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DEDICATION

To the one who is infinite in wisdom, power and love the Lord of Host I dedicate this work.
“To the only wise God our Saviour, be glory and Majesty, dominion and power, both now and ever. Amen”. (Jude 25 KJV).

ACKNOWLEDGEMENTS

Words may fail, feelings may faint but, a record of a good work is always cherished up to eternity. To my supervisor Mr. R. K. Noko, I am well convinced that I owe you a debt of gratitude for your professional guidance and critic all in pursuit to produce a professional manuscript of this nature. Your valuable support and assistance is quite traceable and inseparable from the success of this work. My fellows Claudius, Farai, Albert, Marangarire (baba vaRuth), Rangarirai, Jacob, Diana, Bhaureni, Rubaya, Gabriel and Lily I thank you guys for your unconditional support socially and educationally. My father and brother, thanks for the financial aid in forwarding this great work if your aid was withdrawn from my way it was not possible to reach this far. Special thanks go to Mr. P. Mvura (*also known as Dady*) and Mr. K.C. Mbetu for their perpetual emphasis on the essence of being good stewards of time. Sable Chemical Industries Limited Management and Staff for their great contributions in making this work a success. Midlands State University Seventh Day Adventist Association thanks for the spiritual nurturing during the course of carrying out the study.

To all acknowledged:

"Let the mind be in you, which was also in Christ:" (Philippians 2 verse 5 KJV).

Finally, the heavenly king my father, counselor and shield I thank you for your presence in my life and for guiding me in the course of coming up with this manuscript.

ABSTRACT

The study was aimed at addressing the problem of persistent capacity utilization problems faced by Sable Chemical Industries limited. The major objectives of the research study were the determination of the basis of calculating capacity, capacity-utilization, under-capacity utilisation, major causes of under-capacity utilisation, and effects of under-capacity utilisation to both the entity and the economy in its entirety and to prescribe the possible solutions to reverse the endangering macro-economic disease. The research was a qualitative study using the descriptive research design. Interviews and questionnaires were used as research instruments and were administered at Sable Chemicals Industries Limited's Head office in Kwekwe to the selected respondents (sample of 26 and 24 participated in the study) chosen on the merits of a purposive sampling technique. The study revealed that electricity (i.e. cost of power and availability), financing and liquidity problems, indigenization policy, plant breakdowns and over-estimation of capacity have contributed to low rates of production. Further to that, the research went on to prescribe recommendations which include securing stable and cost effective, revising the production capacity, review of the indigenization policy, considering the adoption of local powerful currencies and considering allowing flexible-labour market laws among other factors.

Table of Contents

APPROVAL FORM	1
RELEASE FORM	2
DEDICATION	3
ACKNOWLEDGEMENTS	4
ABSTRACT	5
LIST OF TABLES	11
LIST OF FIGURES	12
ACRONYMS	13
LIST OF APPENDICES:	14
Chapter 1	15
1.1 Introduction:	15
1.2 Background to the study:.....	15
1.3 Statement of the Problem:	17
1.4 Research Objective:	17
1.5 Major Research Question:	17
1.6 Significance of study:.....	17
1.7 Limitations:	18
1.8 Delimitations	19
1.9 Key Assumptions:.....	19
1.10 Conceptual Framework:	19
1.11 Chapter Summary:	20
Chapter 2	21
2.0 Introductions	21
2.1 Defining the concept of Production capacity:	21
2.2 Measurement of capacity of a unit of production:.....	22
2.2.1 Capacity utilization and under-capacity utilization:	23
2.2.2 Calculating capacity utilization:.....	23
2.2.3 The Concept of under-utilisation of Capacity:	24
2.3 What general factors led to the under-utilisation of the production capacity in	25
2.3.1 Mechanical breakdowns of the production plant:.....	25
2.3.2 Competition in the market:	26
2.3.3 Raw-material Shortages:	28
2.3.4 Demand Factors:.....	28

2.3.5	Labour Factors:	29
2.3.6	Erratic Power supply and cost of electricity:	31
	<u>Cost effectiveness of electrical power:</u>	31
	<u>Supply of electricity:</u>	32
<u>2.3.7</u>	<u>Financing and liquidity:</u>	32
2.4	The impact of government policy:	33
<u>2.4.1</u>	<u>Dollarisation of the economy:</u>	33
<u>2.4.2</u>	<u>Indigenisation and economic empowerment:.....</u>	35
2.5	Effects of capacity under-utilisation:	36
<u>2.5.1.</u>	<u>Increase in fixed cost per unit and overall unit price:</u>	37
<u>2.5.2</u>	<u>Loss of competitive advantage:.....</u>	37
<u>2.5.3</u>	<u>Inability to attract new investment:</u>	37
<u>2.5.4</u>	<u>Financial difficulties:</u>	38
<u>2.5.5</u>	<u>Weak exchange rate and reduced Gross domestic product:</u>	38
2.6	Ways to improve capacity utilization:	39
2.7	Conclusion:	40
Chapter 3	40
3.1	Introduction:	40
3.2	Research Design:.....	41
3.2.1	The Descriptive Research:	41
3.2.2	Merits of Descriptive Research Design:	41
3.2.3	Demerits of descriptive study:.....	41
3.3	Population.....	42
3.4	Sampling and Sampling techniques:	42
3.5.1	Purposive sampling:.....	43
3.5.2	Merits of purposive sampling:.....	43
3.5.3	Demerits of purposive sampling:.....	43
3.6	Reliability and validity:.....	43
3.7	Data source and collections:	44
3.7.1	Primary data:	44
3.7.2	Secondary Sources:	45
3.7.3	The Merits for Secondary Sources of Information:.....	45
3.7.4	Disadvantages of secondary sources:	45
Research Instruments:	46

3.8.1	Questionnaire:.....	46
3.8.2	Advantages of questionnaires:	46
	<u>Disadvantages of questionnaires:.....</u>	46
3.8.4	Closed-ended questions:.....	47
3.8.5	Advantages of closed-ended questions:.....	47
	<u>Disadvantages of closed-ended question:.....</u>	47
3.8.7	Open-ended questions:	47
	<u>Advantages of open questions:</u>	47
	<u>Disadvantages of open-ended questions:</u>	48
3.9	Interviews:	48
3.9.1	Merits of interviews:	48
	<u>Demerits of interviews:.....</u>	48
3.10	Data presentation and analysis:	48
3.11	Chapter summary:	49
Chapter 4.....		49
4.0	Introduction:.....	49
4.1	Response rate:	49
4.2.1	Interview:.....	50
4.3	Level of Education:	51
4.4	Experience:	52
4.5	The results obtained from the questionnaires:.....	53
4.7	Secondary Data Analysis:.....	66
Chapter 5.....		70
5.0	Introduction:	70
5.1	Research objectives:	70
5.1.1	Overall Research Summary:	70
5.2	Major Research Findings	72
5.3	Recommendations:	73
	<u>Recommendations to the government of Zimbabwe:</u>	74
5.4.	Recommendations for Further Research:.....	75
5.5	Conclusion:	75
Reference list:		76
APPENDIX 1: COVER LETTER.....		80
APPENDIX 2.....		80

LIST OF TABLES

4.1	Capacity measurement.....
4.2	Reasonableness of the 240 000 metric tonnes per annum.....
4.3	Desirability of operating level.....
4.4	Breakdown frequency.....
4.5	Impact of imports on local production.....
4.6	Competitiveness of entity to enter global markets.....
4.7	Firm's access to raw-materials.....
4.8	Entity's product's demand.....
4.9	Adequacy of power supply.....
4.10	Cost effectiveness of electricity tariffs.....
4.11	Availability of capital.....
4.12	Affordability of cost of financing.....

LIST OF FIGURES

Fig.1	Sable’s production statistics and analysis.....
Fig.2	Expected revenue versus actual revenue.....
Fig.3	Conceptual framework.....
Fig.4	Classification of population.....
Fig.5	Sample frame and sample sizes.....
Fig.6	Pilot study results.....
Fig.7	Response rate statistical data.....
Fig.8	Results of the interviews conducted.....
Fig.9	Secondary Data.....
Fig.10	Technology.....

ACRONYMS

ZESA	-	Zimbabwe Electricity Supply Authority
AN	-	Ammonium Nitrate
NH ₃	-	46% Anhydrous Ammonia
NH ₄ O ₃	-	34.5% Ammonium Nitrate
SABLE	-	Sable Chemical Industries Limited Industries
CZI	-	Confederation of Zimbabwe Industries
RBZ	-	Reserve Bank of Zimbabwe
ZIMASCO	-	Zimbabwe Alloys and Steel Company

LIST OF APPENDICIES:

Appendix 1	Cover letter to questionnaires.....
Appendix 2	Questionnaire.....
Appendix 3	Interview Guide.....

Chapter 1

1.1 Introduction:

The existence of a volatile economic environment in Zimbabwe has highly impacted on the various sects of Industry and Commerce amongst the heavily betrayed is the manufacturing sector. Since the advent of this macro-economic infection, the sole producer of nitrogenous fertiliser in Zimbabwe (Sable) has repeated a history of under-performances. The purpose of Chapter 1 is to lay a foundation upon which the whole research shall be based upon. As purposed by the author, the Chapter explored on the various issues that provides a firm understanding of the major drive for the research and how it has become of concern to research on the problem identified. The following discussion shall give a clear definition of the problem of the research problem; give a road map of the intended objectives, key research questions that need to be answered in the research in its entirety, justification of the study, scope of the study and possible limitations.

1.2 Background to the study:

Raimi and Adeleke (2009) defined capacity utilisation as the rate of actual to desired levels of output. Under-capacity is the situation where observed capacity output is less than expected / target output, (Raimi and Adeleke 2009). Capacity utilisation has become one of the common micro-economic infections in Zimbabwe's fertiliser manufacturing industry since 2009. In the 2010 Mid-term fiscal Review, the Finance Minister highlighted that, "capacity utilisation stands at 40 %(for 2010) against the 19% received in 2009", (Mid-term fiscal Review 2010), this was evidencing the perpetual existence of capacity utilisation problems in the fertiliser industry.

Sable Chemical since the year 2009 failed to provide the economy with the fertiliser that equals 50 %(i.e.120 000 tonnes) of its production capability resulting in failure to utilise its capacity.

Sable chemical Industries Limited Production Statistics and Analysis:

Year	Production	Capacity Utilisation	Local Demand	Variance(production versus demand)
2009	41 959	19 %	100 000	(58 041)
2010	86 625	37 %	105 000	(18 375)
2011	82 209	34 %	105 000	(22 791)
2012	58 933	25 %	112 000	(53 067)

Fig.1. (Source: TA Holdings Annual Financial Reports: 2009 -2012)

The statistical data above reveals that the entity for the period from 2009 to 2012 had been operating within the range 19% to 37% capacity utilisation. As depicted in the above statistical

data the trend of failing to meet demand is ever-present though it is cyclical rather than continuous.

The plant was designed with the capacity to meet both local and regional demand but, the idea was that regional markets could only be supplied if the local market is fully satisfied (*Source: Sable Company Profile*). The Chief Executive of Sable highlighted that, the entity has since fallen out of the global market suppliers list but rather it has also become part of the consumers of global products through the importation of Ammonia(NH₃) from Sasol Infra-Chem South Africa (*Source: Sable Conference Report –December 2012*). The fact that the entity is no longer servicing the global market can also be evidenced by the statistical depiction shown above, the phenomena represented by the tabulated information reveals that there is no excess product left after servicing the local market but rather a deficit was recorded on the local market which is however, served by the global and regional suppliers.

Capacity under-utilisation also resulted in the loss of Revenue by the company in local markets the below fig.2 tries to give a revelation of that:

Table of Expected Revenue versus Actual Revenue realised for the years 2009 to 2012

Year	Expected Revenue Based on Demand	Actual Revenue (Sale of AN)	Variance
2009	\$ 45 000 000	\$ 18 888 550	(\$26 111 450)
2010	\$ 48 300 000	\$ 39 847 500	(\$8 452 500)
2011	\$ 48 510 000	\$ 37 979 172	(\$10 530 828)
2012	\$ 67 720 000	\$ 33 002 480	(\$34 717 520)

Fig.2 (*Source: Business Development Analysis Reports: 2009 -2012*).

The statistical data shown in the above table reflects the effects of failing to meet the local demand in financial terms. The company had a trend of revenue losses for the 4 years under review where the years 2009 and 2012 recorded highest losses with (\$26 111 450) and (\$34 717 520) respectively. The Management Accountant for Sable pointed out that, the company has failed to commence other projects to include Coal gasification project due to lack of finance as result of rampant revenue losses caused by failing to meet local demand, (*Source: Budget Review June 2012*).

Regardless of the awareness the management of Sable has gained about the existence of capacity under-utilisation and its resulting effects on the firm's returns the problem has continued to exist. It is against this background that the researcher is prompted to investigate on the ways to improve capacity utilisation.

1.3 Statement of the Problem:

Sable has failed to fund some of its vital projects due to financial difficulties that are borne by revenue losses. The revenue losses are a product of the perpetual capacity under-utilisation and a quick resolution is needed to address this problem considering the magnitude of its impact on the firm and the economy. The research therefore intends to investigate on the ways to improve capacity utilisation.

1.4 Research Objective:

The purpose of the study is to investigate on the ways to improve capacity utilisation for the fertiliser manufacturing giant Sable.

In this study the specific research objective are to:

- Determine how capacity, capacity utilisation and under-capacity are determined at Sable.
- Ascertain the causes of production capacity under-utilisation at Sable.
- Determine the effects of government political and economic policies on capacity utilisation.
- Determine the economic effects of under-capacity utilisation (both to the entity and the local economy).
- Make possible suggestion to increase capacity utilisation.

1.5 Major Research Question:

Can utilisation rates of the fertiliser manufacturer be improved?

Sub-Research Questions:

- How are capacity, capacity utilisation and under-capacity determined at Sable?
- What factors led to under-utilisation of the production capacity?
- How do government economic and political policies impacts on firm's capacity utilisation?
- What are the economic effects of capacity under-capacity utilisation?
- In what ways can capacity utilisation be improved?

1.6 Significance of study:

The research is intended to meet the research needs of various stakeholders to either the case entity or the enrolling institution. The various stakeholders include:

The Midlands State University Students Community:

As members of the Midlands State University are in continual research over various issues that among other issues concerns capacity utilisation this research may also satisfy their secondary information needs.

Sable Chemical Industries Limited:

Due to much of the day to day eruption of economic challenges that hit firms in the manufacturing sector Sable like its fellow companies is not exempted from such tragedy hence, is left with less time to effectively carryout the study and prescribe a solution. As a result, this research will facilitate a quick formulation of strategy to erode challenges the entity is faced with.

The Government of Zimbabwe:

As a stakeholder of the entity the Government of Zimbabwe through the responsible ministry will benefit by having knowledge about the effects of its policies on the manufacturing industries in Zimbabwe. The research will explore on the effects of the related policies and hence will usher the refinement of government policies towards the industry to ensure sustainable development and self-sufficiency.

The Research Student:

Having endured the research process through gathering verifiable and authentic facts about the research problem, analysing and recommending the courses of action that may be pursued by the concerned stakeholders, the student has prepared to meet real life industrial challenges and to provide a diagnosis to the economic-infection.

1.7 Limitations:

During the conduct of the research project the researcher has been faced with different challenges to include the following:

(a) Financial Constraints:

Though the student had a budget for the research but, the reality was that the funding of the budget did not equal the projections made in the research proposal. Regardless of such

constraint the researcher managed to gather relevant data for the research through use of cost-effective research techniques.

(b)Confidentiality:

As compliance to data security regulation of Sable some information that pertains this research was regarded to be sensitive to be dispatched to or accessed by the external parties and therefore was withheld on issues that borders on company privacy. This hindered the exploration of the research problem but however, a number of published sources and the triangulation of techniques were used to harmonise the sources and also to get more evidence.

1.8 Delimitations

The research will be limited to Sable Chemical Industries Head office located in Kwekwe Sherwood Block at Anne Newton Boulevard. The research covers a period from years 2009 to 2012 only. The study only includes heads and office staff for Finance, Engineering, Production and Technical services division.

1.9 Key Assumptions:

- Secondary data for the research is readily available.
- All respondents to research questionnaires and interviewees will respond and a 100% response will be obtained.
- There are no chances of false representation of information.

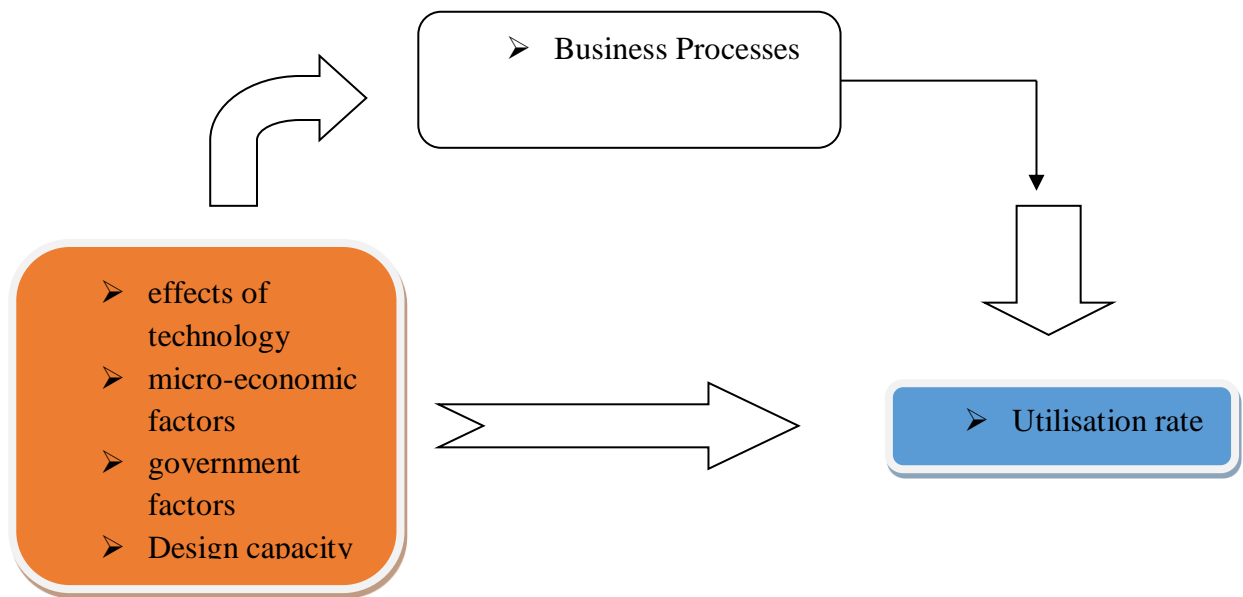
1.10 Conceptual Framework:

Jacobs and Chase (2010) revealed that, capacity utilisation rate shows the nearness of the entity to its optimal operational level in a given period of time. The utilisation rate is a dependent of a number of independent factors. These factors include:

- Effects of technology
- Micro-economic factors
- Government policy
- Design capacity

This diagrammatic representation tries to give the relationship between these variables:

The pictorial representation of the Conceptual framework:

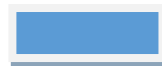


(fig.3 – Conceptual Framework)

KEY



Independent variables



Dependent variables

The efficiency of installed technology, dictates of the micro-economic environment to include demand issues, government policies to the industry and the design capacity determines the actual production level a firm can reach as any of these factors drives the production level of the entity.

1.10 Definition of terms and abbreviations:

In context to this study the following terms and abbreviations shall mean:

- Capacity - Production of 240 000 metric tonnes per annum
- Capacity-utilisation - Rate of actual to desired levels of output, (Raimi and Adekele 2009).
- Sable - Sable Chemical Industries Limited.
- TA Holdings - Tobacco Auctioneers Holdings Group.

1.11 Chapter Summary:

The Chapter gave the definition of the research problem, the scope of the research in terms of geography, time frame and respondents. The chapter highlighted the major objective which is to investigate on the ways to improve capacity utilisation for the fertiliser manufacturer (i.e. Sable). Other issues highlighted in this Chapter include the limitations to the study and key assumptions. The next Chapter reviewed the literature about the subject area.

Chapter 2

2.0 Introductions

Literature is “almost anything that represents the results of research or scholarship on a subject”, (Thomas 2011:30). He further cited that the “review of literature should lead you down some path that will help you define more exactly what you wish to do”, (Thomas 2011:30). Newton (2007:62) went on to expose that, “literature review needs to clarify the relationship between the proposed study and previous work conducted on the topic”. From the above expositions by various celebrated authors it can be deduced that, the navigation through the published literature in the research only aims at exposing the research gap between various research works and trying to synthesize the revelations of various celebrated authors over the subject matter. This chapter examined into published literature, resulting in the exposition of diverging opinions of authors as well as bringing up the point of their convergences in relation to the subject matter. In a bid to accomplish the aforementioned objectives, authentic sources of information will be used.

2.1 Defining the concept of Production capacity:

As cited by Muhlemann, Oakland and Lockyer(1992:322) “ the capacity of a unit is its ability to produce or do that which consumers requires and clearly there must be some match between needs characterized by market forecast and abilities characterized by capacity”. On a differing basis, Buffa and Sarim (2003:548) defined capacity as the “limiting to produce within a stated time period, normally expressed in terms of output per unit of time”. The Buffa and Sarim definition seems to be based on the mathematical determination of capacity of the entity as differing from the approach used by Muhlemann et al (1992) that incorporates items of demand in the determination of capacity. Similarly to the later definition, Kumar and Suresh (2006:93) cited that “capacity of the manufacturing unit can be expressed in number of units of output per period”. The latest supposition and that of Buffa and Sarim seem to be based on the mathematical formula for deriving the variable in question. In addition, the arguments tie on their use of time frame as a useful component in defining capacity of a unit of production. ‘A firm’s productive capacity is the total level of output or production that it could produce in a given time period’ (available on <http://www.tutor2me.net/> accessed 14:12 05/03/2014). In this exposition again, there is congruency between the definition posed by this site and the previous

agreeing definitions leaving the demand based definition of capacity without a tying part or lacking an interlocking partner in as far as the definition of capacity is concerned.

2.2 Measurement of capacity of a unit of production:

The determination of capacity of an item of production is a technical concept that has gained acceptance in the various areas of industry and commerce and selected celebrated authors have published articles concerning this concept.

Kumar and Suresh (2006: 93) cited that, “complexity of measurement of capacity happens when multiple products are produced than in single product”. Similarly to this supposition Reid and Sanders (2005:306) also argued that, “basis used in determining single product capacity do not work well when a company produces different kinds of products”, (Slack et al 2010). In their suppositions it is clearly reflected that a sophisticated method is applied to determine capacity of a multi-product entity opening a forum for acceptable variation on the basis to be applied. However, in entities like Sable that have a single product it is not very complex as it is in multiple product firms.

Capacity can be determined using the output of the production process or using the inputs to the production process. For example fertiliser producers like Sable uses Ammonium Nitrate (NH_4O_3) tonnage output per annum to determine their capacity.

The concept of measurement of capacity gives birth to other sub-concepts i.e. design capacity and effective capacity. Kumar and Suresh (2006:93) defined design capacity as “the planned or engineered rate of output of goods or services under normal or full scale operating conditions. In another view, Reid and Sanders (2005: 306) defines it as “the maximum output rate that can be achieved by facility under ideal conditions”. The definition by Reid and Sander exposes the element of extremism associated with design capacity. A further argument reveals that, “it is only achievable on temporary measures such as overtimes, cover shifting and subcontracting”, (Reid and Sanders 2005:306). Mojekwu (2012:156) in support of this view cited that, “it (referring to design capacity) is not achievable in real life due to both planned and unplanned stoppages”, (Slack et al 2010). In addition, a diverging mind is brought here in by Reid and Sunders also disagrees with the fact that of design as production at normal since their definition clearly shows that it is capacity at ideal conditions meaning that the ideal conditions are never a normal operating environment of any firm but rather a positive abnormality.

Another offspring concept from the concept of capacity is the effective capacity of a unit. “Effective capacity of a unit is the maximum output rate that can be sustained under normal conditions”, (Reid and Sanders 2005:307). The definition of normal production in the context with recent definition is the production level that takes into consideration the effects of break-downs of plant, normal losses and other common business misfortunes other than the definition Kumar and Suresh that focused on the extreme business conditions with the assumption of 100% efficiency. For example, in entities like Sable monthly plant repairs are carried these are accounted for when determining the capacity of the entity according to this supposition. Reider and Sander (2005) further cited that, effective capacity is lower than design capacity. From the above celebrated suppositions, it can be deduced that the determination of design capacity seem to be much of an art in the vacuum rather than a day to day practicable scenario based.

2.2.1 Capacity utilization and under-capacity utilization:

“Capacity utilization is the percentage of the firm’s total possible production capacity that is actually being used”, (available on <http://www.tutor2me.net/business/> accessed 15:28 05 March 2014). Another definition proposed shows that, “it is a measure that provides insights into the extent to which a company actually uses its installed capacity”, (available on <http://www.proquestcombo.safaribooksonline.com> accessed 15:09hrs 05/03/2014). Utilisation means the currently employed portion of the firm’s production capability versus the predetermined level to obtain production output in a given period. The first two definitions agree and both seem to be based on the mathematical deduction of capacity utilisation rate whilst the third seem to giving the qualitative aspect of the definition of capacity utilization. Regardless of the angle these three authoritative texts tries to tackle the concept from, they all agree on the fact that in the measurement of capacity utilization rate the major idea is the reflection of the difference between current production and the production intended.

2.2.2 Calculating capacity utilization:

The computation of capacity utilisation is given by a mathematical model. The model tries to quantify the qualitative facts around capacity utilization into a mathematical determinable variable. The supposition is rooted on the existence of an even supply flow of related production inputs, to include labour and raw-materials and a normal atmosphere of the production. Adjustment for seasonal fluctuations in process output may be taken into account

or ignored depending on the way so determined by the organization the nature of the entity or inevitable shutdowns, (Hickman). Formula for calculating capacity utilization rate:

$$\text{capacity utilisation rate} = \frac{\text{actual capacity}}{\text{possible capacity in time period}} * 100$$

(Source: [Http://www.proquestcombo.safaribooksonline.com](http://www.proquestcombo.safaribooksonline.com) accessed 1452 06/03/2014).

This is the most common way used in determining capacity utilisation rate, and entities like Sable may apply this method in determining this variable. From this mathematical formula, the message “of how much of our capacity we are actually using” is send out, (Reid and Sanders 2005:307). In support of the idea, Jacobs and Chase (2010:56) cited that, “the rate reveals how close a firm is to its best operating level”. Reider and Sander (2005) critical questioned the economic reasonableness of the above generally shared supposition as not very objective and casted doubts on its adequacy to give a revelation of utilization rates at any given time. They supposed that capacity utilization should be based on objective factors i.e. either effective capacity or design capacity not merely say capacity as it is by no means adequate.

The two objective ways of determining capacity utilization rate:

$$\text{utilisation rate(effective)} = \frac{\text{Actual output}}{\text{Effective output}} * 100$$

$$\text{utilisation rate(design)} = \frac{\text{Actual output}}{\text{design capacity}} * 100$$

(Source: Reid and Sanders (2005:307))

These two methods will make a clear basis that was used in determining the rate of utilization as to whether it was based on the idealist design capacity or on the realistic effective capacity.

2.2.3 The Concept of under-utilisation of Capacity:

The objective of the whole background about the concept of capacity, its measurement and the determination of capacity utilization rate was to lay a foundation upon which the concept of capacity under-utilisation shall be built upon.

The determination of under-utilisation is the resultant procedure of the rigorous computation of capacity utilization rate. The simplicity of this logical mathematical computation is borne by the fact that 100% is the maximum production capacity utilisation rate and by virtue of any value being lower than their capacity then under utilization is born. For example Sable has a group of industries that have a capacity of 240 000 metric tonnes per annum and any production below this is regarded under-utilisation in this context. The general rule here is that any production rate below designed or intended capacity is under-utilisation depending as to whether the entity uses the design or effective capacity to measure utilization rate.

The usually and common business implication of the existence of under-utilisation capacity is a worrisome scenario. However, Jacobs and Chase (2010:56) argued that, “low rates (i.e. under-utilisation) are appropriate when both the degree of uncertainty and stakes are high”. On the contrary Pycraft, Singh, Phihleka, Slack, Chambers, Harl, Harrison and Johnston (2002:387) argued that, “many organisations require high utilisation levels before they will authorize investment in additional capacity arguing that this maximizes the return on capital employed in business”. A general conclusion that can be drawn from the above information is that, under-capacity utilization reduces the exposure of a business to risk under uncertainties, whilst it increases risky when the business is operating under conditions of certainty.

2.3 What general factors led to the under-utilisation of the production capacity in the manufacturing sector?

In different compendiums and titles factors that ushered to the existence of persistent capacity utilisation in the manufacturing sector have been exposed. Authors driven by political and economic agendas tried to make a portrayal of the causes of rampant under utilisation problems in the manufacturing sector and some of which will have their ideas they have aired being exposed in this manuscript. Meredith and Shaffer (2003:187) in agreement with the above stated idea exposed that, “the provision of adequate capacity is clearly a generic problem common to all types of organization”. To fully accomplish the objective of this research and as well as to comprehensively explore the core causes of this macro-economic infection each factor shall be analysed as a separate item.

2.3.1 Mechanical breakdowns of the production plant:

A great work of authorship has been done in pin-pointing this factor as one common cause of under-capacity utilization in the manufacturing sector. Pycraft et al (2002:388) cited that,

“frequent mechanical breakdown as one of the causes of low capacity utilization”. “Damage of plant and equipment which most companies find difficult to repair or to replace due to lack of working capital” reduces the productive capacity of the production unit (available on <http://www.czi.co.zw/electricity.pdf> accessed on 23:45 09/03/2014). The frequent occurrence of plant mechanical breakdown reduces the number of production hours of the plant. Pycraft et al (2002:387) pointed out that, “Any lost production time could have been used to produce more output”. In technical terms rampant plant break-downs reduces the percentage of plant availability which influences on the effective production capacity of the plant. This leads to a reduction in the number of production hours resulting in reduced output of production hence low utilization rates.

On another note, the frequency of plant breakdowns means that more time is invested in setting the technology to the required rate of operation for effective performance other than in converting input into output. The accumulation of time spent on attending breakdowns leads to production manpower being less utilized hence, failing to achieve the maximum out of it. Similarly, according to information available on www.tutor2me.net/business/150005/03/2014) agrees with the above supposition, the site points that persistent technological breakdown as contributory cause for failing to achieve 100 % capacity.

In addition, the ballooning statistical rate of mechanical breakdowns also result in an entity failing to utilize the installed technology to the intended level since much time is consumed to bring technology to preferred level of operations and testing its effectiveness than commanding it to perform normal business. This affects the output thereof. A reduced production output will lead to lower rates of capacity utilization since actual output is a factor considered in the determination of capacity utilization rate.

2.3.2 Competition in the market:

The conquering of any market by a ruthless competitor results in under utilization by players in the market (available on <http://www.tutor2me.net/business/accessed14:265/03/14>). Lei and Pitts (2006) defined competitive edge as the capability of the entity to do activities more distinctively or effectively than rivals. The loss of this economic grip by an entity does not only result in the entity failing to secure a market for its product but also, results in the exchange of this advantage to the key rival in the business setting. Similarly, CZI (2010) also cited that, competition as another constraint in capacity utilization. Their argument was that the local market has been flooded with imports leading to intense competition as a result of the market

responsiveness to forces of the market. The existence of active rivals in a market setting especially those backed by a stable financial and economic policy in market poses detrimental effects to entities operating in a volatile economic setup. “Particularly when new entrants are diversifying from other markets, they can leverage existing capabilities and cash flow to shake up competition”, (Porter 2011:42). The existence of cheap Sasol Infra-Chem products in local market might significantly impact Ammonium Nitrate (NH_4O_3) products of Sable. A portion summing to 32% of the fertiliser is locally produced whilst 68% is from regional suppliers reflecting the domination of the market by imports, (Industrial Development policy 2012-2016).

Logically, it is a shared and celebrated economic sense to say that intense competition will influence on the production quantities and utilization rates of the firms as it will be adhering to the tone set by the market framework in which it will be conducting its business. Porter (2011) cited that, the strength or intensity of the competitive force will become one of the key factors considerable or a fundamental pillar for the formulation of organisational strategy. Production is usually matched with the competitive advantage the firm has in the market regardless of whether capacity is met or not in order to prevent the conversion of entity financial and other resource into irrecoverable sunk costs.

Bocardo (2004:17) in contrast argued that, the existence of competition in a market will leave the firms in that market with less spared capacity as they will be almost using the available capacity to reduce product cost by producing more hence remaining competitive. The argument is that when competition intensifies firms will resort to mass production and flood the market with their own brand logo forcing the brand into the preferred brands list. As a result, the firm will have high levels of actual production resulting in high levels of capacity-utilisation. However, in an industry inflicted with diabolical chronic macro-economic infections it would not reflect much truth than fallacy to suppose that, as entities will have their hopes of success entangled in great fears of financial losses.

Similarly, Damiyano, Muchaibaiwa, Mushanyuri and Chikoba (2012) cited that, the effective demand for locally branded products has since dwindled as the consumer group has its preference patterns migrating towards the cheap imported products. Further to that, they also posed that, Zimbabwean firms are subjected to intense competition from rivals in the global spheres and they are struggling to gain sustenance in the market (both local and abroad), (Damiyano et al 2012). For instance, firms like Sable have their desire to enter the global

market shuttered as they could not cope with the intense competition posed by major players like Sasol Infra-Chem in Southern Africa. Porter (2011) cited that the existence of substitute product (i.e. products that serve similar purpose) imposes a price ceiling on the products of the firm and resulting in low profit margins. In turn, this will result in inability to produce more of that product.

2.3.3 Raw-material Shortages:

CZI (2010) also cited that, the major cause for under-utilisation is material shortage. The inputs into the production processes and essential spare parts are major raw-materials that are shortly supplied by the local market. Usually, much of these are obtained from the external suppliers other than the local market. Firms like Sable have to secure spare in external markets. Scarcity of production inputs influences the production output at the end of the day. Chiwanza(2011) asserted that the quantity of the rawmaterial commands whether production should commence or not hence, responsible in promoting under-capacity utilisation.

The shortages of raw-material results in production bottlenecks since it will be highly impossible to even out production. The unevenness of the production statistics will affect the monthly production targets as well as year-end production (actual) figures. A prolonged pattern of bottlenecks will lead to low rates of utilization since much time; the plant will be running offline. For example entities like Sable had to supplement their local Ammonia (NH₃) with imports from global markets which took longer to be delivered resulting in shortages. Technical, raw-material shortages reduces the effective plant capacity.

However, Kachere(2006) argued that raw-material shortages cannot alone trigger and sustain the perpetual existent capacity utilisation dilemma but, they just add insult to an already existent problem qualifying the supposed fact. The argument was that there are other factors that will result in such problems outside raw-material shortages that explicitly brings up that dilemma in utilising industrial capacity.

2.3.4 Demand Factors:

The decline in market demand for the product will restrict production to a level significantly lower than maximum number of required units (available on www.jstor.org.access.msu.ac.zw/ accessed 1438 04/03/2014). Backing a similar supposition, Pcycraft et al (2002) also cited low demand as one of the major causes of production under –utilization. In essence demand

measures the behaviour of customer or their allegiance to the products the entity offers. Hill and Jones (2009) advocated that, customers demand products that offer them high utility. Demand may reflect the ability of the firm to recoup the costs associated with production of the product hence, it can be used to determine the riskiness of the market as well as the how the brand has lost or gained popularity.

Goncalve, Hires and Sterman (2005) cited that, in the event of demand variation factory managers are presented with a few options and will resort to the adjustment to plant capacity utilisation to reduce their exposure to risk resulting from excess production. This applies to firms like Sable whose product has seasonal demand forcing the entity to reduce the rate of production. As a result, the lowering of product demand will compel management of the entity to reduce their quantity of production in a bid to avoid locking up cash and other financial resources in stagnant stocks.

On the contrary, Goncalve et al (2005) argued that, reduced levels of product inventory and service levels will attract a further demise in demand of the product by the market. The argument is that, instead the demand fall is also borne by lower production levels. The blame is further transferred to production level or inventory levels the firms hold for its market as customer perceive that if little stocks are held it's a clear reflection of the doubtful going concern of the firm hence, customers start to switch to other brands to counter the risk having solution to their needs pending after the closure of the major supplier.

However, the argument by Goncalve seem to hold not much water as viewed on an economic microscope, for the reason that a demand-driven production firm only reduce the production quantities when already demand patterns have been observed to be so unfortunate to the returns of the entity. Furthermore, the continual demise in production after observed stock quantity decrease seem too hypothetical than true though it cannot be ultimately be ignored or ruled off. Through the exploration into various sources of evidence the impact of demand on capacity utilisation can be traced.

2.3.5 Labour Factors:

The viability of any business setup hinges on human capital i.e. the man-power the entity owns in terms of their intellectual flexibility and energy reservoirs bestowed upon them. The cost of labour and flexibility of operational legal frameworks in the form of labour laws also determines the output that the entity can reap off from its labour reservoirs. "Manufacturing

sector is still stung by several challenges one of which is the restrictive labour laws in Zimbabwe”, (*Zimbabwe Monthly Economic Review December 2011*). Section 12c of the Labour Act Chapter 28:01 Of Zimbabwe enforces that the employer should give a 3 month notice to the employee before termination of service and Section 13(2) of the same enactment imposes a liability on the employer in case where termination has been fulfilled but termination package has been withheld by the employer without the knowledge of the responsible minister. The above referred sections force the employer to pay an amount equivalent to 3 months’ salary if an employee is terminated without 3 months’ notice. The existence of rigid labour laws denies the companies in the manufacturing phenomena to enjoy flexibility in terms of quantities of labour to hold.

In agreement to the above; CZI (2012) also cited that, “high labour costs and inflexible labour laws call for economic unreasonable production levels in the manufacturing sector”. Similarly, Zimbabwe Monthly Review December (2010) further highlighted that, the laws imposes a barrier on the firms to effectively match their man-power base to their level of operation thereby formulating a rigid environment in the labour market resulting in great fears for companies to offload excess labour.

Porter (2011:60) argued that, “government policies favouring unions may raise supplier power and diminish profit potential”. Companies like Sable are forced to hold the labour base they cannot sustain resulting in them pumping economic resources out of the company to unproductive labour. This reduces the financial resources available for the conversion of production inputs into the final product. The persistent existence of such circumstances will redraw the production trajectory of the firm causing the bowing of the graph leading to low rates of production capacity utilization. This notion agrees with that raised by Porter (2011) who cited that, the strength of supplier bargaining power including supplier of labour has a significant effect on the profitability of the entity especially when the entity cannot pass the cost to buyer.

On another angle, labour efficiency also impacts production output. Kumar and Suresh (2006) highlighted that labour inefficiency as contributory factor to under-utilisation. The existence of labour inefficiencies results in raw material wastages and more time being spent on producing a unit of production. Meredith and Shafer (2003) argued that, human factors may negatively impact the production pattern of an entity to lead it to levels that are significantly lower than their design capacity. Meredith and Shafer (2003) cited defects, error and avoidable losses as

part of the contributory factors leading capacity under-utilisation. Their analysis of these factors leads us to a point where we can realize that human factors influence these losses to occur. However, this is arguable since some avoidable losses may be brought by inefficient technology or defect raw-materials leading to increased losses than expected.

2.3.6 Erratic Power supply and cost of electricity:

Electrical power is the ignition of the manufacturing vehicle and this triggers the kick start of any manufacturing process since most equipment in a manufacturing entity is run by electricity. The influence of power on production capacity should be viewed in two spectacular angles i.e. in terms of its cost effectiveness and its availability.

Cost effectiveness of electrical power:

The feasibility of any power (electricity) tariff influences the quantity of electricity any organization would require before considering resorting to other possible source. Electricity tariff is per unit cost of electricity consumed by a customer of the power supplier, (Mlambo 2010). “The increase in tariffs for electricity has impacted on the unit cost of production and created difficulties for heavy electricity consumer to include Zimasco and Sable Chemicals”, (Mlambo 2010:2).

A costly electricity tariff punishes the production firms like Sable to pay more on running costs in-order to maintain the power demand at its normal rate of output. This result in a firm locked in the valley of indecision as to whether to pay more or reduce the quantity input of power. Considering the volatility of the economic atmosphere in which firms are operating in where an increasing cost of production is extremely unbearable by the supplier or the buyer. Yet, based on a wrong marketing philosophy a firm might think to transfer the burden to the end users who will respond by just excusing themselves from the entities market share resulting in low demand, and all resources employed towards the building up of such inventory will eventually join the irrecoverable sunk-costs bracket. The decline in effective demand and locking up financial resources in inventory coerce the firm to relocate its production purge downwards the production bar graph resulting in under-utilisation rates to balloon.

Kachere (2006) further qualified that among other factors, the commercial tariff imposed on the manufacturing firms has inextricably imposed an economic hardship to Sable’s ailing industry which can only afford US\$3c per Kw/Hr whilst US\$7c per Kw/Hr is charged which

the member of the industry view as a cost recovery rate or cross subsidizing rate other than a rate charged for provision of service. As a result, the capacity utilization is falling to a level that attracts interest of the stakeholders.

Supply of electricity:

The supply of electricity also determines the evenness of production quantities of a firm. The supply of electricity contributes highly in shaping the production pattern of the manufacturing firm as it is not disputable that electricity is key component in the production process.

CZI (2010) cited power outages as one of the constraints that have imposed an unbearable burden to entities operating in the manufacturing realms. In agreement to that, the Chairman of TA Holdings Group reported that, persistent electrical shortages have impacted on the performance of Sable Chemical Industries Limited an associate of the Group (*TA Holdings Annual Reports – 2012*). Erratic pattern of electricity supply has resulted in rampant production bottlenecks. Abeberehe (2012) posed that, the reduction in quantities of electrical power consumption caused by economic unfeasible tariffs forces the firms to reduce their production levels to match such to their electrical power available.

The shortfalls in the supply of required wattage for production sends production equipment into a state of unredeemable idleness due to non-existence of powering energy. The idleness of components of the plant that were considered in determining the production capacity of the entity would lead to plant under-utilisation as a result of stagnant production levels. On another hand, frequent on-off supply of power will result in damage to items of production equipment sending the components into a state of malfunctioning or ill-functioning depending on how volatile is that item to damage caused by altering supply of electrical power. As a result, the period's actual production level will dwindle resulting in low rates of utilization.

2.3.7 Financing and liquidity:

CZI (2013) highlighted that, one of the common aspects that led to persistent industrial capacity utilization continual dwindling is the unavailability of affordable long term capital. Due to the unpredictability of the policy formulation by principles in the government especially after the enactment of minimum capital requirements set for banks that led to the exodus of many banks out of the sector. This happened behind a sad background of an economy that was already stuck

by liquidity crunch after the RBZ was outplayed from the money printing press after the advent of the green economy.

Similarly, Njajeka (2010) cited that the cost and supply of capital also hinders the effectiveness of operations of Sable since high cost of finance would imply a high product cost leading to difficulties and inability to meet required levels of production. As a result of reduced availability of ready lenders of finance, a ready lender at any given time will maximize the return by charging an exorbitant price on the capital in the form of interest. The local rates for the years from 2009 to 2012 ranges from 20-25 % (i.e. lending rate), (RBZ 2013). This is cost ineffective compared to international rates of below 10% (available at [http:// www.imara.co.zw](http://www.imara.co.zw) 19:26 05/03/2014).

2.4 The impact of government policy:

Entities do not operate in a vacuum but, rather operates in real life realms that are bound by political and economic policies to govern their conduct of business and their relationship with the reigning government principals. Major policies that are associated with the period under review are Indigenisation and Dollarisation. These enactments and economic preclusions have impact on performance and the assessment of such will be explored in the paragraphs to follow.

2.4.1 Dollarisation of the economy:

“On 29 January 2009 Zimbabwe fully legalised the use of foreign currency for domestic transaction releasing the economy from the grip of the Reserve Bank which had printed enough money to drive the country into hyper-inflation”, (Mangwizo and Jerie 2011:104). Dollarisation refers the acceptance of a basket of currencies of foreign origin to be official legal tender in local economy. On the same note, Noko (2011:349) argued that, “the new multi-currency regime implied that the Reserve Bank could no longer exercise an independent monetary stance, and that effectively, the monetary policy of the main currencies country, the United States would become the monetary policy of Zimbabwe”. Basically, the two suppositions are in ad-idem (i.e. they agree), the introduction of dollarization resulted in the Apex Bank being disarmed over the dealings of the economy after it has gained popularity against its parent Ministry (i.e. Ministry of Finance and Economic Development) in the last phases of the Zimbabwean dollar regime which many described as a period that threatened the economic configuration of the nation.

The migration from the use of the Zimbabwe dollar which had since been viewed as a demonic currency to the green economy was only done by a government that was financially broke and desperately searching for means to ease battling hyper-inflation. Companies like Sable failed to secure funds for their operations and the government had only to wait for well-wishers to finance its operations in the new denominated environment. With all its hands open to donor funding a high sense of optimism was instilled in the general public who thought that it was an over-night economic turnaround of the industry lacking the knowledge that it was the magnification of the depressing liquidity crunch. Noko (2011) highlighted that the move into the green economy outplayed the RBZ in the financial service gymnastic and, it ceased to be the lender of last resort. The implication of such move was that the lenders of finance when faced with financial problems have nowhere to borrow and this resulted in the bankrupt industrialists desperately clueless as to where to get the financial aid.

Firms needed money in the form of green paper to finance the restructuring programs and recapitalisation of their business in-order to send the message of Armageddon to financial unsoundness and under-capacity utilisation however, the liquidity crunch that resulted from the exclusion of RBZ from performing its magical money dubbing tendencies it used to do to ease liquidity crunch caused despair to industrialists. Firms in the manufacturing sector had only to rely on the migrate foreign exchange reservoirs they had and high cost loans from a few the-then active banks to fund their operations. This resulted in very small production levels being attained. Noko(2011) asserted that business instead of borrowing, they were forced to heavily rely on internally generated profits due to dollarization there was and is still in cost effective financial assistance as a result of the erosion of power of the Apex Bank due to dollarization Policy(Statutory Instrument No.5 of 2009).

The adoption of the dollarization policy in Zimbabwe and any other economy led to the erosion of seigniorage in funding fiscal deficit, (Chagonda 2010). The government in case of the deficit is forced to look at the other sources to include taxes and internal funds other than the printing of money and exchange with assets. Considering that most payers of corporate tax have been repeating a trend of losses in the past years then it would be impossible to fund debt with taxes hence, public debt remains unfunded affecting the productivity of industry and related sectors leading to under-utilisation either directly or indirectly.

In criticism to the dollarization of the economy, Chagonda (2010) cited that, dollarisation brought economic unrest in the banking sector which most of its players were heavily betrayed

by the minimal capital requirement set by the Reserve Bank of Zimbabwe after the inception of the dollar in the economy which left them with no opportunity to benefit from fortunate exchange rate fluctuation that were existent in the Zimbabwean dollar era. This impacted entities like Sable in the manufacturing sector as major lenders of loan amounts and overdraft facilities to manufacturers were forced into inactive by unbearable capital requirements. In addition, dollarization resulted in the erosion of competitiveness of local products on the international market (available on www.consultancyafrica.com>Discussionpapers.economy accessed on 1234 13/03/2014). As a result, the firms will be confronted with decision to reduce their production output to levels that follow the dictates of the environment. Chagonda (2010) argued that, the dollarisation of the economy led to the creation of a stable operating environment reinstating the previously eroded competitiveness of the local firms. However, the argument seem not to hold much reasonableness as the local industry had not benefited from stable environment due to continued inactivity hence did not gain competitive edge in reality.

Proponents of the dollarization and many in its advocacy pledges that, the introduction of dollarization in any economy does away with the tragedy of currency depreciation and hyperinflation, (Federal Bank of Altanta). This enables firms to operate smoothly even to the extent of promoting effective production *ceteris paribus*. Further to that, it is also argued that dollarization has increased investors confidence in the banking sector as a stable environment was established resulting in more deposits into the banks increased number of depositors means more capital will be available for lending to business players(Federal Bank of Altanta).

However, it would seem too unrealistic in the context of Zimbabwe where dollarisation promoted the use of electronic funds transfer and the use of mobile money whilst deposits remained low, (Monetary policy January 2012). Vast of the cash reserves are held outside the banking environment with the public inflicted with no confidence in the law enactors who might over-night change the laws at the expense of the general public. This makes it difficult for local firms to obtain local funding due to excess drains from the money cycle to non-accountable sources.

2.4.2 Indigenisation and economic empowerment:

The manufacturing sector as any other sector felt so threatened by the re-definition of the indigenisation policy that had its roots in early years of post independence; in 2010 the responsible minister had concentrated his effort in targeting foreign owned entity into publicly controlled firms based on the 51% definition of control (i.e. 51% to be owned by indigenous

Zimbabwean natives). Matinhu (2012:7) highlighted that, “in the millennium the government revitalised its indigenisation drive”. This explicitly gives evidence of the prior existence of such policy in the economy but it has since lost impact or else it had an insignificant impact.

Indigenisation policy is a sound policy but however, the dilemma is that the transfer shares of total 51% was never preceded by a payment, the transfer rather more of a paperwork draft than a real business transaction, this resulted in many firms facing financial difficulties, hence unable to either produce to equitable level for their market demand or maintain their business with their suppliers. On a similar perception, Ellyne and Daly (2013) argued that, the indigenisation policy deterred foreign direct investment. This has far reaching consequences as the local economic environment was barred from blooming for investment attraction hence, will have its ability to fully utilize production equally hindered. Similarly, CZI (2013) blamed the indigenization policy as cause for the industry to fail to revert to the proper production line.

The invasion of the industry by this economic tragedy has created great fears in the members of sector who had a case study of Zimplats which had its parent involved in disputes with the South African Government over the black empowerment legislation which has similar principle with Indigenisation policy in Zimbabwe after the South African government failed to honour its obligations emanating from the policy (available on www.bancabc.co.zw accessed 11:23 16/03/2014). Additional investment was hindered as the industrialist wanted to secure their ground by not committing their resources to unsecured venture environments such as Zimbabwe thereby leading to low utilisation rates.

However, those advocating for indigenising the economy claims that, the indigenisation policy will prevent the repatriation of profits, (Ndongko, Monetary Policy July 2011- Indigenisation Supplementary). The repatriation of profits drains the capital from the land where it was generated to other areas leading to the suffocation of the local industry in terms of capital. Ndongko argued that, indigenisation enables the growth of small to medium enterprises leading to increased competency of the sector. Therefore, the enactment of this policy will curtail the outflow of capital and hence encourage the expansion of local economy hence improving the local industry’s capacity utilisation.

2.5 Effects of capacity under-utilisation:

The justification of labelling under-utilisation as a problem can be regarded null and void if the resulting implications of it are ignored. They is no way a problem can be said to exist save for

naming the resulting effects of the problem thereby exposing beyond reasonable doubt that it really affects the entity goal of owner –wealth maximization and sustainable growth as well as the economy in its entirety.

2.5.1 Increase in fixed cost per unit and overall unit price:

A low capacity-utilisation rate is usually associated with high fixed cost per unit. The idea is that, as production quantities increase the unit fixed cost component will fall and vice-versa. High fixed cost per unit gives birth to decreasing profits (available on <http://www.tutor2me.net/business/> accessed 17:57 05/03/2014). Koberl and Lein (2009) said that, a firm with low rates of utilization has high chances of increasing prices for its products. The argument being that, when the firm has fixed cost components of production it can only recover such fixed cost through pegging or increasing the price for its output provided that demand is not price elastic. In the event that the demand is price elastic then the firm will be forced to bear the burden and will not pass on the burden to the customer, (McConnell 2005). As a result the overall profit per product will be lower or a loss might be incurred.

2.5.2 Loss of competitive advantage:

The rampant occurrence of capacity utilization problem in the industry may result in players losing the competitive grip that they used to have. The reduced ability of the firm to spread fixed cost production element over a large quantity of production might hinder the firm's ability to gazette reasonable prices for its products. The shift from local products to imports was speeded up by low price for imports, (Damiyano et al 2012). Further to that, Damiyano et al (2012) went on to highlight that, Zimbabwe firms are facing stiff competition on both local and international frontiers. With this background of high product prices borne by under-capacity utilization of production capacity, the guarantee certificate of industrial competitiveness for local companies cannot be issued at any point in time.

2.5.3 Inability to attract new investment:

Spare capacity may portray a bad image, (available on www.tutor2me.net/business/). A mere interpretation of the economic message send by the current situation in industry and commerce would imply that, investing in a poorly performing entity would not significantly differentiate any business practitioner from the prodigal son as both scenarios purports unprofitable commitment of financial resource in risky decisions. The existence of a highly under-utilised

capacity for any business might be a clear message of the market's loss of trust in the company's brands or a retaliation of the poor services the company offer them that they cannot continue giving consent to, this equally applies to firms like Sable that are flanged with excess capacity. Gitman (2012) cited that generally investors are risk averse i.e. they require increased compensation for any increase in risk leading to the point a firm under-utilising capacity is considered to have high risk and the returns are low as a result of the effects of cost of production. With this background in mind a risk-averse investor would regard investing in such firms as investment on principle of the prodigal son. The firm will be unable to have funding to venture into business restructuring programs to paint off this betraying image.

2.5.4 Financial difficulties:

Usually when a firm is facing operational difficulties it is highly probable that it will rely on hand to mouth operations where all economic decisions are nailed on the erratic cash-flows that find their way to entity cash-floats. Mlambo (2010) cited that, low rates of capacity utilisation results in increased prices for output and has an impact on entity sales. Roos et al (2012) argued that, there is a direct relationship between product price and sales. From their arguments it can be deduced that as a result of under-utilisation high product costs are borne and it will be very difficult for an entity to gain sales in a market where price elasticity is high. The implication of low sales is less revenue. Roos et al (2012) cited that movement in the sales of an entity directly impacts on the profits of an entity. Therefore as the company loses its sales it would result in reduction in equity reserves in the Statement of financial position causing the Statement of financial position to shrink. The effect thereof is that the entity would not be able to convince the lenders of finance as it would be testifying non-lucrativeness in the context of investment.

2.5.5 Weak exchange rate and reduced Gross domestic product:

Kaseke and Hosking (2013) cited that power outage leads to fall in the quantity of exports resulting in a weak exchange rate. The demise in products send on the global market as exports results in low foreign currency inflows, hence low weak exchange rate. Furthermore, Kaseke (2013) Power outages result in reduced production. Reduced levels of production results in the lower of Gross domestic product and as a result balance of payment problems haunts the nation, (McConnell 2008, Samuelson 2006).

2.6 Ways to improve capacity utilization:

With concerns raised over issues concerning under-utilisation of capacity general purpose ways of improving capacity utilization have been suggested that entities may apply to their situations although guarantee that high rates may be achieved due to discrepancies that may result from implementing these strategies or any other discrepancies that may emanate from the general nature of the entity

2.6.1 Stable power supply:

Oluwafemi (2012) cited that, in order to improve on the utilization of the production units a stable source of power is should be in place. The availability of constant power enhances the flow of production processes. Mlambo (2010) also supported the idea by proposing that a cost effective stable power is an essential factor to be in place to improve on capacity utilization problems. The availability of a stable power will ensure constant production hence increasing the rate at which production plant is utilized. Chiwanza (2011) cited that, the major requirement to boost capacity rates is the crafting of an effective business strategy which is foresighted and cognisant of the prevailing economic scenario other than the availability of key production factor to include electricity.

2.6.2 Investing in new business and rigorous marketing strategies:

As cited in the above discussion that one of the reasons for failing to reach maximum capacity is poor demand for the products rigorous selling strategy and identifying new markets might cure this macro-economic infection. According to information available on <http://www.tutor2me.net/business/production/> it is economical feasible for a firm to determine new business or to invest in new marketing propositions in order to improve its capacity utilization rate. The argument vests on the point that the entity will expand its market share by venturing into new area hence, increasing the effective demand for its products. However, the effectiveness of the strategy is vested on the attitude of the market to new products and the competition that exist in that market.

2.6.3 Business process re-engineering:

“Re-engineering refers to the complete rethink, reinventing, and redesign of how a business or set of activities operates”, (Lei and Pitts 2006:93). Marangarire (2013) cited that Sable needs to do a business process re-engineering to improve on utilisation rates. “This improves the responsiveness to customer needs”, (Lei and Pitts 2006:93).as a result, Business process re-

engineering brings sanity in the manufacturing sector as business efficiency is increased hence, increased rates of utilisation.

2.7 Conclusion:

The above is a review of the literature by various authors about the research area. From the review of the literature it is clear that the previous research work did not fully address the effects of indigenisation, dollarisation to the manufacturing sector and also that the previous research work did not provide causes of under-utilisation to the fertiliser sector in specificity. It is therefore the purpose of this study to bridge up the existent gap between the held literature and industrial realities by applying a suitable methodology to determine the actual facts behind under-utilisation of capacity at Sable specifically other than these general factors. The next Chapter focused on the methodology for data collection for the purposes of this study.

Chapter 3

3.1 Introduction:

Methodology is “theory of how research should be undertaken, including the theoretical and philosophical assumptions upon which research is based and the implications of these for the method or methods adopted, (Saunders and Lewis 2004: 481). Methodology provided the roadmap of how the research was executed. It is a reflection of the interrelatedness of assumptions to their resulting effects in the research. The purpose of this chapter was to give detail on the design of the research, techniques and methods used to gather data about the research study.

3.2 Research Design:

Mauch and Park (2005) defined research design as a consolidated blueprint that narrates the execution of an investigation. Similarly Orodho cited in Kombo and Troup (2010: 70) defines research design as “a scheme, outline or plan that is used to generate answers to the research problem”. From the above suppositions it can be deduced that, the success of any research is hinged on the effectiveness of the research design. The research design is relevant for completing the jigsaw puzzle of research data components by bringing items of data into a common whole. It also assists in demarcating relevant data from irrelevant data. Regardless of the existence of various types of research, for the purposes of this research a descriptive case study was used courtesy of the research objective of determining ways of improving capacity utilisation at Sable.

3.2.1 The Descriptive Research:

Sakaam (2000:125) cited that, “a descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variable of interest in a situation”. Descriptive research tries to highlight information about the description, explanation and the interpretation of prevailing conditions as present, (Sakaam 2000). It was purposed at examining the prevailing phenomena and variable factors associated that include the determination thereof and how a summary of these can be expressed to aid comprehension and comparability.

3.2.2 Merits of Descriptive Research Design:

The descriptive research design incorporates both useful quantitative and qualitative data to determine the solution about the subject under study. The meaningful presentation of data in a descriptive study enabled a comprehensive grasp of situational characteristics of a study group. It also allows logical or sequential thinking on a situation and flexibility in the method to employ depending on what you intend to obtain.

3.2.3 Demerits of descriptive study:

Confidentiality:

Descriptive study did not prove to be immune over the effects of confidentiality and the resulting implications.

Conservatism:

It was observed that some people felt threatened to throw out sensitive input and decided to omit it or never to respond hence affecting the solutions.

The descriptive method was the method chosen regardless of these disadvantages which were countered by the triangulation of data.

3.3 Population

Cooper and Schindler (2013) defined population as the totality of elements from which representative will be drawn from (i.e. population is a whole and samples are components of a population). The magnitude of a population is the one that dictates the size of the sample and method of sampling as samples are intended to reasonably represent the population whence they are drawn from. In the context of this research, the target population were members of the organisation that are responsible for the generation, analysis and making decisions form information about entity production. The target population included Executive Management Team, Middle Management Team, Line Managers, Accounts Officers and Clerks from the stated division at Sable. The target group consisted of 34 people, (Sable Employees Statistics June 2013).

Classification of population:

	Technical services	Engineering	Finance	Production	Total
Level of Authority	Population	Population	Population	Population	Population
Executive Management	1	1	1	1	4
Middle Management	3	4	3	2	12
Line Managers	3	3	3	3	12
Costing Officers			2		2
Clerks			2	2	4
Total	7	8	11	8	34

(Fig. 4 – Population by Division: Source: Sable staff record, 2013)

3.4 Sampling and Sampling techniques:

Cooper and Schindler (2013) defined sampling as the extraction of a representative component of a whole that satisfies the research purpose. Sampling is the terminology used to describe the process of separating participants of the research from non-participants but with the fact in mind that participants should give true reflection of the generally obtainable result if the entire population was opted for. The study employed a non-probability sampling technique. As all research work is bound to time and financial constraints it was considered reasonable in the context of financial and time management to use samples as it was determined that they can give reasonable assurance about the reliability of intended information. To the extent to which it pertains to this research non-probability sampling will be used. Out of the 34 members 26 people formed the sample. The below is the representation of the sample size.

Sample frame and sample sizes:

CLASS	Population	Sample Size	Percentage
Executive Management	4	4	100%
Middle Management	12	10	83%
Line Managers	12	8	67%
Accounts Officers	2	2	100%

Clerks - Procurement	4	2	50%
Total	34	26	76%

(Fig. 5 – Sample Frame and Sample sizes).

3.5.1 Purposive sampling:

Cooper and Schindler (2013) cited that, purposive sampling is where the selection of members of the sample has been done based on predetermined criteria. Purposive sampling gave the researcher the freedom to use personal judgement to determine cases that would provide information / solutions to the research questions of the study and accomplishment of the research objective which is to determine ways to improve capacity utilisation of Sable.

3.5.2 Merits of purposive sampling:

- Purposive sampling enabled the researcher to study the group in depth. This ensured the researcher to clearly know about the group and extract as varied relevant information as possible.
- Purposive sampling also enhanced the accuracy of the research results as it was based on an unbiased investigation. The elimination of irrelevant items in the sample encouraged the devotion of research effort towards improving the ultimate result.

3.5.3 Demerits of purposive sampling:

- With purposive sampling it was difficult to eliminate the effects of the bias associated with the choice of participants unlike it might have been if probability sampling had been chosen. However, a proper criterion was pursued and judgement was properly considered that resulted in reduced levels of bias.
- It was not possible to calculate sampling error after using purposive sampling. The method was based on non-probability method and hence it was not possible to quantify and determine the sampling error as it might have been in the case where a probability method was used.

Regardless of the existing demerits the purposive sampling method was opted for because it had more desirable attributes that suits the purposes of the study.

3.6 Reliability and validity:

Bui (2009:149) refers, “to the extent to which instrument constantly measures what it was intended to measure” whilst validity “has to do with whether a measure of a concept really measures the concept”, (Sekaram 2000:74). To ensure the reliability and validity data from secondary sources, interviews and questionnaires was corroborated. A pilot study was also conducted.

Pilot study:

Respondents	1	2	3	4	5	6	7	8
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No. of questions	18	18	18	18	18	18	18	18
Questions answered	13	14	12	15	14	13	15	15
Questions not-answered	5	4	6	3	4	5	3	3

(Fig.6 – Pilot study Results)

A pilot study was conducted on 8 people from a firm in the manufacturing sector with almost similar characteristic with those of Sable and the above fig.6 is the reflection of the results of a pilot study conducted. From these results several adjustments were effect to include the following:

- The number of closed questions was reduced from 14 to 12.
- Four closed questions were rephrased into 3 questions with both closed and open questions characteristics and 1 open ended question.

The pilot survey led to the rephrase of other questions to include question 6 and 13 that were found to be controversial.

3.7 Data source and collections:

Cooper and Schindler (2013) defined data as research facts that are derived from the research environment. Data sources therefore refer to all areas from which data can be obtained from relevant for research purposes. Research data branches into two categories which are primary and secondary data.

3.7.1 Primary data:

Kombo and Tromp (2011:70) defined primary data as facts that the researcher obtains from the respondents specifically for the study. These are facts that are gathered with the research question in mind and the data obtain satisfies the research question and research objective. For this study questionnaires and interviews were used and were administered at Sable. The following were the advantages enjoyed during the administration thereof of the instruments.

Advantages of Primary data:

Increased relevance:

- Data gathered was primarily to meet the objectives at hand and therefore relevant in context of the current research unlike the use of secondary data where data has already been to meet the research needs that may be different to current study.
- The employment of primary data gathering techniques ensured the gathering of adequate data as all the research effort is employed towards the gathering of data primarily for the current research therefore in line with research objectives.

Disadvantages of primary data:

- The reliability of primary data was hinged on the ability of the researcher to explore, analyse and present facts.
- It was also discovered that primary data may also be influenced by the integrity of the respondents in the research. If respondents are of poor integrity there are high chances that data may be a misrepresentative of the actual phenomena. Professional judgement was applied and caution was taken to avoid the creeping of such as the research targeted morally sound individuals.

3.7.2 Secondary Sources:

Blumberg et al (2011) defined secondary source as already held information that might be useful to the current study but was compiled for a different purpose. For the purposes of this study TA Holdings website, TA Holdings Annual Reports 2009-2012, Sable ZITF Presentation 2013 and Sable production reports were used for the extraction of secondary data.

3.7.3 The Merits for Secondary Sources of Information:

Saving of financial resource:

- The use of already held information forbidden the pumping out of a lot of financial resources to gather data relevant for research. The use of secondary data resulted in a cost saving as the extent of interviews was limited to 10 and 15 questionnaires were distributed.

Improved Quality:

- The use of integral secondary data from Sable and its parent TA Holdings enhanced the quality of research data as these sources were providing authentic verifiable facts about the research problem.

Gathering of sensitive information:

- The analysis of secondary data enabled the extraction of sensitive data that was avoided during the administration of research instruments. Revenue figure and imported ammonia quantities were not revealed in the administration of research instruments.

3.7.4 Disadvantages of secondary sources:

Shallow depth:

TA Holdings Financial Statements provided summarised data (after aggregation and reclassification) that would not provide a detailed picture of the trend of events during the year hence, becoming of shallow depth.

Research Instruments:

In order to ensure the gathering of relevant research data questionnaire and interviews were used in this study. The two cited instruments assisted in the gathering of primary data whilst other relevant data was gathered from the analysis of secondary data sources as cited in the prior sections.

3.8.1 Questionnaire:

Refer to a particular data collection technique in which the respondent is asked to give responses to a set of questions about study area in a particular manner, (Kombo and Troup 2010). Questionnaires had both closed or open-ended questions. 15 questionnaires were distributed at Sable's Headquarters in Kwekwe to Executive Managers, Middle Managers, and Line managers, Accounts Officers, Procurement Clerk and Production Clerk. Questionnaires were distributed after authority was sought from Sable's Human Resource department.

3.8.2 Advantages of questionnaires:

(a) Cost effectiveness:

- The use of questionnaires to gather research data was observed to be relatively cheaper as compared to the conduct of face to face interviews.

(b) Speed gathering of research data:

- The use of clear and well explained questionnaires enabled the respondents to quickly go over the questionnaire and provide relevant responses in time hence, resulted in quick gathering of research data.

(c) Uniformity and standardisation:

The use of questionnaires ensured that all respondents are given the same questions which they should respond to and this resulted in obtaining uniform answers that suits a set standard.

Disadvantages of questionnaires:

(a) Deprives the researcher opportunity to supplementary corroborating data:

- Unlike in interviews the use of questionnaires deprived the researcher access to supplementary observational data since there was no chance to divulge in detailed conversations.

However, extensive work was done on interviews and interviewees were prompted to deliver as much evidence which compensated for this disparity and moreover, the financial statements of TA Holdings group, Sable Conference reports and Productions report were extensively analysed.

3.8.4 Closed-ended questions:

These are a type of questions that gives the respondent a limit in giving his response and guides him never to exceed set boundaries, (Burns and Burns 2008). The questionnaires distributed at Sable had more of this type of questions as they proved to be easy to administer and to understand. This has its merits and demerits in as far as reliability of research data is concerned.

3.8.5 Advantages of closed-ended questions:

(a) It eliminated rigorous steps in processing answer:

-As the answers were standardised there was no need to analyse and understand the answer or to further reclassify the response hence, easy processing of research data results.

(b) Enhanced comparability:

- It was observed closed questions comparisons are easy unlike where open ended have been used since the results of open-ended questions provided a range of similar expected responses.

Disadvantages of closed-ended question:

(a) Generating mutually exclusive forced choice answers was a requiring task.

(b) There was no assurance that variations in interpretation by respondents were been eliminated.

However, regardless such weakness closed ended questions were employed as it proved to be more relevant and effective in generating research answers. Professional judgement and caution was applied in-order to ensure that mutually exclusive choices were generated by use of yes, no and uncertain as options and explaining the questions to respondents.

3.8.7 Open-ended questions:

These are questions that give the respondent an exclusive right to respond anyhow, (Reardon 2006). The questions does not limit the respondent but rather is given the room to answer the way he thinks so fit to cover question objectives as depicted in Appendix B(Questionnaire). The research used less of opened questions to reduce the rigorous process of response analysis.

Advantages of open questions:

- Ensures the gathering of variety of information:

-The respondents were not limited to respond in a certain pattern they may answer anyhow as long as they are providing data in relation to the research. This enables the researcher to gain information in its variety.

Disadvantages of open-ended questions:

(a) The reliability of data was hinged on the competency of the data analyst:

-The analysis of open-ended required expert knowledge especially the interpretation of industrial and production engineering terminology to avoid data loss and the establishment of the pattern of their responses.

Interviews:

Refer to the interaction of the respondent and the interviewer in a setting where the interviewer imposes questions to the interviewee with the desire to get response relating to particular subject area, (Reardon 2006). For the purposes of this research work interviews were also used to enhance the reasonableness of research data. 10 short interviews were conducted at Sable's Head office in Kwekwe. The interviews targeted 1 Executive Management, 6 Middle Managers and 4 line managers. These people were targeted based on their knowledge about Sable's capacity utilisation problem.

3.9.1 Merits of interviews:

(a) Enables flexibility and extensive data gathering:

Interviews allowed free interaction between the respondent and the interviewer which enabled the researcher to quickly read the responding pattern of the interviewee. Unlike other methods, interviews awarded the researcher the right to gather other information that was never part of the interview questions relevant for the research.

(b) Improved understanding and correct response:

The interviewer had the chance to clarify issues that are not easily understandable by the interviews hence, increasing understandability and the gathering of rightful responses.

(c) Allows the gathering of in-depth data:

The one to one interaction between interviewee and interviewer enabled the reaping-off of detailed facts about the research study.

Demerits of interviews:

(a) Reliance on experience and expertise of the interviewer:

The success of the interview was hinged on the experience and the expertise of the interviewer i.e. if any an inexperienced person conducts the interview a wrong result may be obtained.

3.10 Data presentation and analysis:

Wegner (2007) defined data analysis as the application of statistical and other techniques to describe and illustrate, condense and make an evaluation of data. Cooper and Schindler (2013)

included in their definition that, data analysis involves the looking for patterns in data, the application of patterns and application of statistical techniques. Statistical methods will be used for the analysis of data and presenting the results of the research. The results from the research carried out at Sable will be analysed using various statistical forms which includes the use of graphs, tables and charts and the mode shall be the measure of central tendency applicable in making the overall result by mere looking on the number with highest frequency.

3.11 Chapter summary:

The current study was a qualitative research study based on a descriptive research design. A purposive sampling technique was applied to select respondents to the study and questionnaires and interviews were employed as research instruments. The chapter also provided an evaluation of the various techniques, methods and instruments employed for the purposes of the study. The next Chapter focused on the presentation of research findings and an evaluation of findings against literature will also be revealed in the following chapter.

Chapter 4

4.0 Introduction:

The objective of this chapter was to reflect the application of statistical techniques on the raw facts obtained from the research study that was conducted at Sable Kwekwe and try to portray them in the form of graphs, charts and tables using statistical concepts and other relevant research concepts. An analysis of the research data gathered from the administration of questionnaires and the conduct of interviews at Sable was also part of the chapter objectives.

4.1 Response rate:

Response rate is the percentage rate of actual response against the intended response. In context to this study it is measured as number of questionnaires distributed at Sable responded versus the total number distributed. The responds rates per class of sample are given below:

Responses rate statistical data:

Class	Questionnaires Distributed	Actual Responded	Response Rate (%)
Executive Management	3	2	67
Middle Management	4	4	100
Line Managers	4	4	100

Accounts Officers	2	2	100
Clerks Procurement & Production	2	2	100
Total	15	14	93

(Fig.7. Response results of the study conducted at Sable).

From The above statistical depictions it is reflected that 67% of the executive management team responded to the questionnaires distributed to them, 100% of the middle management team responded and the same for questionnaires distributed to line managers were responded. Furthermore, questionnaire distributed to peripheral staff (i.e. accounts officer and clerks) had a 100% response rate. An overall 93 percent response rate was obtained. Punch(2008) cited that, a 50% response rate is suffice to ensure the development of the conclusion and suggesting courses of action to be implemented.

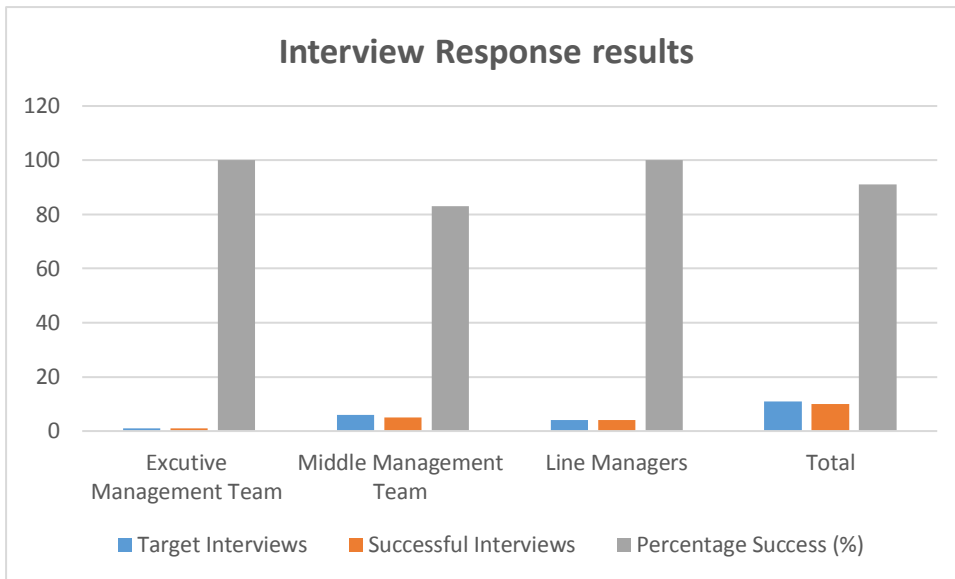
4.2.1 Interview:

The research was targeting ten people for interviews. The study managed to obtain a 91 % success on the intended interviews leaving a 9% as unsuccessful. The results of the study are given below.

Table and bar graph showing the results of the interview success:

Class	Target interview	Successful Interview	Percentage Success (%)
Executive Management Team	1	1	100
Middle Management	6	5	83
Line Managers	4	4	100
Total	11	10	91

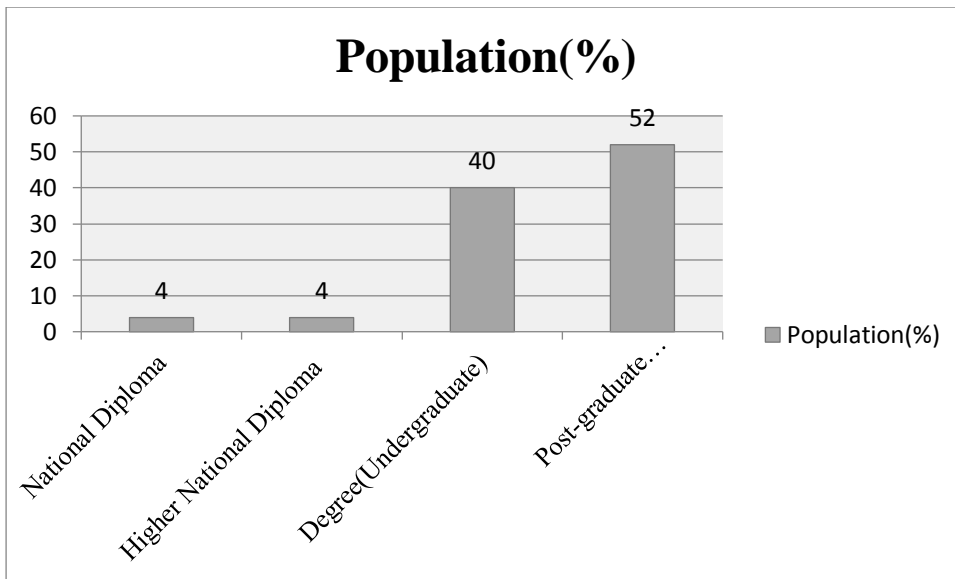
fig.8 – Results of the interviews conducted).



The table and bar-graph shows that 100% Of the intended interviews were conducted with the executive management team, 83% of the interviews targeting middle management were convened as well and 100% success was recorded on the line management group. An overall rate of 91% success was scored, the rate is capable of satisfying the research data needs and a conclusion can be drawn. This is supported by Punch (2008) who highlighted that a response rate of 70% is very good.

4.3 Level of Education:

An optional question was also posed that was asking the respondents to furnish their levels highest levels of education by choosing a category to which they belong from the given 4 options on the questionnaire without specifying the fields of their specialization in the case of interviews that was part of the introductory questions although it was not included in the interview guide. The essence of this question was to ensure that there is no information bias as a result of misinterpretation of facts caused by lack of requisite knowledge. The following is the reflection of the output of the study on the question:



(Fig.9 - Education levels of respondents).

From the above view posed by a bar graph, it is shown that:

- (i) 4 % are holders of National Diplomas.
- (ii) 4% are holders of Higher National Diplomas.
- (iii) 40% are holders of Undergraduate Degrees.
- (iv) 52% holds post graduate qualifications.

The results testify that 92 % (40% plus 52%) of the population of respondents have an understanding of the purpose and the conduct of the research as they are holders of undergraduate degrees and post-graduate qualifications. As a result, it can be deduced that the bias that creeps into research information as a result misinterpretation of questions and failure to grasp the intentions of the questions will be low therefore; the result of the study can be relied upon.

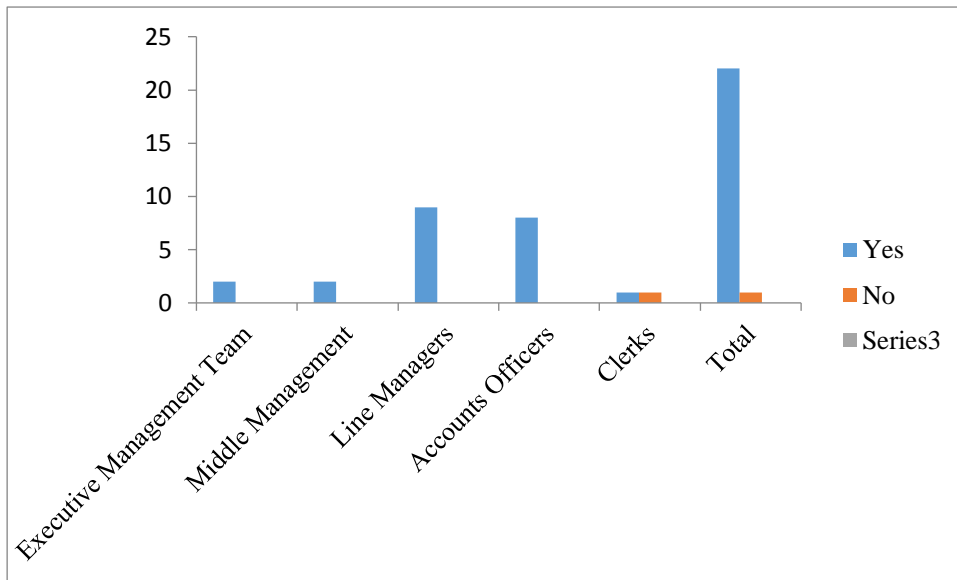
4.4 Experience:

On this aspect two questions were asked to respondents.

- (a) We you employed fulltime at Sable during the period under review?

The question was posed to respondents to show whether to they were permanent employees or not for the whole period under review. The drive of this question was to ensure that there are

no biases in the research information as a result of disruptions caused by rendering of temporary service as they may lack a fully comprehension of the activities and issues affecting the business. The statistics below reflects that the majority (22 out of 24 of respondents) are in a position to provide reliable results about Sable as they were with the entity for whole period under review and (2/24) was not with the entity and considering the position held by the individual the results cannot be distorted.



4.5 The results obtained from the questionnaires:

Question 1: *Production capacity measurement is based on design capacity.*

The question was asked in order to determine the basis used for measuring the production capacity at Sable.

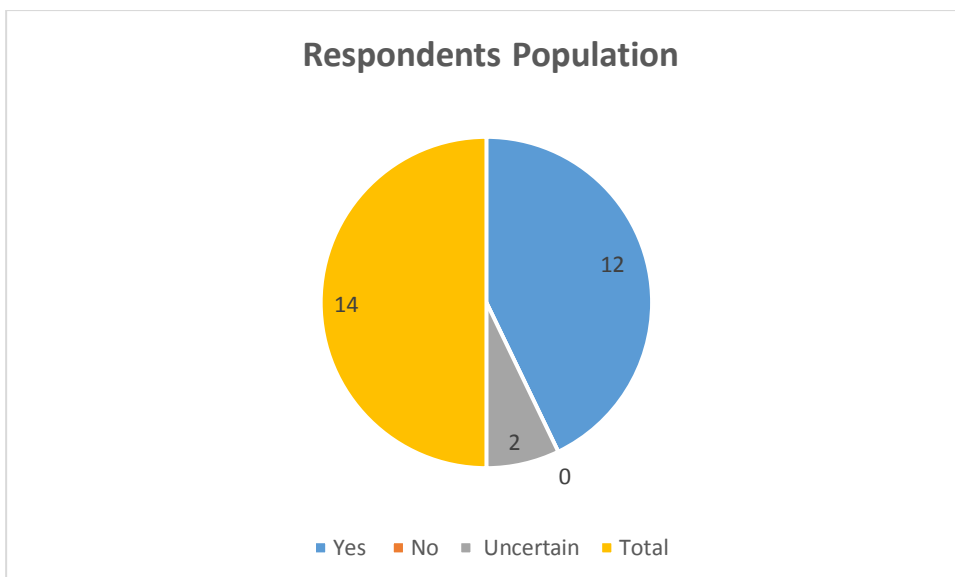


Table 4.1 Capacity measurement:

	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondent population</i>	12	0	2	14
<i>Percentage</i>	86%	-	14%	100%

The majority (86% i.e. 12 out of 14) of the respondents agrees that production capacity of the plant is measured based on design capacity. However, a population equalling 14% of the representative population is not certain of the basis used in determining the capacity of Sable. According to Reider and Sanders (2005:307) capacity can be measured based on design capacity, therefore the measurement of capacity at Sable is in harmony with their supposition.

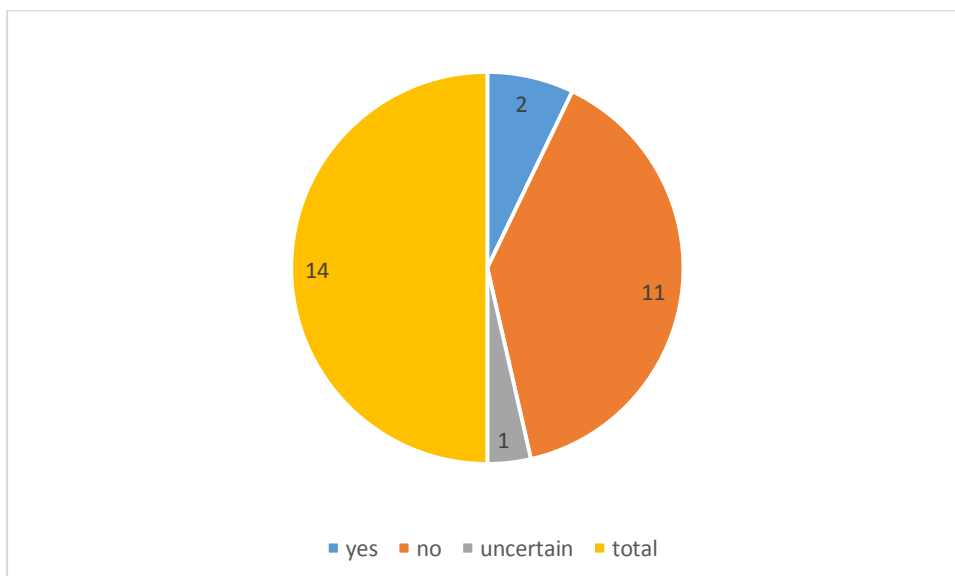
Question 2: *Is the 240 000 tonnes output per annum reasonable estimate of the capability of the plant?*

The objective of the question was to ascertain whether the 240 000 tonnes per annum is still a target that can be achieved by installed technology at Sable. The following were the results of the study:

Table 4.2 Reasonableness of 240 000 metric tonnes per annum

	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondent population</i>	2	11	1	23
<i>Percentage</i>	14%	79%	4%	100%

The representation of tabulated data in a pie-chart:



The results reflected in the table above reveals that, 14% (2 out of 14) of the respondents says it's still reasonable and a correct estimate of the plant's capability and 79%(11 out of 14) argues that the 240 000 tonnes per annum is not the correct estimate of the plant's capability and 1 out of 14 (constituting 7%) is not certain as to whether it is still reasonable or not. The majority expresses doubt over the capability of the plant to continue being purged at 240 000 tonnes.

Question 3: *The entity's operating level is highly desirable.*

The objective was to determine whether the operational level is favourable or not.

Table 4.3 Desirability of operating level:

	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondent population</i>	0	14	0	14
<i>Percentage</i>	0%	100%	0%	100%

Every respondent pointed that the operational level is not desirable. The reason given were as follows 72%(10 out of 14) gave the reason that low rate of utilization results in losses due to high fixed costs and 14%(2 out of 14) gave the reason that its resulting in low uncertainties around their job security 14%(2 out of 14) passed inability to the firm to meet demand for their seasonal demand hence, it's not desirable. However, the results of the study are contrary to the idea of Jacobs and Chase (2010:56) that cited that low rates are sometimes desirable as a 100% population of the respondents objected and never gave room to the desirability of it on same circumstances.

Question 4: The mechanical plant breakdowns so frequent?

The objective of the question was to determine whether the plant is frequently send offline due to mechanical breakdowns. The tabulated data reflect the responses obtained:

Table 4.4 Breakdown frequency:

Column1	Yes	No	Uncertain	total
Respondent Population	12	2	0	14
Percentage	86%	14%	0%	100%

Comments on the result:

The results reveal that 86% responded YES to the question and 14% responded NO. From the results it can be deduced that the majority agreed that mechanical breakdowns are frequent for the reason that spare parts are not readily available. Persistent technological break-downs is a contributory factor to low rates of plant utilization (available on <http://www.tutor2me.net/business/> accessed 17:43 05/03/2014). Therefore, in the context of Sable the above supposition holds truth. It has proved by results of primary study (research carried out).

Question 5: Fertilizer imports have little impact on the entity’s production.

The objective was to determine contribution of fertilizer imports on the firm’s low rates of production. The following were the results obtained from the study:

Table 4.5 Impact of imports on local production:

	Yes	No	Uncertain	Total
Respondent population	9	5	0	14
Percentage	64%	36%	0%	100%

Comments on the result:

The result of the study reveals that 64% (9 out of 14) of the respondents agree that the fertilizer imports have no significant effect on local production. 36% argues that imports have a significant influence on the production levels. Damiyano et al (2012) cited that there was a great demise in the demand for locally branded products towards imports and that could have led to low production rates(also **CZI 2010:14**). The results of the study does not reflects an ad-idem scenario between the in industrial realities and previously held research work as the majority are of the view that fertilizer imports have no impact on the production levels of Sable. Additional information gather revealed that the 240 000 tonnes per annum(which to be the maximum) is less than aggregate demand and virtue of that imports are necessary.

Question 6:

The company is still competitive to enter global markets:

The drive to pose this question was to determine whether or not the firm can still compete with other global suppliers of fertilizer considering that it is stuck with under-utilization. The table below shows the results of the study:

Table 4.6 Competitiveness of the entity to enter global markets:

	YES	NO	UNCERTAIN	TOTAL
<i>Respondents(POPULATION)</i>	5	8	1	14
<i>Percentage (%)</i>	36%	57%	7%	100%

From the results above it can be stated that, 57% of the respondents disagreed with the fact that the company is still competitive to enter global markets as reflected in the table above. This seem to be sympathetic to the supposition of Damiyano et al (2012) who cited that Zimbabwean firms cannot stand a fair ground on the global markets due to their high priced products compared to fairly priced products from other global competitors. However, a significant population totaling 35% agreed that really the firm has competitive advantage to stand global completion. Additional information reveals that the 34.5% Ammonium Nitrate (NH₄O₃) has a demand on the regional markets due to the higher content of up to 34.5% of Nitrogen hence, will penetrate easier into the market as it will be perceived a quality product to defend its high price. However, based on the majority it can be concluded that the firm is no longer competitive on the global market.

Question 7: The Company is accessing all raw-materials and spares locally without any challenge.

Table 4.7 Firms access to raw-materials:

	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondent population</i>	0	14	0	14
<i>Percentage</i>	0%	100%	0%	100%

Comment on the results:

100% of the respondents disagreed and posed that the company is facing challenges in acquiring essential raw-materials. This is in harmony with the position by CZI (2010) when it alleges that material shortages are contributing towards dwindling rates of utilization. It is therefore conclusive to say that material shortages go a long way in shaping an uneven production pattern.

Reason(s):

79% (11 out of 14) mentioned that the company imports essential spares and catalyst and it is facing challenges in securing these spares and in the shipment of materials thereof. 21% (3 out

of 14) mentioned that electricity a major input of the process is obtained locally with problems. Persistent power shortages have resulted in lost production and uneven pattern of the production trend (**TA Holdings Annual Report – 2012**). So, primary information has confirmed this notion.

Question 8: Does the firm have a high demand for its products?

Table 4.8 Entity’s product’s demand

	Yes	No	Uncertain	Total
Respondent population	12	0	2	14
Percentage (%)	86%	0%	14%	100%

Comment on the result:

The results reflects that 12 out of 14 (86%) of the respondents agree that the firm has a high demand for its products while 2 out of 14 (14%) are not certain as to whether demand is still high or not due to low rates utilization. Pycraft(2002:388) cited that reduced demand is a factor that leads to under-utilisation of production capacity however, this is contrary to the existent situation on ground in the case of Sable as reflected in the results where majority said that it has a high demand. On this factor the result leads one to conclude that, the company has a high demand for its product.

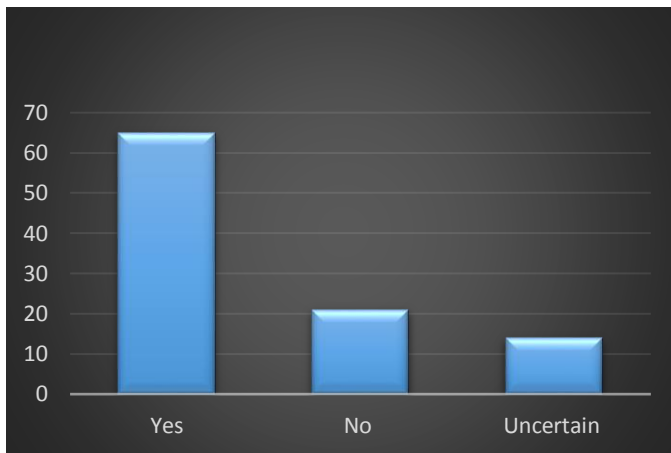
Question 9: The Company has excess production workforce than effectively required.

The results of the study were that:

- (a) 79% agrees that the company has excess labour.
- (b) 21% disagrees with the fact that labour pool was excess of the effective requirement. Companies are holding excess labour than effectively required to perform their production, (*Zimbabwe Monthly Economic Review December 2011, CZI 2012 and Zimbabwe Economic Review December 2010*). Therefore, the results of primary research is confirming that the pre-held knowledge the existence of excess labour in the manufacturing sector (where Sable is the case for the current study).

Question10: Labour costs are reasonable to ensure viability of the entity:

The question has imposed with the objective to determine whether labour costs are hindering production output or not. The results of the study as evidenced by the below graph.



Comments on the result:

From the graph above graph it is reflected that 64 % (9/14) of the respondents argues that the labour costs are not economical feasible to ensure viability whilst a significant population that equals 21% of the respondents agrees that the labour costs are economical feasible to ensure viability and the remainder population summing to 15 % has shown to be uncertain about the effects of labour cost.

Question 11: Power supply is inadequate to ensure even production.

The respondents were posed with this question in order to establish whether entity is receiving adequate power to reach desirable rates of production. The following results were obtained from the respondents:

Table 4.9 Adequacy of Power supply:

	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondents</i>	14	0	0	14
<i>Percentage Response</i>	100%	0%	0	100%

The above results are simplifies in the pie – chart below:



The statistics above and the summarised data on the pie-chart reflect that all respondents (14 out of 14) agree that the power supply is insufficient to ensure even production at Sable. This agrees, with the point that, erratic power supply has resulted in production problems in the manufacturing sector leading to low rates of plant utilization, (Abeberehe 2012:16, TA holdings Annual Reports 2012, CZI 2010:14).

Question12: Is the electricity tariff justifiable to ensure viability of the entity?

The question was posed with the objective to determine the magnitude of the effect of cost of power on the production of Sable. The following were the results:

Table 4.10 Cost effectiveness of electricity tariffs:

<i>Column1</i>	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondents</i>	2	11	1	14
<i>Percentage Response</i>	14%	79%	7%	100%

79% (11 out of 14) of the respondents disagree that the electricity tariff charged on Sable is not justifiable to ensure the viability of the entity whilst 14% agrees that the tariff is justifiable to ensure viable operation and the portion that sums to 7% of the respondents are not certain as to whether the tariff is of either negative or fair in effect to the operations of the entity. However, the majority is of the view that the tariff hinders entity’s viability. The results above, agree with Mlambo (2010) who cited that the electricity tariffs have resulted in difficulties for companies like Sable Chemicals and Zimasco as their production was impacted negatively.

Question 13:

The entity has financial constraints.

100% of the respondents agreed that the entity has financial constraints. Sable is lacking money To execute some of its intended long and short as well as projects due to this financial problems, this seem to agree with idea raised by CZI(2013) when they cited that the inexistence of

financial resources has led to capacity utilization problems in the manufacturing sector. Therefore, it can be concluded that financial constraints have a traceable effect towards capacity under-utilization at Sable.

Question 14:

Is the company lacking capital to finance its production?

The objective to be addressed was that of determining the magnitude of financing on corporate production levels and the impact of it to the overall capacity utilization rate. The results show that 100% of the respondents agree that Sable is faced with capital shortages to ensure that production is always online. This is allied to the position posed by CZI (2013) which was pointing that financing as one of the causes for under-utilization of capacity in firms in the manufacturing sector in Zimbabwe.

Table 4.11 Availability of Capital:

	Yes	No	Uncertain	Total
Respondents	23	-		23
Percentages response (%)	100%	-	-	100%

Question 15:

Cost of financing is not affordable to ensure viability of business.

The objective was to assess the financial implication of the price at which the lenders offer capital money to users of it and the financial implication thereof on the utilization rates (i.e. production). 86% of the population of respondents agreed that the cost of capital has an impact on the firm's performance and 7% are absolute that the cost of finance has no effect. The majority agrees with Nyajeka (2010) who cited that the cost of capital has a hand in the promotion of dwindling production quantities. However, a representative portion of respondents summing to 7% is uncertain about the effects of cost of capital to the production of Sable and in this regard these seem to pose any argument worth being carried over or debated of in essence they are not communicate at all in the furtherance of the research.

Table 4.12 Affordability of Cost of financing:

	<i>Yes</i>	<i>No</i>	<i>Uncertain</i>	<i>Total</i>
<i>Respondents</i>	12	1	1	14
<i>Percentage Response</i>	86%	7%	7%	100%

Question 16.

Government policy has no impact on the company's performance.

The intention of posing this question was to ascertain whether government policies have effects on the production patterns of the entity. The research wanted to establish the effects of the policies on the capacity levels as it one of the objectives set out.

Results:

The result of the study shows that 93 % of the respondents disagree and are of the view that government policy has significant impact on the production level attained or to be attained by a firm and 7% of the respondents agree that government policy has no impact on the production of the entity. Based on the majority's view, it can be reduced that the government policy has an impact on the performance or utilization rates of the entity.

Question 17:

Indigenization has negative impact on the entity.

The respondents were asked this question in-order to determine whether indigenization has affected the operations of Sable.

After conducting study the following results were obtained,

-79 % said it has negative impact.

-7% said no effect to Sable operations.

-14% said there were uncertain of the magnitude and existence of the resulting effects of the indigenization policy on Sable in particular.

The majority however, is of the view that indigenization has impacted on the firms production pattern. Ellyne and Daly (2011) cited that indigenization deterred foreign direct investment which impacted on the ability of companies to obtain cost effective financing. In the case of

Sable it is also reflected in the results of the study that indigenization has a hand as-well on the rates of utilization reached by the entity.

Question 18: in your opinion based on your responses above will capacity under-utilisation continue or not and what other factors might be contributory?

100 % (14/14) responded that it will continue to persist. They cited electricity (cost and supply), government policy, raw-material shortages, lack of capital, restrictive labour laws and mechanical breakdowns as contributory factors. This agrees with their responses in previous questions.

4.6 The responses from Interviews conducted:

Question 1:

In your opinion how is production capacity determined and how does your company measures it? Is the basis objective and still reasonable and relevant considering the volatility of the business environment?

100% (10 out of 10) cited that Sable's production capacity is measured based on design capacity. This agrees with responses given Question 1 on the questionnaire where 100 % (14/14) of the respondents posed that. 30 % (3 out of 10) cited that it is still objective to measure capacity at 240 000 metric tonnes per annum whilst 70 % (7/10) say it is no longer objective. The reason was that it is no longer objective as result of the ageing technology while those who said its objective were saying under-utilisation was as a result of other factors explicitly outside the entity's capability.

Question 2:

Are there any cases of under-utilization of production capacity and if so, what might be the major causes for such in the context of your organization?

100% (10 out of 10) of the interviewees posed that the entity has under-capacity utilisation. 100% cited cash flow problems, electricity supply and cost and poor infrastructure (i.e. railway line system). This agrees with responses given in questionnaire from question 11-14 pointing the same factors. 80%(8out of 10) cited raw-materials, major spares shortages, ageing technology, major breakdowns, labour costs and restrictive labour laws as causes of under-

utilisation at Sable. This also agrees with responses given in the questionnaires where significant respondent population cited these as well.

Question 3.

What influences do government policies (i.e. limited to indigenisation and dollarization) have on the production capacity of your organisation.

80 % (8 out of 10) of interviewees cited indigenisation has negative impact as it has threatened foreign direct investment leading to reduced capital supply. 70% (7/10) of the interviewees cited that dollarisation has resulted in lack of financial support from lenders as there was no longer of last resort. Agrees with response in question 17(indigenisation) and question 16(dollarisation). This further agrees to Noko (2011) who posed that dollarisation results in the loss of lender of last resort.

Question 4.

In your own point of view, what negative effects has low production rates have on the entity and what challenges have you encountered in trying to resolve the problems?

100 % (10 out of 10) cited loss of revenue as a result of failure to meet both local and regional demand. 70% cited operating loss due high product costs. According to <http://www.tutor2me.net/business/> accessed 17:57 05/03/2014) high fixed cost per unit results in low profits, this confirms with primary data gathered. However, interviewees disagreed with the notion of Koberl and Lein (2009) who cited that, when fixed cost per unit is high the entity has the risk of increasing prices, when interviewees posed that for the past 3 years the prices for Ammonium Nitrate(NH₄ O₃) has never changed.

Question 5.

Basing from your experience with the manufacturing sector and Sable in particular how can persistent capacity utilisation problems be eradicated and what possible challenges can be faced in implementing such?

100 % of the interviewees cited electricity shortages as the cause for under-utilisation, government policy and financial resources as major challenges resulting in the failure to correct utilisation problems. The notion above agrees with Oluwafemi (2012) cited a stable supply of electricity is required in-order to improve the production pattern of the entity.

Question 6:

What are possible effects do your entity's rate of capacity utilisation has on national economy based on your personal opinion.

Effects of under-utilisation:

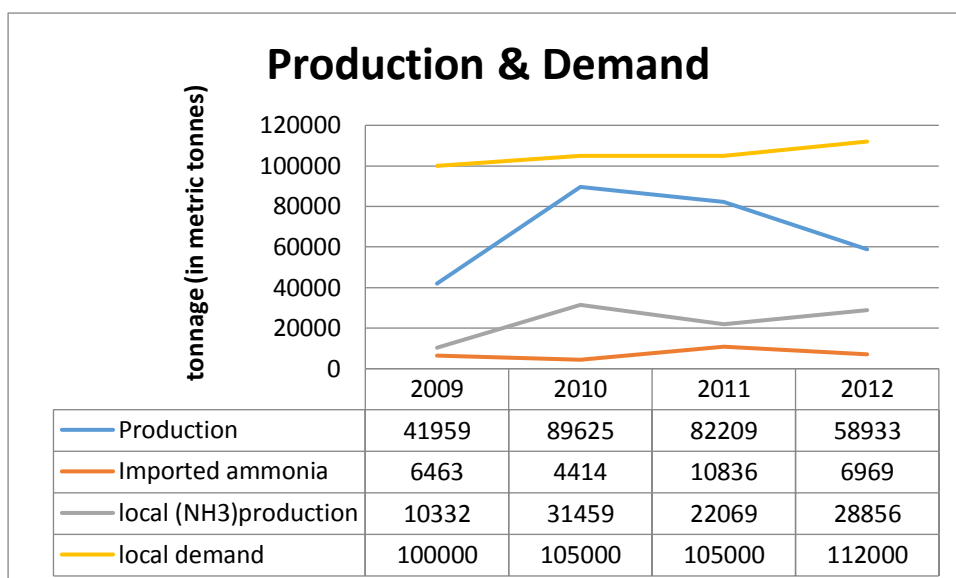
90% cited reduced gross domestic product while 80% cited balance of payment problems and unemployment rate increases and weak exchange rates. This agrees with suppositions by Kaseke and Hosking (2013) who cited that low utilisation has impact on the economy by constraining the balance of payment image of the nation, (McConnell 2010). Further to that,

Kaseke and Hosking(2013)posed that low rates of utilisation affects exchange rates as a result of low gross domestic product.

4.7 Secondary Data Analysis:

	2009	2010	2011	2012
Ammonia: Local(NH ₃)in m/t	10,332.00	31,459.00	22,069.00	28,856.00
:Imported(NH ₃) in m /t	6,463.00	4,414.00	10,836.00	6,969.00
Ammonium Nitrate(NH ₄ O ₃) (Actually Produced)m/t	41,959.00	89,625.00	82,209.00	58,933.00
Local Demand(NH ₄ O ₃)m/t	100,000.00	105,000.00	105,000.00	112,000.00
Utilization Rate(%)	19	37	34	25
Average Units (electrolytors)	6	10	9	8
Effective Units (electrolytors)	4	7	6	6
Revenue(US\$)	\$18,888,550	\$39,847,500	\$37,979,172	\$33,002,480
Average Plant Availability (electrolysis)	45%	67%	62%	55%
effective availability(electrolysis)	14%	44%	31%	40%

Fig.9 (Source: TA Holdings Annual Reports & Sable Chemicals Production Reports).



Plant name	Capacity	Output	Technology	Commission
Air Separation Plant	7000 m ³ / h	Nitrogen	Air Liquide – France	1972
Electrolysis Plant	2100 m ³ /h	Hydrogen	Lurgi – Germany	1972
Nitric Acid	300 mt /day	Nitric acid	C & I Girlder – USA	1972
Ammonia Synthesis Plant	220 mt/day	Ammonia	Grande Paroisse - France	1972
Ammonium Nitrate	730 mt/day	Ammonium Nitrate	C & I Girlder – USA	1969

Fig.2. (Source: Sable Chemicals – ZITF 2013 Presentation)

The above is an extract from the financial statements of TA Holdings Group, Sable Chemical Monthly reports and ZITF presentation of 2013 made by Sable staff in Bulawayo in 2013.

Analysis of the tables:

By design of the plant, the ammonia synthesis plant is supposed to produce a total of 72 000 metric tonnes per annum of production and 43 000 tonnes should be obtained from the regional markets to achieve the production target of 115 000 metric tonnes of Ammonia (NH₃), (**ZITF Presentation – Sable Chemicals 2013**). From the statistical data above it is clearly exhibited that the production of ammonia for the years from 2009 never reached 72 000 metric tonnes and imports never reached the level of 43 000 metric tonnes as required. There two set of messages send out here:

(i)The installed technology could not sustain production requirements as per design. The statistics of number of units available reveals that it was impossible for the ammonia synthesis plant to reach a tonnage of 220 when the effective units available for the period under review ranges from 4 to 7 yet the target was set with 14 units in mind. The ammonia synthesis relies

on the Air separation and the electrolysis plant that supplies nitrogen and hydrogen respectively. So, the ineffectiveness of the electrolysis plant hinders progress at the ammonia synthesis plant. The secondary data analysis reaped off the same result as that obtained in the questionnaires.

(ii)The second message revealed here is that, the entity had no financial resources to import ammonia from the regional markets from which from design the provision was made. This is supported by the Chairmen's report of 2012 which outlined that the idea to import was hindered by lack of financial resources acquire and ship the raw-material from regional markets. The results of study also confirmed that the entity lacks financial resources (see response for question 13 and question 7 which evidence that the entity is facing challenges in acquiring raw-materials).

The investment in the infrastructure that is installed at Sable was to reap off a total of 240 000 metric tonnes of 34.5 % Ammonium Nitrate (NH_4O_3) annually through a production quantity of 730 mt/per day. From the depiction given it is clear that from 2009 to 2012 the production quantities ranged from 41,959 to 89,625 metric tonnes versus a local demand of the range 100 000 to 105 000, mere analysis of the facts above drives into concluding that there was much potential revenue that was lost by failure to meet local demand before considering the regional market demand which were not served at all. Average plant (electrolysis) availability ranges from 45% to 67%. This means that on average, to the maximum of 67% of the year will the plant be available in a condition it may be ready for production regardless of whether the production is taking place or not. Taking away the non-production days but when plant is ready for production will leave us certain that it will be by no means possible to reach the production target. This is a result of break-downs that are rampant. A combination of the plant break-downs and malfunctioning electrolytors will entangle the firm in the position where it cannot be redeemed. The low arêtes of utilization of Sable Chemicals are also borne by rampant breakdown, financial constraints, power shortages and high tariff, (**Chairmen's report – Annual reports TA Holdings Limited Group 2012**). The effective availability now matches production to capacity. However, the effects of power failures are also reflected here as the average availability is higher than effective.

From the interviews, some pointed out that the failure to reach the set levels of production was also attributable to ageing technology. The fig.2 above reveals the information about the dates the technology was installed to start operations. It is clear that the technology that is used is

somewhat old (above 60 years after installed) and the spares are sometimes rare to find or ship as all technology is from abroad and is now found on order rather than being actively traded. In 2010 the electrolysis plant of the company was impairment with a value of 12 million (TA Holdings Annual report 2010). The reason for impairment was that due to power problems the benefit can be reaped off from it have significantly dwindled. So, all these factors compete to justify the existence of low utilization rates.

4.7 Chapter Summary:

The above was a reflection of the actual results of the study. The research managed to accomplish intended objectives as the basis of determination of capacity at Sable was determined, causes of under-utilization, its (underutilisation) financial and economic effects as well as the analysis of the impact of government policy on Sable's production patterns. The next chapter will give major conclusions from the study, recommendation of possible courses of action and a recommendation for further study.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS:

5.0 Introduction:

The current chapter was aimed at summarizing the whole research work carried out as exposed in prior chapters. It also went a further height into exposing the concluding remarks and recommending the possible course of action to involved stakeholders. All is done in pursuit of accomplishing the intended research objectives as highlighted in the initial stages of this research.

5.1 Research objectives:

The study was aimed at the determining the ways in which the capacity utilization rate of Sable can be improved. The following were the objectives of the study:

- How are capacity, capacity utilization and under-capacity determined in the manufacturing sector?
- What factors led to under-utilisation of the production capacity?
- How do government economic and political policies impacts on firm's capacity utilization?
- What are the economic effects of under-capacity utilisation?
- In what ways can capacity under-utilisation be improved?

The study managed to address all the above objectives as it provided the basis of measurement of variables in question, revealed the core-causes of under-utilisation of capacity, naming the resultant effects and assessment of the impact of government policy on the firm. The study also managed to provide the possible recommendations that can be pursued to address the problem.

5.1.1 Overall Research Summary:

This portion needs to give a snapshot of the whole research study. It will expose the major ideas from the introductory chapter (Chapter 1) up to the research findings and analysis which

is chapter 4 to necessitate the evaluation of achieved objective and unaccomplished objectives which remained pending up until the end of the research if there are any.

Chapter one, this section exposed the drive that has compelled the research study to be initiated. It exposed on the background from which the idea of divulging into study is brought from, a statement qualifying the existence of the problem, the set of intended research objectives, a justification on the relevance of the study, presumed conditions (assumptions), geographical, time and information delimitations and definitions of applicable research terminology. In these differing sections, the research was trying to portray the existence of capacity utilization problems at Sable from the period 2009 to 2012 and providing a justification of the need for a study to be carried out.

Chapter 2 is a review of previous work on the research area. The current study exposed ideas previously propounded by different authors about the research topic and their arguments were also plainly revealed. Major components of this section is the scholarly work on the determination of capacity, capacity utilization and under utilization, further the scholarly views on the causes, effects and possible remedies were also highlighted. In trying to reflect research gap between differing work of various authors who published their school of thoughts Textbooks, Journals, TA Holdings Financial Statements, Conference Reports and Sable Internal Records were the sources used for gathering research information for the purposes of the chapter.

Chapter 3, in this section the research methodology was revealed. The study used the descriptive research design and a population of 34 people, a sample of 26 was drawn from four divisions (i.e. Finance, Production, Technical Services and Engineering) of Sable and 24 responded. A purposive sampling technique was employed. Furthermore, in this sector an evaluation of applied research method was shown and data analysis techniques were also shown used to analyze research data from research conducted at Sable.

Chapter 4 was a reflection of the results of the study conducted at Sable concerning the capacity utilization problem in line with research objectives highlighted above applying the methodology highlighted in Chapter 3 and testing the truthfulness of factors by previous research highlighted in chapter 2 as to whether they hold true in the case of Sable. The chapter provides tables, graphs and charts summarizing research findings. Chapter 4 forms therefore the basis for concluding remarks, recommendations and suggestions for further research which become part of this chapter.

5.2 Major Research Findings

(a) Sable is faced with heavy electrical outages and high cost of electricity supply. The results of the study show that 100% of the respondents pointed it as a major constraint to the entity achieving its target population. The electricity tariff is high resulting in constant on-off power supply.

(b) Sable is faced with liquidity problems as a result of dollarization policy and low utilisation. Study reveals that dollarization although has brought up economic stability it has also resulted in acute liquidity shortages that sends the production technology into a state of inactive.

(c) The indigenization policy has barred foreign direct investment hence; companies are faced with financing problems as the external world is not welcome to make investments in Local economy. The results of the study reveal that, the harsh economic preclusion brought by the faulted configuration of the legal system is a major cause of financing and liquidity problems.

(d) Sable is faced with challenges in securing raw-materials locally as a result of increased unavailability of the electrolysis plant. Further to that the entity is failing to obtain major spares for repairing the installed technology the electrolysis plant in particular resulting in low production.

(e) Inability to serve the regional and global markets with nitrogenous products. Study results reflect that Sable is not competitive to enter the global markets due to high unit cost of its production that forces it to under produce.

(f) The entity is faced with high labour costs towards unproductive staff. The output of the study reveals that the entity is holding more than requisite labour for the production commensurate to operating level. The study reflects that the labour laws are restrictive on the part of the entity as it is not allowed to offload excess labour to avoid the obligation of pumping-out financial resources towards retrenchment and redundant costs.

(g) Sable is faced with rampant plant breakdowns. The study result reveals that 83 % (20 out of 24) highlighted that mechanical breakdowns are frequent and detrimental to the production rate of the entity.

(h) The 240 000 metric tonnes per annum production capacity is no-longer an objective measure for the firm's production capability. 100 % (24 out of 24) of the respondents in the study articulated that.

5.3 Recommendations:

Based on the major research findings above here under are the recommended courses of actions that may be pursued by the various stakeholders involved to redraw the production pattern of Sable:

(a) Stable and economically feasible power:

Sable may ensure that it secures adequate power through one of the following:

(i) Consider the partnership with private players with capacity to produce electricity e.g. Green-fuel (Pvt) limited which has the capacity to produce a minimum of 18 mega-watts of power.
(ii) Engaging other investors who are financial sound to tender their bids in the methane plant and gasification projects that has failed to kick start to ensure adequate power. Kaseke and Hosking (2011) cited that a stable power is required to ensure that the industry improves in terms of its utilization rates. Shifting the dependence from national grid power is only the solution for the total eradication of power and utilization problem (**TA Holdings Annual Reports – Chairman’s report 2011**). As result, the establishment of gasification and methane plant may go a long way in redressing the production pattern of the entity.

(b) Resorting to importing Ammonia from external sources as opposed to local production:

In the short run it will be very desirable for the company to do away with the electrolysis plant to reduce its power consumption. In order to be successful on this the company has to engage National railways to have a special tariff (the rate should be a given timeframe) for the railage and the government of Zimbabwe through the ministry of Transport to ensure reasonable landed cost. This will go a long way in improving short term utilization rates.

(c) Increasing Energy efficiency:

The increase in the energy efficiency rate results in the firm producing more with constrained power. The advocates for avoiding energy losses and power leak that is abnormal. Mlambo (2010) cited that, energy efficiency results in the entity producing more with the same quantity of power but reduces cost of electricity and boost production as well hence, increased rate of utilization (Ryan and Campbell 2011). Improved energy efficiency results in increased productivity primarily because of energy savings (available on www.iea.org accessed 20:45 29/04/2014).

(d) Reviewing the production capacity:

Based on the results of the study it is reasonable that the entity revises the capacity of the entity downwards in-order to match its capacity amount to the actual that the entity can achieve considering the age of the installed technology. The revision of the entity's production capacity will go a long way in enhancing the reasonableness of the entities utilization rate. Chiwanza(2011) cited that it is important for Sable that it reduces its capacity measurement to the quantity commensurate to the plant's current capability as opposed to continued measurement at 240 000, (Gwengo 2008).

Recommendations to the government of Zimbabwe:

The government of Zimbabwe through the responsible ministry(s) may opt for the following in order to increase production capacity utilization of the Fertilizer manufacturing giant (i.e. Sable):

(a) Consider the revision of the indigenization policy from 51% to a percentage rate that will be fair to both the existing investor and the new investors. The revision of this policy may increase a stream flowing of affordable capital in the name of foreign direct investment. Kaseke and Hosking (2011) cited that it will be an economic noble stance for the government of Zimbabwe to revise the indigenization policy to free the industry from underperformances as it will improve foreign direct investment. The possibilities of existence of joint control between two entities with less than 51% owner-ship defies the reasonableness of the 51% definition under-indigenisation, (IFRS 11 effective 1 January 2013).

(b) Consider the primary adoption of powerful regional currency against the use of the United States dollar as primary currency. This will ensure flexibility in the monetary policy and ensure the restoration of the lender of last resort in the local economy. Chagonda (2010) also agreed the above supposition; the author revealed that there is need to consider the adoption of local or regional currencies to enable an easy control of the national monetary policy, (Noko 2010).

(c) Consider the rehabilitation of the railway system through investing in restructuring of infrastructure of the parastatal (i.e. National railways of Zimbabwe). The will go long way in ensuring the efficiency in shipment of essential equipment, raw-material and spares for the industry to boost up production, which also has a significant impact in correcting balance of payment problems. In agreement to the above notion, CZI (2011) posed that the rehabilitation of the railway infrastructure and road network is a fundamental issue to the boosting of industrial utilization rate, (Minde et al.2013).

(d) Consider the revision of labour laws to allow flexibility on both the employer and employee to ensure a bearable labour burden on the side of the employer. Flexible labour laws enhances efficiency and competitive advantage as labour costs are forced down and boost production output (available on www.economicshelp.org/labour-markets/adv-disadv-flexible-im/ accessed 20:08 29/04/2014).

5.4. Areas for Further Research:

As the current research was had its own objectives it was targeting not all areas concerning this particular area were exhaustive. Many lines of research work can be developed from this research. These include the following:

- Investigation on the challenges faced in implementing strategies aimed at improving capacity utilization.
- Effects of under-utilisation on the firm's break-even sales and overall profitability.

5.5 Conclusion:

The study to accomplish the aforementioned objectives and managed to provide possible courses of action to alleviate the set out problems. The provided recommendations may go a long way in improving the utilisation rates of Sable and having done that, this marks the end of the end of the research study.

Reference list:

- Blumberg et al (2008) **Business Research Methods**. Berkshire: McGraw-Hill Education.
- Bui, y (2009) **How to write Master Thesis**. New Delhi: Sage Publications.
- Buffa, E.S. and Sarim, R. M.(2003) **Modern Production / Operations Management**. Los Angeles: John Wiley & Sons.
- Chase, R. b. (2004) **Operations Management for Competitive Advantage**. New York: McGraw-Hill.
- Cooper, D.R. and Schindler, P.S.(2013)**Business Research Methods** .new York : McGraw-Hill
- Gitman, L. and Zutter,C.Z.(2012)**Principles of Managerial Finance**, Essex: Pearson Education Limited.
- Goncalves, P. et al (2005). **Push – Pull Production Systems**. New Jersey, Prentice Hall.
- Heizer, J. and Render, B.(2011) **Operations Management**. New Jersey: Prentice Hall.
- Jacobs, F.R. and Chase, R.B.(2010)**Operations And Supply Management: The Core**. New York McGraw-Hill.
- Kombo, D.K.and Tromp, C.A. (2010) **Proposal and thesis writing."An Introduction"**. Nairobi: Nairobi Pauline Publisher Africa.
- Kumar, S.and Suresh, N. (2006) **Production and Operations Management**. New Dehli: New Age International Publisher.
- Maunch, J.E.and Park, N.(2003)**Guide to Successful Thesis And Dissertation**, New York: McGraw-Hill.
- McConnell, C.R. et.al.(2008)**Microeconomics** , Boston: Irwin
- Meredith, J.R.and Shafer, S.M. (2003) **Operations Management for MBA's**. New York: McGraw-Hill.
- Muhlemann, A. et.al.(1992)**Production and Operations Management**. University of Bradford: Prentice Hall.

Pitts, R.A. and Lei, D.(2006)**Strategic Management(Building and Sustaining Competitive Advantage)**.Mason: Thomson Higher Education.

Punch, K.F.(2005)**Introduction to Social Research** ,London: Sage Publications

Pycraft, M.et al.(2002)**Operations Management**. Cape-Town: Pearson Education.

Reardon, D.F.(2006)**Doing your Undergraduate Project**, London: Sage Publications

Reid, R.D.and Sanders, N.R.(2005)**Operations Management: An Integrated Approach**. Los Angeles: John Wiley & Sons.

Roos, A. et al(2012) **Principles Of Management Accounting A South African Perspective**, Cape-Town: Oxford University Press South Africa.

Rudestan, K.E. and Newton, R.R.(2007)**Surviving your Dissertation: A Comprehensive Guide to Context**, New York: McGraw-Hill.

Sakaam, M.A.(2000)**Research Methods For Business Student**, New Delhi: Pearson Education

Slack et al.(2010)**Operations Management**, Edinburg Gate Harlow: Pearson Education.

Wegner, T.(2007)**Applied Business Statistics**, Cape-town: Juta & Co.

Journals:

Chagonda, t.(2010) **dollarization of Zimbabwean economy .Cure or Curse? The case of Teaching and Banking sectors**. Dar es Salam: Godesria Conference

Damiyano, D. et.al.(2012)**An Investigation Of Zimbabwe's Manufacturing Sector's Competitiveness**. volume 1 No.2.

Hickman, B.G. **Capacity – capacity utilization and accelerated principle**, The Brookings Institution. Volume 1 page 419 -468.

Mangwizo and Jerie(2011)**Is dollarization the panacea for Zimbabwe's Economic Challenges?** Volume 5. No.1.

Matinhu, J.(2012)**The indigenization and economic empowerment policy in Zimbabwe: Opportunities and challenges for rural development**. Gweru: Midlands State University.

Ndongko, W.A. **Indigenisation of private enterprise in Nigeria**. Institute of African Affairs, pages 53-71.

Noko, J.(2011)**Dollarization the case of Zimbabwe**. Cato Institute; Volume 31. No.2.

Other publications:

Business Development analysis Reports, 2009-2012

Chiwanza, T.M.(2011) **Investigation on the factors affecting strategy implementation** .Harare.: University Of Zimbabwe.

Confederation of Zimbabwe industries bulletin 2010

Confederation of Zimbabwe industries 2012

Confederation of Zimbabwe Industries 2013

Gwengo, P.(2008) **Impact of supply side constraints on capacity utilization of fertilizer industry in Zimbabwe**. Gweru: Midlands State University.

Federal bank of Atlanta

Kachere, M.S. (2006) **fertilizer industry in the southern African development community. Region, current situation, opportunities, challenges and constraints paper.**

Labour Act Chapter 28:01. Harare: Government Printers.

Industrial Development Policy (2012-2016). Harare: Government of Zimbabwe.

Marangarire, Z.(2013)**Impact of business re-engineering on productivity, costs, cycle time, and employees expectations**. Gweru: Midlands State University.

Minde, I.J.et. al. **Supply and demand trends for fertilizer in Zimbabwe 1930 to date “:key drivers and lessons learnt**. No.96179, AESA 48th conference, September 19-23 2010: Capetown.

Mid-term Fiscal Review 2010

Mlambo, A.R.(2010)**The impact of electricity tariff increase on manufacturing sector.**

Volume1

Mojekwu, J.N.(2012)**Factors affecting capacity utilization decision in Nigeria.** A time series analysis , Volume 5 No.1

Monetary Policy 2011 – Indigenisation Supplementary, Harare: Reserve Bank of Zimbabwe

Nyajeka, B.P.(2012)**Conference Report.** TA Holdings Group, 05 June 2012.

Sable Chemical Conference Report, Kwekwe: Sable Chemicals Industries Limited.

Sable Company profile, 2010

Sable Annual Conference Report, December 2012

Sable Chemical Budget Review June 2012.

TA Holdings Annual Report 2009

TA Holdings Annual Report 2010

TA Holdings Annual Report 2011

TA Holdings Annual Report 2012

Zimbabwe Economic Review December 2010

Websites:

www.bancabc.co.zw/

www.consultancyafrica.com>Discussionpapers.economy/

www.czi.co.zw/electricity.pdf/

www.economicshelp.org/labour-market/adv-disadv-flexible-im/

www.imara.co.zw/

www.jstor.org.access.msu.ac.zw/

www.proquestcombo.safaribooksonline.com/

APPENDIX 1: COVER LETTER.

Midlands State University

Private Bag 9055

Gweru

Zimbabwe

Date: 10 April 2014

To whom it may concern

Sable Chemical Industries Limited

Dear Sir or Madam

Re: Permission for authority to carry-out a research study:

I am a finalist student enrolled with Midlands State University studying towards the attainment of Bachelor year student in the final semester should carry-out a research study for a real life industrial problem faced by a specified company of the student's choice in order to complete the degree program. For my case below is my research study title:

“Investigation on how to improve capacity utilisation”. (The case of Sable).

It is therefore my request that you provide me with data for the purposes of this study by responding to qu to which it pertains to academic purposes only and will be handled with confidentiality without contravenin

Your assistance in the furtherance of this research is greatly appreciated.

Yours faithfully,

Wellington Chiseva (R102775R – HACC MSU)

APPENDIX 2

Questionnaire:

1.0 Guidelines:

- (a) Place a tick in the appropriate response box.
- (b) For open ended questions, fill details in the spaces provided.
- (c) Remember to provide details for the mandatory sections,
- (d) Do not include your name.

2.0 Company and respondent details:

Entity name: Sable Chemical Industries Limited

Division of deployment:.....

Position currently held:.....

3.0 Education(Optional):

National Diploma

Higher national diploma

Degree (undergraduate)

Post-graduate qualification

4.0 Experience (Mandatory)

(a) Were you employed full-time at Sable during the period under-review(2009-2012)?

Yes no other

Other(specify).....

(b) Were you employed in the department / division you are presently employed?

Yes no other

Other(specify).....

Question 1: *Production capacity measurement is based on design capacity.*

Yes no uncertain

Question 2: *Is the 240 000 tonnes output per annum reasonable estimate of the capability of the plant?*

81

Yes no uncertain

Question 3: *The entity's operating level is highly desirable.*

Yes no uncertain

Give reason.....

Question 4: The mechanical plant breakdowns so frequent?

Yes no uncertain

Question 5: Fertilizer imports have little impact on the entity's production.

Yes no uncertain

Question 6: *The company is still competitive to enter global markets.*

Yes no uncertain

Question 7: The Company is accessing all raw-materials and spares locally without any challenges.

Yes no uncertain

Reason.....

Question 8: Does the firm have a high demand for its products?

Yes no uncertain

Question 9: The Company has excess production workforce than effectively required.

Yes no uncertain

Question 10: Labour costs are reasonable to ensure viability of the entity.

Yes no uncertain

Question 11: Power supply is adequate to ensure even production.

Yes no uncertain

Question12: Is the electricity tariff justifiable to ensure viability of the entity?

Yes no uncertain

Question 13: *The entity has financial constraints.*

Yes no uncertain

Question 14: *Is the company lacking capital to finance its production?*

Yes no uncertain

Question 15: *Cost of financing is not affordable to ensure viability of business.*

Yes no uncertain

Question 16. *Government policy has no impact on the company's performance.*

Yes no uncertain

Question 17: *Indigenization has negative impact on the entity.*

Yes no uncertain

Question18: *in your opinion based on your responses above will capacity under-utilisation continue or not and what other factors might be contributory?*

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Thank you so much, Siyabonga, Hikesile.....

APPENDIX 3

INTERVIEW GUIDE:

Question 1:

In your opinion how is production capacity determined and how does your company measures it? Is the basis objective and still reasonable and relevant considering the volatility of the business environment?

Question 2:

Are there any cases of under-utilization of production capacity and if so, what might be the major causes for such in the context of your organization?

Question 3.

What influences do government policies (i.e. limited to indigenisation and dollarization?) have on the production capacity of your organisation.

Question 4.

In your own point of view, what negative effects has low production rates have on the entity and what challenges have you encountered in trying to resolve the problems?

Question 5.

Basing from your experience with the manufacturing sector and Sable in particular how can persistent capacity utilisation problems be eradicated and what possible challenges can be faced in implementing such?

Question 6:

What are possible effects do your entity's rate of capacity utilisation has on national economy based on your personal opinion.