UNIVERSITY OF KWAZULU-NATAL

Enhancing the sustainability of Tongaat Hulett Sugar through assessing logistics costs, sugar taxes, and tariffs

By

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DECLARATION

I Philani Blessing Buthelezi.....declare that:

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DEDICATION

I wish to express my sincere appreciation and gratitude to the following individuals, without whose assistance, this study would not have been possible:

- I would like to thank my protector Inkosi UNyazi LweZulu (Shembe). All the glory goes to him for giving me the strength, courage, and wisdom to make this possible.

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ABSTRACT

Globally, sugar-producing companies have been faced with rising production costs in recent years. The majority of these costs are related to logistics costs, sugar taxes, and import tariffs. The association of sugar with health problems like diabetes and obesity has compelled governments including South Africa to impose taxes to manage the supply and intake of sugar. Moreover, the South African government imposed no import tariffs on sugar to improve the supply of sugar. As a result, sugar from countries like India, Brazil, and Swaziland has flooded the local market creating uneven competition for local producers. This has negatively affected the revenue, market share, and success of local companies like Tongaat Hulett Sugar. Against this backdrop, this study investigated how logistic costs, sugar tax, and tariffs influence the sustainability of Tongaat Hulett Sugar. The study utilised a qualitative explorative research method design to collect data. Upon investigation it was established that Tongaat Hulett Sugar utilizes different companies providing logistics services which means they have to absorb all the overhead costs from different logistics providers. It is important to have a logistic strategic partner who will have a greater understanding of the business. This helps companies partnering to collaborate in seeking innovative methods that provide competitive advantage thus handling logistics rising costs. The Master Sugar Plan played a critical role in addressing the issue of high imports. Since the introduction of The Sugar Master Plan, import duties and tariffs have significantly increased, decreasing the number of sugars imported. TPNA can also play a crucial role in helping Tongaat Hulett Sugar and other sugar-producing companies by imposing lesser charges when exporting sugar globally. This will increase their revenue stream consequently allowing them to reinvest in improving their processes making them more efficient making them more sustainable. Introducing the sugar tax led to job losses in the sugar market. The introduction of The Sugar Master Plan will address this element. They need to be more transparent about the revenue collected from the sugar tax. This tax portion of the tax collected should be invested in research and development that will improve the production processes and come up with more healthier options that can be substituted for sugar, opening other streams of revenue for Tongaat Hulett Sugar and other sugar-producing companies.

Key Words*:* Logistics, Sugar tax, Sustainability, Tariffs

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ACRONYMS

3PL	Third-party logistics
BFAP	Bureau of Food and Agricultural Policy
CFI	Co-operative Financial Institutions
DTIC	Department of Trade, Industry, and competition
GDP	Gross Domestic Product
HPL	Health Promotional levy
JIT	Just-In-Time system
PBS	Performance-Based Service
USDA	United States Department of Agriculture
SACU	South African Customs Union
SADC	Southern Africa
SASA	South African Sugar Association
SASRI	South African Sugar Research Institute
SSA	Sub-Saharan Africa
SSB	Sugar-Sweetened Beverages
THS	Tongaat Hulett Sugar
TNPA	Transnet National Port Authority
WHO	World Health Organization

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

South Africa's sugar industry is regarded as one of the world's leading producers of high-quality sugar. The industry is ranked 15th out of the 120 countries involved in global sugar production (South African Sugar Association (SASA), 2021). The sugar industry is a significant contributor to the labour market in South Africa and KwaZulu Natal province in particular. However, the local industry has witnessed a decrease in sales revenue and market share contributing to a high rate of unemployment in the province and South Africa. South Africa's largest sugar producer Tongaat Hulett Sugar (THS) has recorded a decline in revenue, and market share due to an increase in the amount of imported sugar, unsustainable rising logistics expenses, and a high sugar tax (Health Promotional Levy). For example, South Africa imported from Brazil US$4.28 million during 2022 (Trading Economics, 2023). Furthermore, in 2019 while cane production increased by 3% locally due to improved weather conditions THS continued to experience a decline in revenue and market share (Sikuka, 2019). This study investigated how logistic costs, sugar tax, and import tariffs affect the sustainability of THS located in KwaZulu Natal province (KZN), South Africa.

1.2 Background of the study

The sugar industry in KZN is dominated by three companies namely THS, Illovo, and Transvaal Sugar Limited (SASA, 2021). The industry contributes over R5 billion annually to the economy of the province and employs over 350 thousand people. It also supports the livelihoods of over a million people in KZN (Agriculture, Land Reform, and Rural Development, 2014). Moreover, the sugar industry in KZN accounts for over 80% of the national total industry (Agriculture, Land Reform, and Rural Development, 2014).

This study utilized logistic costs, import tariffs, and taxes as the units of analysis for the sustainability of THS. Logistics costs account for the largest portion of costs in the supply chain

of sugar. Logistics costs start from sourcing raw materials (sugar cane), production of sugar, and the distribution of sugar and products to the final customers. In 2021, logistics costs account for about 30% of total costs using a global scale. This estimate is projected to rise to over 50% mainly due to rising fuel prices (Jenkins, 2020). The current spate of sugar tax increases, low tariffs, and increasing logistics costs fueled by the Covid-19 pandemic, and global oil price hikes and instability requires effective sustainability management. Therefore, it is a must that sugar producers like THS explore and scan their immediate business environment and value chain to develop evidence-based mitigating measures to ensure the sustainability of the industry.

South Africa receives a significant amount of imported sugar with countries like Brazil, India, and Swaziland being the leading importers (Sikuka, 2019). The dwindling market share for companies like THS highlight the immense pressure on the local industry from imported sugar. Factors such as cheaper prices and the limited supply of local sugar brands in the market make it easier for imported sugar to be a product of choice by the consumer. It is therefore important that local sugar producers study customer behaviour to draw lessons of sustainability and survival in global competition. Factors that result in low production costs for countries like Brazil and other South region countries is due to their high yields of sugar that can be achieved with less irrigation (Haley, 2013). This makes their crushing season longer compared to South Africa, which can be throughout the year compared to 9 months in South Africa. They have larger mills compared to South Africa coupled with low production costs such as labour, electricity, water, and fuel costs. South Africa has been badly affected by droughts in the past making their overall yields very low. Fuel has been increasing, with an unstable electricity supply, all these factors combined increase the production costs. This increase is then absorbed by the customer thus making sugar from Brazil and South region countries more attractive to customers.

Increasing sugar health-related problems such as obesity and diabetes have compelled the government to take steps to address the problem. It is imperative to note the two sources of sugar which could either be from corn or cane. Cane sugar is a sucrose that is obtained from the sugarcane plant and is composed of molecules of glucose and fructose linked together. Table sugar or all-purpose sugar is the most popular kind of cane sugar (Healey, 2023). Corn

sugar also known as brewing sugar is derived from corn starch, consisting of only glucose which regarded a preferred source of yeast (Healey, 2023). The main difference between cane and corn sugar is that Dextrose or glucose, which is present in corn sugar, is a monosaccharide made up of just one glucose molecule (Leech, 2020). Sucrose sugar, which is present in cane sugar, is a disaccharide made up of two molecules that need to be broken down (Leech 2020). It is worth noting that the scope of this study will be focusing on the research of cane sugar. Mvelase (2021) reported that 7% of 521 000 deaths in South Africa in the year 2000 were due to obesity and other sugar-related diseases. In response to these challenges, the South African government introduced a sugar tax to reduce the supply of sugar called the Sugar-Sweetened Beverages (SSBs) Tax. Moreover, the World Health Organization (WHO) had advised that the daily intake of sugar-added products be limited to 10% of energy for daily intake (Mvelase, 2021). These factors have a negative impact on the success, growth, and sustainability of local sugar producers in South Africa. It is for this reason that the study assessed the effects of sugar, tax, import tariffs, and logistics costs on THS.

1.3 Problem statement

The survival of sugar-producing businesses lies in their ability to manage and adapt to the effects of tariffs, taxes, and logistic costs. Evidence is scant on the availability of studies investigating how taxes, tariffs, and logistics costs affect local sugar companies. Studies such as Rambakus et al, 2020, and Noyakazi, 2019 have been conducted on the effects of various factors on the sustainability of sugar companies. For example, the Bureau of Food and Agricultural Policy (BFAP), (2015) revealed that bad weather, lack of knowledge, and cost of production negatively affect the production of sugar cane. These studies did not collect data on how tariffs, sugar tax, and logistics costs affect the success and sustainability of sugar producers, particularly in KZN, South Africa. Thus, their effect on sugar companies' sustainability is not known.

Rambakus, Proches, and Hoque (2020) stated that cheap imports, high sugar taxes, and consumer awareness of the dangers associated with high sugar consumption, are challenging the sustainability of local sugar-producing organizations in South Africa. Fourie (2020) reported that annual sales of sugar trade in KZN dropped significantly, causing a strain on local

sugar producers and mass job losses. For instance, in 2019, THS closed down the Darnall sugar mill. As a result, 400 people mainly from the surrounding area of Stanger lost their jobs (Fourie, 2020). Hence, this study investigated how logistic costs, sugar tax, and tariffs affect the sustainability of THS in KZN province, South Africa.

Tongaat Hulett Sugar has experienced a significant decline in market share resulting in declining revenues therefore making the company unsustainable. There are many factors that have led to this phenomenon, the study will investigate how factors such as logistics costs, import tariffs, and sugar tax in the form of the Health Promotion Levy (HPL) have impacted the sustainability of Tongaat Hulett Sugar. Different strategies will be analysed and tested to see if they can influence these factors resulting in better revenue and sustainability.

1.5 Research Questions

The research questions addressed in the present study are;

I. What factors are influencing the escalation of sugar tax, import tariffs, and logistics costs at Tongaat Hulett Sugar,
II. How are these factors related to sugar tax, import tariffs, and logistics costs impacting the sustainability of Tongaat Hulett Sugar, and
III. What innovative strategies can be used to influence the sustainability of Tongaat Hulett Sugar through assessing the impact of sugar tax, tariffs and logistics costs.

1.4 Study objectives

To achieve the aim and address the above questions, the below objectives were adopted:

1.4.1 Specific objectives

The specific objectives are:

I. To assess the factors influencing sugar tax, import tariffs, and logistics costs at Tongaat Hulett Sugar,

II. To analyse the effects of the sugar tax, import tariffs, and logistics costs on Tongaat Hulett Sugar sustainability, and
III. To propose innovative strategies that can be used to manage the sustainability of Tongaat Hulett Sugar by assessing the impact of sugar tax, tariffs and logistics costs.

A thorough literature review was done to gain deeper insights into how logistics costs, sugar taxes, and import tariffs influence the sales and sustainability of local sugar producers like THS. Semi-structured interviews were utilised to collect data from relevant multi-stakeholder industry experts to share based on their direct experiences the impact of tariffs, sugar, tax, and logistics costs on THS sustainability and stability.

1.5 Definition of key terms

Logistics - refers to the process of effective planning, implementation, flow, and storage of goods, services, and related information from raw materials to the customers to satisfy their unique needs (Amr, Ezzat, & Kassem, 2019). In a similar vein, Akarca, (2019) adds that logistics refers to the effective planning and execution of all supply chain activities, including transport, storage, and control. Havenga (2020) defined logistics as the overall management of the value chain's entire processes starting from raw material acquisition, to storage, transportation, and the final consumer.

Imports – are any goods or products produced beyond the borders of the consuming country (Hemzawi, Umutoni, 2021). According to Co-operative Financial Institutions (CFI) (2022), imports are all goods and services produced and purchased outside one's country of residence. Hemzawi & Umutoni (2021) definition will be used in the study.

Sugar tax – in South Africa, a sugar tax is a levy charged to sugar-producing companies on sugar, sweetened beverages (SSBs), and other sweetened snacks to discourage sugar consumption and tackle sugar-related diseases (WHO, 2017). This definition will be applied in the study.

Sustainability – is defined as any processes that are positively aligned with present generational needs, but do not pose any danger or compromise the adequate needs of future generations (Kuhlman, & Farrington, 2010). Kotob, (2011) defines sustainability as the ability in commercial operations to embrace policies and practices that both meet the demands of the organization and its stakeholders now and preserve and improve the natural and human resources that will be needed in the future. The term sustainability generally originated from the extraction or harvesting of agricultural resources, where it referred to harvesting enough for the fields to be able to reproduce.

Import Tariffs - refer to the tax portion that is charged to goods imported into the country (Betz, 2018). Kowalski (2015) defines tariffs as a government tax penalty charged on goods and services from foreign companies. The aim is to protect local producers and industry by discouraging other countries from bringing their products into the country.

1.6 Significance of the study

South African sugar industry has the potential to compete with world leaders in the industry due to its quality of sugar, attributed to good weather (SASA, 2021). However, the industry is struggling with high production costs, logistics costs, competition from imported sugar, and sugar levies in a form of tax. The study is significant in helping the sugar industry find solutions to its sustainability and growth. The study also investigated policies that currently exist in the sugar industry on sugar importation and sugar levy. Through industry experts, the study seeks solutions that help address the effects of high logistics costs contributing to sluggish industry growth. Lastly, the study investigated how logistics costs, sugar taxes, and imports influence the sustainability of THS and cause its operations resulting in Darnall Mill shutting down and job losses for example. Recommendations are provided to assist the sugar industry and THS in their efforts to manage the effects of SSBs, tariffs, and rising logistics costs to remain competitive and sustainable.

1.7 Organization of the thesis

The research study is organized into five chapters. Chapter one outlines the background of the study, the research gaps, the problem statement, the study objectives, and why it is important to conduct the current study. Chapter two presents the reviewed literature background and trends of the sugar industry globally, regionally, and locally. Also, the background of THS is provided. Moreover, the effect of the sugar tax, import tariffs, and logistic costs of sugar-producing companies are extensively discussed and how they impact the sustainability of the sugar industry. Chapter three highlights the methods and techniques employed in carrying out the research. Chapter four focuses on the of analysis data the presentation of results. Lastly, Chapter 5 focused on the discussions, conclusions, and recommendations drawn from the study.

1.8 Summary

The chapter provided an introduction and background of the study which focusses its investigation on companies in KwaZulu- Natal that are involved in the production of sugar. The distinction was made between different types of sources of sugar while outlining the main focus of the study being cane sugar. Different factors were highlighted that make sugar production costs low in countries like Brazil and other neighbouring South region countries. Elements such as good weather, lengthy crushing periods, and low production costs such as labour, electricity, and fuel were highlighted as the main sources of low costs of production. The problem statement, research questions, and study objectives were provided in the chapter, with key term's definitions also provided. The importance of conducting the study was provided as well as how the thesis will be organized.

1.9 Conclusion

The chapter provided the background of the study while also outlining the problem statement. THS has been unsustainable due to elements such as increased logistics costs, increased importation of sugar as well as an increased sugar tax, this statement has been framed as a problem statement. Definitions for key terms have been provided together with the significance of the study. Lastly, the organization and what should be expected of the study were offered

The next chapter reviews the literature on different theories adopted to support the objectives of the study on the effects of logistics costs, imports, and sugar tax on sustainability and their potential contribution to THS's unsustainability.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to discuss the literature on how logistical costs, imported sugar, and sugar tax impact the sustainability of sugar companies with a focus on THS. Precisely, a detailed discussion of the sugar industry globally, in Sub-Saharan Africa, in South Africa is given while lastly focusing on THS. The case of THS in KZN is here also described as a case study. The background and origin of logistics costs, sugar tax, and import tariffs are discussed. Also, how these factors may affect the sustainability and growth of the local economy and sugar industry in the country with reference to THS. In the last section, a literature-based scientific conclusion on the insights into the literature that demonstrates how the investigated factors contributed to THS's declining revenue and its lack of an effective and implementable company sustainability plan.

2.2 Sugar industry

The section below provides an overview of the sugar industry globally, in Sub-Saharan Africa, and South Africa.

2.2.1 Global overview

Sugar is one of the most consumed products in the world either directly or as an addable product. There are currently over 110 countries globally that are responsible for the production and distribution of sugar. Sugar is either produced from cane or beet. Eight countries make use of both cane and beet (International Sugar Organization, 2022). During the period of 2019/2020, over 166.18 million metric tons of sugar were produced and consumed globally (Shahbandeh, 2021). An increase of 9.6% was expected during the production year of 2020/2021that was expected to increase to 182 million metric tons of sugar (Makgopa & Wood, 2022). The overall production globally went up from approximately 182.9 million tons in 2022.

This is attributed to an increase in production in countries like Brazil, China, and Russia (USDA, 2022).

Sugar demand and consumption are on the rise globally. United States Department of Agriculture (USDA), (2022) predicts a record-breaking growth in sugar consumption. Countries like China, India, Indonesia, and Russia are the main rising markets. Out of the 110 countries, Brazil, Thailand, the European Union, Australia, and India have the largest exports approximately 70% global (USDA, 2022). These countries exported between 10216 and 10825 million metric tons (International Sugar Organization, 2022). Overall, Brazil dominates the sugar industry, with the World Trade Organization estimating that Brazil accounts for approximately 45% of the total global production and exportation in the production year 2020/2021 (International Sugar Organization, 2022). Table 2.1 shows a summary of the world sugar producers, exporters, importers, and consumers by country.

2.2.2 Sub-Saharan Africa (SSA)

The Sub-Saharan African sugar industry has thrived in the past years with notable challenges. Nigeria with the largest GDP in Africa has its sugar production fallen by 98% to imported sugar (Ekott,2021). Nigeria's 10-year Sugar Master Plan comes into effect end of the 2023 production season and will likely negotiate another 10-year plan (Boluwade, 2022). Nigeria is expected to source 95% of sugar during the 2023 sugar production season at 1.8 million metric tons. While most parts of the Sub-Saharan region boast the most suitable conditions for growing sugar cane, less sugar is produced in the region compared to global countries (Machacek, Syrovatka, & Jarmacek, 2017). In this region, Southern Africa (SADC) is a significant contributor to sugar produced and distributed globally. Eswatini, Zambia, and South Africa are the top ten global net exporters of raw and white sugar. Zambia is the lowest-cost producer (Nair, 2017). Moreover, Egypt is also among the top ten beet sugar producers globally. In general, South Africa is the largest producer of sugar with Swaziland the highest producer in per capita terms (Machacek *et al.*, 2017). The rest of the countries in Africa are net importers. For instance, Nigeria, Algeria, and Sudan are in the top ten of net exporters which could be attributed to perfect weather conditions, and widely available and unoccupied land (Machacek, et al, 2017). Overall, the SSA accounts for only 5% of the global sugar production

and distribution which is less competitive compared to other major sugar world producers (Machacek *et al.*, 2017).

Before 2007, the region was a net trade exporter of sugar production and distribution. However, this had recently changed with major producers entering the market. According to Nair (2017), South Africa and Zambia are the largest net exporters of sugar in Africa, yet there is a large trade deficit between these two countries. South Africa is not benefiting from this low cost of sugar which they could exploit and invest in advanced technologies. Due to the production competitive advantage of global sugar companies and the high prices of locally produced sugar, the SSA is witnessing an influx of imports and creating unhealthy competition for local producers (Nair, 2017).

2.2.3 South Africa

KwaZulu Natal, Mpumalanga, and some parts of the Eastern Cape are provinces that participate in sugar production. KwaZulu Natal is the most dominating province when it comes to sugar production which can be credited to favourable weather conditions which allow for quality sugar cane. The figure below illustrates the areas that participate in the production of sugar.

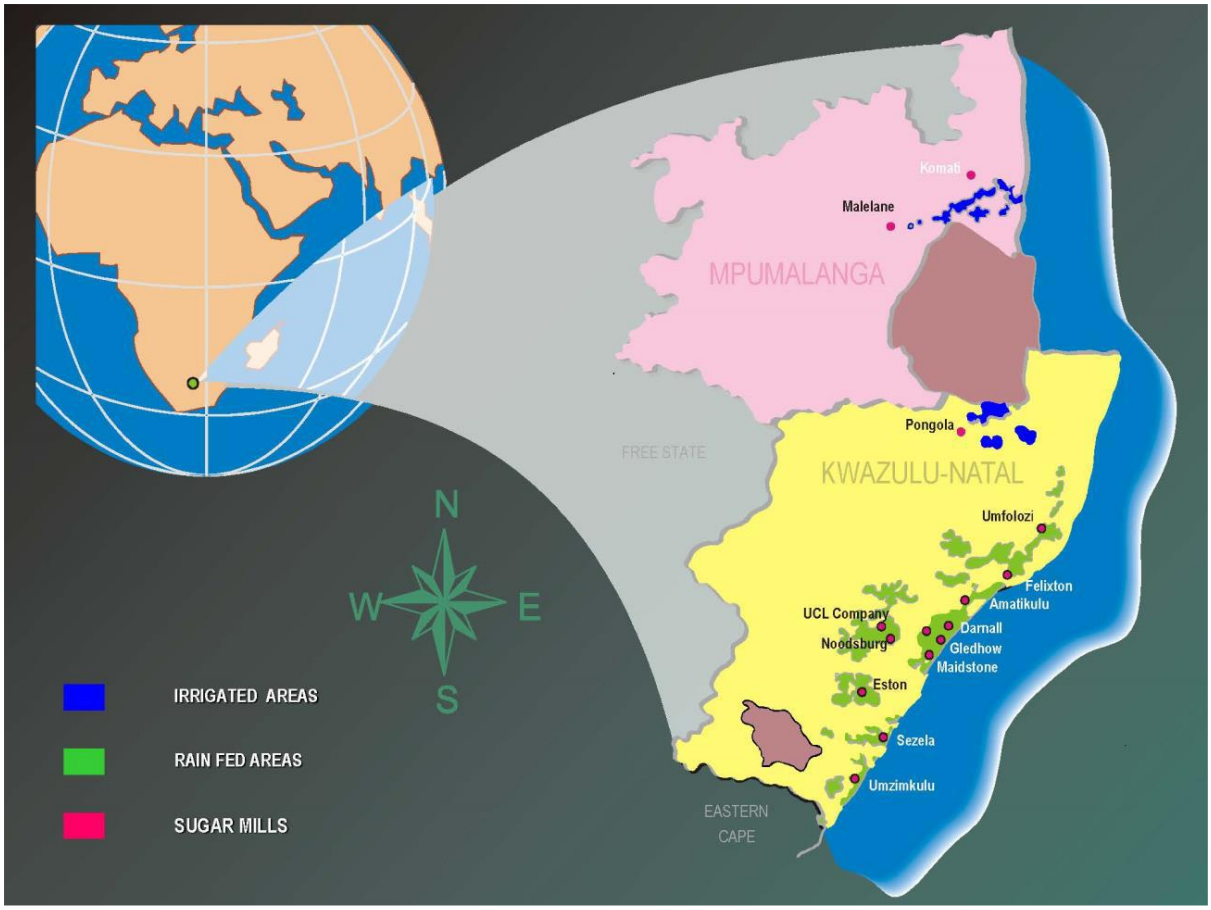


Figure 2.1: *South African Sugar Producing Locations:* Source: Noyakazi, 2019.

Countries such as Brazil and India which are leading producers of sugar globally have not been affected by drought in the last seasons. As a result, they enjoy a competitive edge in the global market, this explains why there is an increase in sugar exports from these countries (Sikuka, 2018). The South African sugar market produces approximately 2.2 million tons of sugar per season. Approximately 60% of this sugar is sold to the Southern African Customs Union, and the remaining sugar is sold on the international market (South African Sugar Association, 2022). The competitive advantage of the South African sugar industry is its ability to produce high-quality sugar at reasonably low costs compared to other sugar-producing industries in other countries.

United States Department of Agriculture (USDA) in 2018 released a report on the overview of South Africa's sugar industry. The report shows the industry structure and the demand and

supply dynamics for the production season of the year 2018/19 (Sikuka, 2018) as illustrated in Figure 2.2.

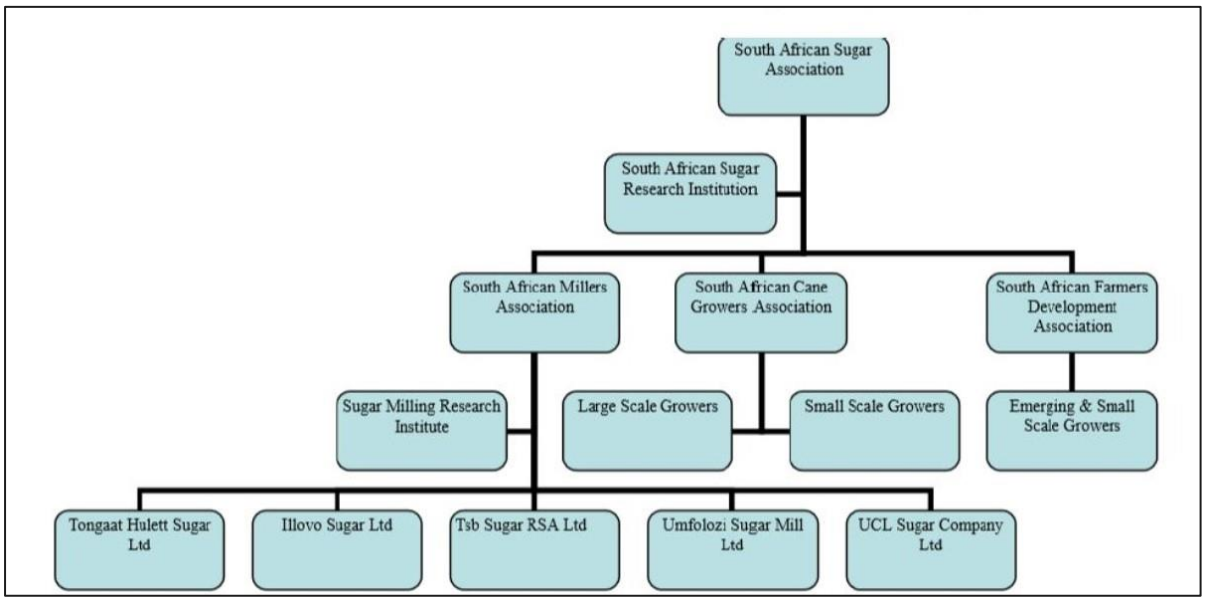


***Figure 2.2**: South Africa's sugar industry's organizational structure*

Source: Mvelase, 2021.

The South African sugar industry has one of the most structured hierarchies where different major stakeholders clearly understand their roles. This is critical for the industry's short- and long-term sustainability (Sikuka, 2018). South African Sugar Association (SASA) is the highest institution in the hierarchy of decision-makers. Its main responsibility is to look after the interests of all stakeholders involved in the sugary industry's value chain from growers to companies in the distribution of sugar.

Below SASA is the South African Sugar Research Institute (SASRI) which researches various critical issues affecting the growing of sugarcane. Their job is to ensure growers produce high-quality sugarcane and ensure correct chemicals are utilized to eliminate the danger of diseases and pests in sugarcane production. Also, they are tasked with mitigating any threats to sugarcane crop production in the republic. Approximately 80% of the sugarcane is from large-scale farmers, while small-scale farmers and communities in subsistence farming account for 20%. Their interests are looked after by two authorities namely: The Growers Association and

South African Famers Development Association (Sikuka, 2018). The South African sugar industry consists of six sugar-producing companies namely: Illovo Sugar Ltd, Umfolozi Sugar Mill Ltd, THS, Gledhow Sugar Company, UCL Company Ltd, and Tsb Sugar RSA Ltd (see Figure 2.2). Among all these milling companies, there are fourteen sugar mills located in KwaZulu-Natal Province and two mills located in the Mpumalanga province (SASA, 2021). Table 2.2 summarizes the performance of the industry.

Table 2.1: Sugar production and sales trends in South Africa

TOTAL CANE/SUGAR PRODUCTION: 2005/2006 TO 2018/2019*

Season	Cane crushed (tons)	Saleable sugar produced		
		National Market (tons)	International Market (tons)	Total (tons)
2005/2006	21 052 266	1 261 808	1 238 696	2 500 504
2006/2007	20 278 603	1 340 524	886 329	2 226 853
2007/2008	19 723 916	1 399 657	873 842	2 273 499
2008/2009	19 255 404	1 438 587	821 657	2 260 244
2009/2010	18 655 089	1 412 273	766 177	2 178 450
2010/2011	16 015 649	1 583 457	325 779	1 909 236
2011/2012	16 800 277	1 685 312	137 176	1 822 488
2012/2013	17 278 020	1 701 731	249 785	1 951 516
2013/2014	20 032 969	1 543 264	800 386	2 343 650
2014/2015	17 755 537	1 649 056	458 617	2 107 673
2015/2016	14 861 401	1 573 504	46 826	1 620 330
2016/2017	15 074 610	1 534 741	4 998	1 539 739
2017/2018	17 388 177	1 190 281	795 434	1 985 715
2018/2019*	19 031 688	1 241 479	939 682	2 181 161

SA SUGAR SALES/TONS: 2005/2006 TO 2018/2019*

Season	White sugar (tons)	Brown sugar (tons)	Direct sales (tons)	%	Industrial sales (tons)	%
2005/2006	1 112 153	215 640	810 017	61,0	517 776	39,0
2006/2007	1 121 273	224 297	771 216	57,3	574 354	42,7
2007/2008	1 121 263	241 292	784 293	57,6	578 263	42,4
2008/2009	1 162 113	264 949	822 224	57,6	604 838	42,4
2009/2010	1 191 342	307510	867 616	57,9	631 236	42,1
2010/2011	1 230 945	319 132	861 273	56,03	675 882	43,97
2011/2012	1 296 866	392 697	930 119	55,05	759 443	44,95
2012/2013	1 200 970	409 712	877 553	54,48	733 128	45,52
2013/2014	1 156 505	393 409	788 553	50,87	761 361	49,13
2014/2015	1 169 842	384 349	567 401	41,19	810 015	58,81
2015/2016	1 205 069	386 077	538 977	39,88	812 414	60,12
2016/2017	1 180 432	462 568	625 517	42,84	834 679	57,16
2017/2018	844 037	334 262	461 647	43,23	606 275	56,77
2018/2019*	864 255	447 228	575 745	49,45	588 666	50,55

Source: SASA, 2021.

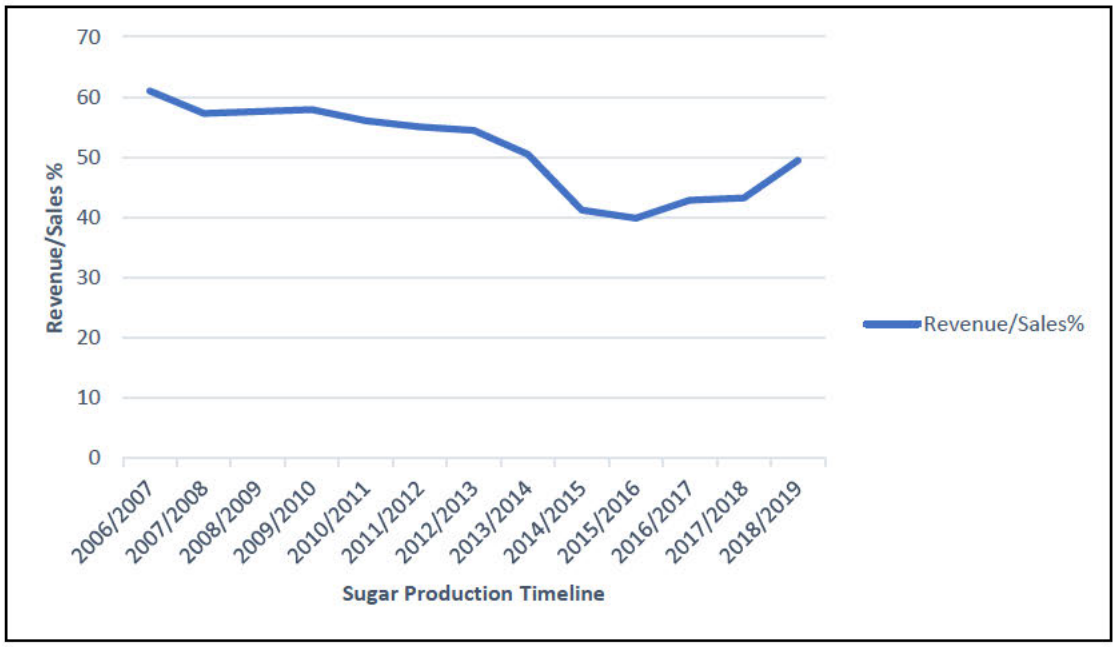


Figure 2.3. Sugar Sales Revenue in South Africa, 2005/6 to 2018/19.

Source: SASA, 2021.

Figure 2.3 shows the sugar trends in the South African sugar industry sales revenue from the 2005/ 2006 season to the 2018/2019 season (SASA, 2021). According to the United States Department of Agriculture (USDA), the South African sugar industry experienced an increase in sugarcane production this season mostly due to the good weather (Sikuka, 2018). As shown in figure 2.3, an increase in the production of sugar is indirectly related to revenue sales. Thus, as sugar production increases revenue gained by sugar-producing companies declines. For instance, sugar production increased by 9.8% in the 2018/2019 season from 1985 715 tons to 21810 161 tons. In the same period, sugar sales recorded a decline of 8.9% from 606 275 tons to 588 566 tons sold. Hence, the reasons the sugar industry is not able to benefit from such a good season of sugar production must be studied.

2.2.4 The Case Study: Tongaat Hulett Sugar

Tongaat Hulett Sugar has a 32% market share in the sugar industry and it contributes over R1.6 billion to KZN province (SASA, 2021). With the challenges faced by the sugar industry, many

companies had to partially shut down their operations. Expectedly, THS had to shut down operations at the Darnall mill which was established in 1846. The company CEO cited that mill closure is critical to lower exorbitant fixed costs to remain sustainable (Fourie, 2020). However, this negatively affected the livelihoods of the people from the Stanger community who have depended on the company for 100 years. Fourie (2020), reported Darnall mill closure was the main source of income for over 400 permanent employees from local the community. Now, they are jobless. More so, this has significantly affected negatively the local provincial economy shown by declining sugar sales in the province.

Tongaat Hulett consists of four sites in KZN namely Felixton Mill, Maidstone Mill, Amatikulu Mill, and a refinery. The mills produce brown sugar which is then transported to two sites using road and rail transportation in Durban (THS, 2021). The brown sugar is sent to the refinery to be converted to white sugar, packed, and ready to be distributed to final customers. The second segment of the sugar is stored at the South African Sugar Association which is situated in Maydon Wharf to be converted during the off-season to allow the refinery to remain productive and supply its customers during the off-season (Padayachee, 2021).

Recent years have seen a severe drop in the revenue and output of the South African sugarcane industry. According to Slater (2021), cheaper imported sugar and a Health Promotion Levy in form of a sugar tax have played a significant role in the decline of sugar sales. Department of Trade, Industry, and competition (DTIC) claim that the sugar industry declined by over 25% in the last 20 years (DTIC, 2020). The department has highlighted logistics costs, imports, and sugar tax as the most important factors impacting the industry. Logistics costs affect the costs of handling and delivering the products to final customers, with tariffs affecting the level of imports and Health Promotion Levy I, which is a form of sugar tax affecting the price of final products using sugar as an input resource (DTIC, 2020). These components will be discussed on how they each contribute towards affecting the sustainability of THS.

2.3 Logistic Costs

It is believed in scholarship that international trade is a key factor in addressing both social and economic development factors (Chasomeris, 2022). Logistics costs have been increasing

significantly. This limits the country's capability to participate in international trade hampering its ability to swiftly address social-economic developmental issues (Chasomeris, 2022).

The term logistics was first introduced towards the end of the 19th century. In the book titled, "Art of war" Jomini (2008) popularized the term logistics translated from the French word "Logistique" (Nailwal, 2019). The term was used by the French soldiers during the time of the World War later referred to as 'Military Logistics'. Prior to the use of the term 'logistics', other processes like supplying, transporting, and warehousing were common. This process involved using castles as warehouses, horse-drawn vehicles, and boats as means of transport (Nailwal, 2019). During World War I, between 1914 and 1918, is when the term military logistics was first used. All the soldiers involved in the movement of military resources such as medical equipment and ammunition were referred to as Logistics Officers. These officers were primarily responsible for activities such as equipment cost calculation, forecasting future needs, and controlling the current consumption of resources (Nailwal, 2019). The complexity and sophistication of businesses today require that the needed resources for the production of goods and services are correct, in the required quantity, at the right time and place. Hence, the evolution of logistics is a critical component of the supply chain processes (Nailwal, 2019). Logistics activities are continuously taking place globally every day, which involves the complex processes of moving products to different locations where and when they are needed timeously.

Logistics can be generally defined as the process of bringing in materials for production (Raw materials) from suppliers and ensuring after production final products are properly stored and successfully delivered to customers in time and to their expectations (Nailwal, 2019). Prieto (2021) provides a general definition of logistics, in his view logistics can be defined as the process of designing an efficient and effective system that controls and allows a smooth flow of goods and services in the organization.

The process of logistics controls the management of transportation and movement of company raw materials. This is done by ensuring that there is proper coordination for their importation or exportation, correctly choosing the right mode of transportation, and partnering with reputable transport partners to transport both raw materials and finished goods. There are

different components to be included in the logistics budget by every producing company. Figure 2.4 shows different logistics components namely: Transport, Warehousing, Management and Administration, and Inventory carrying cost. Transport is responsible for the movement of goods to different points of the supply chain. Warehousing is used for the storage of raw materials and finished goods, and inventory carrying costs are goods that are awaiting selling or goods with defects from customers. (Hevanga *et al*, 2014).

Fluctuating fuel costs in South Africa have caused increased uncertainty in the economy. In 2014 a logistics calculation forecasted (F) depending on the expected fuel fluctuation was introduced. The assumption used was that the minimum increase was estimated (E) to average that of 2013, which resulted in total logistics costs of R456 billion as of the year 2013. The maximum estimation using the 2013 (E) average was assumed that it will experience a 15% increase which would result in logistics costs increasing to R470 billion. This increase seemed to be conservative because, by the first quarter of 2014, fuel was already 11.3% high compared to the 2013 estimator. Figure 2.4 provide evidence of how these different logistics costs have been increasing in South Africa from 2003 to 2014. It is worth noting that transportation is always the highest logistic component. For example, in 2003 sugar transportation costs accounted for 56.2%and accounted for 61.6% in 2013.

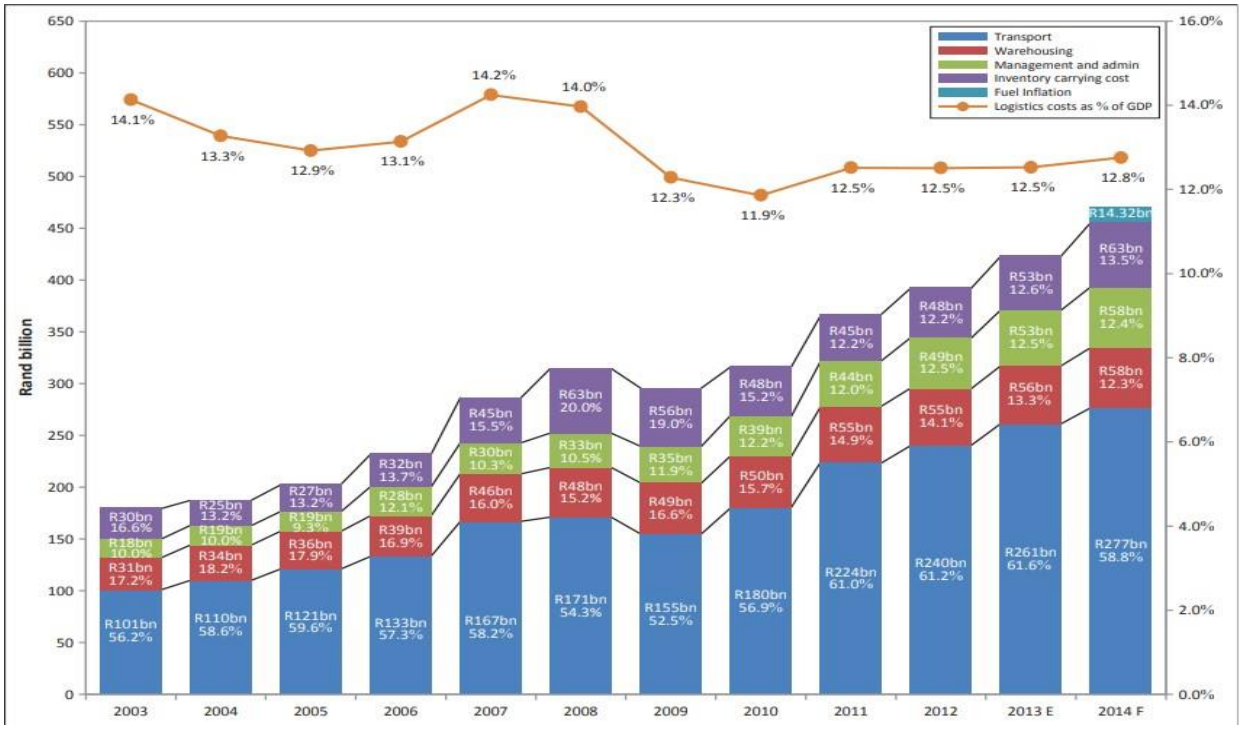


Figure 2.4: *Logistics costs components*

Source: Hevanga (2014, p 4).

Tongaat Hulett Sugar has different logistics partners that play different roles in its supply chain process. The study focuses on the process after production when the sugarcane is crushed and sugar has been extracted. The logistics process after production involves raw sugar being transported from the mills to the refinery where the conversion of brown sugar to white and packaging takes place. Some of the products are transported using both road and rail to the sugar terminal where sugar is stored to be utilized during the off-season to continue supplying the market and their customers. Section 2.4.1 reviews the literature on different elements of logistics costs and how they into fit in THS process.

2.3.1 Elements of Logistics

There are different elements of logistics however the study explores types of logistics and the benefits of functioning logistics. Different types of logistics are inbound logistics, outbound logistics, and reverse logistics. Inbound refers to the process of bringing raw materials to the manufacturing company for the purpose of production or converting raw materials to finished goods. On the contrary, outbound refers to the process of moving goods and services outside

the company after production to end-user customers. Reverse logistics refers to a process where goods and services have not met the needs of the customer and require to be brought back to the company in preparation for resale (Prieto, 2021). Figure 2.5 depicts the types of logistics and how they fit into the entire process. Each of these processes is discussed on how they contribute to the process.

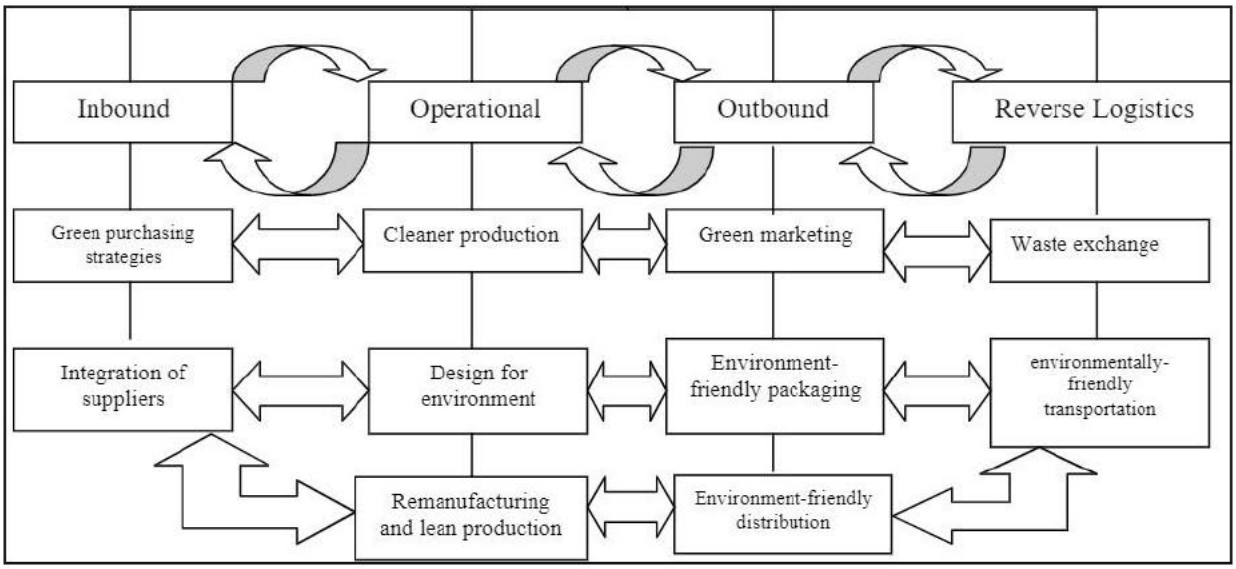


Figure 2.5: *Logistics process*

Source: Choudhary Seth, 2011.

- **Inbound logistics**

Inbound logistics is defined as a process of bringing raw materials into the company for the purpose of manufacturing finished goods (Fourie, 2013). Takita and Leite, (2020) define inbound logistics as a process comprising all activities that are responsible for securing all raw materials supplied for the purpose of manufacturing, and retail operations. This process at THS takes place twice in their logistics process. The first process involving inbound is when sugarcane is brought to the mill to be processed to brown raw sugar. The second part takes place when raw sugar is transported to the refinery for the purpose of packaging and converting brown sugar into white sugar. Figure 2.6 illustrates the inbound process.

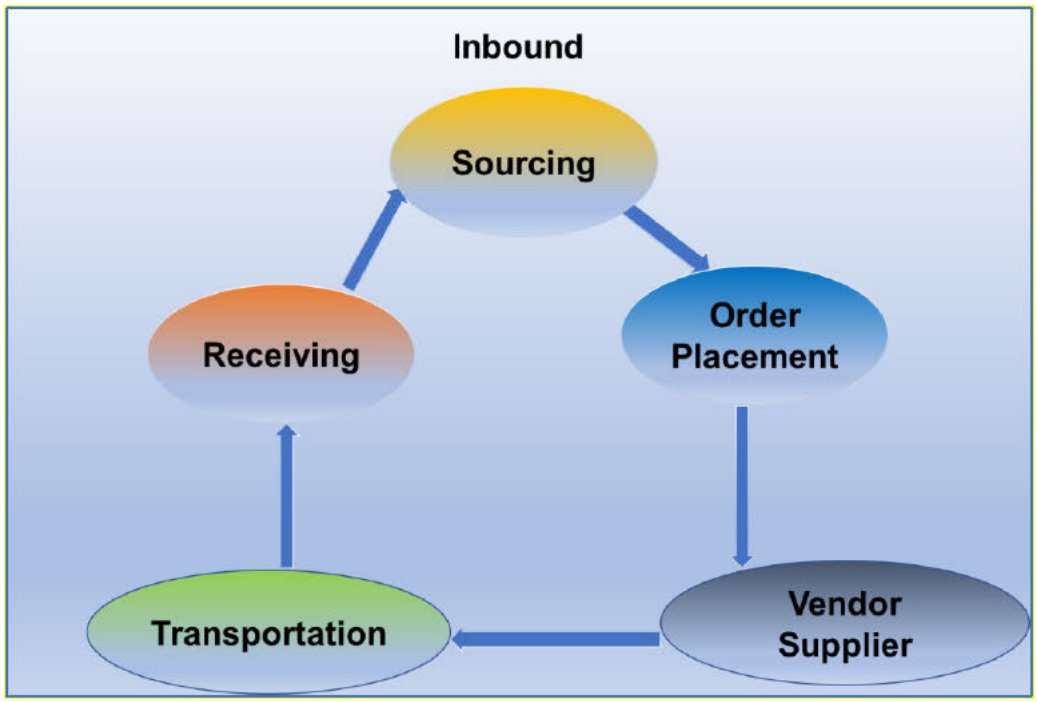


Figure 2.6: *Inbound logistics process:*

Source: Jenkins, 2020

The process begins with the company sourcing the raw materials required to manufacture company-specific finished goods. The process continues with the order being placed to the chosen suppliers. The raw materials are then transported by either in-house transport or third-party logistics (3PL) that the company chooses to work with. The raw material is received by the company and prepared for the production process. If the inbound logistics processes are not efficient and the raw materials do not reach production on time, the whole value chain is affected due to delayed production and final goods reaching consumers on time. The production process becomes expensive resulting in staff working long hours and accumulating over time.

- **Outbound logistics**

Outbound logistics is a process that involves the movement of goods and services from the manufacturing to the next supply chain process. It involves storing goods in the warehouse or straight delivery to the point of sale to the last consumer. This process is referred to as an order-fulfillment process (Jenkins, 2020). Fourie (2013) says outbound logistics is the process of

getting the appropriate product to customers at the right time for the lowest possible cost. Figure 2.7 describes the process flow of the outbound logistics process.

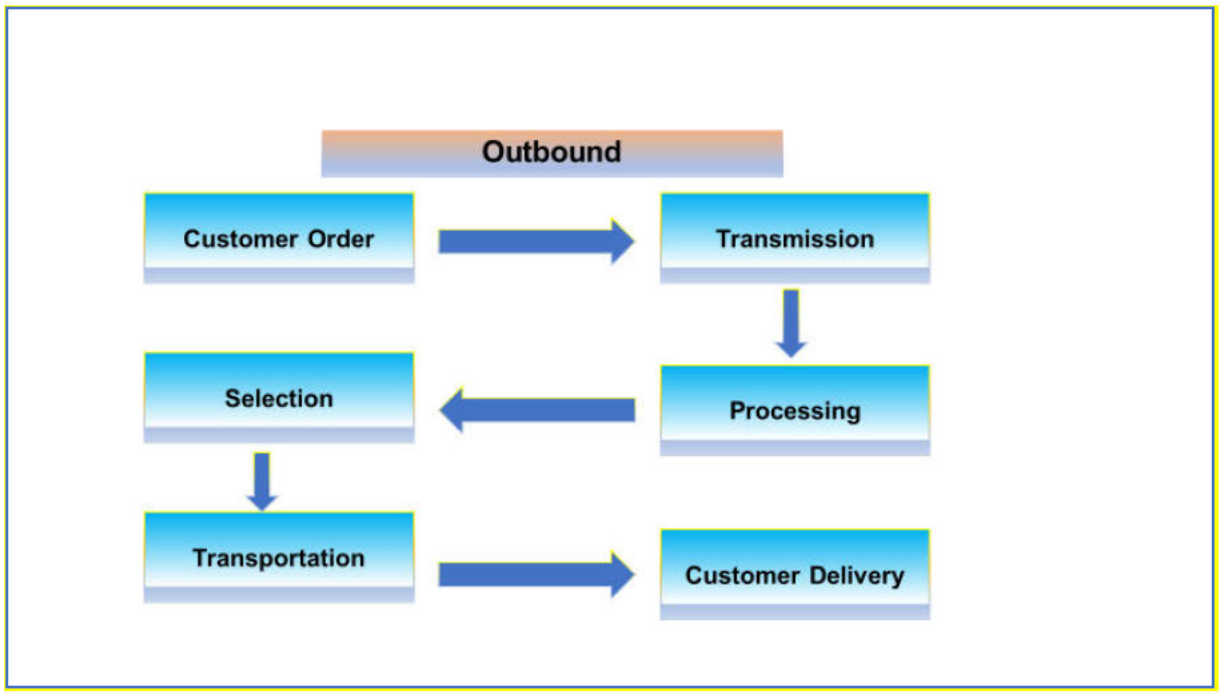


Figure 2.7: *Outbound logistics process:*

Source: Jenkins, 2020

The logistics process begins with the customer placing an order for a product that is then transmitted to the warehouse team. Thereafter, the order is processed and prepared for delivery. The delivery takes place by either in-house transport or a 3PL provider. The product is transported to the final destination which the end-user selects for their usage. This is a very important stage in the logistics process because this is where customer satisfaction is determined (Jenkins, 2020). The company may gain, keep, or lose customers to other competitors if this process is not efficient.

- **Reverse logistics**

Reverse logistics is the process where goods are moved from the end-user customer back to the manufacturing customer due to defects, reuse, repair, or to help discard the product safely (Jenkins, 2020). In this process, the company is offered an opportunity to rectify its mistake

and restore faith in its customers. This process exists in the value chain of THS where all defective sugar from customers are brought back by their 3PL, and the customer is either re-reimbursed or given another replacement product. Ford recalled 4556 vehicles between December 2012 and February 2014 as vehicles were found defective and placed their customers at risk (Ford, 2017). This is a typical example of reverse logistics because Ford had to recall all the cars to safeguard and protect their customers.

The section below continues to discuss the benefits of having an efficient logistics process. There are objectives that a company will use as a benchmark to ascertain if their processes are efficient and the objectives are: increased efficiency, reliable and consistent delivery, minimum damage to products, reduction in transport costs, quick response and shorter lead time, and inventory reduction (Jenkins, 2013).

Having functional logistics processes brings a competitive advantage to the company. Fourie (2013) recognizes the five elements as the benefits of the logistics process namely: providing better service, seamless deliveries, cost efficiency, better management of orders, and increase supply chain transparency. The section below will discuss these elements that has been outlined by Fourie (2013)

- **Better service**

When the logistics process is running effectively, the overall efficiency within the company increases as both inbound and outbound become master. This allows all functions within the company to be completed within the agreed timelines (Jenkins, 2013). The waste is controlled and minimized in the value chain allowing quality raw materials to be sourced at cheaper prices. Thus, bringing down the overall cost and increasing the efficiency of the entire logistics process.

- **Reliable and consistent delivery**

Customers expect their products to be delivered on time and in full (Fourie, 2020). This requires the organization to plan its deliveries properly and timeously with transport providers. The most important element of logistics is maximizing customer experience and satisfaction. This can be achieved by ensuring that products are delivered faster, at the right place, and in full, to

the right customers. In this way, customer experience is positively enhanced and such clientele is likely to remain loyal customers of the product and the company.

- **Minimum damage to products**

Proper packaging and handling of the products are vital, as damages to products increase costs, and affect overall profitability and sustainability. Products must be properly packaged loaded, monitored, and handled properly to ensure they reach the customer in an acceptable manner (Jenkins, 2013).

- **Reducing transportation costs**

It is important that the process of logistics is attentive to costs and work operations to reduce costs by constantly evaluating transportation charges. This can be achieved by selecting a transport partner that provides efficient services at a lower cost, and ensure shorter routes are planned and utilized (Jenkins, 2013). It also assists to consolidate the value chain for example allowing the same transport delivering to customers (outbound) to return with any goods from customers as reverse logistics.

- **Quick response and shorter lead time**

Being able to respond to needs in a short space of time shows that the company is capable of serving its customers and solving their queries timeously (Fourie, 2020). Quick response requires proper planning, and strong communication which enables customers to receive their orders on time. Furthermore, quick response allows the company can anticipate any possible issues that may arise, and alert the customer in advance if the delays are beyond their control (Jenkins, 2013). With the aid of technology, the company can track the live location of the product, plan better routes to avoid traffic, and improve how decision-making.

- **Inventory reduction.**

If the company keeps more inventory, it means less revenue is generated, and a greater danger exists of products being damaged. An equilibrium of the inventory must be maintained to assist and fulfill all the business orders. Proper planning and forecasting help the company to only

produce what is needed by the customers and avoid products sitting in the warehouse for a long (Jenkins, 2013).

Proper logistics management is vital for a company that plans to be competitive and sustainable. A company that invests in proper logistics processes creates and builds a competitive advantage over its competitors. Improper management of logistics leads to the demise of the organization through higher logistics costs due to damages and improper planning. Also, products fail to reach customers in time culminating in customer dissatisfaction.

2.4 Sugar imports

Imports form part of the trade balance of payment for a country that records goods and services that are traded with other countries (Jessop, 2021). Exports are goods that leave the boundaries of the country to be traded outside the country (Jessop, 2021). The products and services that citizens of a nation choose to purchase outside the country rather than purchase domestically are known as imports (Hemzawi & Umuntoni, 2021). It is important to note that when a country imports goods and services, there is an outflow of funds from the country receiving the products to the country that initially brought in the goods and services. There are many reasons a country may decide to import a product from another country. A country may decide to import a product that they are not efficient at producing in their country and source a product from a country that can produce it at a lower cost. A country may not have that product at all but need the product for the benefit of the consumers and the country for operational reasons. An example will be oil and other natural resources that the country may not have but need for other operations leading to those resources being imported.

Figure 2.8: *Imports of Sugar in South Africa*

Source: Makgopa, Woody, (2022, p11)

As depicted in Figure 2.8, from 2011 sugar imports have been decreasing due to good weather and the quality of sugar that was produced until the sugar-producing season of 2014 (Makgopa, Woody, 2022). During the season of 2014, South Africa was affected by a devastating drought which led to insufficient sugar cane being produced in the country (Sikuka, 2021). This led to the government lowering import duties and tariffs for other sugar-producing countries that wanted to bring in their sugar to help supply the market (Makgopa & Woody, 2022).

Sugar imports in South Africa have been on the rise ever since the 2015 drought (SASA, 2021). The increase was a result of bad weather that caused poor sugarcane quality and low production. South Africa removed tariffs during the sugar production season of 2015 due to the effects of drought and local producers could not satisfy the local demand. The government removed sugar import tariffs to encourage imports to meet the demand, however, this offered

little to no protection to the domestic sugar producers (Sikuka, 2021). Due to the removal of tariffs and import duties in South Africa, an increase in sugar imported from 107.550 metric tons in 2015 to 375.525 MT in the following season of the year 2016 (see Figure 2.8). This trend continued until 2017 through 2018 with 382.214 MT. A decrease was observed in 2019 and is attributed to improved weather conditions. Also, a further decrease in imports in 2020 to 116,267 MT is a direct result of the Covid-19 pandemic (Sikuka, 2021).

During the 2020/2021 sugar season, 95% of raw sugar imported to South Africa was from Eswatini. Import duties do not apply to Eswatini because they form part of SACU with South Africa. The United Arab Emirates and Brazil only accounted for 1% of the imports of raw sugar. In the sugar production season of 2020/2021, an introduction of the Sugar Master Plan has started to restore tariffs and import duties (Makgopa & Woody, 2022). It is worth stating the percentage of imports from the United Arab Emirates and Brazil has decreased by 19% from 20% for the season of 2017/2018 due to an increase in customs duties (Makgopa & Woody, 2022). Lower production prices, tariffs, and good weather conditions give countries like Brazil a competitive advantage over local sugar producers like THS to compete. Analysis of trends is conducted by comparing how increases or decreases in tariffs influence imports.

2.5 Sugar tax

The tax imposed by the South African government referred to as a Health Promotional levy (HPL) is applied to all SSB that contain 4 grams of sugar per 100ml (Mvelase, 2021). The reason behind these taxes is to promote healthy living by consuming less sugar and fighting sugar-related diseases like obesity. WHO (2019) has defined obesity as an abnormal accumulation of excess fat that poses a threat to one's health. WHO had set a goal to have a zero increase in obesity by 2025, but this goal looks likely to fail as the study has shown that by 2030 obesity is on course to double especially in low and middle-income countries (Sulcas, 2022). On average globally, more than 1 billion people are obese, which is approximately 13% among adults which is 650 million adults, 340 million teenagers, and 39 million children (Sulcas, 2022). According to WHO (2019), over 5 million people in the world died because of obesity in the world. In 2002, a study conducted by WHO showed that 2in 002 56% and 29%

of women and men in South Africa were obese, respectively. In 2016, the number of obese females increased by 68% whereas 31% of men were obese (Boachie, 2022).

World Health Organisation recognized obesity as one of the leading causes of death caused by related health complications associated with excessive consumption of sugary products (National Treasurer, 2016). More than 2.8 million people die each year from being overweight or obese, and the condition has reached epidemic proportions on a global scale (WHO, 2019). With WHO findings the South African government introduced a tax on SSB to try and control the growing concern of obesity in the country. Research showed that an increase of 20% in prices had to be implemented to reach the desired decrease in sugar consumption (National Treasurer, 2020). This increase in sugary product prices caused a sharp decline in the consumption of sugary drinks and decreased the company's profitability. The trend shows that a 5% increase in sugar tax from 2.21c/g in 2021 to 2.31c/g in 2022, increased government revenue from R2.11 billion to R2.2 billion (BusinesTech, 2022). Currently, the discussion is ongoing on further raising the sugar tax in South Africa to fight sugar-related ailments. Sugar companies are therefore required to observe, prepare, manage and adapt swiftly to these uncertain conditions.

2.7 Sustainability, logistic costs taxes, import tariffs

Figure 2.9 below depicts the effects of an increase in logistics as a cost, thus showing the impact the increase has had on both the transportable GDP and the GDP of the country as a whole. The figure states that logistics has been increasing since 2003. When logistics cost was 14.1% in 2003 the transportable GDP was forecasted at 44.3% of (Hevanga, 2014). This increase is credited to the inflation of inputs such as fuel which is a vital component of the transportation of goods. With over 83% of goods in South Africa depending on road transportation, this has placed pressure on companies because this resulted in overall logistics costs increasing (Havenga, 2014).

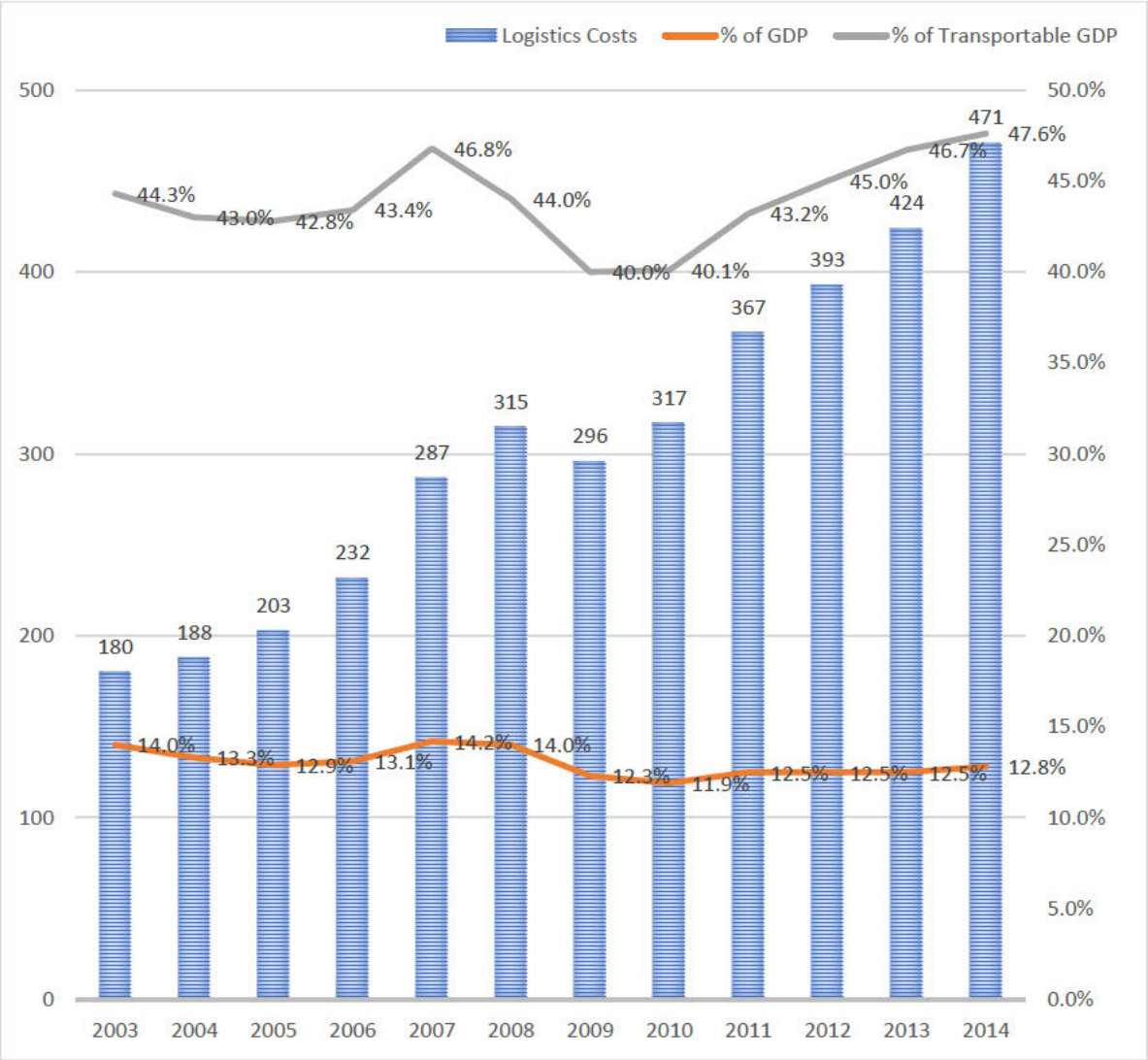


Figure 2.9. *Logistics costs as a percentage of total and transportable GDP.*

Source: Havenga, 2014.

World Health Organisation has indicated an increase in the number of people suffering from obesity. This means the Health Promotional Levy will continue to rise making it difficult for sugar-producing companies to remain sustainable. Urgent intervention from the government is also required to address the effects of low to no import tariffs on imported sugar to protect the sugar industry.

Import tariffs can be described as a tax component charged on goods and services that are collected at the port of entry by customs officials (Sheldon, 2018). Imports tariffs are deemed

not good for international trade as they create trade barriers and cause misrepresentation in the market (Chasomeris, 2022). Tariffs are used to ensure fair competition exists among local and global products. In addition, import tariffs ensure consumers are paying a fair price and are in the best interest of the consumers (Jessop, 2021). Four types of tariffs exist on international trade namely; Specific Tariff, Ad Valorem Tariff, Compound Tariff, and Sliding Scale Tariff (Boyce, 2020). A brief overview of these tariffs will be provided below.

Specific Tariff

A special tariff is a fixed price per tangible item, or by the weight or measurement of the commodity imported or exported (Boyce, 2020). This type of tariff is applied to sugar importation and is easy to administer since it does not require an evaluation of each product (Sikuka, 2020). The government can avoid price complexity by turning to specific duties. However, this tariff cannot be used on high-value products like natural resources, jewellery, and appliances.

Ad Valorem Tariff

Ad Valorem is a direct translation of the word value from Latin. Valorem tariffs are imposed when the duty is calculated as a fixed proportion of the value of the traded good (Sikuka, 2020). These taxes are imposed on goods whose worth is excessively higher than their physical characteristics, such as weight or measurement. This type of tariff is usually applied to products of high value like jewellery.

Compound Tariff

This type of tariff is a mixture of specific and Ad Valorem tariffs. Ad valorem duties by percentage and a specific duty on each unit of the commodity are combined in compound tariffs (Boyce, 2020). The compound tariffs increase revenue flexibility while ensuring more effective protection for the domestic industry.

Sliding Scale Tariff

Sliding scale tariffs refer to import taxes that change by commodity prices. These may be based on a specific basis or an ad valorem basis, but in actuality, they are typically based on a specific tariff (Boyce, 2020). Figure 2.10 provides insight into how tariffs affect the trading of a country. The importer will begin at a perfectly flat elastic supply curve at S_1. When the tariffs are included, the curve shifts up to S_{1+t} which then increases the price from P_1 to P_{1+t}. The country importing the sugar will then have the decision to make if it will be worth it to continue bringing in sugar to SA and that way the local producers are protected. The domestic supply of sugar will then increase from Q_S to Q_{S1} lowering the competition and allowing local producers to set their prices. With the limitation of competition, the price of sugar increases in the domestic market decreasing the demand from Q_d to Q_{d1}. As depicted in figure 2.9 loss of consumer surplus is denoted by area –(a+b+c+d) in the graph which occurs when consumers pay a price for a good or service that is less than the price, they are willing to pay (Sheldon, 2018). The gain in producer surplus is shown by area (a) which depicts the entire profit a producer makes from creating and offering a given quantity of a product at the going rate. Area (c) in the figure denotes the revenue that will be earned from introducing tariffs. Area -(b+d) shows how much will be lost from the tariffs. Area (d) represents a deadweight loss which is the result of inefficiency in the market as supply and demand are not in equilibrium (Sheldon, 2018).

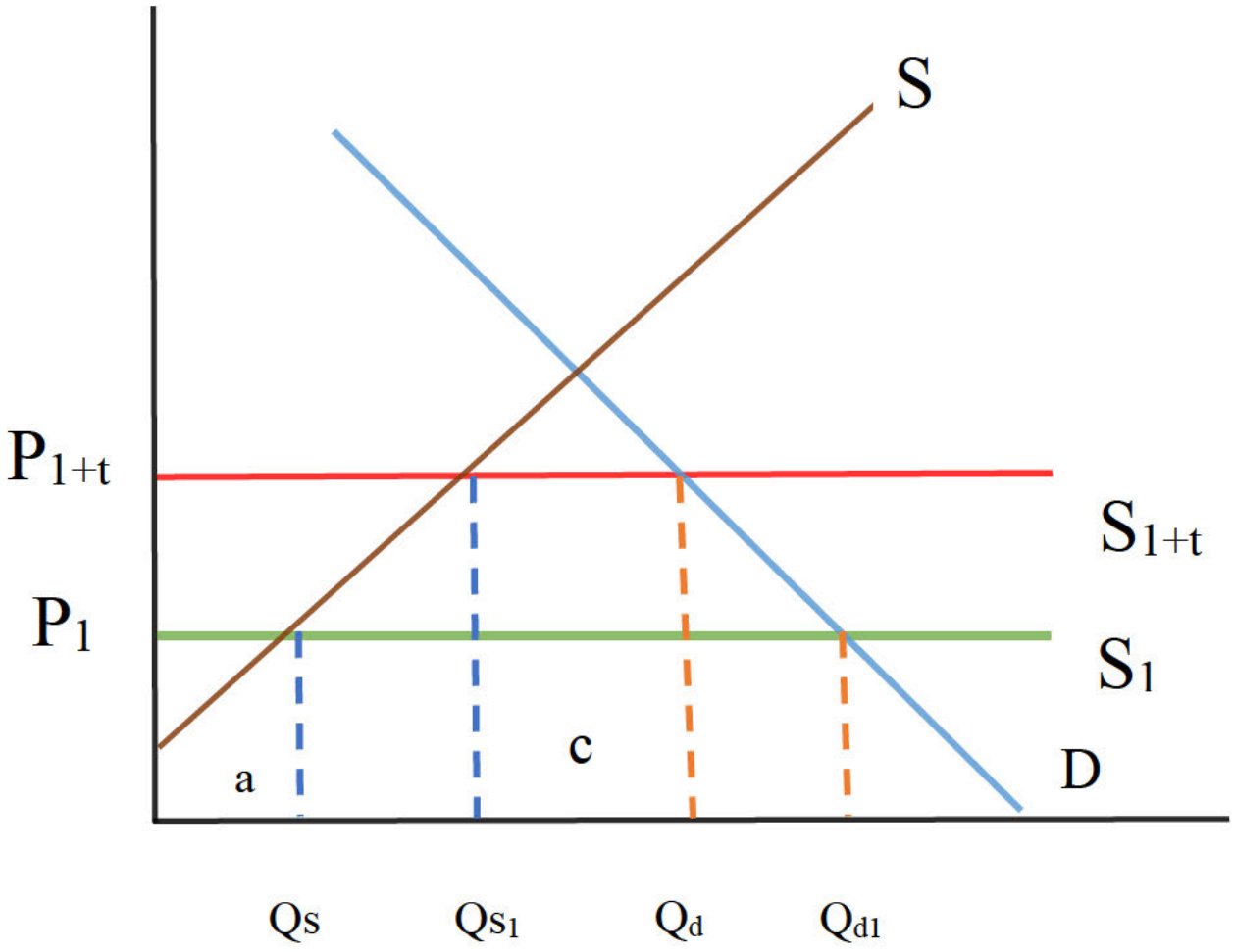


Figure 2.10: Effect of tariffs on country's trade

Source: Sheldon (2018)

The mechanism that is applied by South Africa to ensure that tariffs and duties are applied correctly is called Dollar Based Reference Price (DBRP) (Sikuka,2019). The effects of import tariffs and duties have a big impact on how much sugar will enter South Africa. An example will be in 2017 wrong import tariffs and duties were applied. In April 2017 R636 per ton was applied instead of R1,117 per ton (De Wet, 2018). After local producers were engaging with the government on the issue the tariffs were increased to R2,131 on 15 September 2017. Because of this error, it was reported that imports increased significantly to sugar worth approximately R1.9 billion between the period of April and September (De Wet, 2018). During

this time local producers suffered unfair competition as sugar imported was cheap due to low production costs from the countries that were importing sugar.

2.8 Conclusion

The chapter reviewed and evaluated vast literature to help investigate how logistics costs, sugar taxes, and import tariffs affect the sustainability of the sugar industry and sugar-producing companies in particular THS. Literature shows that logistics costs have risen as a result of inflation on specific logistic components like fuel. Countries like Brazil, India, and Swaziland dominate the sugar imported to South Africa. This has made it a major challenge for local sugar producers to be competitive due to the low production costs of these countries. In South Africa, a sugar tax is increasing yearly as a strategy to discourage excessive sugar consumption leading to obesity. To manage and mitigate the effects of this tax, industrial manufacturers of beverages that contain sugar have changed the production mixing formulas to use less sugar in the product. Moreover, a global overview of sugar was provided with different challenges discussed. South African trades with the Sub-Saharan African market, hence it was imperative to explore that market and all the dynamics that affect the South African market, especially THS. The study further explored THS and the challenges faced by the company in relation to how three elements affect the sustainability of THS.

The next chapter provides insights into the methodological framework followed in collecting and processing data for the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodological framework used to conduct the present study. In this chapter: firstly, a refresher on the aim and objectives of the study and how the methodology contributes to answering the research questions are given. Also, the research design, details of the study setting for instance where the population of the participants is based and sampled, methods of data collection, and methods of data control like a test of validity and reliability of collected data collected are outlined; ethical considerations applied when conducting this study, are explained and discussed in steps and lastly, the conflict of interest is discussed with a summary of the study provided

3.2 Research approach and design

The study makes use of a qualitative constructivism approach. Qualitative constructivism focuses on a variety of methodologies and takes an interpretive, naturalistic approach to its subject (Terrell, 2012). This means that constructivist researchers investigate phenomena in their natural environments while attempting to understand or interpret them in terms of the meanings that individuals assign to them. quantitative research focuses on figuring out the whys and how's of the event that the study focuses on (Saunders et al, 2006). As a result, qualitative research is sometimes characterized as being subjective (as opposed to objective), and its conclusions are recorded in writing as opposed to numerically (Saunders et al, 2006). Qualitative research data analysis was chosen due to its suitability as most of the data analysed was from respondents collected during interviews.

This type of research design was fitting because the aim of constructivist researchers is to comprehend research subjects' experiences in order to ascertain their subjective truths or perspectives (Saunders et al, 2006). The emphasis is not only on what the respondents said but, other non-verbal signs that are important in constructivist research design. Sometimes these habits can provide answers to queries on their own, and crucial factors to consider include

respondents' body language and speech tones (Terrel, 2012). The constructivist research tradition's strength is its emphasis on the experiences of specific individuals as well as on processes and experiences over time. It was important that different professionals from different fields are interviewed to get a comprehensive outlook on the subject instead of focusing on one or few individuals.

The next section outlines a description of the study setting, how participants were sampled, and the techniques applied during the collection of data.

3.3 Study setting

There are four THS sites in KZN with four mills, namely Felixton Mill, Maidstone Mill, Amatikulu Mill, and a refinery. The mills produce brown sugar which is then transported to two sites using road and rail transportation in Durban. The brown sugar is sent to the refinery to be converted to white sugar and the rest is stored at the South African Sugar Association (Padayachee, 2021) in Maydon Wharf to be converted off-season to remain productive and supply their customers during the off-season.

Felixton Mill

Felixton Mill is based on the north coast of KZN, and it is about 150 km north of eThekwini. It is located closer to the town of Empangeni with coordinates of 28.8351° S, and 31.8914° E. The mill processes 600 tons of cane per hour operating two production lines, which is an average of 1.3 million tons of cane produced per season (Tongaat Hulett, 2021).

Matikulu Mill

Matikulu Mill is situated on the northern KwaZulu-Natal coast, 120 km north of Durban, situated in the community of Amatikulu coordinates (29.0449° S, 31.5283° E). The mill produces 385 tons of cane per hour, using a single production line (Tongaat Hulett, 2021).

Maidstone Mill

Maidstone mill is situated in the heart of the town of Tongaat approximately 40 kilometers away from Durban, coordinates (29.5494461682,31.1313011908). The mill produces 440 tonnages of cane per hour using 2 production lines.

Refinery

The refinery is situated in Clairwood, Durban with coordinates of 29°54’28” S 30°.58’37” E. The refinery is used to convert brown sugar received from the mills to white sugar and other sugar-related products. Additionally, the refinery holds more than 600 000 tons of refined sugar per annum. This is where final distribution to customers takes place through the confirmation of sales (Tongaat Hulett, 2021). The figure below provides graphical location of all the sites under the study.

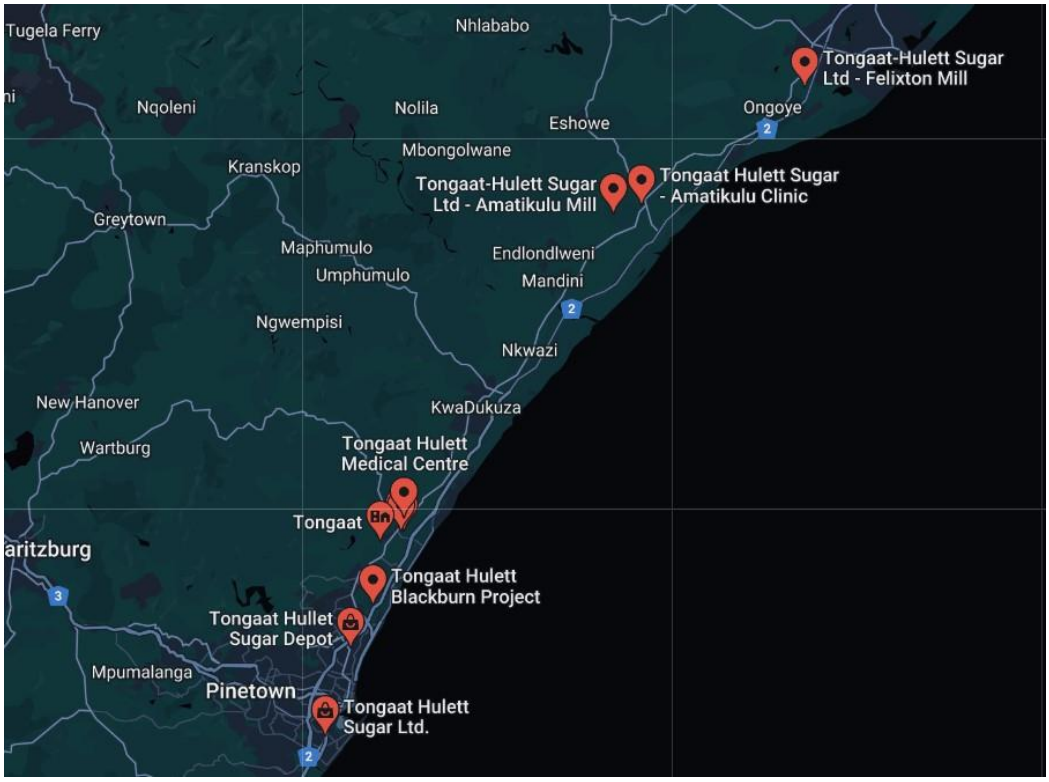


***Figure 3.1**: Tongaat Hulett Sugar Sites*

Source: Google maps (2003).

3.5 Population and sample of the study

The term "target population" describes a set of individuals with a shared crucial trait from which the researcher can draw conclusions (Lavrakas, 2008). The target population in this study was experienced professionals and executives in the sugar industry. These individuals were sought after to provide insights, knowledge, and know-how on how these factors affect the sustainability issues of THS. The strategy used was to gather the data from several participants, individually, to ensure that there was no fear of intimidation and answers are not influenced in any manner.

A purposive sampling was used to pick participants of the study from THS and Unitrans Supply Chain Solutions. The term "purposeful sampling" describes a range of non-probability sampling procedures where units are chosen because they have the qualities that you need in your sample. Purposeful sampling can also be referred as Judgmental sampling method as the researcher uses his or her judgment when selecting the individuals to participate in the study (Saunders et al, 2006). Eight professionals were purposefully selected due to their industry experience with the anticipation of finding information rich cases. A sample size of 13 professional respondents was purposefully selected from the wide potential sample frame of 24 respondents. The other respondents were left out of the sample as they hold the same designation as the participants. Thirteen respondents were sampled, eight respondents were from Tongaat Hulett Sugar, and five respondents were from Unitrans Supply Chain Solutions. They were a mix of different subject matter experts from the logistics sector, policy-making, and strategy formulation from the sugar industry. The sample size was deemed to be sufficient considering the experience they have working in the sugar industry, it was deemed their experience will be sufficient to provide a proper representation when answering the questions covered in the study.

A purposive sampling technique also known as judgmental sampling was used to select participants. Purposive sampling is a type of non-probability sampling method where researchers use their discretion based on the characteristics of participants to select a sample

for the study (Saunders *et al,* 2006). Therefore, a researcher must have extensive knowledge of the study to make it easy to identify and select suitable participants that add value to the study and reject the rest of the non-relevant potential participants. The benefit of the approach is that it allows the collection of extensive data from the participants. Moreover, the approach is considered cost and time effective as it allows the researcher to cover a small but representative number of participants in the study (Lakens, 2019). Lastly, the method allowed the study to focus on the content, diversity, and context of these different professionals in both the sugar industry and the relevant logistics service provider.

3.6 Data collection methods

The study is rooted in a pragmatic view, as the study was conducted to gain a better understanding of the company as well as the sugar industry processes. The study made use of both the observable phenomenon from studying the industry and a subjective approach to provide acceptable knowledge dependent upon the research questions (Saunders *et al,* 2006). For the study to realize this objective, the use of a qualitative method was utilised. Face-to-face semi-structured interviews were used to sample of senior management and middle management of THS and Unitrans Supply Chain Solutions.

(i) Qualitative method

Qualitative data meanings are based on the expression of words and providing analysis through conceptualization (Saunders et al, 2006). The study made use of semi-structured interviews as a form of data collection from participants.

- **Semi-Structured interviews**

The study made use of Semi-structured interviews enable participants to be adaptable and at ease when responding to inquiries within the established framework while enabling the researcher to clarify any points with additional questions (Saunders, 2006). Semi-structured interviews consist of a list of questions and themes to be covered during the interview, with the order of questions varying depending on how the questions are structured and how the

conversation flows (Terrell, 2012). Additional questions may come up during the interview to help answer the research question. All questions and answers were recorded and written in English. All interviewees were fluent in and comfortable using the English language. An interview is when two people discuss a particular topic with the aim of gathering relevant and reliable data to address specific research questions, objectives, and aims of the study (Saunders *et al.*, 2006). Saunders et al (2006) further add that an interview is a discussion between two or more people with the purpose of gathering valid and reliable data relevant to the research questions and objectives of the study.

3.7. Data quality control

Triangulation is a strategy used to improve the validity and reliability of research or evaluation of findings and was applied in the present study (Sanders 2006). This was achieved by gathering data from multiple sources and experts to cross-validate results. Moreover, in-depth interviews are a research tool that was used to collect data. These were best suited for this study for extensive investigation and analysis to draw fact-based conclusions and recommendations. Triangulation cross-verifies data from more than two sources by facilitating the use of different instruments to test the consistency of the results. This increases the chances to control threats that may influence the results (Humble, 2009). Triangulation deepens and widens the understanding of the researcher, it leads to an innovative concept in addition to validity and reliability (Humble, 2009). By looking at human behaviour from several angles, triangulation aims to map out or fully describe how rich and complex is human behaviour.

Noble & Heale (2019) state that there are four types of triangulation and reasons that lead to the use of triangulation concepts namely data, theory, methodological and investigative triangulation. Data triangulation considers things like epochs of time, spaces, and individuals. Investigator triangulation involves the use of multiple researchers in a study. Theory triangulation promotes the use of many theoretical frameworks to facilitate phenomena interpretation. Lastly, methodological triangulation encourages utilizing a variety of data collection techniques like interviews and observations (Noble & Heale, 2019).

The use of one or more of these techniques is to ensure that different instruments either formal or informal add value bthroughthe explanation of different phenomena. It is also useful in refuting the hypothesis that is not aligned with the study as well as confirming if different hypotheses generated agree. It may also provide an explaination by giving context to different hypotheses that are producing unexpected findings (Noble & Heale, 2019).

Research may present different biases, and triangulation plays a key role in minimizing such biases present in research (Humble, 2009). It also eliminates measurement bias caused by the technique used in the data collection. This is achieved by eliminating peer pressure bias that may arise during focus groups by also conducting individual participation. Omission bias may also exist where the researcher is only sampling and does not cover all populations needed in the study but only focusing on population parts that are convenient, triangulation ensures all parts of the population required are covered. Furthermore, participants may be put under pressure to provide information that suits the researcher. Triangulation may eliminate this by allowing participants enough time to cover all parts they may feel are relevant to the study.

Like any other system or technique, triangulation has its limitation. When triangulation is applied to a complex study it may be time-consuming, and may sometimes not be enough or adequate to mitigate problems that exist in a study (Noble & Heale, 2019). For this reason, it is important to always important to use other techniques to ensure validity and reliability are maintained in the study. These measures are discussed below on validity and reliability maintained.

Validity*:* The researcher ensured biases in the interviews are managed by focusing on facts brought by the interviewees. Validity in this research means the tools, processes, and data were appropriate for the study and the research method (Leung, 2015). Interview questions were provided in advance. This permitted interviewees to prepare and to seek clarity on any questions that are not clear.

Reliability: This means the data must be applicable and follow the framework of the study. The data have to be relevant to the study with interview questions ensuring consistency and assuring validity. The data need to be uniformly recorded without any bias.

3.8 Data analysis

In a qualitative study, the collection and analysis of data is a critical process that requires attention to detail from the researcher (Saunders *et al.,* 2006). The process of categorization is often employed in the study for the purpose of arranging all the resources that are needed in the study. These include people, technology, and all the effects needed to collect and analyze the study (Mavimbela, 2021). During the analysis of the interview data, a structured procedure was employed to locate and categorize the interviewee's ideas. Many approaches are available to the researcher to utilize for the analysis of data, this study made use of the thematic analysis method. Thematic analysis is a unique technique of qualitative data analysis deemed acceptable for any study that aims to comprehend the potential of an issue more broadly through using theme to interpret data (Mason & Francis, 2022). Kiger & Varpio, (2020) further defines thematic analysis as a technique for assessing qualitative data c that involves looking through data collected to find, examine, and report recurring themes. The use of thematic analysis to explore different views and experiences of the interviews involves seven steps of data analysis (Bicudo *et al.,* 2019).

Thematic analysis can be used as a stand-alone in data analysis and provide foundational work for other qualitative and quantitative research methods. One of the distinctive features of thematic analysis is its adaptability, which allows it to be used within a variety of theoretical and philosophical frameworks and applied to a variety of study topics, designs, and sample sizes (Kiger & Varpio, 2020). Utilizing thematic analysis requires adapting this technique to specific goals and results in various research models.

3.9 When to use thematic analysis?

The thematic model has proved to be an appropriate tool for analyzing qualitative data. This technique can be chosen if it fulfills the goals of the researcher as opposed to being used merely because it is seen as an easy-to-follow process (Kiger & Varpio, 2020). Thematic analysis is a good and useful technique to use when attempting to understand a group of experiences, thoughts, and/or actions present during the data collection process (Castleberry & Nolen, 2018). Because thematic analysis may be applied to other qualitative research methods, its

phases are similar to those of grounded theory, ethnography, and other qualitative approaches that also rely on coding and searching data sets for themes as part of their procedures (Bicudo et al, 2019). The thematic analysis involves six steps that a researcher may follow to produce the best results from the use of thematic analysis. The steps involved in thematic analysis are; familiarizing and understanding data, generation of initial codes, searching for themes, reviewing themes, and lastly, the researcher will produce the report of the analysis (Kiger & Varpio, 2020).

Step 1: Familiarizing and understanding data

During this step, the researcher studied the data repetitively to have a better understanding of the information gathered. The data was collected via interviews and responses were transcribed to get a better understanding of every viewpoint from the participants. This process is used by the researcher to familiarize themselves with the data collected. A code should be sufficiently well-defined and delimited so that it does not overlap with other codes and fit logically into a larger coding framework or coding template that controls the coding process by outlining and specifying the codes to be applied (Castleberry & Nolen, 2018).

Step 2: Generation of initial codes

This is the step in the analysis where data is organized into different granules and set at specific levels for easy recognition and reading. At this stage, it is now possible for a researcher to start making notes on potential data items of interest, querying certain data, relationships between data items, and other early concepts (Kiger & Varpio, 2020). Further, it is important at this point that codes or raw data are given identifying elements to have meanings and should not be confused with themes. Coding can either be done with the assistance of a computer program or a researcher may elect to code data manually. Once all data has been coded, the researcher can prepare to move to the next step of the thematic analysis which is searching for themes within the data.

Step 3: Searching for themes

The coded and assembled data extracts are analyzed in this stage of thematic analysis to find any potential themes that might be of larger significance (Kiger & Varpio, 2020). The researcher creates themes by analyzing, combining, contrasting, and even visually depicting how codes relate to one another in order to create themes that are not only dependent on data.. The emergence of themes does not only rely on data. A researcher may make use of thematic maps when organizing themes for the ease of categorizing connections between concepts and demonstrating main themes from sub-themes. Until the researcher has conducted step 4, they will be no indication of which theme will be kept and what theme need to be disregarded.

Step 4: The reviewing of themes

This step is a two-step analytical process. The level is when the researcher is ensuring all data coded fit into the themes and ensuring each theme has supporting data that better provides identity to the data captured and coded. Researchers should keep detailed records of their thoughts and decisions regarding the development, modification, and/or elimination of themes throughout this process. Such notes can help researchers connect unrelated subjects, and they can also create an audit trail that increases the credibility of their conclusions (Kiger & Varpio, 2020).

Step 5: Defining and naming themes

This is the step where the researcher looks at the map that has been created with themes and identifies how those themes are contributing to the overall objective of the study and how are they assisting in answering the main research question. This is an excellent chance to pick data extracts that emphasize key characteristics of themes and to create narratives around them that explain why those themes are important in connection to the overall narrative that each of them conveys (Kiger & Varpio, 2020). The researcher is then ready to write up an analysis report in the last step of the thematic analysis.

Step 6: Producing report

This is the final step of thematic analysis that involves the researcher writing the final analysis and describing all the findings from different themes from the above steps. The report should

be written as a narrative that clarifies how the researcher interprets the data in a clear, concise, and logical manner as well as why such interpretations are significant and accurate (Kiger & Varpio, 2020).

There is little doubt that thematic analysis is a potent analytical technique for qualitative research, and it is relatively easy to learn and apply in a research study. The biggest drawback of thematic analysis is if the researcher lack of understanding of which data to include and omits important data due to poor interpretation of data. Below the study examine the ethical consideration of the study.

3.10 Ethical considerations

Maximizing benefits and minimizing harm are the core doctrines of research ethics (Mazibuko, 2019). To ensure the study presented no harm to all participants, the researcher had to obtain ethical approval from the University of KZN Ethics Committee (See Appendix 1). The gatekeeper's letter was obtained from the companies that participated in the study providing permission to gather data. An informed consent form was provided via email to all the participants to provide consent to participate in the study. The informed consent form allows the participants to withdraw from the study at any time if they felt uncomfortable participating in the study. No participant was coerced or intimidated into participating in the study, all participant's identities were kept confidential and the data is only to be used for the purpose of the study.

3.11 Publication of results

The results of the study were never manipulated but compiled following all the rules and regulations of the University of KZN. The University of KZN shall remain the full custodian of this study and participating companies will have access to the study findings to utilize them in improving their operations. The study will be accessible via the library of the University of KZN.

3.12 Management and discarding of data

All the audio and transcript from the interviews were kept under the files protected by a password with the purpose of using them to benefit the research and were discarded on completion of the study. All personnel that participated in the research and their information were confidential. Academics or officials interested in the study can access the study for academic and research purposes.

3.13 Research limitations

The researcher upon conducting the research was an employee of Unitrans Supply Chain Solutions with insight into some of the challenges facing THS, but couldn't participate in the study as a response. This limitation was compensated by interviewing an operations manager from Unitrans Supply Chain Solutions with similar experiences, exposure, and insights into the issues affecting THS. There is a chance of participants bias in answering questions due to how they have been affected by the topic investigated. This was resolved by targeting the population with wider industry experience in the matter being investigated.

3.14 Conflict of interest

The investigator works for one of the participating companies. It is important to note that the researcher is not sponsored in this research and the gatekeeper's letter was obtained to conduct a study with no limitations imposed by the participating companies.

3.15 Conclusion

Research methodology, research questions, aim, and objectives of the study, including research design were all delineated in this chapter. Different professionals in the sugar industry from the executive level to senior managers in the industry as well as logistics experts were all interviewed to get their perspectives on the investigated topic. The validity and reliability of the study were tested using a triangulation process to ensure results are not biased and within the framework of the study. The study was conducted ethically and ensured confidentiality is maintained for all participants in the study. Ethical clearance was received from the university

of KZN ethics committee together with the gatekeeper's letter provided by companies participating in the study. Solutions were provided to deal with issues that were deemed as limiting the study.

The next chapter provides insight into the analyzed data and the presentation of results. The participants provided their insights on the research questions that seek to answer how logistics costs, sugar taxes, and imports affect the sustainability of THS.

CHAPTER 4

DATA PRESENTATION AND DATA ANALYSIS

4.1 Introduction

The chapter provides the results of the study based on the data collected from the participants during the interview process. The main objective of the study was to investigate how logistics costs, sugar taxes, and import tariffs affected the sustainability of THS. A thematic analysis process was followed to do data analysis in the study. The process started with the transcription of interviews, followed by the coding of data before theme extraction Themes were then reviewed, and lastly defined and named. Three objectives of the study were used as the main reference themes for the analysis needed to focus on. The first objective assessed factors influencing sugar tax, import tariffs, and logistics costs at THS. The second objective analyzed the effects of the sugar tax, import tariffs, and logistics costs on THS. Lastly, the last objective proposed strategies that can be used to foster sustainability in THS. To ensure confidentiality of the interviewee's codes were utilized with interviewee numbers to avoid using their names or positions.

4.2 Data presentation

This section is based on the data that was collected during the interview process from different respondents. Different themes were extracted during the interview process surrounding the objectives of the study which was to research the three factors, logistic costs, sugar tax, and import tariffs on how they affect the sustainability of THS. 13 respondents were sampled, within the 13, eight respondents were from Tongaat Hulett Sugar, and five respondents were from Unitrans Supply Chain Solutions. They were a mix of different subject matter experts from the logistics sector, policy-making, and strategy formulation from the sugar industry.

All respondents agreed that Tongaat Hulett Sugar and other sugar-producing companies have been under immense pressure due to declining revenues and market share in the South African sugar-producing industry. The respondents agreed that many factors within logistics have been playing a significant role in the declining revenues and sustainability of THS. Fuel, lack of

infrastructure, cost structures, and lack of strategic partners were seen by 8 respondents as the most common factors that affect logistics costs and cause them to rise and affect the sustainability of THS. Three respondents recognized a lack of communication, and poor planning as contributing factors that cause logistics costs to escalate.

61% of participants recognized that the sugar tax (Health Promotional Levy) has been very detrimental to the sugar industry. These respondents believe sugar has resulted in job losses and a lack of growth in the industry. 39% believe the tax was needed to address the health issues and dangers that come with high consumption of sugar. This section of respondents (39%) believes the Health Promotional levy forced the discussion among sugar stakeholders and research and development to come up with other options that lower the risks when consuming sugar. The sugar stakeholders have opened the platform to discuss sugar tax by means of The Sugar Master Plan.

Through discussions, interviewees were all in agreement that international trade is vital for any successful market. International trade is only successful if there is the protection of the local market through the introduction of tariffs and import duties on goods and services entering the local market. Interviewee 2 who is a market strategy expert explains that government plays a crucial role in controlling and monitoring how much sugar is entering South African borders and should ensure there is enough sugar in the market to cover demand. This should be undertaken while cautiously protecting the local market through the enforcement of tariffs. The interviewee believes that export can also plays a crucial role in assisting Tongaat Hulett Sugar to boost their revenues by charging less when exporting sugar globally.

From the results of the interviews, themes were extracted and recognized as either internal, external, or mutual, which means it has elements of both internal and external. Internal themes looked at inefficiencies that arise from internal factors from Tongaat Hulett Sugar. The external themes looked at some of the factors that are outside Tongaat Hulett control. The last themes were considered to be mutual which are factors that have the combination of internal and external elements. The next section will look at and analyse these themes and subthemes from the data collected from interviewees.

4.3 Assessing the factors influencing sugar tax, import tariffs, and logistics costs at Tongaat Hulett Sugar

4.2.1 Factors influencing logistics costs

Figure 4.1 presents different factors thought to affect the effectiveness of the logistics components and the factors were categorized into three either internal, external, or mutually shared (both influence internal and external) factors.

Internal factors

These are factors that are within the control of THS that the company can affect and bring about positive change within the company.

Number of logistics partners

Interviewee six who is an expert in logistics argues that one of the challenges the company is facing is dealing with multiple logistics service providers. This is why in the future; the company is looking to have a single service provider who will act as a strategic partner. The interviewee further revealed that they currently have over 9 logistics providers. Now, they are down to the challenge of finding one provider who will meet all their needs that comes with supplying a different range of vehicles for different operations. Hence, the company in the future is looking to consolidate most of its operations into one strategic partner.

Logistics Cost structure

Interviewee four who is an expert in operations and logistics recognized that the way their transportation cost was structured did not help the company reduce its costs. Interviewee four corroborated what was said by interviewee six. The participant stated that having many transports logistic structures to pay is one of the main challenges confronting THS logistic costs. In a conversation with interviewee four, it emerged that appointing one transporter, a lot of synergies with the best rates, can be achieved.

The fixed cost will be reduced because it's one structure that looks at everything. When THS start giving out work to many transporters, each transporter has its establishment that they need to factor in their costing. This results in a customer paying more for the final product because of various structures, whereas if you had one person or one company dealing with it you benefit from one lean structure as opposed to paying two or three transporters, and in THS case, over nine partners. In other words, with one partner THS effectively pay someone to do finance, safety, revenue, management, and control of the fleet. In the case there are four or five transporters, each has its own complete structure. Hence, the customer ends up paying for those multiple structures. Whereas if you only get one, you get one fixed cost, and other benefits further than that with additional work.

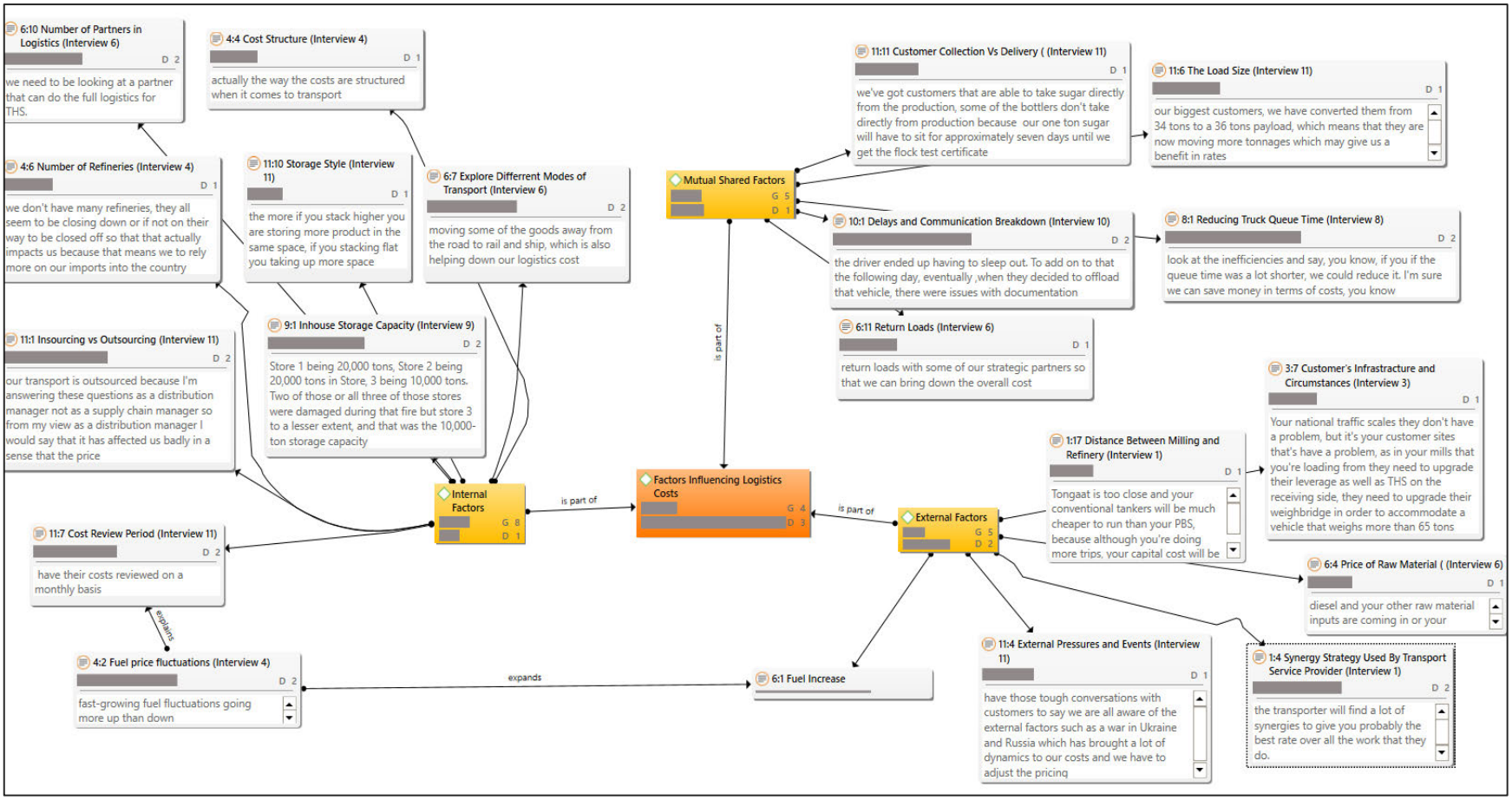


Figure 4.1:*Factors affecting logistics costs*

Source: Author (Atlas-ti Network Diagram)

Number of refineries

Interviewee four further expanded that due to prior events with accounting irregularities that were widely and publicly reported. As a result, THS had to close down Darnal mill which played a big part in their production numbers and ensuring enough sugar was moved to the refinery. This decreased the number of tons the company was producing before which opened the gate for more sugar to be imported into the country.

Storage style in the warehouse

Interviewee eleven who is a supply chain specialist highlighted that the warehousing cost are on the rise. To minimize these costs, THS has started to terminate the relationship with some of its previous service provider. They agreed with the new service provider that was less expensive with the site allowing them to stack higher thus saving on space usage and the warehouse was now capable of taking more one-ton sugar.

Exploring other modes of transport

Interviewee six further alluded that alternative modes of transport are needed to manage higher logistics costs that are associated with road transport, especially with the rising fuel costs. Tongaat Hulett Sugar is in the process to explore other modes of transportation like rail and sea with the view to cutting costs on logistics.

Inhouse raw sugar storage facility

The increase in the use of road transport was down to the fire that damaged two stores forcing THS to resort to a Just-In-Time system (JIT). Interviewee nine who is an operation and logistics specialists elaborated on this issue stating that THS storage capacity had approximately 50,000 tons of storage capacity between stores 1, 2, and 3, with Store 1 being 20,000 tons, Store 2 being 20,000 tons in Store, 3 being 10,000 tons. Two of those or all three of those stores were damaged during that fire. However, store 3 was damaged to a lesser extent in comparison. Thus, the company remained with a capacity of only 10,000-ton storage capacity. So, THS

were placed in a situation where they could either shut the refinery down until they repaired the damaged section of the refinery. However, the option that they chose to go with was to move sugar on a JIT. So, it meant Unitrans increased the capacity of cross-haul raw bulk sugar trucks from the three that normally ran during all seasons between 10 to 12 trucks. These were responsible for operations such as bringing sugar from the sugar terminal through to the refinery on a JIT system to continuously feed the refinery processes. This worked out pretty well for THS because, the company managed to not only keep its refinery functioning, but it modified and adapted its business model to only build out of the 50,000 tons, but only replace 10,000 tons worth of storage capacity. This meant moving away from rail moving most of their sugar to the refinery and using more road transport resulting in increased logistic costs as the road is expensive compared to rail.

Transport cost review

The interviews revealed that the company had previously agreed with transport providers to review the rates quarterly. However, due to fluctuating fuel prices, this was no longer workable and profitable. Tongaat Hulett Sugar, therefore, had to change to frequency of transport rate reviews from a quarter to monthly to ensure the increased costs did not burden transport service providers. This meant their customers had to take the burden of increased transport costs which resulted in sales declining for THS.

External factors

These are factoring that THS may have little to no ability to influence but still affect the productivity and sustainability of the company.

Customers infrastructure and circumstances

Interviewee three who is an operations specialist pointed out the challenges that THS encountered in trying to increase payloads by introducing Performance Based System (PBS) vehicles that could pull between 40 and 65 tons per trip. There are several challenges with this vehicle as THS does not have the weighbridges to accommodate such payloads. Performance

Based Systems serve as the cornerstone of South Africa's alternative heavy-vehicle regulation framework. The PBS system, first introduced in 2007, employs a modified version of Australian road-train regulations. The system allows heavy vehicles to be constructed based on how they function against a set of safety requirements, as opposed to how they appear. Performance Based System consists of four levels with different requirements. Level 1 allows you to travel on any road in South Africa and has the capability of increasing payload by 30%. Level 2 has specific designated routes that it can use and can increase payload by 60%. Level 3, is a specialty vehicle that usually operates in agricultural estates and mines and cannot use common roads, with the ability to increase payload by over 280% which can go over 140 tons. Tongaat Hullets would have been more suited for levels 1 and 2 which could have increased payload to approximately 60 tons.

Below is a demonstration of how this could have affected the THS operation. With the same volume of 500 000 allocated per annum to these three operations, Table 4.1 indicates that with the conventional vehicle carrying 34 tons per load the vehicle can complete 14706 trips per annum. Performance Based System level 1 carrying 44.2 tons per load would be able to complete 11312 trips per annum, saving 33940 trips per annum. Performance Based System level 3 vehicle carrying a tonnage of 54.4 tons would complete 9192 trips per annum saving 5514 trips compared to a current conventional vehicle used by THS which is limited to 34 tons. The biggest challenge with the PBS is the cost associated with acquiring the vehicle as it can only come as a truck and trailer and cannot be used separately, which means off-season the vehicle cannot be utilized in other operations.

Interviewee one also emphasized the challenges associated with PBS being successful at THS which is the distance between their mills and the refinery. The distance is too short as the PBS is more suitable for long leads. The PBS is fuel efficient if running long leads and provides good utilization.

	Conventional vehicles	PBS		Variance (Conventional vs PBS L1 trips)	Variance (Conventional PBS L2 trips)
		Level 1	Level 2		
Volume/ton/Annum	500 000 tons	500 000	500 000	0	0
Payload	34tons	(34*30%) =44.2	34*60% = 54.4	10.2	20.4
No. of Trips	500k/34tons =14706 trips	500k/44.2 tons= 11312 trips	500k/54.4 tons= 9192 trips	14706-11312= 3394 trips	14706-9192= 5514 trips

Table 4.1: Comparison of conventional sugar vehicles compared to Performance-based system vehicles

Source: Interviewee three.

Fuel increase

Fuel increases have played an integral part in the increase in logistics costs. Interviewee six stated that THS consists of inbound and outbound logistics. Inbound is the movement of sugar from the mills to the refinery for the processing and packaging of sugar, having it ready for delivery to their customers. Outbound is when the products leave the refinery through their transport providers to their customers. THS is now affected by the movement of fuel in the outbound logistics process as it is included in the price, they give their customers. The ripple effect is when there is less sugar being ordered due to the increase in the price of sugar due to various elements like fuel going up. The customer carries the burden of fuel increases. The inbound process is where THS is affected by the increase of fuel when their transporters move

their raw sugar from the mills to the refinery. This fuel increase has affected the sustainability of THS as it does not add any value to its production process.

External pressures and events

Interviewee eleven recognized different global catastrophes and events that have put more pressure on logistics. Catastrophes such as Covid-19 affected logistics providers where they had to park their vehicles while the country was on total shutdown. Another event that has played a vital role in the increase of fuel globally is the war between Russia and Ukraine which has seen a shortage of supply of fuel pushing the price and transport rates up ultimately pushing the transport providers to charge THS. Lastly, the strikes and riots that occurred in KZN and Gauteng with many trucks set alight also worsened instability in the logistics industry causing prices to increase and affecting THS as well.

Some factors are both internal and external and are discussed below on how they have affected THS.

Mutual factors affecting both internal and external factors

Customer collection vs dedicated transporter deliveries

Conventionally Tongaat could only produce sugar and store it in their warehouses while orders are prepared to be collected and delivered to their customers. Interviewee eleven highlighted that the company is moving away from that operation but allowing customers to be able to load their sugar straight from production. This has enabled them to save on warehousing and storage costs. Furthermore, the same interviewee elaborated that bottlers like Coca-Cola and producing companies like Tiger Brands do not need a flock test certificate, thus they do not need their products to wait. With such companies, they can make an appointment so that by the time transport arrives all the resources are ready for them to start loading straight away from the production line. The planner had to work with the production staff from the one-ton station to prepare loads for any customer coming to load. This helped THS save money from handling fees, and transportation to the outside warehouse which may cost us up to R150 per ton.

Payload size

According to interviewee eleven, THS is currently moving away from using vehicles that can take 34 tons but is looking to increase payload to 36 tons. The company has already had this conversation with their customers that they introduce tautliners as their preferred trailer. This allows THS to move more tonnages to their customers, which is beneficial to their customers as it decreases the number of loads that they need to accept. More so, it benefits all stakeholders involved by eliminating extra staff needed to apply tarps when flat decks are used, while also reducing the turnaround time for vehicles.

Delays and communication breakdown

Interviewee ten who is a supply chain and market strategists highlighted that there is a frequent delay at the loading points which are either the warehouse or the refinery. Queues that delay vehicles from leaving and reaching the customers in time to come are common hence, trucks cannot make return trips to achieve scheduled loads for a day. There are often challenges with communication between the transporter and the sales team from THS causing these unnecessary delays. The interviewee believed that improvement in the communication between stakeholders is a must to addressing these delays, meeting uncompleted deliveries, and reducing unnecessary costs of overtime.

Reverse logistics/Return loads for transporters

The results also showed that having a strategic partner to execute most of the logistics operations is important to bring synergies in THS operations and increase efficiency. For example, the same vehicles for deliveries may be used for return loads to their different mills and refinery. If this is executed successfully it may result in lowered transport rates due to increased utilization of vehicles.

The section below discusses factors that participants believed to be influencing or affecting the imports due to tariffs. Figure 4.2 provides an analysis of the factors that affect the importation of sugar due to ineffective tariffs. The participants provided their insights on how these factors

have impacted the sustainability of THS. These factors have been categorized into factors that may be affecting THS directly and those that are believed to be indirect.

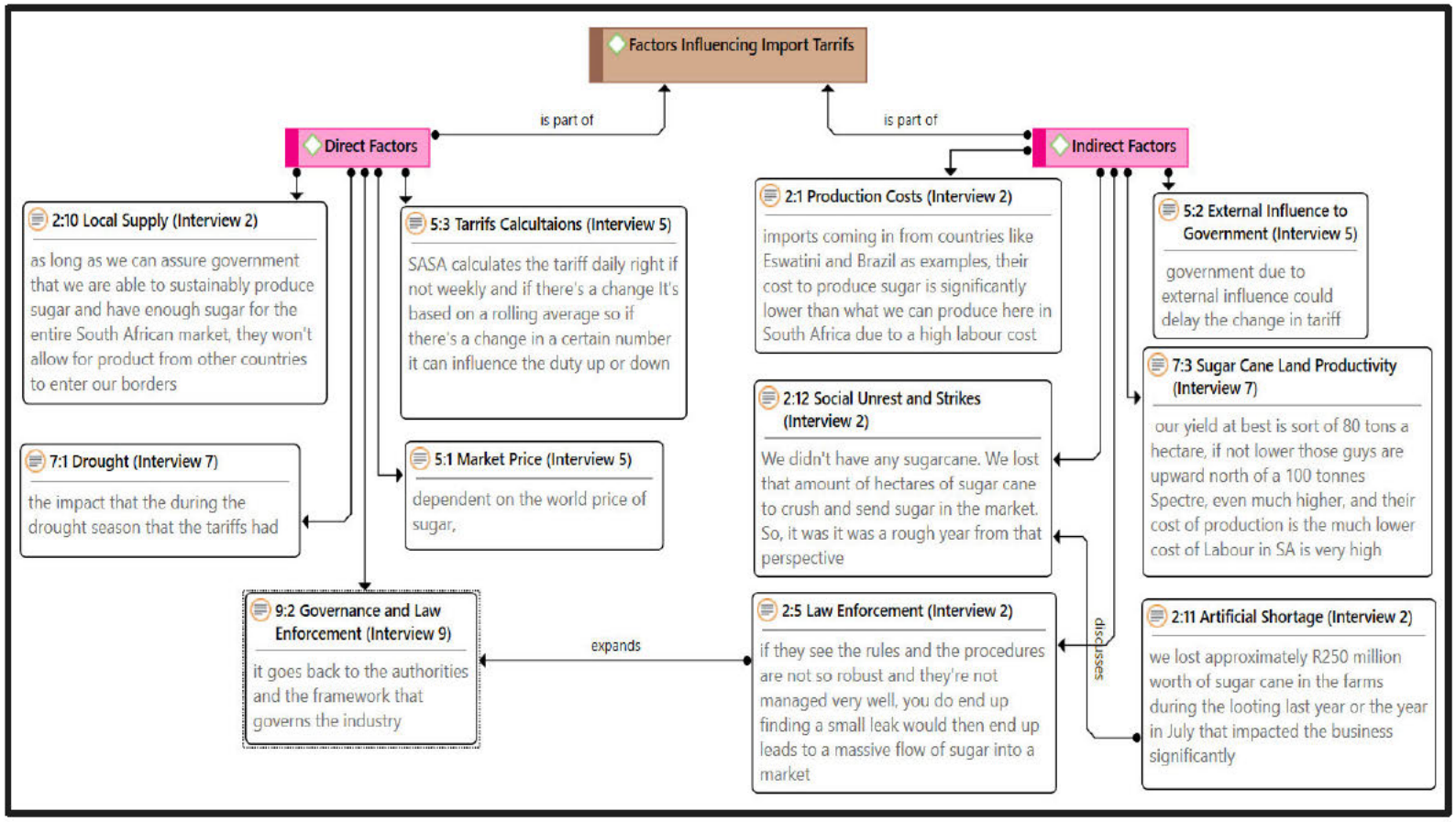


***Figure 4.2**: Factors influencing import tariffs.*

Source: Author (Atlas-ti Network Diagram)

4.2.2 Factors directly affecting the importation of sugar through tariffs

Local sugar supply

The ability of local sugar producers like THS to sufficiently supply the local market plays a big role in assisting government regulators on how much tariffs to enforce on imported sugar. According to interviewee two who is an export specialist, as long as the local sugar-producing companies can assure the government that they can sustainably produce sugar and have enough sugar for the entire South African market, local industry will certainly be protected from products coming from other countries. In other words, if the local producer can meet local demand, there is no need to open the market to foreign companies. Different factors such as bad weather, and high production costs have led to the shortage of supply of locally produced sugar. Hence, the government lowered import tariffs and quotas to other countries to encourage sugar imports and maintain the local sugar supply.

Drought and floods

In recent years South Africa, especially KZN has been affected by bad weather leading to low production and poor-quality sugarcane. Interviewee seven accentuated that bad weather is the main reason why tariffs were dropped to zero. Local are negatively affected by such policies. For example, due to drought and zero tariffs, the South African sugar industry recorded an operating profit of 86 million in 2018 from 390 million in the 2017 season. It can be seen that the impact on revenue and operating profit is huge. In terms of production, it decreased from 530 000 tons in 2017 to 358 000 tons in 2018. Imports into South Africa after the removal of tariffs, increased by nearly half a million tons in the 12 months and industry sales dropped to approximately 1.18M tons from 1.64M tons. This demonstrates a massive impact on our revenue, profits and market share to local producers like THS.

The global market price of sugar

How much sugar costs on a global scale plays an important role in the international trade of sugar. In 2022, the Rand/US Dollar exchange rate has averaged at R18: 1US$. This makes

sugar world price very expensive in South African Rands. A strong Rand is good for importing goods while a weaker Rand favour exports. For example, when the Rand was about R14.5 to R15, in that case, you importing sugar is ideal however, at the current prevailing rate that is weak Rand is good for exporting, not for importing.

Tariffs calculation

South African Sugar Association as a regulator of the sugar industry is responsible for the calculation of tariffs after taking into consideration different factors such as local supply, and world sugar market price. According to interviewee five who is a market strategist expert has given insight that this is done daily and the calculation is then submitted to the Department of Trade, Industry, and Competition (DTIC) for approval. The interest of the consumers must be protected at all times.

Governance and law enforcement

Regulations that are put in place must be followed at times by all stakeholders. Interviewee nine raised concern that sometimes it is difficult to control sugar imported due to the black market and lack of law enforcement due to corruption. Sometimes sugar finds its way into the country and is not labeled as sugar but labeled as some grains that are not affected by tariffs. The law enforcers need to play a critical role to ensure this does not happen. Below the study will provide insight and analysis of factors that may be deemed as indirect but have an influence on the importation of sugar into South African borders.

4.2.3 Factors indirectly affecting the importation of sugar.

These are factors that may be happening in the country or globally that may affect the production of sugar leading to the increase or decrease in the importation of sugar.

Cost of production

The cost of production is significantly high in South Africa compared to countries like India, Brazil, and Eswatini which results in imports of more sugar into South Africa. Interviewee two states that many customers especially industrial producers will choose imported sugar that will be cheaper compared to local producers like THS which may be affected by the high cost of production resulting in their sugar being more expensive. Factors such as labour and logistics costs are higher in South Africa compared to some of the countries importing which makes competition unfair and leads to massive revenue loss to local producers.

Social unrest and strikes

South Africa has been affected by strikes due to social factors affecting the country. In July 2021 in some parts of KZN and Gauteng, there was huge unrest that led to the business being looted and burned which led to massive losses. Interviewee two stated that due to unrest and looting, over R250 million worth of sugar cane was destroyed by fire, which led to cane growers losing revenue, and local producers failing to meet the demand of the local market. This opened a door for importers to supply the local market to meet the demand. This led to many people losing their jobs as the revenue, sustainability, and profitability of THS were significantly affected.

Sugar cane land productivity

South Africa has fertile land that produces good sugar compared to its SADEC region counterparts. This is not the same compared to countries like Brazil and Singapore and India situated in tropical regions. These countries can produce over 100 tons per hectare compared to a local market that can produce approximately 80 tons per hectare in a good producing season. Brazil alone can produce 30 to 35 million tons of sugar per season compared to 2 million that can be produced locally. This element makes it difficult to compete with these countries due to their ability to produce in bulk which means they always have sugar available to import at any time.

Government external influence on imposing tariffs

As it was detailed above SASA regulates the sugar industry but can only recommend the amount of tariffs that need to be imposed on any country looking to bring in sugar after looking at all the factors. Interviewee five stated that due to corruption and external influence, it sometimes takes time to have the recommendation of SASA taken into consideration and that hurts the market because by the time there is any reaction the market might have suffered irreparable damage. Government regulators must be neutral and look at facts when making decisions, with the main objective to protect the consumer and ensure the local market is stable to protect jobs in the market.

South African Revenue Services (SARS) announced that it will be initiating a tax on domestic and imported sugar from sweetened beverages (SSB) from the 1st of April 2018 except 100% fruit juices with the announcements made on the 15th of December 2012 (Sikuka, 2019). The section below will address factors affecting the sugar tax.

4.2.4 Factors influencing sugar tax

Research and development

Figure 4.3 shows factors influencing the sugar tax. Local demand for South African sugar has decreased as a result of the tax increase, forcing some producers to look for customers in the saturated global market (Mwareya, 2022). Sugar has occasionally been sold at a loss due to an increase in sugar taxes. Interviewee two concurs with Mwareya (2022) when he stated that more proof needs to be provided, and more evidence needs to be supplied to clearly show the direct relationship between sugar and obesity and health problems. Hence, more evidence is still required to conclude with certainty that sugar is the root cause of health problems like obesity.

Pressure groups

South African Sugar Association and South African Farmers Association have been vocal about the sugar tax and how it is harming the sugar industry. Interviewee two further stated that the industry has lost approximately 16,000 workers in the entire industry totality across the board just because of the sugar tax. This has not benefitted the people of South Africa as they are losing their jobs to the same element that is supposed to be protecting their health. The interviewee believes that government should be coming together with the private sector to find solutions in order to mitigate the loss of jobs.

External factors

South Africa is regarded as a third-world country. Interviewee two believes the South African government is applying first-world country regulation that has brought negative socio-economic factors to the residents of the country. Interviewee two also questioned how the sugar tax is benefiting the industry as there is no transparency on how the proceeds generated from the tax are utilized and there is no reinvestment to make the industry more competitive.

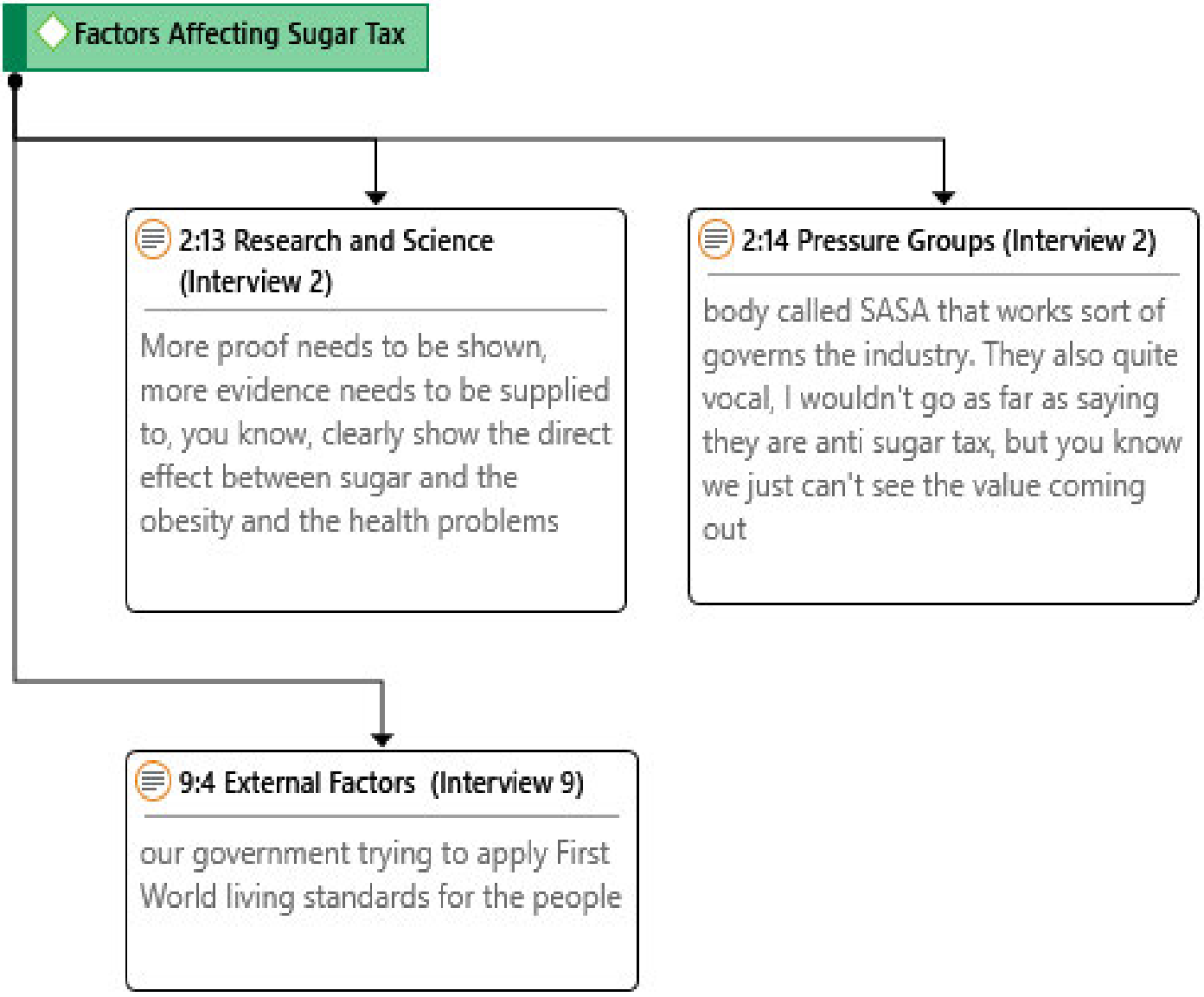
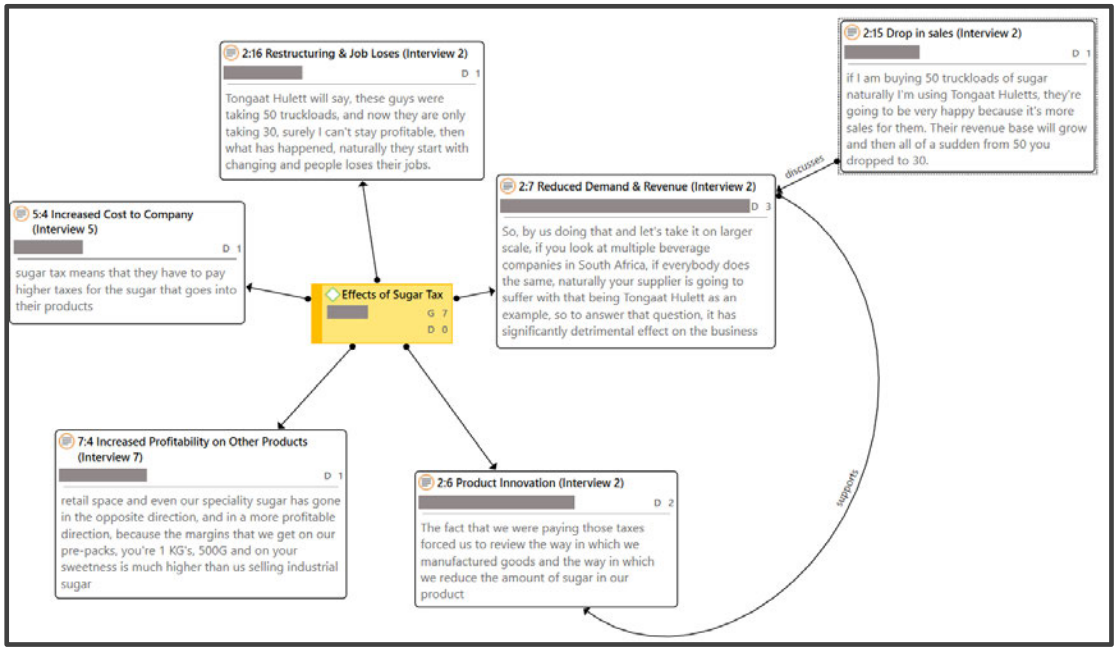


***Figure 4.3**: Factors affecting sugar tax*

Source: Author (Atlas-ti Network Diagram)



The section below will analyse the effects of the sugar tax, import tariffs, and logistics costs on the sustainability of THS.

Restructuring and job loses

The government has budgeted to collect R2.396 billion from Health Promotional Levy but ended up collecting R3.195 billion which was above the budgeted amount in the 2018/2019 fiscal year (Sikuka.2021). In the following fiscal year 2019/2020, the HPL levy collected by the government slightly declined from the budgeted amount of R2.590 billion to the actual of R2.446 (Sikuka, 2021). The Sugar-Sweetened Beverages industry companies have changed most of their formulas by the end of 2020, which led to a further decline to R1.952 billion. These levies have affected both the sugar industry and the SSBs industry which is depicted in Figure 4.4.

Figure 4.4 provides the breakdown of how detrimental the sugar tax has been to the sugar industry and THS. The sugar-producing industry is said to be employing 88703 people in the financial year 2017, with 3823 jobs lost in 2018 and further 9711 jobs lost in 2019 (Wesbound, 2020). The HPL was directed to the SSBs industry to limit sugar in the formulation of their products, by imposing this tax in the SSBs industry resulted in 645 jobs being cut in 2018 with

a further 1104 lost by the end of the financial year 2019 (Wesbound, 2020). The direct contribution of the industry to the gross domestic products fell by a cumulative R 1579.8 8 million (Wesbound, 2020), from R771.1 million in 2018. Sugar is a crucial component in the creation of SBBs, hence any decrease in SSB production or reduction in sugar consumption by the SSBs industry as a result of reformulation will affect the downstream sugar business. According to model findings, the sugar industry comprising two sectors namely sugarcane growing and sugar milling lost a total of 16621 jobs as a result of the HPL between 2018 and 2019 and experienced a shrink of R2045.6 million in its contribution to GDP (Wesbound, 2020).

Table 4.2: The economic impact of HPL on the Sugar and SSBs Industries

Sector	2017 (Baseline)	2018	2019
Sugar Industry			
Jobs Supported	88,703	-3,823	-9,711
GVA Contribution to GDP (R' million)	13,730	-596.5	-1,186.3
Sugar-Sweetened Beverages			
Jobs Supported	13,965	-645	-1,104
GVA Contribution to GDP (R' million)	14,907	-771.1	-1,579.8
Overall Economy			
Jobs	16,168,663	-10,269	-16,621
Real GDP (R' million)	3,119,983	-1,180.9	-2,045.6

Source: Wesbound (2020, p. 2).

Increased cost to the company and product innovation

The sugar-sweetened beverages industry had to be more innovative in order to stay competitive due to the HPL levy. This was possible through research and development which led to the introduction of more formulations that will address the health problem by either eliminating all sugar or limiting sugar in their products. This increased costs of sales as more resources had to be allocated. The positive of the exercise is that the companies were able to provide products with less sugar. THS had to invest more in sweeteners that are not considered to be a danger like sugar.

Increased prices drop in sales, and demand

Figure 4.5 show the effect of HPL prices and consumption relied more on how much of the tax increase the SSBs industry companies were willing to absorb and how much they were passing to their customers (Wesbound, 2020). Absorbing the tax meant the companies were willing to sacrifice their profitability to keep the price of their product the same while passing the tax to consumers provided them with the chance to increase their profits. A study indicates that SSBs companies were willing to pass through roughly 68% of the tax for bulk container sugar products and almost 100% for smaller sugar products such as cans (Wesbound, 2020). This increased prices as illustrated by Figure 4.5. Household consumption decreased from a baseline of R42,052 million to R40481 million in 2018 to a further decrease of R37267 million (Wesbound, 2020).

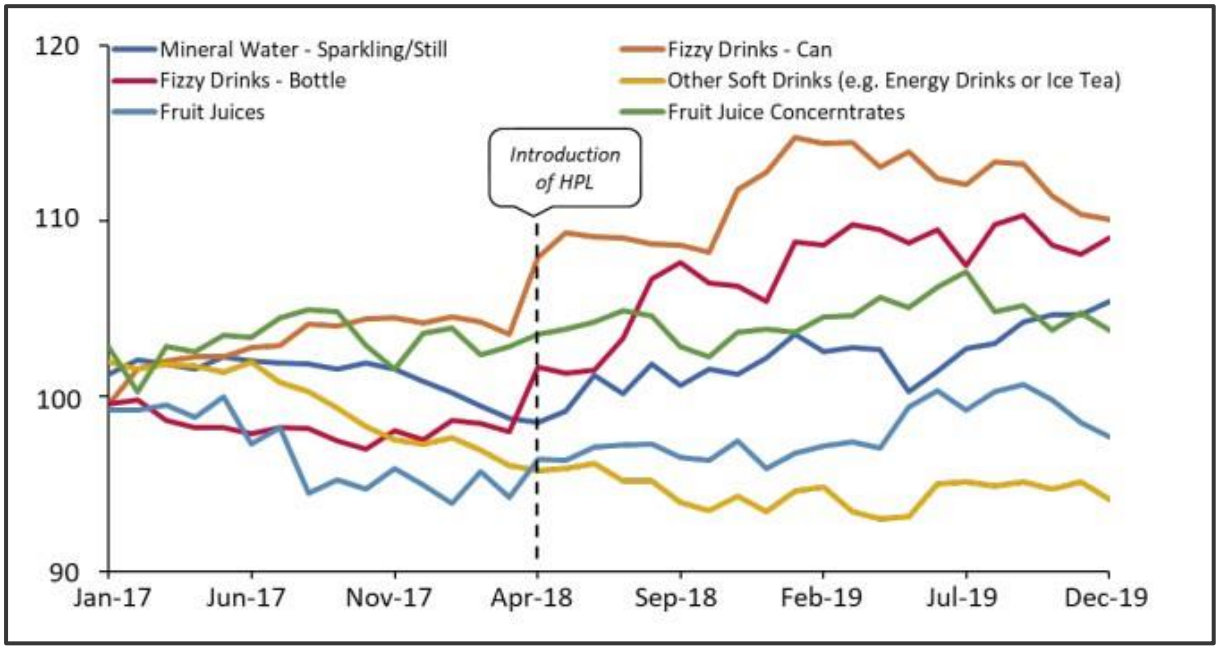


Figure 4.5*: Price indices for sugar-sweetened beverages.*

Source: Wesbound (2020, p. 39).

Section 4.4 will explore the effects of the logistics costs on the sugar industry and how it affected the sustainability of THS.

4.4 Effects of high logistics costs on the sustainability of Tongaat Hulett Sugar

Figure 4.4 discusses the effects of logistics costs which are divided into two sections. The first section discusses how high logistics costs affect THS consumers and the second part discusses how THS is affected as a business.

Logistics costs effects on Tongaat Hulett Sugar consumers

Interviewee eleven highlighted that when there is an increase in logistics costs, Tongaat Hulett Sugar passes those increases to their customers as they form part of the final price charged to the customer. This may lead to customers decreasing their orders due to higher prices as also illustrated in Figure 4.6. the customers may even decide to buy from the competition. Fuel has been increasing every month contributing to a monthly increase in transportation costs. These costs are passed to customers, which according to interviewee eleven led to THS losing customers to cheaper foreign products. This is how revenue and profitability tanked for THS

Logistics effects on Tongaat Hulett Sugar as a business

Increased logistics costs have a negative effect on the ability of THS to be competitive due to increased cost of production, and higher cost of sale. Interviewee one highlighted that an increase in elements such as fuel inflates transportation rates, which results in higher costs of sales. This makes THS products more expensive causing difficulty to remain competitive in the market. Another element that causes rates to increase is having many logistics partners. Interviewee 1 stated that THS has many logistics partners which means that they have to pay for many structures within those partners. If THS had one strategic partner handling their logistics business they will only pay for one structure, for example, one administration team. Thus, only one set of fixed and variable costs is paid as compared to paying many structures of different service providers.

The section below will discuss the different effects as a result of low tariffs. The section will discuss how low tariffs affect THS due to increased imports.

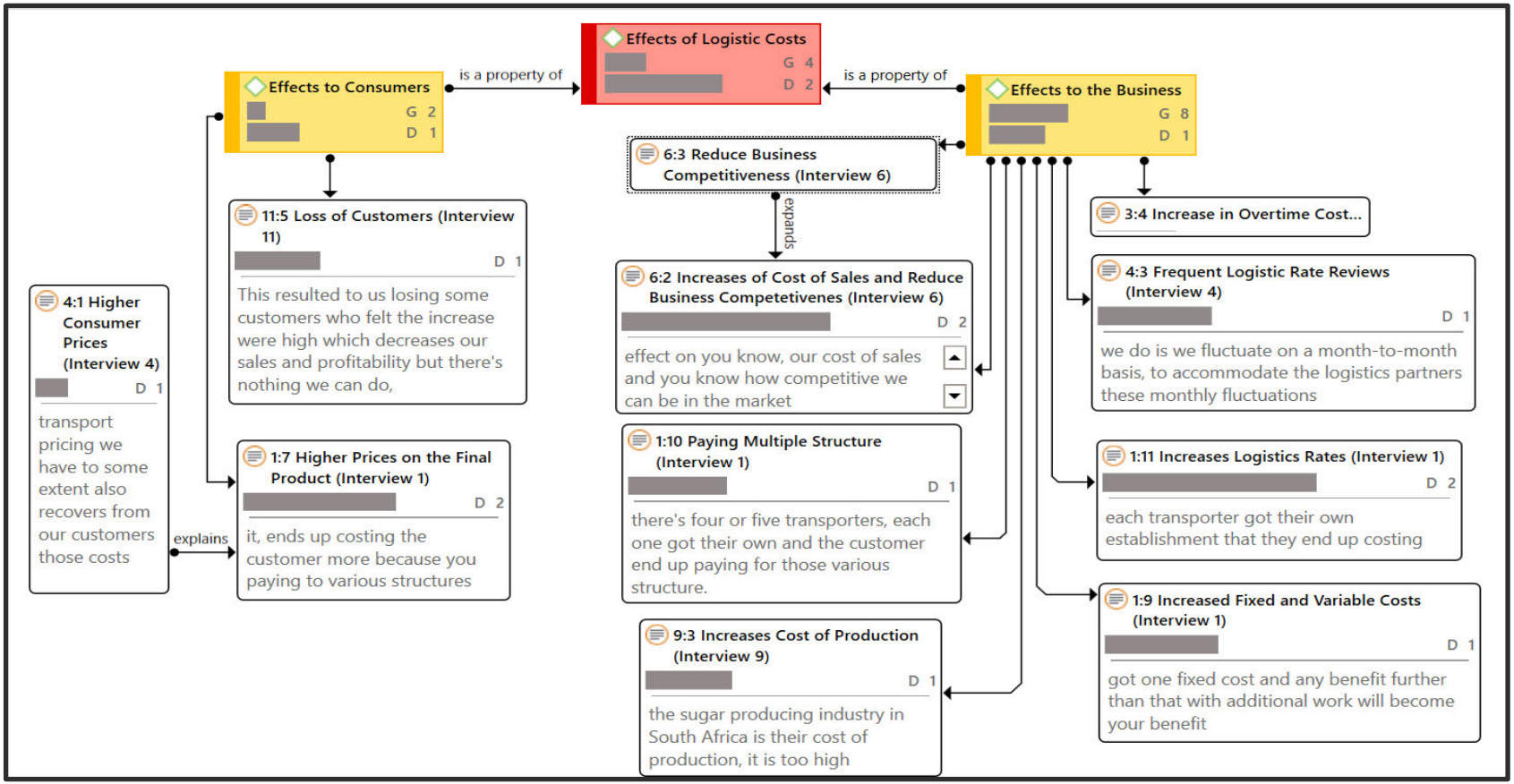


Figure 4.6:: *Effects of logistics costs on Tongaat* Hullets *Sugar.*

Source: Author (Atlas-ti Network Diagram)

4.5 Effects of lower tariffs on the sustainability of Tongaat Hulett Sugar

Figure 4.7 below discusses the effects of low tariffs on the sustainability of THS which recognized three parts namely, the reduction in sales, loss of consumers to competition, and lastly reduced profitability.

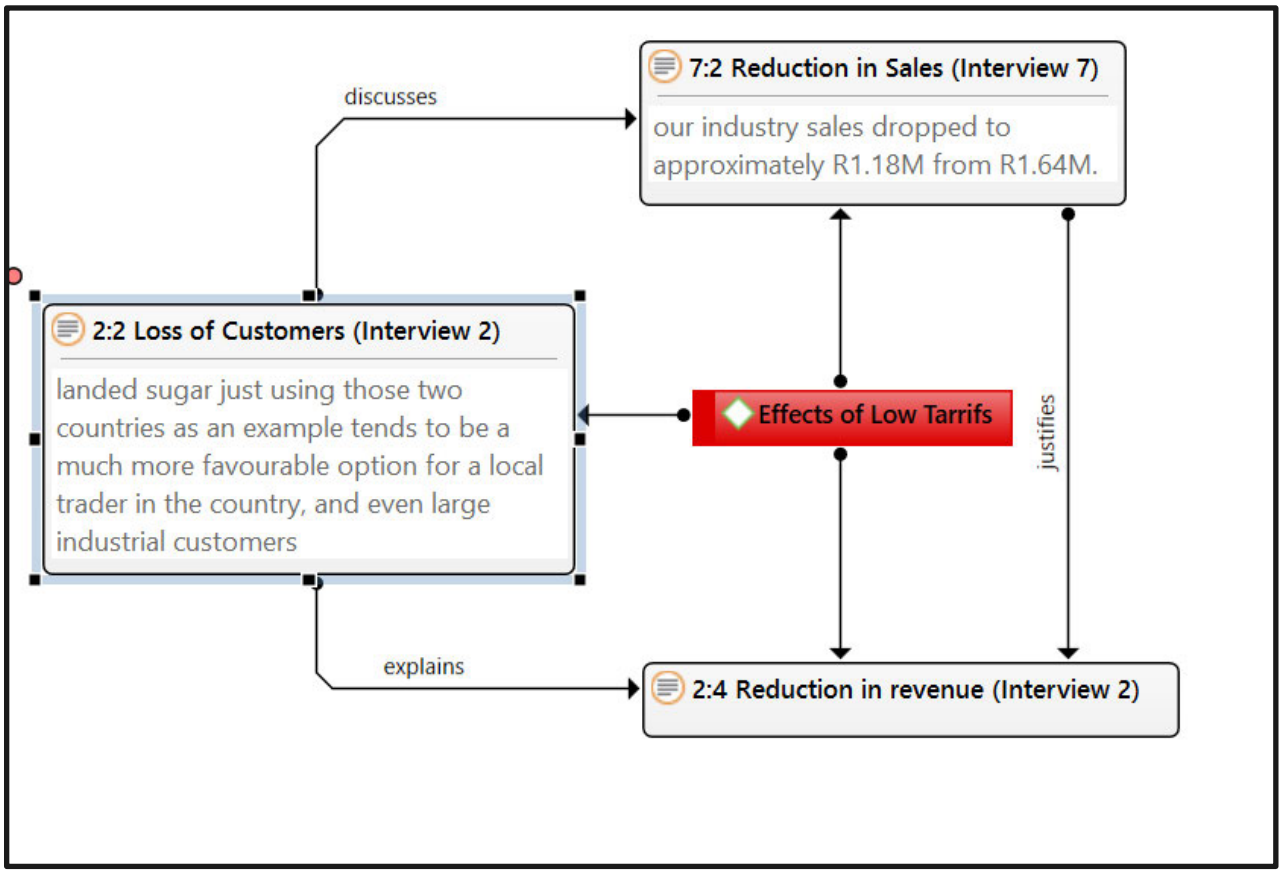


***Figure 4.7**: Effects of low tariffs*

Source: Author (Atlas-ti Network Diagram)

Sale and profit reduction as a result of low tariffs

As previously indicated by interviewee seven, low tariffs were dropped to zero in 2018 which badly affected the local sugar producers and THS. South African sugar-producing companies recorded a significant decline in operating profit which dropped from R390 million in 2017 to approximately 86 million in the 2018 sugar season. This was accompanied by a significant decline in total revenue due to a decline in production which decreased from 530000 tons in

2017 to 358 000 tons in 2018. Stakeholders in the sugar industry had to intervene to try and rescue the sugar industry by introducing the sugar master plan, which according to interviewee seven seems to be working to ensure there is protection for South African producers.

Loss of customers due to low tariffs

When tariffs are reduced, it increases the number of countries importing sugar to South Africa. Countries like Brazil, India, and Singapore have low production costs which make their sugar to be cheap compared to sugar in South Africa. THS customers especially industrial companies may decide to switch and buy imported sugar which will improve their revenue and profitability. When customers buy imported sugar, local supply decreases leading to a decline in sales, profitability, and sustainability of THS.

The study above has discussed the three topics of logistics costs, sugar tax, and low tariffs and how they affect the sustainability of THS. The section below proposes strategies that Tongaat Hulett Sugar needs to undertake to remain competitive in the sugar market. Strategies proposed attempt to provide answers on how THS can deal with the increased sugar tax, increased logistics costs, and lastly, low tariffs.

4.6 Proposed strategies that can be used to foster sustainability in sugar-producing companies and specifically Tongaat Hulett Sugar.

The sugar tax has significantly contributed to unsustainability at THS and the study above has discussed how it has affected the growth of the sugar industry, especially THS. Figure 4.8 illustrates the proposed strategies that can enhance growth and ensure sustainability at THS.

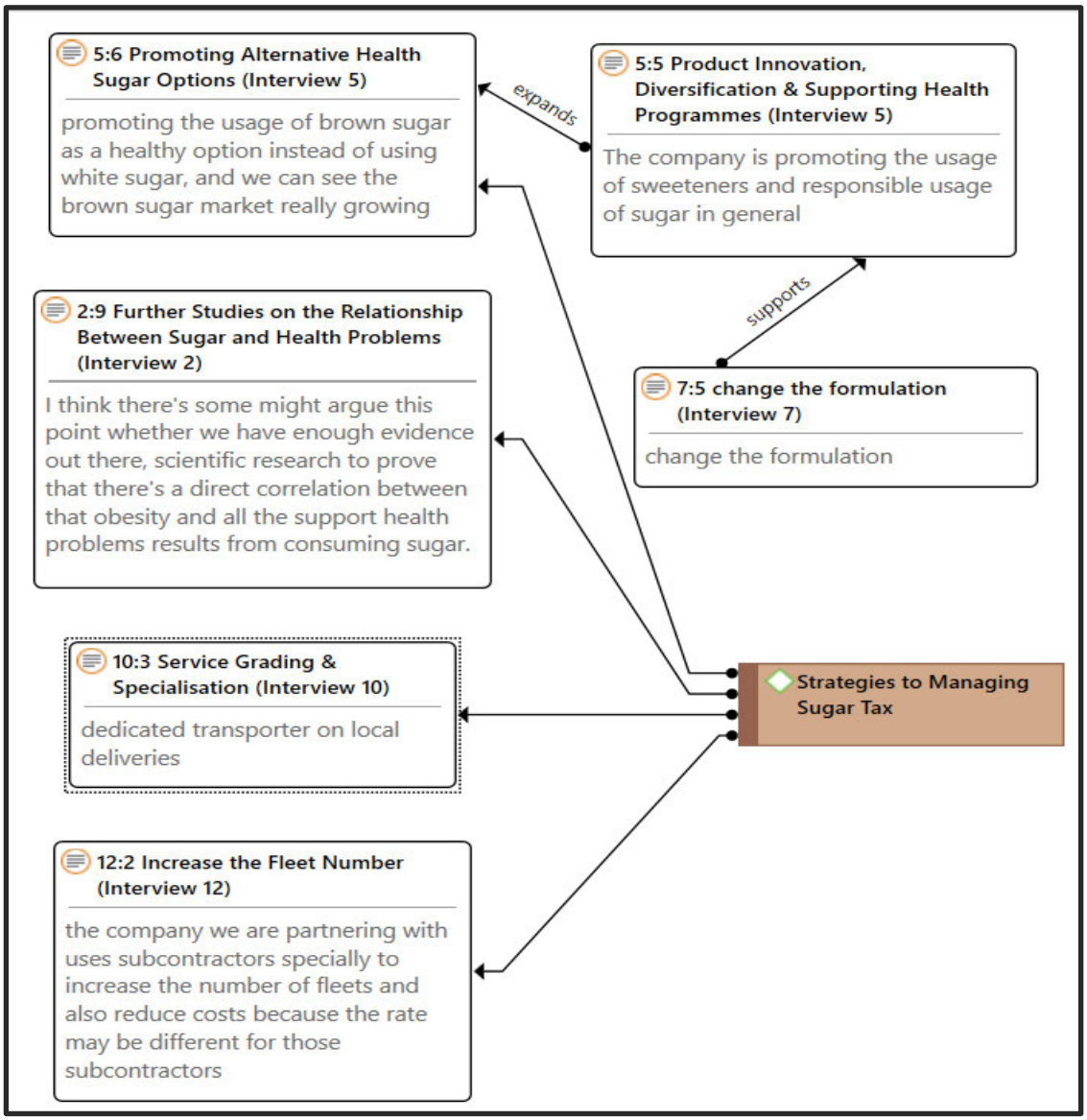


Figure 4.8: *Promoting alternative health sugar options*

Source: Author (Atlas-ti Network Diagram)

A sugar tax was introduced by the South African government to tackle health issues associated with the high consumption of sugar and to create awareness about the dangers related to high sugar intake**.** THS needs to further develop products that act as substitutes for sugar with less sugar content to open its market. Industrial companies like Coca-Cola are changing their formulation to limit sugar in their products and avoid excessive taxes. Tongaat Hulett Sugar may collaborate with manufacturers like coca cola to find solutions on alternative options to sugar. This would also reduce the number of job losses due to the sugar tax (Wesbound, 2020).

Interviewee two also stated that THS is investing more resources to educate people on how to consume sugar responsibly, by educating their consumers on the dangers of highly irresponsible consumption of sugar.

Investigate the relationship between sugar and diseases alleged to be sugar related

Interviewee two questioned the relationship between sugar and the diseases that are alleged to be a result of sugar intake. Interviewee two believed more studies need to be conducted to verify and conclude that sugar has a negative impact on individual health. Pettinger (2020) also believes ailments associated with sugar intake such as diabetes can originate from many factors and cannot be solely blamed on sugar consumption. Section 4.6.2 will discuss logistics strategies proposed to keep THS sustainable.

Different strategies were proposed by different interviewees that can enhance the sustainability of THS. Figure 4.9 will provide and discuss different strategies that will seek to improve logistics efficiencies at THS.

Reduce the number of logistics providers

Interviewee one suggested that THS has too many logistics providers that are not familiar with the processes of the company and does not add any value to the business. Strategic logistics providers are vital to a business as they add value to the entire value chain because they know and understand the business.

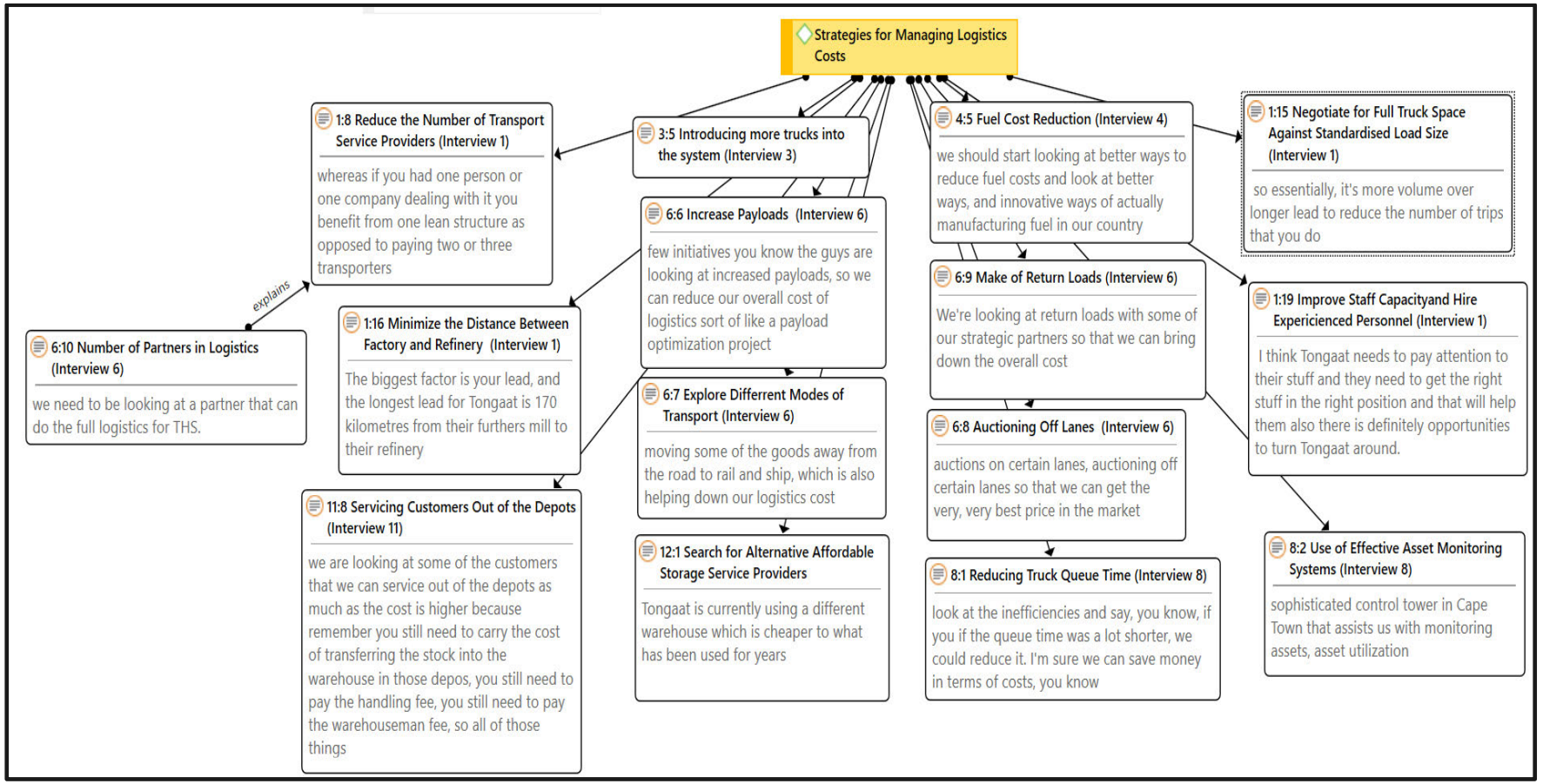


Figure 4.9: *Logistics strategies proposed to keep Tongaat Hulett Sustainable*

Source: Author (Atlas-ti Network Diagram)

Servicing some of the customers from the production line

Tongaat can decide to service their customers from the production line and eliminate logistics costs in a form of transportation and warehousing, especially those customers that don't require flock tests from their products. According to interviewee eleven, this will eliminate transportation costs from the refinery to the warehouse and also remove handling and storage fees from the warehouse.

Increasing payloads when transporting

THS needs to increase payload on their trucks which will increase efficiency and ensure more products are moved with the same or less costs. Higher payloads give more benefits in terms of the rate per ton to THS. Interviewee eleven stated that they have advised their customers and transport providers to introduce tautliners that can carry up to 38 tons instead of flat decks that can only take 34 tons. Taut liners also increase turnaround time compared to flat decks that need to be tarped ensuring more loads are completed with the use of taut liners.

Use of asset monitoring system

Introducing technology to monitor vehicle utilization and fleet movement to ensure the use of better assets. Interviewee eight highlighted that the use of this technology sends the communication on which routes to use to avoid traffic and routes that may be perceived as unsafe due to riots and strikes that may put customer products at risk of being looted and vehicles damaged. Vehicle performance is monitored and reported to contract management if any inefficiencies are noticed. The system can assist by recommending route that saves on fuel by avoiding traffic.

The next section will discuss strategies proposed to enhance the sustainability of THS by addressing low tariffs that result in high imports.

4.6.3 Strategies proposed to enhance the sustainability of THS by addressing low tariffs that result in high imports.

As stated by Chasomeris (2005, p. 129) “international trade is the engine of economic growth and social development”, it is vital that there is some form of import of sugar into the country to strengthen competition. Imports benefit consumers as there is an increase in the supply of sugar which results in competitive prices. Tariffs play a vital role in ensuring that there is control over how much sugar is imported into the country and when there are no tariffs that means any country can bring as much sugar as they want into the country. Such a liberalized market is not healthy for local producers and leads to the local industry not being sustainable.

The introduction of the Sugar Master Plan will manage the flow of sugar into the country ensuring that imports do not harm the local industry (Sikuka, 2021). Most countries that are importing sugar to South Africa have low production costs which make their sugar less expensive compared to local producers. This brings unfair competition, which forces the South African government to react and protect local producers by increasing tariffs. Interviewee two also stated that some form of corruption partly plays a role in allowing the flooding of sugar into the South African market. Hence, authorities such as SASA cannot know or dictate the amount of sugar entering the country.

4.7 Conclusion

Interviews were conducted to gather data which were then transcribed and analyzed to extract themes that showed relationships and provided some insight into the study. Upon analyzing the data, it was discovered that factors affecting Tongaat Hulett Sugar were either internal, external, or combination of the two. The internal factors were the factors that THS had control of and could affect and the external were those factors that they had no influence on. The elements were then given themes related to the factors being investigated. These These themes looked at three main sections with the first section providing an analysis assessment of the factors influencing sugar tax, import tariffs, and logistics costs at THS. The second section investigated the effects of the sugar tax, import tariffs, and logistics costs on THS sustainability. Factors influencing logistics were deemed to be either internal (in control of THS), external

(outside THS's direct control), and or mutual (those that were partly internal and external). Research and development, pressure groups, and external factors were considered to be playing a crucial role in influencing the sugar tax. Lastly, different strategies were proposed to foster sustainability in sugar-producing companies and specifically THS. Many of these themes will be discussed and elaborated on in next chapter 5 presents conclusions and recommendations.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The study aimed to investigate how to enhance the sustainability of THS by assessing logistics costs, sugar taxes, and tariffs. This chapter provides a discussion of the key findings, main conclusions, and recommendations. More understanding is provided on the elements that may have not been covered but contribute negatively to the sustainability of THS. Section 5.2 gives a brief discussion on the role played by the Sugar Master Plan to attempt and revive the market. Section 5.3 focuses on the discussion of key findings on how high logistics costs have affected THS. Section 5.4 discusses how sugar taxes have led to companies reducing the amount of sugar in their formulation and conclude if this has contributed to the instability of THS. Section 5.5 covers a discussion of the key findings on how imports have created unfair competition leading to companies like THS losing significant market share. Section 5.6 provide a conclusion of the study which will serve as a link between the objectives of the study and key findings. Lastly, section 5.7 will be providing recommendations and identify areas for future research.

5.2 The role of the Sugar Master Plan on the sustainability of Tongaat Hulett Sugar

The Sugar Master Plan was announced by the Minister of Finance during the budget speech in July 2019. Different stakeholders that govern the sugar industry which involved government, retailers, sugar-producing companies, sugar cane growers, and social partners recognized that the sugar market was fading and came together to find solutions to revive the market (Sikuka, 2021). The objective of the master plan is to attend to the current crisis that is facing the sugar industry to mitigate against any further decline in the industry and preserve job losses by providing a foundation that allows local sugar suppliers the ability to compete on a medium and long-term basis. The resolutions agreed upon are set to be executed in a three-year segment until 2030 when all the challenges are predicted to be resolved (Sikuka, 2021). The main challenges that were at the forefront of the master plan were innovative solutions to multiple droughts and declining world sugar prices, better ways to deal with the incursion of cheap

imports, and the Health Promotion Levy (HPL or sugar tax), which continues to put pressure on the local industry.

The master plan seeks a steady increase of tariffs and quotas to attempt to limit the number of sugars imported into the country. Improve production costs through innovation to allow local sugar suppliers to compete with the world's sugar prices. Lastly, open an honest debate with the government with regard to a sugar tax on how it can be relaxed to allow fair trade with imports who can supply the local market due to their low production costs.

The section below will discuss the research question on how logistics costs, sugar tax, and imports can be improved to revive the sugar market and allow companies like THS to compete and remain sustainable.

5.3 High logistics costs and the sustainability of Tongaat Hulett Sugar

Two aspects of logistics were of interest in the study that are believed to be of significance at THS which are, transportation, and warehousing. The proposition that formed part of the objective was to investigate and show that high logistics costs have played a crucial role in the instability of THS. There are factors such as fuel increases that are beyond THS's control which has caused transport rates to increase significantly. Global market instability that has been caused by the war between Ukraine and Russia has seen a shortage in fuel supply resulting in fuel hikes. By the end of the second quarter of 2022, fuel prices were 40% higher compared to the same period a year before (Magome, 2022). As a result, THS reviews its rates every month to ensure the costs are absorbed by the customer. It is important to mention that this is beyond their control as they do not control the global fuel market but can absorb some of the increases to cushion customers from high prices. According to Prieto (2021), proper assessment of resources is the beginning of a successful logistics process. However, THS has failed to manage some of these aspects within its control which are logistics principles such as resource assessments, management of lead times, and proper sourcing of logistics partners.

Resource assessments

There are inefficiencies within the process of allocating resources at THS, especially within their transportation. Tongaat uses trucks like flat decks which require general workers to apply tarps after loading. According to interviewee 1, this increases transportation costs and adds to inefficiencies which are delays, and exposure of products to theft as well as contamination as tarps may not be recycled regularly. Most companies that carry food-grade products have moved to taut liners which are easier to operate, do not need general workers, and can be easily cleaned to ensure the quality of the product is not compromised.

Tongaat Hulett Sugar has paid their warehouse suppliers significant amounts of money yearly to keep their products and act as their dispatch point. It will make more business sense for a company of THS magnitude to consider investing in a warehouse which would be costly on a short-term basis but will yield good returns on investment in the long run basis. Tran (2018) argue that many companies consider a warehouse as just a place to store goods, but believes an inhouse warehouse can bring many supply chain synergies and eliminate costs such as rental, and handling fees that THS are paying their suppliers. Tongaat Hulett Sugar needs to have a proper assessment of its logistics requirements and ensure they are employed to perform effectively and bring efficiencies to the company's logistics processes.

Management of lead times

Lead time refers to the amount of time from the time the order is made to the time the order reaches its final destination or final customer (Prieto, 2021). Factors such as order preparation time, queuing time, and travel time may lead to long lead time. Preparing an order should take place before the vehicle arrives to load, this eliminates queuing time and delays. Communication in any business plays a crucial role in ensuring logistics processes are efficiently managed in the supply chain processes. Communication is recognized as one of the hindrances to high performance at THS. Additionally, poor communication is the sole reason the other factors affecting lead time exist. The driver must have a prepared order when arriving to load, come to load already aware of a good destination and be familiar with all the requirements of the specific customer and quicker routes to use. This lack of well-organized

processes leads to some of the customer deliveries being carried over to the next day with a potential to THS losing out on a sale due to their orders not arriving on time. Transporters incur unnecessary overtime costs that THS will have to absorb.

Proper sourcing of logistics partners

Tongaat Hulett Sugar has many logistics service providers, especially on the transportation side that share the workload. This might not be good for them as that means they lack logistics providers that are strategic partners with whom to learn and understand their business to provide an end-to-end logistic solution. Choosing the logistics partner should be beyond choosing someone who can move goods and services from point A to point B, it should be a company that shares the same values on many elements such as safety, customer satisfaction, and employee relations (Ye Wu, 2014).

Tongaat Hulett Sugar has been under financial strain which led to them considering the financial aspect as the main element in choosing a logistic partner. However, when choosing a logistics partner, it is not always the best option to choose a partner based on lower rates. According to Selviaridis et al (2010) choosing a partner with lower rates can signal a poor level of service, a lack of compliance with health and safety regulations, and labour laws, inferior management systems, a lack of adequate problem-solving skills, and not being reliable. There are indirect costs (poor handling, continuous vehicle breakdowns, accidents, and poor customer service) associated with selecting an incompetent logistics provider that may account for approximately 40% of the total logistics costs (Selviaridis *et al.,* 2010). Selecting a good logistic partner can improve the overall processes of the supply chain through integrated solutions and the reduction of indirect costs.

The next section discusses key findings on how the sugar tax has contributed to the sustainability of THS.

5.4 High sugar tax and the sustainability of Tongaat Hulett Sugar

The Minister of Finance introduced a sugar tax on sugary drinks SSBs known as the Healthy Promotional Levy (HPL). This was to respond to a series of studies provided by the World Health Organization and the Department of Health that high consumption of sugar leads to many ailments such as diabetes. Tongaat Hulett Sugar provides sugar to many industrial companies that produce sugary drinks which impacted their supply significantly as a result of a sugar tax with the sugar tax affecting over 89% of South African sugar-containing beverages producing companies (Westbound, 2020).

Tongaat Hulett Sugar saw a drop in their demand as industrial companies chose to buy from imports that are cheaper compared to THS. This is worsened by the fact that the South African government is not providing enough support to companies like THS affected by the sugar tax. According to Sikuka (2021), the government collected R3.195 billion in sugar taxes which was reinvested in the economy but none of those funds were reserved to help these companies affected to further their research and development to provide solutions. Industrial companies like Coca-Cola had to establish measures to try and counter this sugar tax by relooking at their formulation and introducing products with less sugar (Sikuka, 2021).

These changes led to a reduction in sugar demand which moved from 1190,281 Metric tons in 2017 to 1140,990 Metric tons in the production year 2018/2019. This decrease in demand meant THS and local sugar-producing companies had to restructure their business. This resulted in job losses, a decline in revenue, and market share. The sugar industry lost 88,703 jobs when the sugar tax was introduced in 2018 with the sugar beverages industry losing 13,965 jobs in the same year (Sikuka, 2021). This means 102,668 jobs were lost in one year due to the introduction of the sugar tax. The South African government has done little (if anything) to address those job losses which have been ongoing due to the tax, which begs a question if this is benefiting the people of the country. It becomes contradictory when the government introduces tax to address health issues but opens another social ill which is unemployment. Many organizations such as the sugar cane growers have been vocal and question the basis of the science behind the claims that sugar leads to these diseases and ask for it to be reviewed. Nothing much has happened that forces sugar-producing companies like THS to invest more

in research and development to come up with the answers that will either see the evolution of new products or improve existing products to survive. One of the inventions of THS is the introduction of sugar sweeteners that has less sugar content, which has thrived in the market as more consumers see it as an alternative.

The next section discusses key findings of how low import tariffs have contributed to the unsustainability of THS.

5.5 High sugar imports due to low tariffs and sustainability of Tongaat Hulett Sugar

International trade is vital for any thriving economy and it includes allowing other countries to bring their goods and services into the country which is known as imports (Chasomeris, 2005). Imports are vital in the market to increase supply and protect consumers from higher prices that may be imposed by local producers. Sugar imports are reliant on many factors which include the regulation of ports and how import and tariff duties are applied. The sole port authority and landlord in South Africa that offers infrastructure and maritime services to the eight commercial ports is Transnet National Port Authority (TNPA) (Gumede and Chasomeris, 2018). TNPA can also play a critical role in reducing export costs and ensuring Tongaat Hulett Sugar and other producing companies compete better in the global markets (as will be explained in section 5.7.2).

During the sugar season of 2015, South Africa was hit by a devastating drought affecting the entire sugar industry. South African government opened up the market by introducing a zero-tariff rate on the importation of sugar which affected THS which could not compete with countries like Brazil, and India which have low production costs (Sikuka, 2021). The government eliminated tariffs to ensure enough sugar supply for the local market due to unmet local demand by local producers due to drought.

The introduction of the Sugar Master Plan to the sugar industry is set to address these challenges that were brought about by the introduction of zero tariffs on sugar imports. According to SASA (2021), they believe the master plan should have been introduced earlier to revive the market that was fading away as local producers were struggling to keep up with

the prices of sugar imported. If the guidelines and resolutions agreed upon by different stakeholders are executed, there is hope that the market can be revived and be competitive.

The section below provides a conclusion of the study, by providing a link to the objective of the study and key discussions in the study and concludes if the answer to the research was provided.

5.6 Conclusion

The study provided chapter two which was a literature review discussing different frameworks and literature from different scholars with evidence that explored the research question of whether high logistics costs, increasing sugar taxes and high imports due to low tariffs have played a role in the sustainability of THS. Chapter three provided the methodology of the study, which provided insight into the type of study and techniques that were to be used to collect and analyze data. Chapter four provided data analysis, where interviews were conducted to collect data from participants, Chapter five provided conclusions and recommendations. The section below will revisit the research questions and provide insight into whether the study has provided answers to the questions.

5.6.1 How have logistics costs affected the sustainability of Tongaat Hulett Sugar?

Chapter two provides a framework with further supporting evidence provided by literature from different scholars. The literature provided different definitions, backgrounds, and evolution of logistics. Data was collected from different industry experts from THS and Unitrans Supply Chain Solutions. Data were analyzed to extricate similar themes from different participants. Upon analysis and discussion of key findings, it was concluded that logistics has played a fundamental role in THS instability. Various strategies were proposed in the study that can be explored to provide support to the industry with further recommendations to be provided in section 5.7.

5.6.2 How has the increase in imported sugar affected the sustainability of Tongaat Hulett Sugar?

Drought and recent floods caused a major disturbance in the healthy production of good sugar which led to a decline in the level of sugar produced. This led to the government introducing a zero tariff to allow imports to supply the demand in the market. Resultantly, a high influx of imported sugar into the country was experienced and causing unfair competition, market loss, and instability to local producers like THS. With devastating effects of job losses. Based on the reviewed literature, data analysis, and discussion of key findings it is concluded in this study that low tariffs are behind high imports and that has negatively impacted the sustainability of THS.

5.6.3 How has the yearly increase in sugar taxes affected the sustainability of Tongaat Hulett Sugar?

The Department of Health and the WHO, through different studies conducted, concluded that high consumption of sugar can lead to many ailments which end up costing the government a high amount of money through hospitalization and medical care (Manyema *et al.*, 2014). in response to this, the Minister of Finance introduced the Health Promotional Levy (HPL) also known as the sugar tax. To mitigate the effects of the sugar tax, companies like Coca-Cola reformulated their products to decrease sugar. Sugar-producing companies like THS were directly affected and consequently experienced a decline in sales and job losses. Through findings from the literature, data analysis, and discussion of key findings the study can conclude that the sugar tax contributed significantly to THS's reduced sustainability.

5.6.4 What solutions have the government proposed to Tongaat Hulett Sugar and other local sugar-producing companies?

The decline in the sugar industry has prompted the government to intervene. In July 2019, the Minister of Finance announced that there will be an initiative that seeks to take back the market from a high number of imports and look for initiatives that revive the market. The government involved and engaged all sugar industry stakeholders to seek initiatives and methods that can assist the industry in becoming more productive and address all the social ailments like job

losses. The introduction of The Sugar Master Plan was put in place to seek different strategies that will be put into place on segments until 2030.

The study covered all the research questions. It was concluded that to enhance the sustainability of THS, it is vital to address the escalating logistics costs, government to review the sugar tax on SSBs, and increase tariffs on sugar imports while still allowing international trade to exist within the sugar industry. The last section provides recommendations for the study.

5.7 Recommendations of the study

Through literature, data collection, data analysis, and discussion undertaken in the study below are the recommendations that can be used in further studies related to the subject matter.

5.7.1 Recommendations on tackling logistics costs

It is vital to have a logistic strategic partner that has insight and understanding of THS's business. This helps consolidates all costs instead of paying for different structures from different logistics service providers. It is vital that THS only promote the usage of tautliners when conducting their customer deliveries to avoid additional charges on general workers, increase turnaround time, and ensure the health and safety of the product are maintained at all times. Other types of transportation like rail and sea need to be explored more to counter the increase in fuel which places a burden on their customers as they have to absorb the monthly increases in fuel. Proper communication between the sales department and transport providers is vital. This minimizes delays and unplanned overtime, which could be countered by ensuring all the loads that need to be delivered in the morning are preloaded a day before to avoid queues and traffic in the loading sites.

5.7.2 Recommendations on high imports

The introduction and implementation of The Master Sugar Plan will play a critical role in addressing the issue of high imports. Addressing issues that lead to high production costs will allow sugar-producing companies to produce at low costs ensuring that they can compete with global sugar market prices. Also, ensuring that there is a steady supply of sugar to the market

will allow the government to limit the quantity of sugar that is brought into the country, thus making local sugar producers like THS more competitive and sustainable. A review of zero tariffs for sugar coming from Eswatini is vital as the country can bring cheaply produced sugar to South Africa resulting in unfair competition with local producers. South African borders and ports need to be stricter and more vigilant in ensuring there are plans to eliminate the black market of sugar coming into the country by avoiding import duties and quotas. Transnet National Port Authority can also play a critical role in ensuring Tongaat Hulett Sugar and other producing companies compete better in the global market.

According to the TNPA final tariff book for the financial year end of 2022/2023, it shows that sugar is charged the same amount when importing sugar as well as exporting sugar (Transnet National Port Authority, 2022). The sugar industry has already been struggling with competition from countries with cheaper production costs that are able to sell their sugar cheaper. During the financial year end of 2022/2023, TNPA is currently charging R18 per metric ton (1000kg) for imports, as well as R18 per metric ton (1000kg) for exports of sugar (Transnet National Port Authority, 2022). In order to assist the struggling local sugar industry, TNPA needs to consider a cheaper rate for exporting sugar than for importing sugar. This will provide support to the local sugar-producing companies that export. There are other products where TNPA have allowed a significant difference between export and import tariffs. An example will be cement and clinker, in the same financial year it costs R18 per metric ton (1000kg) to import and R5.63 per metric ton to export the same products. If this same principle can be applied to the sugar sector, it will give local producing companies an advantage and allow them to compete better and contribute to their sustainability.

If Transnet National Ports Authority can decrease the tariff rate especially export tariffs, this will support local sugar producing companies like Tongaat Hulett Sugar that are exporting more tonnages of sugar to the global markets, thus increasing their revenues and making them more sustainable in the long term. Grater and Chasomeris (2022) explain that South African port authority tariff rates are 69% above the global average rates, with their cargo dues 166% above the global rates. Grater and Chasomeris (2022) explain how it may be possible for port authority tariffs to be reduced by up to 20%. If the TNPA can reduce the port authority prices by 20%, then it will benefit the sugar industry and allow trade to improve, especially exports

of sugar to the global market. This initiative by TNPA will allow Tongaat Hulett Sugar to compete better even in the local scale, as they can retain the funds generated to reinvest on improving their operations and decreasing their production costs.

5.7.3 Recommendations on high sugar tax

The Master Sugar Plan aims to address the consequences brought about by the introduction of the sugar tax. The introduction of the sugar tax has led to the instability of the sugar industry consequently resulting in high job losses. The government is therefore required to invest in other initiatives that address the ailments that come with high sugar consumption. Also, sugar-producing companies need to come up with more healthy options for sugar products that can act as substitutes. In addition, more responsible advertising should be adopted that clearly state the dangers of high sugar consumption and inform responsible use of sugar to ensure consumers make an informed decision when consuming sugary products.

5.8. Limitations of the study

The factors that were investigated are not the only problems that may be affecting and influencing the sustainability, declining revenues, and declining market share of Tongaat Hulett Sugar. Some of the bottlenecks may be existing in their production process, and corporate culture may be a contributing factor. This was highlighted by interviewee 6 that Tongaat Hulett Sugar has been experiencing quite a number of issues that might be contributing to their instability. The solutions that may be proposed in this study may not be enough in making Tongaat Hulett Sugar sustainable, but they were interesting factors to investigate as they were viewed as playing a crucial role.

The target population may have been not wide enough. The research design chosen which is qualitative constructivism has its shortcomings which may be further affected by the lack of background knowledge from the researcher as they are not a subject matter specialist. This means the truthfulness and reliability of the data gathered is partly dependent on the interviewees.

5.8. Future areas of study

Many ailments said to be caused by sugar consumption, like diabetes, have proved to be originating from some other factors (Fouire, 2020). The relationship between sugar and diseases must be further explored to demystify the quagmire. Interviewee five who is a Market Strategists, confirmed that people choices due to awareness of the danger of over-consumption of sugar has forced them to look at alternative ways or products that will be safer. More products need to be explored to ensure the survival of Tongaat Hulett Sugar. Tongaat Hulett Sugar is also expected to explore the possibility of introducing Performance-Based-System transport that allows for higher tonnages to be moved. Interviewee 6 who is a logistics specialist urges that increase in tonnages being hauled at the same time could bring efficiency in the transportation, hence exploring PBS need to be explored more. Sugar producing companies need to collaborate with TNPA to investigate the impact of the reduction of export port authority prices for sugar. According to interviewee 5 increasing exports may benefit Tongaat Hulett Sugar to increase their revenue stream. TNPA need to consider charging less for companies exporting sugar to other countries, which is currently charged the same as imports, tis will need to be explored as a possibility to enhance THS revenue. The good example will be on the woodchip and cement that has high tariff prices for imports but cheaper exporting costs which makes the products more competitive globally. Transparency need to be improved with regard to the collection of sugar taxes. This tax collected from sugar producing companies can be used to help these companies invest more on research and development to explore better ways of production and improving their products. Interviewee two stated that more proof needs to be provided, and more evidence needs to be supplied to clearly show the direct relationship between sugar and obesity and health problems. Hence, more evidence is still required to conclude with certainty that sugar is the root cause of health problems like obesity.

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Appendix 1: Consent Form

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL
For research with human participants

INFORMED CONSENT

Information Sheet and Consent to Participate in Research

Date: 25 - July - 2022

Greeting:

My name is Philani Blessing Buthelezi. I am enrolled for a Master of Business Administration (MBA) degree at the Graduate School of Business and Leadership at the University of KwaZulu-Natal

You are being invited to consider participating in my master's dissertation study that involves research with the title: Enhancing the sustainability of Tongaat Hulett Sugar through assessing logistics costs, sugar taxes, and tariffs. The aim and purpose of this research are to contribute to finding innovative ways that can improve the sustainability of Tongaat Hulett Sugar, especially with a focus on examining the role of logistics costs, sugar taxes and tariffs. The study is expected to enroll 13 participants which will include 8 participants from Tongaat Hulett Sugar and 5 participants from Unitrans Supply Chain Solutions. It will involve the following procedures; the study will be conducted virtually preferably through Zoom but other platforms can be used to accommodate the participants. The duration of your participation if you choose to enroll and remain in the study is expected to be a maximum of one hour (30 minutes).

The study will provide no direct benefits to participants but the intention is to provide long-term benefits to both companies Tongaat Hulett Sugar and Unitrans Supply Chain Solutions.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number_____).

In the event of any problems or concerns/questions you may contact the researcher at (207520801@stu.ukzn.ac.za, [redacted]) or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details are as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

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Participation in this research is voluntary and participants may withdraw participation at any point, and in the event of refusal/withdrawal of participation, the participants will not incur penalty or loss of treatment or other benefits to which they are normally entitled. There will be no consequences or potential consequences to the participant for withdrawal from the study, the participant may make their intention not to participate in a study through writing and send to the researcher using the above contact details.

There will be no cost incurred by the participant as a result of participating in the study. The confidentiality of the participant will be maintained and the data obtained will be only used for the purpose of the study.

CONSENT (Edit as required)

I (Name_____) have been informed about the study entitled **Enhancing the sustainability of Tongaat Hulett Sugar through assessing logistics costs, sugar taxes, and tariffs** by Philani Blessing Buthelezi.

I understand the purpose and procedures of the study which uses interviews to investigate and find innovative approaches that can help bring stability to Tongaat Hulett Sugar.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at 207520801@stu.ukzn.ac.za/[redacted]

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

I hereby provide consent to:

Audio-record my interview YES/NO

_____ _____

Signature of Participant **Date**

_____ _____

Signature of Witness **Date**
(Where applicable)

Appendix 2: Interviews Schedule

Enhancing the sustainability of Tongaat Hulett Sugar through assessing logistics costs, sugar taxes, and tariffs

Interview Schedule

Participants Tongaat Hulett Sugar

Operations Executive

1. How has the increasing logistics cost impacted the sustainability of Tongaat Hulett Sugar?
2. Why are logistics costs increasing?
3. What are the initiatives that Tongaat Hulett Sugar has implemented to address the escalating logistics costs?

4. What initiatives have your logistic partners implemented to support Tongaat Hulett Sugar cope with the increasing logistics costs?

5. What are the gaps that you believe are existing in the logistic market that may contribute positively to Tongaat Hulett Sugar if addressed by your logistic partners?

Strategic Sourcing Executive

1. How has the increasing logistics cost impacted the sustainability of Tongaat Hulett Sugar?

2. What is the initiative that Tongaat has implemented to address the escalating logistics costs?

3. What initiatives has your logistic partners implemented to support Tongaat Hulett Sugar cope with the increasing logistics costs?

4. What are the gaps that you believe are existing in the logistic market that you believe can contribute positively to Tongaat Hulett Sugar if addressed by your logistic partners?

Supply Chain Manager

1. How has the increasing logistics cost impacted the sustainability of Tongaat Hulett Sugar?

2. What is the initiative that Tongaat has implemented to address the escalating logistics costs?

3. What initiatives have your logistic partners implemented to support Tongaat Hulett Sugar cope with the increasing logistics costs?

4. What are the gaps that you believe are existing in the logistic market that you believe can contribute positively to Tongaat Hulett Sugar if addressed by your logistic partners?

Procurement Manager

1. How has the increasing logistics cost impacted the sustainability of Tongaat Hulett Sugar?

2. What is the initiative that Tongaat has implemented to address the escalating logistics costs?

3. What initiatives has your logistic partners implemented to support Tongaat Hulett Sugar cope with the increasing logistics costs?

4. What are the gaps that you believe are existing in the logistic market that you believe can contribute positively to Tongaat Hulett Sugar if addressed by your logistic partners?

Distribution Manager

1. How has the increasing logistics cost impacted the sustainability of Tongaat Hulett Sugar?

2. What is the initiative that Tongaat has implemented to address the escalating logistics costs?

3. What initiatives has your logistic partners implemented to support Tongaat Hulett Sugar cope with the increasing logistics costs?

4. What are the gaps that you believe are existing in the logistic market that you believe can contribute positively to Tongaat Hulett Sugar if addressed by your logistic partners?

Transport Controller

1. How has the increasing logistics cost impacted the sustainability of Tongaat Hulett Sugar?

2. What is the initiative that Tongaat has implemented to address the escalating logistics costs?

3. What initiatives has your logistic partners implemented to support Tongaat Hulett Sugar cope with the increasing logistics costs?

4. What are the gaps that you believe are existing in the logistic market that you believe can contribute positively to Tongaat Hulett Sugar if addressed by your logistic partners?

Market Strategy Manager

1. How has increasing imports affected the sustainability of Tongaat Hulett Sugar?

2. Are tariffs and quotas imposed by the government enough to protect the local sugar producers like Tongaat Hulett Sugar against imports?

3. How is Tongaat Hulett Sugar coping with sugar taxes imposed by the government?

4. What support or initiatives can the government provide sugar producers to ensure their stability is maintained?

5. How has the Sugar Master Plan introduced in 2019 by the government impacted on the challenges brought by imported sugar in the country?

Market strategy specialist

1. How has increasing imports affected the sustainability of Tongaat Hulett Sugar?

2. Are tariffs imposed by the government enough to protect the local sugar producers like Tongaat Hulett Sugar?

3. How detrimental is the sugar taxes imposed by the government to the sustainability of Tongaat Hulett Sugar?

4. What support or initiatives can the government provide sugar producers to ensure their stability is maintained?

5. How has the Sugar Master Plan introduced in 2019 by the government impacted on the challenges brought by imported sugar in the country?

Participants Unitrans Supply Chain Solutions

Operations Executive

1. How long have you been in partnership with Tongaat Hulett Sugar?

2. What are the most challenges have you faced when providing services to Tongaat Hulett Sugar?

3. What initiatives do you believe logistics providers can introduce to will help Tongaat Hulett Sugar cope with increasing logistics costs?

4. With the above-mentioned dynamics what changes have been implemented by Unitrans Supply Chain Solutions to remain competitive?

General Manager Consumer

1. How long have you been in partnership with Tongaat Hulett Sugar?

2. What are the most challenges have you faced when providing services to Tongaat Hulett Sugar?

3. What initiatives do you believe logistics providers can introduce to will help Tongaat Hulett Sugar cope with increasing logistics costs?

4. With the above-mentioned dynamics what changes have been implemented by Unitrans Supply Chain Solutions to remain competitive?

Business Development Manager

1. How long have you been in partnership with Tongaat Hulett Sugar?

2. What are the most challenges have you faced when providing services to Tongaat Hulett Sugar?

3. What initiatives do you believe logistics providers can introduce to will help Tongaat Hulett Sugar cope with increasing logistics costs?

4. With the above-mentioned dynamics what changes have been implemented by Unitrans Supply Chain Solutions to remain competitive?

Operations Manager

1. How long have you been in partnership with Tongaat Hulett Sugar?

2. What are the most challenges have you faced when providing services to Tongaat Hulett Sugar?

3. What initiatives do you believe logistics providers can introduce to will help Tongaat Hulett Sugar cope with increasing logistics costs?

4. With the above-mentioned dynamics what changes have been implemented by Unitrans Supply Chain Solutions to remain competitive?

Contract Manager

1. How long have you been in partnership with Tongaat Hulett Sugar?

2. What are the most challenges have you faced when providing services to Tongaat Hulett Sugar?

3. What initiatives do you believe logistics providers can introduce to will help Tongaat Hulett Sugar cope with increasing logistics costs?

4. With the above-mentioned dynamics what changes have been implemented by Unitrans Supply Chain Solutions to remain competitive?

Appendix 3: Ethical clearance

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

15 September 2022

Philani Blessing Buthelezi (207520801)
Graduate School of Business & Leadership
Westville Campus

Dear PB Buthelezi,

Protocol reference number: HSSREC/00004676/2022
Project title: Enhancing the sustainability of Tongaat Hulett Sugar through assessing logistics costs, sugar taxes, and tariffs
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 29 August 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 15 September 2023.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/ms

Humanities and Social Sciences Research Ethics Committee
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 8350/4557/3587 **Email:** hssrec@ukzn.ac.za **Website:** http://research.ukzn.ac.za/Research-Ethics
Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

Appendix 4: Table 2.2: Global outlook on sugar production, exportation, and consumption, 2019.

10 LARGEST PRODUCERS			10 LARGEST CONSUMERS		
(in mln metric tonnes)					
1	India	29.66	1	India	25.51
2	Brazil	29.17	2	EU-28	18.11
3	EU-28	16.65	3	China	16.20
4	Thailand	14.05	4	Brazil	10.55
5	China	10.57	5	USA	10.24
6	USA	7.22	6	Indonesia	6.95
7	Russian Fed.	7.20	7	Russian Fed.	5.95
8	Mexico	6.18	8	Pakistan	5.35
9	Pakistan	5.33	9	Mexico	4.09
10	Australia	4.25	10	Egypt, Arab Rep.	3.19
10 LARGEST CANE SUGAR PRODUCERS			10 LARGEST BEET SUGAR PRODUCERS		
(in mln metric tonnes)					
1	India	29.66	1	EU-28	16.42
2	Brazil	29.17	2	Russian Fed.	7.20
3	Thailand	14.05	3	USA	3.96

Source: International Sugar Organization (2022).

4	China	9.31	4	Turkey	2.49
5	Mexico	6.18	5	Egypt, Arab Rep.	1.53
6	Pakistan	5.30	6	Ukraine	1.47
7	Australia	4.25	7	China	1.27
8	USA	3.26	8	Iran	0.75
9	Guatemala	2.96	9	Japan	0.65
10	Indonesia	2.23	10	Belarus	0.64

10 LARGEST NET-EXPORTERS (in mln metric tonnes)

TOTAL		**RAW SUGAR**				**WHITE SUGAR**		
1	Brazil	17.89	1	Brazil	15.98	1	Thailand	4.60
2	Thailand	10.41	2	Thailand	5.81	2	India	4.24
3	India	4.02	3	Australia	2.59	3	Brazil	1.91
4	Australia	2.71	4	Mexico	1.82	4	Guatemala	1.04
5	Mexico	2.34	5	South Africa	1.21	5	EU-28	0.77
6	Guatemala	2.06	6	Guatemala	1.02	6	Pakistan	0.61
7	South Africa	0.89	7	Cuba	0.57	7	Morocco	0.52
8	Eswatini	0.79	8	El Salvador	0.49	8	Mexico	0.52

Source: International Sugar Organization (2022).

9	Cuba	0.62	9	Nicaragua	0.37	9	UAE	0.51
10	Pakistan	0.62	10	Eswatini	0.34	10	Eswatini	0.45
10 LARGEST NET-IMPORTERS (in mln metric tonnes)								
TOTAL		RAW SUGAR			WHITE SUGAR			
1	China	4.25	1	Indonesia	3.97	1	China	1.34
2	Indonesia	4.12	2	China	2.92	2	Sudan	1.29
3	USA	2.82	3	USA	2.25	3	Sri Lanka	0.63
4	Bangladesh	2.17	4	Algeria	2.19	4	USA	0.57
5	Algeria	1.89	5	Korea,Rep. of	1.83	5	Chile	0.48
6	Malaysia	1.78	6	EU-28	1.80	6	Israel	0.45
7	Korea, Rep. of	1.66	7	Bangladesh	1.74	7	Bangladesh	0.43
8	Nigeria	1.36	8	Malaysia	1.73	8	Syrian Arab Rep.	0.42
9	Iran	1.33	9	Saudi Arabia	1.47	9	Uzbekistan	0.39
10	Sudan	1.29	10	Nigeria	1.36	10	Ethiopia	0.37

Source: International Sugar Organization (2022).