive data of all seasons in comparison.

Table 4.3. BHR descriptive data

Descriptive data for Boiling House Recovery across seasons				
Statistic	***Benchmark***	***2016/17***	***2017/18***	***2018/19***
Count	26	26	26	26
Mean	88.38	86.14	86.66	86.30
Median	89.10	88.07	88.11	87.96
Standard Deviation	2.69	3.83	5.35	3.85
Coefficient of variation	3.04	4.45	6.18	4.46
Kurtosis	2.05	1.90	16.01	2.49
Skewness	-1.61	-1.57	-3.70	-1.85
Range	9.90	14.78	27.21	13.50
Minimum	81.40	75.98	63.05	76.19
Maximum	91.30	90.76	90.26	89.69
Standard Error	0.59	0.82	1.05	0.77

The average BHR of benchmark season was by far better that all other seasons. The remainder of other seasons had an average BHR almost the same. The variation of data is very low for all seasons.

Paired t-Test was done to check the if there was statistical significance in difference between 2016/17 and 2017/18 samples. The t-value of 2.75 and a probability of 0.012 were achieved. The statistical significance confirms the cause and effect relationship.

Table 4.4. Paired t-Test for 2016/17 & 2017/18 seasons

BRH t-Test: Paired Two Sample for Means		
Statistic	***2017/18***	***2016/17***
Observations	22	22
Mean	87.78395	85.72920363
Variance	1.79139	13.23253596
Pearson Correlation	0.282829	
df	21	
t Stat	2.751372	
P(T<=t) two-tail	0.011962	
t Critical two-tail	2.079614	

4.4 Evaluation of turnaround impact on time account

In manufacturing industry time is of great importance. Loss of production time directly affects production costs. It is therefore important to maximise allocated time of production. In this factory time lost was being recorded per section. That is however a normal practice for many sugar factories. Time lost records help on maintenance planning and budgeting. Equipment failure can also be detected through time account and be avoided by necessary maintenance. Time loss occurs due to equipment failures; shortage of utilities; processing difficulties and operational errors. Error in judgement also occurs, which is normally caused by incompetence or even miscommunication. In this section, time lost due operations was analysed to evaluate the impact of intervention.

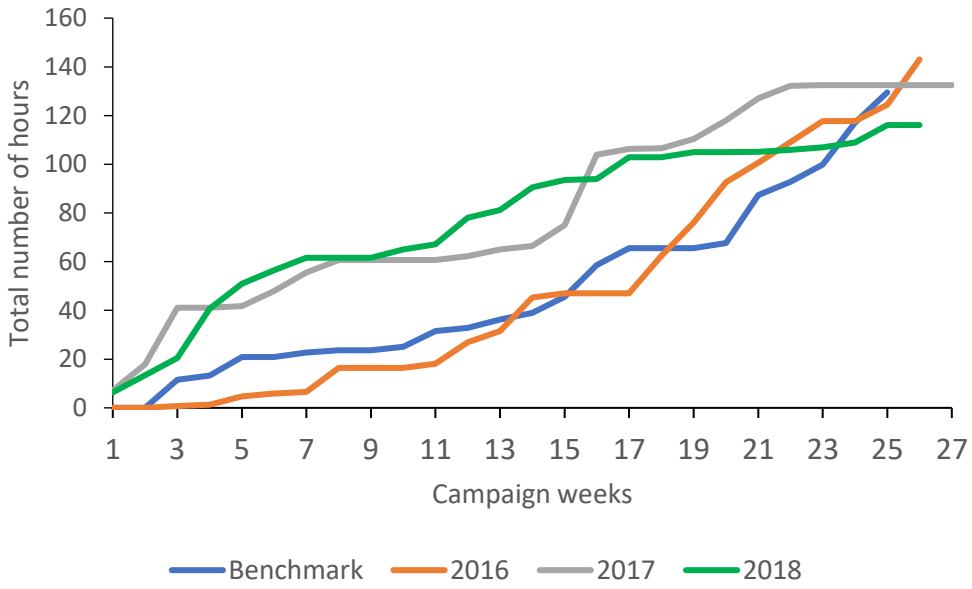

Figure 4.5. Accumulative time lost trends for all seasons

Production time lost was added on week to week basis to draw smooth curves. Weekly figures are too erratic and produce messy trends. From figure 4.5 it should be noted that 2016/17 season which was deemed the worst, had a stable run for most of the campaign weeks. Only towards the end this season got out of control. The subsequent seasons 2017/18 and 2018/19 had poor start-ups which remained poor throughout the season for 2017/18 while 2018/19 improved significantly during the second half of the season. Out of 132 total production hours lost in 2017/18, about 29 hours were lost just in one week, week 16. From the observation of figure 4.5, one can easily conclude

that interventions did not improve time account in a production line. If anything, time account got worse in 2017/18 and 2018/19 seasons. It was noted though that 2018/19 season had a more stable time account from week 17 hence the total time lost is below all other seasons. Statistical analysis also confirmed no causal relationship in this data. Table 4.5 summarises descriptive data for time account.

Table 4.5. Time account descriptive data

Descriptive data for time account				
Statistic	***Benchmark***	***2016***	***2017***	***2018***
Count	26	26	26	26
Mean	5.396	5.501	5.096	4.465
Median	3.100	2.517	2.583	3.042
Mode	0.000	0.000	0.000	0.000
Standard Deviation	5.719	6.063	7.107	4.805
Sample Variance	32.702	36.762	50.506	23.088
Kurtosis	0.549	-0.667	5.302	3.317
Skewness	1.145	0.809	2.219	1.559
Range	19.800	18.580	28.833	20.333
Minimum	0.000	0.000	0.000	0.000
Maximum	19.800	18.580	28.833	20.333
Sum	130	143	133	116
Standard Error	1.167	1.189	1.394	0.942

4.5 Evaluation of turnaround impact on throughput

One other key performance indicator in a sugar factory is product throughput. Higher throughput means more product available for sales. Also specific to the sugar industry, higher throughput means shorter season length which avoids summer months. Quality of cane deteriorate during the wet season. Sucrose pick is in winter.

Production throughput comparison is presented in figure 4.6. Similar to time account trends, 2016/17 versus subsequent seasons started very well and decline sharply towards the end. 2018/19 started poorly and improved during the second part of the season. It needs to be noted that all other trends beside 2018/19 have a sharp decline towards the end. There is a relationship between BHR and throughput in such that the

lower the recovery, the lower is the desired product volume and the opposite is true. Similarities can be noted in figures 4.4 & 4.6. Moving average was also used to smoothen trends in figure 4.6 as in 4.4.

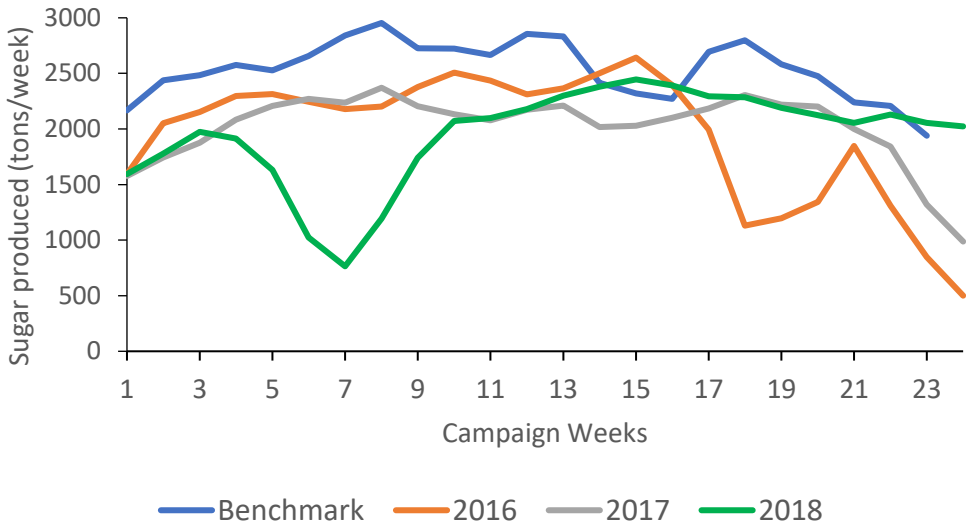

Figure 4.6. Throughput trends for all seasons

Descriptive on throughput was done as shown in table 4.6 below.

Table 4.6. Descriptive data for weekly production rate

Throughput descriptive data				
Statistic	***Benchmark***	***2016/17***	***2017/18***	***2018/19***
Count	26	26	26	26
Mean	2493.376	1866.016	1947.030	1920.791
Median	2528.807	2130.500	2049.604	2074.307
Standard Deviation	418.683	758.060	473.575	521.405
Coefficient of variation	16.792	40.625	24.323	27.145
Kurtosis	-0.691	0.307	3.113	2.506
Skewness	-0.505	-1.181	-1.562	-1.645
Range	1454	2638	2113	2162
Minimum	1587	47	464	339
Maximum	3041	2685	2577	2501
Sum	62334	48516	50642	49941
Standard Error	83.737	148.668	92.876	102.256

It was mentioned in the sales section earlier that the benchmark season had very high production volume compared to all other seasons. The sum in this table also shows that. Variation in the 2016/17 sample is very high at almost 41. Minimum and maximum show a swing of 47 and 2685 respectively. 2017/18 and 2018/19 seasons also had considerable variation in weekly production.

Table 4.7. Paired t-Test for 2016/17 & 2017/18 seasons

Throughput t-Test: Paired Two Sample for Means		
Statistic	***2017/18***	***2016/17***
Observations	26	26
Mean	1947.029938	1866.015864
Variance	224273.3933	574655.1341
Pearson Correlation	0.508512773	
df	25	
t Stat	0.627181699	
t Critical one-tail	1.708140761	
P(T<=t) two-tail	0.536226641	

The causal relationship examined using the paired t-Test as shown in table 4.7 above revealed null hypothesis, no statistical significance. t-value achieved was low at 0.627 and a probability of 0.536. This outcome suggests there was no impact of intervention on throughput figures.

4.6 Evaluation of turnaround impact on product quality

Quality determines if the product will sell or not. It is imperative to get it right first time or if by any chance quality is out of specification, the product must not be released but rather recycled. Product quality has numerous parameters tested internally. Many of those tests were only introduced in 2018/19, so they could not be compared with other seasons. The customer complaints which were related to product itself not packaging were reviewed and compared on season to season basis. Table 4.8 presents the results.

Table 4.8. Quality data from customer complaints records

Season	**2016/17**	**2017/18**	**2018/19**
No. of complaints	3	3	2
Nature of complaints	2x Foreign matter and high moisture	Insoluble solids; product colour and lumpy product	High moisture and irregular grain size
Related costs	R48, 000	R65, 000	R12, 000

The number of customer complaints dropped very slight as the table shows. Even though these numbers look almost the same, the magnitude of the complaints were very high for 2016/17 and 2017/18 as shown by costs. High moisture and grain size for 2018/19 season affected only the handling of the product but it remained usable. Table 4.8 is self-explanatory in terms of magnitude of these complaints. Table 4.9 presents the regression analysis between the number of complaints and related costs. R-square of 0.9 confirms there is a cause and effect relationship.

Table 4.9. Regression analysis of complaints versus costs

Regression Statistics	
Multiple R	0.94939072
R Square	0.90134274
Adjusted R Square	-3
Standard Error	12020.81528
Observations	1

4.7 Summary

All the assessed data of this study was presented in this Chapter. Data was presented in both chart and table formats. Every set of data presented was elaborated and the abnormal terms were clarified. However, as far as possible the common terms were used. This Chapter lays a foundation for the next one, the discussion of results in conjunction with objectives of the study.

Chapter 5

Discussion

5.1 Introduction

This Chapter aim to collaborate the objectives of this research with results achieved from data analysis. Briefly, the objectives of the research were: to test the cause and effect relationship between turnaround and performance; develop the turnaround model and identify at what point to apply turnaround. In data analysis, four main season campaigns were compared graphically for various variables to identify changes. Relationship test was then done using the recommended (Saunders, et al., 2016) paired t-Test. These results are further discussed in conjunction with objectives to determine if the overall objective of a research was met.

5.2 Turnaround strategy 1: Selective product or market

Market opportunity is one of the big factors when shaping the company's strategy (Hough, 2016). Profit and growth potentials need to be identified upfront before acting on production line, especially for an already troubled firm. In many instances maximisation of sales is thought to be crucial to improve profits. This can be in the form of increased production, as an example. This approach tends to side-track many managers as they end up overextending resources trying to maximise sales while there is minimum impact on profits (Wild, 2010, p. 621). In contrast, if the market is open, sales should be maximised to improve profit. It may be attractive also to apply resources to niches within the same market. These two scenarios were the case in this study. The standard product had a preference in local market, increasing sales would improve profit and a niche market also had its potential.

A new product was designed between the Technical department and Operations. A sample of product was made for marketing purposes. International sales department marketed the product and therefore secured a market for it. This product was sold at a premium price as a niche. The pre-selling of product prior to production was a good strategy in such that customers committed upfront which helped in sourcing capital required for necessary modifications. Capital expenditure for modifications totalled to about R15 millions which is not significant compared to the overall factory machinery. Manufacturing the new product was no significant difference to a standard product but

just few technicalities required. It was therefore an easy decision to embark into niche production after the market was secured.

The factory started producing the new product in 2017/18 season and continued to 2018/19. That had had an impact on sales as shown in the previous Chapter. The prices used in sales calculations are estimates as mentioned in ethical consideration in Chapter 3. R6500/ton was an average price of brown sugar in calendar year 2016 (Dlamini, 2016, p. 417) whereas €530/ton was just a quoted estimate by an internal sales representative. The use of average prices alleviates the effects of fluctuations in prices and exchange rates which is good for comparison purposes. So these prices are more of multiple factors than anything. The used exchange rate for a Euro was R15.5 (South African Reserve Bank, 2018).

Total production of 50642 tons was achieved in 2017/18. Of that total, 7172 tons was the new product which resulted in about R59million sales. That was just over R12mil extra if everything was going to be sold as a standard product. The project nearly paid itself off in one season. The following season 2018/19 dropped in niche sales to R53mil. That was mainly due to the drop of production to 6450 tons. Again, R11mil extra was due to niche sales. This amount completed the project payback within the second. Many South African firms use payback period as investment criteria and two years is an average cut-off point (Firer, et al., 2012). This was therefore an acceptable project under the payback rule.

The benefit of a niche product was clearly realised in seasons 2017/18 and 2018/19 and the modification project was paid back within acceptable period. Reading from the production numbers, it is imperative to increase the production volume of this new product. However, that comes with a growth in the market. In this particular case, the market had been already established but the drop was caused by failing to fulfil the market demand. In a focused differentiation market segment, product quality is of great importance. The product did not meet some quality specifications in 2017/18 season. That cause a drop of sales for the subsequent season. Confidence dropped in some customers and the purchase orders decreased.

After the shortfall in product quality, an assessment of the whole system was done and it was established that when plant modifications were implemented, quality control element was missed. An additional work which totalled at about R2mil was done to

address quality issues in a plant. A big issue though was with internal quality control system. An overhaul of the whole quality assurance department was done to improve quality control standards. When evaluating the production process, it was also established that there were huge swings in production volumes as shown in figure 4.2. These swings also could have affected the product quality. Equipment for this product was designed for both throughput and quality. It needs consistent and smooth throughput to produce good quality product. Staff competence was a significant factor on those swings. As maturity of operators improved, magnitude of swings dropped but still on a high side.

The issue of niche product quality cascaded into the second turnaround strategy, asset redeployment. So the R2mil work aimed to cover the full quality control for every product produced from the plant. The quality control system was commissioned in the beginning of 2018/19 season. It is for that reason the magnitude of customer complaints dropped so much as highlighted in table 4.8, the 82% drop in costs related to complaints.

It is clear that the introduction of niche product had some positive effects of sales which would eventually improve profitability. The next step was to test the significance of this strategy to fulfil the objectives of the study. As shown by figure 4.3 in Chapter 4, statistical analysis suggests that there is no significant impact of niche sales on overall sales. Looking at the figures, R59mil and R53mil are far less than R341mil and R336mil respectively. That indicates minimum impact from the turnaround strategy. So, the statistic is correct but that does not mean the strategy has failed. It suggests that if sales were to improve, the significance would be greater. Comparing the benchmark season with all other seasons confirms the suggestion. This is shown in figure 5.1 which is included in this Chapter. Here, the shows the comparison of benchmark season which had the highest sales and 2016/17 which had the lowest sales. Unlike in figure 4.3, the t-value for figure 5.1 is 3.996 and the probability of 0.0005.

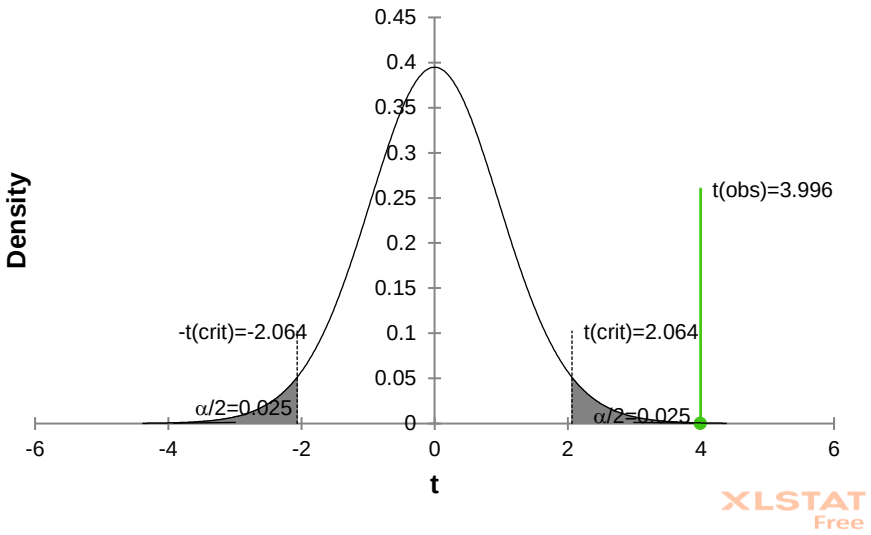

Figure 5.1. t-Test chart for a benchmark vs. 2016/17 season

The strategy when implementing niche was to increase production and sales. This quality issue was a setback. Going forward with this project it would be important to improve production volumes of niche product with the corresponding quality. This can be achieved by smooth and consistent throughput. The equipment installed addressed the quality shortfalls. The maturity of staff in both operations and quality assurance departments should further improve throughput and quality. In late 2018 the firm was accredited for the first time in food safety management system (FSSC:22000) which should instil confidence on customers. On hindsight, the production of niche is highly dependent on the overall plant performance. This overall performance on its own could also affect profitability. It was therefore necessary to work on improving the factory performance and that is how the first turnaround strategy is linked with the second one, as mentioned earlier.

5.3 Turnaround strategy 2: Asset redeployment

Often business needs more than one strategy to survive the decline (Mann & Byun, 2017, p. 24). Santana, et al., (2017, p. 206) argue that the most prevelent strategy in difficult situations is retrenchment which can sometimes be counter-productive. Asset redeployment involves restructuring plant and equipment to improve production efficiencies. It aims at improving capacity utilisation and employee productivity (Hoffman, 1989, p. 62). It was elaborated in the previous turnaround strategy discussion that increased production would benefit the sales, more espacially for niche. In the situation of this particular firm, the less costly option was to improve effeciencies and employee productivity. This option was further supported by the fact

that the very equipment had once produced high volumes of product, as per the benchmark season data.

The approach in improving capacity utilisation was to reduce production down time, reduce product loss to byproduct stream by improving product recovery and improve product quality to minimise recycling. When starting this project it was established that were many hours lost on a production line due to process related issues, e.g. high process stocks; equipment under utilisation; miscommunication leading to equipment stoppages; inconsistence amongst operators and incompetence. Asset redeployment included the following items in address these problems:

- *Equipment restructuring to provide flexibility*. The old principle of operation in this plant was to assign equipment per duty. That had been working well in the past but when the new product was introduced it created an imbalance. There was over capacity in some areas and under capacity in some. Restructuring brought back the balance. After completing equipment restructuring, production cycle was drawn to assist staff in adapting the new approach.
- *Installation of new equipment to address quality*. One of the major customer complaints was the foreign matter in product. Series of filters were installed to remove suspended solids in product. In some areas of the plant carbon steel was replaced with stainless steel to eliminate risk of rust. Installation of new equipment was conducted concurrent with introduction of extra quality analyses in the quality assurance department.
- *Plant automation to address inconsistence*. There was a lot of inconsistence in product quality amongst the operation shifts. Some operations were exposed to subjectivity of operators. That subjectivity was replaced with the automation of equipment.
- *Restructuring organogram and plant sections to improve communication*. The product handling department was very isolated to manufacturing. There was a restricted communication between these departments. Areas of operation were re-assigned to get product handling more involved with manufacturing. That forced the interaction and improved communication.
- *Staff training to address incompetence*. Some basic concepts of sugar manufacturing were missing from operators. Critical operations staff was sent

to an independent training facility to attain those concepts. Also a lot of in-house training was conducted.

The implementation of above items was expected to affect recovery; time account; throughput and quality. These parameters were measures and analysed statistically as shown in Chapter 4.

5.3.1 Boiling House Recovery (BHR)

BHR measures how well the product was recovered from the raw material as shown by the formula:

$$\text{BHR} = 100 \text{ x } \frac{M_s . W_s}{M_j . W_j} \quad \text{…….. (Rein, 2007, p. 583)}$$

Where: M_s……Total mass of product stream (sugar)

W_s……Fractional content of sugar

M_j…….Total mass of raw material (cane juice)

W_j…….Fractional content of sugar

This is a standard formula used by all factories in the SADC region. Performance of all these factories is published every year on SASTA congress and BHR is one of the parameters of comparison (Madho, et al., 2018, p. 30 & 33). A good BHR would normally be on the upper 80s and the higher is the better. At lower 80s BHR is poor. This parameter depends heavily on the quality of cane juice, the raw material. As indicated by the formula, if W_j is low (0.1 – 0.13) BHR is likely to be around 85% and below whereas at higher W_j (0.14 – 0.16) BHR increases. A poor BHR at higher W_j is an indication of poor performing factory. Unlike in South Africa, most countries are irrigating the cane and W_j is normally on a higher side. For that reason, juice quality was ignored when evaluating BHR.

Figure 4.4 in Chapter 4 compares BHRs for different seasons. At least for the first eleven weeks 2018/19 was below all other seasons. There was then a considerable improvement and it remained higher to the end of the season. The common behaviour for all trends is a significant drop at the tail-end of the season. 2018/19 season however remained higher than other seasons at the tail-end which was a new phenomenon. The explanation to these two extreme ends (poor start and strong finish) for season 2018/19 is the commissioning of both equipment automation project and the new equipment aimed at addressing quality. Commissioning of automation brought

the whole factory into standstill in week 9. Soon after that week new equipment settled and improvement was evident. With operators gaining more experience and confidence, BHR remained high all the way to the end.

The statistical analysis confirmed a causal relationship between 2017/18 and 2016/17 seasons. Table 4.4 highlights the results of the paired samples t-Test with t-value of 2.751 and probability of 0.012 which confirm statistical significance. Therefore turnaround had a positive impact on BHR. The trend of improvement did not however continue to 2018/19 season as the t-Test results were opposite when compared to 2016/17 season. This once again does not conclude a failure of turnaround but it was due to poor start-up of 2018/19 season as mentioned above. The table below illustrate the t-Test results of 2018/19 versus 2016/17.

Table 5.1. Paired t-Test for 2018/19 & 2016/17 seasons

BHR t-Test: Paired Two Sample for Means		
Statistic	**2018/19**	**2016/17**
Observations	20	20
Mean	87.0325	86.5772
Variance	4.4198	3.49042
df	19	
t Stat	-1.1957	
P(T<=t) two-tail	0.2465	
t Critical two-tail	2.0930	

The other measure of recovery, even though it includes section of the factory not covered by this research, is cane to sugar ratio. This figure denotes how many tons of cane were crushed to produce one ton of sugar (product). The lower the ration the better. As shown in table 5.2 below, there was a significant improvement between 2016/17 and 2017/18 seasons but a slight drop to 2018/19.

Table 5.2. Cane to sugar ratios comparison

Season	**2016/17**	**2017/18**	**2018/19**
Cane to sugar ratio	9.50	8.73	8.82

5.3.2 Time account

This is one of critical parameters which are carefully controlled in a sugar factory. Time is money for many businesses. In a sugar factory, production is lost when losing time. Also, this tricky product (sugar) deteriorates with time when it is on liquid form. It needs to be processed into a crystal form (which is more stable) as soon as the cane is cut in fields. Time starts counting as soon as the cane is flame burnt in the fields until final product is made. There are many records of time accounts but for this study only production related time account was evaluated.

A comparison of accumulative hours lost per week is shown in figure 4.5. Once again season 2018/19 started poorly and had a highest time lost between weeks 4 and 14. After that the accumulation was reduced and remained constant until the end. Again, the behaviour of other trends tends to increase towards the end while 2018/19 remained fairly constant. 2016/17 season started very well and worsened from around week 16. From week 17 to 28 this season moved from a total of 47 hours lost to 143. About 100 hours were lost just in 10 weeks. That was also the case for a benchmark season which lost over 60 hours in 6 last weeks. Also 2017/18 season declined towards the end. Only 2018/19 season behaved differently at the tail-end as there was no significant increase. This season ended up achieving the lowest number of hours lost due to production issues. Table 4.5 summarises the descriptive data for time account. It can be noted that season 2018/19 had the lowest mean and sum in comparison to other seasons.

There were no causal relationships on time account as per statistical analysis. Both 2017/18 and 2018/19 were each paired with 2016/17 for a t-Test and in both cases t-values were negative and probabilities were well above 0.05. The results were statistically not significant. Figure 5.2 below shows a graphical illustration of t-Test from XLSTAT tool. This case is the same as in sales, there is no statistical significance to confirm cause and effect relationship but there are positive attributes of turnaround strategies noted from the data presented.

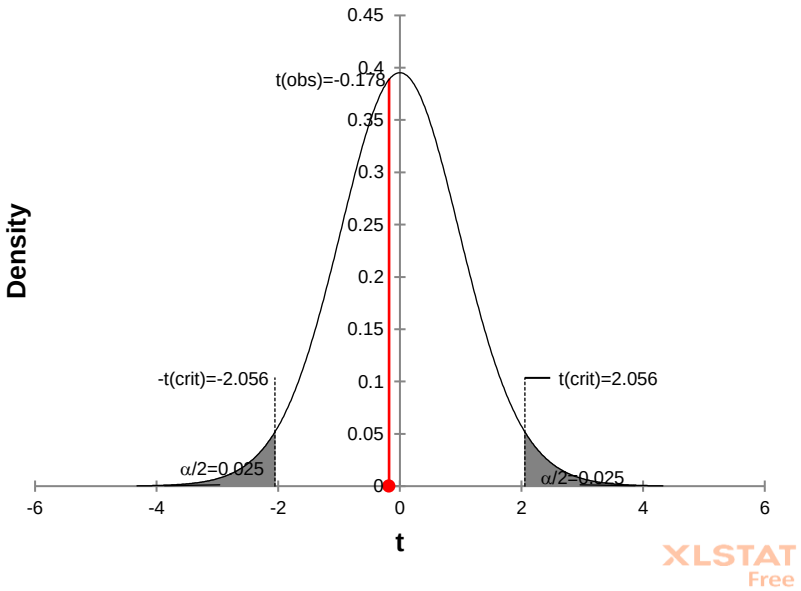

Figure 5.2. t-Test chart for time account :2017/18 vs. 2016/17 season

5.3.3 Product quality

Quality has been discussed in depth under turnaround strategy 1. This section covers discussion of data analysis only.

Table 4.8 shows the number of major customer complaints and related costs for each season. It is important to note that there was no significant difference in total number of complaints but there was a huge change in related costs. As mentioned earlier, in 2017/18 there were few major customer complaints which resulted in upliftment of product from the customer site. The costs related to that were high. As a result of those major complaints, more work was done in the plant to address quality issues. This work was commissioned at the beginning of 2018/19 season, of which there was a significant drop in cost per complaint. There were still complaints in 2018/19 season, those were not as significant as the previous season, even though they also need to be address. Competence and communication was the cause of those complaints. While quality assurance department was learning a new method of moisture analysis, out of specification product was released to customers. The complaints were related to moisture.

The strength of cause and effect relationship was done through regression analysis with number of complaints as independent variable and costs as a dependent. Table 4.9 presents the results with r^2 of 0.9 which indicates a very strong relationship. A figure of 0.5 upwards means a positive relationship, the closer to 1 it gets the stronger

is the relationship (Saunders, et al., 2016). Sekaran & Bougie (2014) describe the effect of statistical regression. These regression analysis results are likely to be affected by the extreme scores on dependent variables. From the data used for regression analysis, the highest figure is almost 3 times the lowest. Saunders, et al., (2016) quote the figure 0.8 as the highest most research has achieved, even though there had been some rare cases above 0.8. In dealing with this uncertainty, an internal measure was used in comparison. All of out of specification product is recycled into process and it is measured, as normal operation. A record of recycled product was reviewed and table 5.3 below summarises the findings:

Table 5.3. Total tons of product recycled per season.

Season	**2016/17**	**2017/18**	**2018/19**
Tons	2123	1883	807

This table further confirms a significant drop in product reject for 2018/19. This is an estimate as it includes product rejected due to poor packaging but it gives a good indication.

5.3.4 Throughput

The amount of product produced per unit time depends on the inlet stream, the raw material. After improving the flexibility of equipment, throughput was expected to also improve. Improved BHR also should contribute in throughput. With an improved production volume, sales would improve and potentially the profits. High production rate would also increase niche product which improve sales.

As with all other parameters evaluated for the impact of turnaround, throughput was also compared for seasons in consideration using trends. Figure 4.6 presents throughput trends expressed in tons produced per week. Similar to BHR and Time account trends, 2018/19 season had a poor start-up with throughput below all other seasons. 2016/17 also shows the same trend, good start-up and drastic drop at the end. As mentioned in discussions for other parameters, 2018/19 was affected by commissioning. After recovering from commissioning, throughput was fairly constant through to the end. Descriptive data presented in table 4.6 highlights that 2017/18 and 2018/19 had similar mean and the total production was almost the same. Both these seasons were better than 2016/17.

Figure 5.3. below shows the result of cause and effect relationship test for the turnaround on throughput.

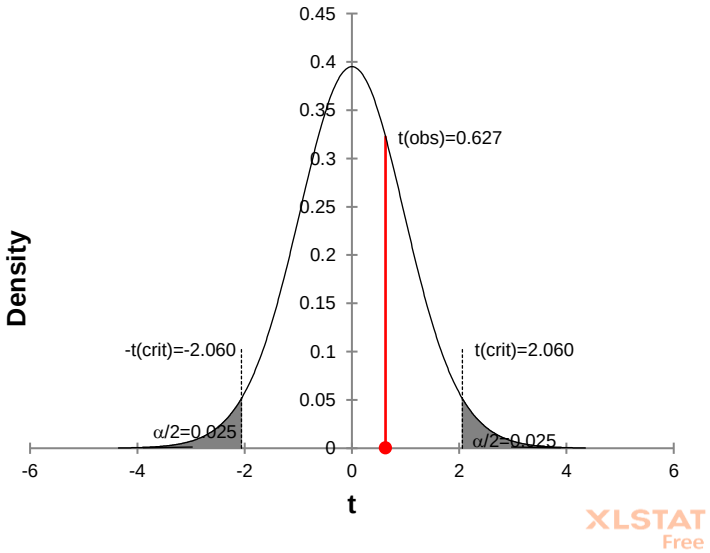

Figure 5.3. t-Test chart for weekly throughput :2017/18 vs. 2016/17 season

The red line of t-value denotes null hypothesis meaning the difference in these two variables is not occurring by chance alone. The t-value achieved is low 0.627 and the probability of 0.536. Once again there was no significant impact of turnaround on this parameter (throughput) measured. However, there was a positive change as presented by data. The improved cane to sugar ratio as presented in table 5.2 earlier, was also by the contribution of improved throughput as this ratio is calculated by dividing mass of cane processed by mass of product produced.

5.4 Summary of discussion

Statistical data in 3 of the 5 evaluated parameters did not prove a cause and effect relationship of turnaround. However, in all 5 parameters there was evidence of a positive impact of turnaround strategies applied. This evaluation might have been done too soon after implementation. Part of the project was commissioned during the evaluated season and yet that commissioning had hampered the start-up. Also operator maturity and confidence was still low when this evaluation was done. Given time, that situation was looking likely to improve. Wild (2010, p. 624) describes the time frame of 3-4 years it takes before the benefits of turnaround can be realised. In some cases, it can take as long as 10 years for a firm to fully recover from decline (Wild, 2010, p. 624). Due to the noted positive impact of turnaround, the model was developed as one of the objectives of this study.

5.5 The turnaround model

The model presented in this section is based on the study done on this particular factory. It remains a framework which can be used as a foundation. Some components may be modified to address the underlying problem. A thorough investigation on the causes of business decline is more important than just applying the model.

Preventive measures should always be given first preference over corrective measures in a business. Constant monitoring of performance assists in detecting the decline so that action can be taken earlier. It is important to understand why things go well during good times as this knowledge helps in addressing problems in challenging times (Dlamini, 2016, p. 423). In contrast, preventive measures are more aligned with internal factors. External factors are mostly unavoidable. It is the responsiveness of an organisation that determines the success over business waves.

Many of the internal and external factors are discussed in literature review. What was not covered though is to identify when to initiate turnaround strategies. Wild (2010, p. 624) argues that a decline of 3 or 4 years can be used as a qualifying criteria. In contrast, Mann & Byun (2017, p. 24) discuss the retail industry which declined within 1 year due to recession. The response to a declining performance might vary from industry to industry; firm to firm or situation to situation. Ravaghi, et al., (2017, p. 9) argue that in very rare cases the cause of decline is a single factor like a disaster or recession but in many cases decline is cause by multiple internal problam. In response to the research objective, embarking on turnaround strategies would be situational in a sugar factory. The following conditions might trigger the turnaround and their respective response period:

- Natural disaster -if the capacity allows, turnaround should start immediately.
- Economic recession -depending on the during of recession, shorter (<1yr) recessions can be absorbed in a manufacturing industry unlike in retail (Mann & Byun, 2017, p. 24) but also depends on the business size. In longer recessions (>2yrs) might need action.
- A continuous performance decline caused by multiple internal factors -this situation should be addressed immediately unless it is being addressed with traditional methods. However, if problems persists it should not exceed 2

consecutive seasons, turnaround should be applied otherwise. The 3 or 4 years criteria (Wild, 2010, p. 624) might results in longer recovery period.

- A continuous loss of market share -same as performance decline in this case. Watch agency problems not to cause further delays spicifically in these 2 categories.

Should turnaround be necessary, a 5-step model was drafted as a foundation of the sugar factory and should be considered as a framework.

Step 1.

- ***Acknowledge the decline:*** Teng (2002) narrated a declining firm as sick person. Whereas the first step to healing is accepting the sickness. Same as the declining firm, the sooner top management accept the better. Often management prolong the action due to reasons such as agency problem (Firer, et al., 2012, p. 9)
- ***Determine the magnitude of a decline:*** What cannot be measured cannot be controlled. Understanding the magnitude of the problem helps to prioritise resources towards addressing it. There are few ways to measure the magnitude of decline, e.g. loss of profit; financial ratios and loss of market share. In a factory set-up, production rate; efficiencies and time account are some of the inputs towards the determination of a declining performance.
- ***Communicate the problem, its magnitude and the intention to address it:*** All stakeholders should be actively involved during the turnaround stage. Communication assists in getting the buy-in from them. The sooner they are engaged, the better chances of success of a turnaround.

Step 2.

- ***Investigate the root cause:*** The actual problem, not the symptom, needs to be identified. There are few common tools that can be used for root cause analyses (RCA), e.g. fishbone diagram; 5-whys; fault tree; current reality tree and failure mode & effect analysis (SixSigma.us, 2017) to name a few. Investigation must be properly planned including a formulation of a team; drafting investigation method; describe the scope of investigation and allocate resources.

- ***Conduct company analysis (internal and external):*** It is important to understand the company's position in an industry and market place. This can assist when formulating a solution after RCA. SWOT analysis can be used for internal factors while PESTEL, VUCA or Porter's 5-forces (Hough, 2016) can be used for external factors. With a better understanding of internal and external factors, implementation of turnaround can address the shortfalls and maximise competitive advantage.
- ***Communicate the findings:*** Painting a picture of what the problem is and where the company stands amongst others can assist in finding solution as stakeholders might start brainstorming. Employees at this point start feeling as part of the team.

Step 3.

- ***Classify findings into a 5-M analysis:*** The causes of performance decline can be classified into manpower; material; machinery; method and money (5ME, 2018). This approach streamlines the solution into focal points which in turn gives more accurate allocation of resources.
- ***Identify the most suitable solutions:*** Some RCA tools assist in identifying the solution after root cause has been identified. Also, experience plays a role in finding suitable solutions. The solutions should however be in line with findings of the internal and external analysis.
- ***Develop the roll-out plan:*** Each solution should have its thorough roll-out plan. Roles, responsibilities, milestones and timelines must be clearly stated in a plan. Project management approach can be used in this regard.
- ***Allocate resources:*** Each solution must have its adequate resources. Identify necessary training and allocate funds.
- ***Communicate the plan of action:*** At this point the plan is solid and it should be communicated. If possible display the plan on notice boards or on sites.

Step 4.

- ***Implement each solution precisely:*** Manage the resources perfectly. Abide to timelines. Recognise milestones and celebrate with a team.

- ***Training:*** Roll-out the training of the necessary staff. Both classroom and field training are important. Classroom training promotes interaction while field training targets hands-on experience.
- ***Communicate the progress:*** As the project rolls-out its important to highlight milestone achieved while strongly exposing the hiccups.
- ***Conclude implementation and commissioning:*** Close-out each project and start-up. Address all glitches while handing over to the end-user.

Step 5.

- ***Test performance:*** Test the system if it can deliver the expectation and sign-off the project team. Conduct performance evaluation.
- ***Seal the deal (Sustainability):*** Take over the new way of doing things. Put procedures and policies in place. Keep training documents for reference. Carefully manage culture change if applicable. Attain accreditation where applicable to set new standards.

This 5-step model can be fitted in Lewin-Shein change model (Warnich, et al., 2014). Steps 1 & 2 can be grouped in an unfreezing stage. Steps 3 & 4 are in moving stage and 5 in refreezing. Hourani (2017, pp. 12-30) discusses conceptual frameworks of strategy implementation. One of the frameworks presented is the 1998 Aaker's conceptual framework for analyzing organization and strategy implementation requirements (Hourani, 2017, p. 17). This framework was expanded to represent the aforementioned 5-step turnaround model. Along with the framework, Lewin-Shein change model is featured to highlight how the concept of 5 steps fits in.

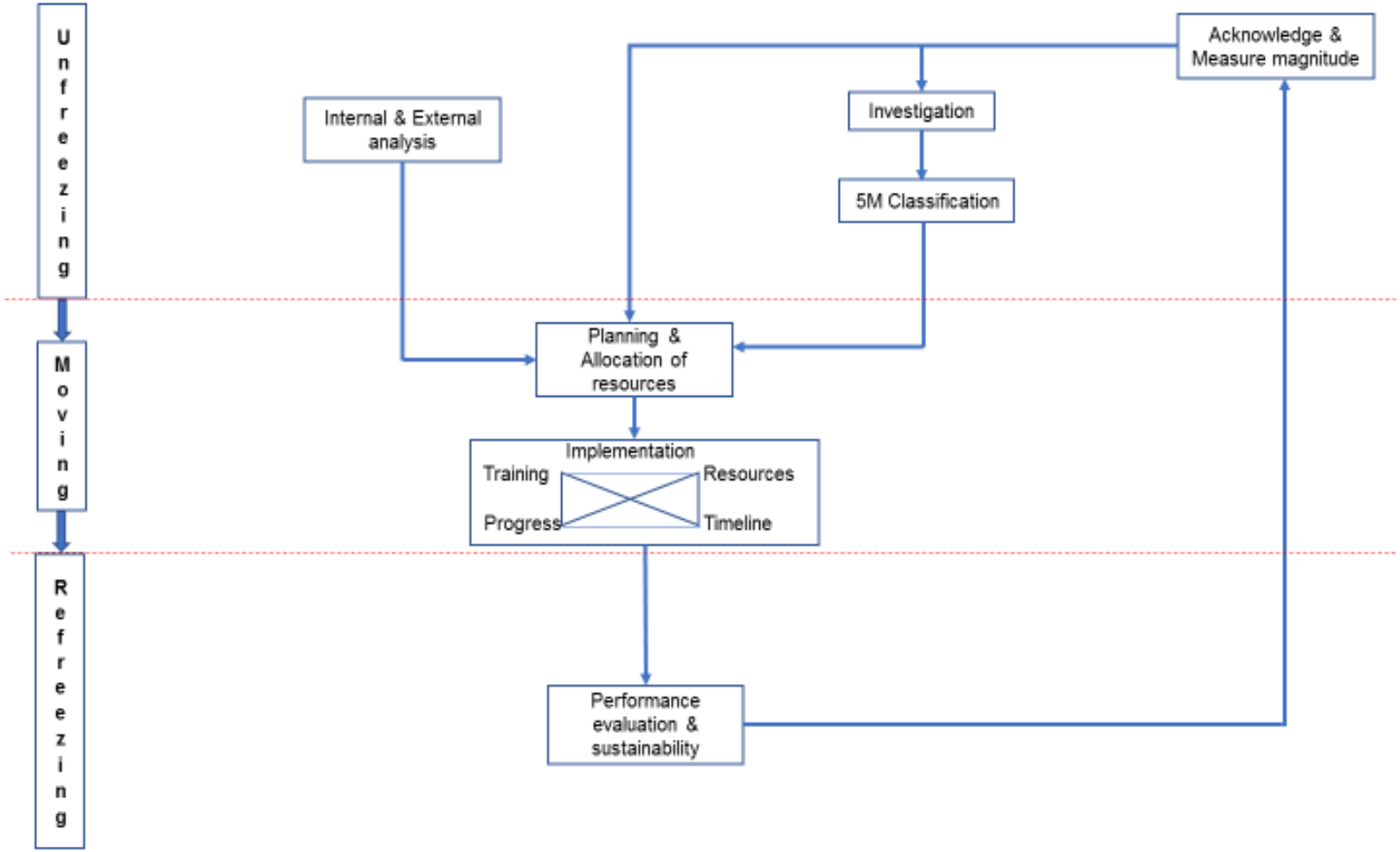

Figure 5.4. Conceptual framework for a turnaround model

5.6 Summary of model

This is a generalized model derived from the research. It is a foundation that can be used when similar project arises in any sugar factory. It reflects a turnaround project done in the pilot plant. This model covers what was done and the learnings from the project. It did not exist prior to the project. The model fulfills research objectives.

5.7 Concluding remarks

This chapter discussed the research results in depth and has addressed the research objectives in the following manner:

- **Objective 1:** *To assess the impact of organisational turnaround strategies on factory performance and product quality*. The cause and effect analysis was conducted and the results showed null hypothesis (H_0) in 3 of the 5 factory performance parameters tested. However, the was a positive trend of change in all 5 parameters.
- **Objective 2:** *To develop a turnaround model that can be used across the organisation which the piloted factory falls under*. A 5-step model together with a conceptual framework were developed as a sugar factory turnaround model. The model may be altered to suit each factory depending on the causes of decline.
- **Objective 3:** *To establish at what point in business cycle should each sugar factory embark into a turnaround*. Four conditions that may trigger application of turnaround in a sugar factory are presented in this chapter.

Chapter 6

Conclusion and Recommendations

6.1 Introduction

This Chapter concludes the whole work done and discussion of results as presented in Chapter 5. The research was conducted soon after the implementation of project. There is still some future work to be done as per the recommendations presented in this Chapter. The summary of objectives and findings are also presented. The outcome of research is also highlighted.

6.2 Conclusion

This study aimed at evaluating if the applied turnaround strategies helped in improving the performance of the factory. Many parameters tested showed positive trends of change. However, only two out of five proved statistically significant when applying statistic tools to test the strength of the relationship. This means turnaround strategies (independent variable) had less impact on performance parameters (dependent variables). This suggests a null hypothesis. However, a very strong relationship of turnaround and product quality was proven and that proved the alternative hypothesis.

The dependent variables tested in this study are somehow interrelated. The niche sales were dropped in season 2018/19 partly due to poor quality in the previous season (2017/18). Improved quality should influence customer confidence and increase sales. Sales on the other hand are related to production rate (throughput). Increased production rates increase volumes. High production volumes increase sales and potentially the profits. Recoveries and time account also influence the production rates. Therefore, it remains important for this firm to improve production rates to upturn profitability.

This study was not an outright success as per statistical analysis results but it showed positive trends of change. It was for that reason the researcher concluded to continue formulating the turnaround model. This model was derived from 2 factors; the experiment itself (how the implementation of turnaround strategies was done) and learnings from the experiment (what could have been done differently). The model is practical but strongly supported by the proven theory. As per the objective of the

research, this model can be tailor-made to address the specified problems. It is a framework that can be used in any sugar factory.

One other objective of the study was to determine at what point in business should turnaround strategies be applied. Theoretical review revealed different causes of performance declines. These causes were classified as internal and external factors. It was therefore established that application of turnaround could be situational. Based on the cause and the availability of resources, the estimate time frames to embark into turnaround strategies were stipulated. One of the key factors of time frames mentioned is agency problems especially when causes are internal factors. Agency problems might cause untimely or delayed reaction to a business decline.

6.3 Implication of the study

This is one unique study which applied scholarly approach in evaluating the performance of a factory in a very traditional industry where majority of top management have engineering background. The study introduced a new dimension in a business. World is changing so fast and climate is becoming more unpredictable especially for agri-processing organisations. Diversified approach and flexibility in problem solving is becoming more crucial, of which this study fulfills.

Literature used in this research was dominated by the overseas content. There was very little literature on turnaround strategies in Southern Africa. To an extent, this study closes a gap. However, it only covers a portion of turnaround strategies. The research provides a new source of literature in sugar industry either than the normal conference proceedings and sugar journals. The turnaround model developed in this study can be used by any factory facing the performance decline in the industry.

Application of turnaround strategies in the piloted factory was meant to improve performance and therefore profits. However, when doing the evaluation of turnaround impact, it was established that there were indirect benefits introduced. The staff morale was significantly improved by the project as whole. Inclusiveness and training were said to be the contributing factors in morale. It was also mentioned that the underlying job security could be the main driver of high morale. There was a complete culture change in the factory. Coming from a standard sugar factory to an accredited food grade manufacturer was a big step to culture change. Competence of production staff was by no doubt improved with all training done during turnaround. Moreover,

turnaround came with new equipment and automated system. All these tangible and intangible benefits from the project give this factory a competitive advantage even if they were to revert back into a standard product only.

6.4 Limitations of the study

The following limitations of the study were noted:

a. The evaluation of turnaround impact was conducted before the completion of implementation. The start-up of 2018/19 season was affected by the commissioning phase of the project. That ended up affecting the production line. The parameters considered for comparison were skewed therefore. The null hypothesis suggested by statistical analysis was not completely conclusive as null relationship of turnaround strategies. Despite the skewedness, the affected season recovered strongly and surpassed others. The positive trends established from the data analysis were enough to identify the impact of turnaround strategies even though it could not be statistically proven in some cases.
b. This study was limited to factory only. Finance, Human Resources and Logistics were not involved in turnaround. There might have been an opportunity to apply another turnaround strategy in these departments, e.g. cost reduction strategy. The reason for starting with the production line is that the decline was significant and noticeable.
c. The factory being investigated was in a different country to the researcher. There was a limitation in the flow of information. Even though there were scheduled visits, time was of essence.

6.5 Recommendations related to research objectives

a. Objective 1 was to determine the cause and effect relationship of turnaround strategies and performance. This relationship could not be proven statistically on this research. It is recommended that more time should be given to the production line. Some equipment was new and operators were still learning to operate it. It is more reasonable to conduct this evaluation at the end of next season 2019/20.
b. Objective 2 was to develop turnaround model that can be used by any other sugar factory. The model was developed but not ready for publication since

evidence is not yet firm. The recommendation is once again to wait another season after which a technical paper can be written for conference proceedings.

6.6 Recommendations for future studies

There is still an opportunity to expand this topic as per the following listed recommendations:

a. There might be a great opportunity of cost savings if this study was to cover the whole organisation including HR, Finance and Logistics departments. It might prove worthy to expand this subject to cover these departments in future. As an example; a quick survey revealed that the total number of employees at the factory is almost three times more compared to the biggest factory in an organisation, whilst this factory is the smallest in size.
b. The extra intangible benefits presented by the primary project of this study were valuable. It would be important to measure these benefits in future and document them as part of the project.
c. It was established that there is limited local literature on turnaround strategies. It is believed that many local organisations do apply these strategies, however they are not documented in a scholarly format. This present a great opportunity for scholars to explore this subject and provide a much more understandable local literature.
d. African countries operate differently in many aspects. Turnaround strategy employed in one country may not necessarily succeed easily in the next country. For instance, some African countries are deliberately not quick on adapting to newer technology. They tend to favour manual operation because it absorbs more labour force, as partly mentioned in a) above. Political demographics also differ from a country to country. This opens another opportunity to study common and noncommon practices in Africa. That study can help in aligning the better suited turnaround strategy or strategies.

6.7 Summary

Turnaround strategies might have been applied in the sugar industry before but there was evidence of literature supporting that. The study presented a unique research which addresses the gap in literature. The industry from where the study was

conducted could benefit from an extra body of knowledge, the diversified problem approach and flexibility of options.

The data collected to provide answers to the research objectives was enough. However, the time frame was rather narrow to give statistical proof, though there was conclusive evidence of an impact of turnaround in a factory. The study opened opportunities for future work in this subject as per recommendations. As for the piloted factory, the future looks promising.

References

5ME, 2018. *The 5 M's of efficiency & Lean manufacturing.* [Online]
Available at: http://5me.com/the-5ms-of-efficiency
[Accessed 15 November 2018].

Anonymous, 2017. *History of sugar in South Africa.*

Bennett, N. & Lemoine, J. G., 2014. What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons.*

Creswell, J., 2014. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches.* 4 ed. London: Sage.

Deerr, N., 1949. *The History of Sugar.* London: Chapman and Hall Ltd.

Dlamini, E. M., 2016. *Vicious cycles in factory operations.* Durban, South African Sugar Technologists' Association. pp. 416-423

Evans, R., Chitnomrath, T. & Christopher, T., 2013. Successful Turnaround Strategy: Thailand evidence. *Journal of Accounting in Emerging Economies,* 3(2), pp. 115-124.

Firer, C., Ross, S. A., Westerfield, R. W. & Jordan, B. D., 2012. *Foundamentals of Corporate Finance.* 5th ed. Berkshire: McGraw-Hill.

Gordhan, P., 2016. *National Treasury.* [Online]
Available at:
http://www.treasury.gov.za/documents/national%20budget/2016/speech/speech.pdf
[Accessed 3 August 2018].

Herman, B., 2016. "Turnaround was job one. Now we are moving forward". *Crain Communication.*

Hewitt, P. H., 1996. *Seventieth Annual Congress: The SASTA Congress -1926 and 1996.* Durban, South African Sugar Technologists' Association.

Hoffman, R. C., 1989. Strategies for corporate turnarounds: What do we know about them. *Journal of General Management,* 14(3), pp. 46-66.

Hough, J., 2016. *Crafting and Executing Strategy.* 2nd ed. London: McGraw Hill.

Hourani, M., 2017. Conceptual Frameworks for Strategy Implementation: A Literature Review. *Journal of Management Research,* 1 July, 9(3), pp. 12-30.

Hurst, R., 2000. *just-drinks.* [Online]
Available at: https://www.just-drinks.com
[Accessed 4 November 2018].

Illovo Sugar Ltd, 2016. *Illovo Sugar Africa.* [Online]
Available at:
https://illovosugarafrica.com/UserContent/documents/Announcements/2016/IllovoChairmanStatement23May16.pdf
[Accessed 1 November 2018].

Li, X., 2012. Turning around low-performing private universities in China: A perspective of organisational ecology. *Springer Science+Business Media Dordrecht.*

Lumadi, W., 2015. Curriculum reform paradigm: A turnaround strategy. *Journal of Educational studies,* pp. 16-31.

Madho, S., Essop, R., Visram, K., Davis, SB. & Bhyrodeyal, L., 2018. *Ninety-Third Annual Review of the Milling Season in Southern Africa (2017/18).* Durban, South African Sugar Technologists' Association.

Mann, M. & Byun, S.-E., 2017. To retrench or invest? Turnaround strategies during a recessionary time. *Journal of Business Research,* pp. 24-34.

Manqele, N., Zuma, S. & Ninela, M., 2016. *Water shortage experiences as Amatikulu Mill: Drought.* Durban, South African Sugar Technologists' Association, pp. 85-96.

Marius, P., 2014. Business Failure and Turnaround Measures. In: G. Nieman & C. Nieuwenhuizen, eds. *Entrepreneurship: A South African Perspective.* Pretoria: Van Schaik , pp. 325-357.

Mbele, N., 2010. Turnaround strategy: Implications for municipalities. *Management Today,* 28(1), pp. 52-54.

Mohanty, M. & Mishra, P., 2016. HR Intervention in Turnaround Strategy: A case study of Rourkela Steel Plant. *SAGE Journals.*

Mutunga, C. M., 2013. *Implementation of Turnaround Strategies at Kenya Broadcasting Corporation,* Nairobi: University of Nairobi.

Nieman, G., 2014. Managing Growth. In: G. Nieman & C. Nieuwenhuizen, eds. *Entrepreneurship: A South African Perspective.* 3rd ed. Pretoria: Van Schaik, pp. 291-306.

Okwir, S., Ulfverngren, P., Angelis, J., Ruiz, F. & Guerrero, Y.M., 2017. Managing turnaround performance through Collaborative Decision Making. *Journal of Air Transport Management,* pp. 183-196.

Osborn, R. F., 1964. *Valiant Harvest.* Durban: South African Sugar Association.

Ravaghi, H., Mannion, R. & Sajadi, H. S., 2017. Organizational failure and turnaround in public sector organizations: A systematic review of the evedence. *Medical Journal of the Islamic Republic of Iran,* 31(76).

RCL Foods, 2018. *RCL Foods.* [Online]
Available at: https://www.rclfoods.com/aboutus
[Accessed 1 November 2018].

Reilly, F. K. & Brown, K. C., 2016. *Investment Analysis & Portfolio Management.* 10th ed. Mason, OH: South-Western Cengage Learning.

Rein, P., 2007. *Cane Sugar Engineering.* Berlin: Verlag Dr. Albert Bartens KG.

Santana, M., Valle, R. & Galan, J.-L., 2017. Turnaround strategies for companies in crisis: Watch out the causes of decline before firing people. *Business Research Quarterly,* pp. 206-211.

Saunders, M., Lewis, P. & Thornhill, A., 2016. *Research Methods for Business Students.* 7th ed. s.l.:Pearson.

Sekaran, U. & Bougie, R., 2014. *Research Methods for Business: A Skill-Building Approach.* 6th ed. s.l.:Wiley.

SixSigma.us, 2017. *What are the common root cause analysis (RCA) tools.* [Online]
Available at: https://6sigma.us
[Accessed 15 November 2018].

Smarick, A., 2010. The Turnaround Fallacy. *Hoover Institution,* 10(1), pp. 20-26.

Smith, G. T., Davis, S. B., Madho, S. & Achary, M., 2016. *Ninety-First Annual Review of the Milling Season in Southern Africa (2015/16).* Durban, South African Sugar Technologists' Association. pp. 21-51

South African Reserve Bank, 2018. *Selected Historical Rates.* [Online]
Available at: https://www.resbank.co.za
[Accessed 2 November 2018].

Szymanski, S., 2017. Entry into Exit: Insolvency in English Professional Football. *Scottish Journal of Political Economy,* 64(4), pp. 419-444.

Teng, M., 2002. *Corporate Turnaround: Nursing A Sick Company Back To Health.* s.l.:Prentice Hall.

Tongaat-Hulett, 2018. *Integrated Annual Report,* Tongaat: Tongaat Hulett Limited.

Verum, A., 2017. Sugar Tax. Is it healthy?. *SADC Sugar Digest,* pp. 57-65.

Warnich, M. R., Carrell, N. F. & Elbert, R. D., 2014. *Human Resource Management in South Africa.* 5th ed. Hatfield: Cengage Publishers.

Werner, A., 2016. *Organisational Behaviour.* 4th ed. s.l.:Van Schaik Publishers.

Wild, A. & Lockett, A., 2015. Turnaround and Failure: Resource weaknesses and the rise and fall of Jarvis. *Business History,* 58(6), pp. 829-857.

Wild, A. M., 2010. Learning the wrong lessons from history: Underestimating strategic change in business turnarounds. *Business History,* 52(4), pp. 617-650.

Appendices

A. Ethical Clearance

B. Turnitin report