



Management Case Study Examination
May - August 2022
Pre-seen material



COVID-19 Statement

This pre-seen and the case study in general (while aiming to reflect real life), are set in a context where the COVID-19 pandemic has not had an impact.

Remember, marks in the exam will be awarded for valid arguments that are relevant to the question asked. Answers that make relevant references to the pandemic or social distancing will, of course, be marked on their merits. In most cases, however, candidates may find it helpful to assume that there are no restrictions to the movement of people, goods or services in place.

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Introduction

Piping Beverages (“Piping”) is a quoted company that manufactures packaged tea for sale to retailers. Piping buys the tea that it uses in bulk on the open market.

Piping is based in Northlandia, a developed country that has a strong economy and whose citizens have a high standard of living.

Northlandia’s currency is the N\$. Northlandian company law requires companies to prepare their financial statements in accordance with International Financial Reporting Standards (IFRS).

You are a financial manager at Piping’s Head Office. Your primary responsibilities are associated with management accounting and you report to Channa de Silva, the Senior Financial Manager, who reports directly to the Finance Director.

The tea industry

Traditionally tea is a hot drink made by soaking the dried leaves of the *Camellia sinensis* shrub in boiling water. *Camellia sinensis* is a clearly defined family of shrubs that includes a number of specific varieties.

Leaves, plants and buds from many other plants can be used to make drinks that are often referred to as “tea”, although strictly that title should be restricted to leaves from one of the shrubs belonging to the *Camellia sinensis* family.

All references to “tea” in this document will be to products and drinks made from *Camellia sinensis* leaves.

Growing and processing tea leaves

The *Camellia sinensis* shrub is grown commercially in South Asian and East African countries. The best tea shrubs are grown at altitudes of between 1,000 and 2,000 metres.



The shrubs on tea plantations have useful lives that vary between 40 and 100 years, depending on the specific variety of *Camellia sinensis* shrub. The leaves are harvested by plantation workers, who pluck leaves from bushes every 7–14 days. The leaves are then processed using two main methods to produce two different types of tea:


Black tea



The green leaves are spread on racks to dry before being treated mechanically to break up the leaf cells.

The processed leaves are left to absorb oxygen. Once they have oxidised, they are blown with hot dry air, which turns them black.

Black tea is sometimes referred to as “made tea” or “dry tea”.

<p>Green tea</p> 	<p>Green tea is made by steaming and heating the green leaves after they have been plucked. The leaves are not processed further and so they remain green.</p>
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There is some further processing at the plantation, with slightly different processes depending on whether the leaves are to be sold to make loose tea or teabags. The leaves are then bagged and sold to tea manufacturers.

Black tea is sold in bulk as a commodity, with many tea-growing countries operating tea auctions that enable manufacturers to bid against one another in order to acquire a supply of tea leaves. Black tea leaves from different countries have different flavours, and flavour can also be affected by the plantation where they are grown. Manufacturers must keep the particular flavour of their tea blends and will often bid for leaves from specific plantations to help in the blending processes.





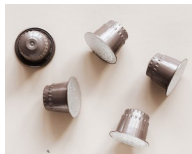

Tea manufacturing

Tea manufacturers import the tea leaves purchased at auction from growers. They are then blended and packaged, ready for sale to retailers.

Each batch of black tea has a slightly different flavour because of factors such as weather conditions during growth. Tea manufacturers deal with that by employing skilled blenders to taste samples from each batch of tea leaves under laboratory conditions. The tasters note

the precise flavour characteristics of each batch and determine a blend from different batches that will create the consistent flavour associated with their particular brand or brands of tea. The mix of leaves from different sources varies slightly according to the flavours of each batch of leaves that arrive at the factory, but the tea that is sold should always taste the same when it is brewed by customers.

Once the tea is blended, it is packaged and prepared as products for sale to consumers, primarily through retailers. Tea is sold to consumers in different forms:

<p>Loose tea</p> 	<p>Loose tea leaves are sold in packets. Consumers spoon the leaves into a teapot or other receptacle and add boiling water. The mix is allowed to stand until the water has been infused with flavour.</p> <p>Loose tea is generally made with high quality tea leaves. Depending on the drinker's taste preference, each cup of tea requires roughly 3 grammes of leaves.</p>
<p>Teabags</p> 	<p>Teabags are made by enclosing loose tea in small bags of porous material.</p> <p>The bags vary in composition, but they are usually made from paper, plastic or gauze (sometimes a mixture of two or more raw materials).</p> <p>Consumers can use a teapot, or they can simply put a teabag in a cup or mug and add boiling water. The tea then infuses as for loose tea.</p> <p>Teabags require the leaves to be ground more finely at the plantation because the water cannot flow through the leaves as freely as for loose leaves.</p> <p>A typical teabag contains 1.5 grammes of tea leaves.</p>
<p>Tea pods</p> 	<p>Tea pods are sealed plastic containers that are designed to fit in the same machines that are used to make coffee from coffee pods. Each brand of such machines requires pods that are made to accommodate its unique shape.</p> <p>The consumer inserts a pod into the machine and fills the machine's tank with water. The machine heats the water, punctures the pod and forces hot water through the pod.</p>
<p>Ready to drink</p> 	<p>Tea is sold in bottles that are intended to be consumed as chilled drinks. The manufacturer brews batches of tea, which are then cooled and bottled for sale to retailers.</p>

Tea consumption

Tea is second only to water as the most widely consumed drink in the world, although its popularity varies significantly between countries. Northlandians consume an average of 1.9 kilos of tea per person each year, putting them near the top of the global rankings. Northlandia is one of 8 countries where the annual average consumption exceeds 1 kilo per person.

Tea drinking is deeply rooted in many national cultures.

Tea contains caffeine, which makes it refreshing.

Tea is hydrating, and so helps the body to store fluid, which is very beneficial in hot climates or when taking a break from work or exercise. Tea is also believed to increase the body's defences against a number of serious illnesses.



Cultural differences also affect the manner in which tea is prepared and consumed. For example, black tea is very popular in some countries and green tea is preferred in others. The relative popularities of teabags versus loose tea also varies significantly.

Piping's history and products

Piping was founded in 1852, in Northlandia's Central City. Northlandia's climate is unsuitable for the growth of tea shrubs and so tea manufacturers have always relied on imported tea leaves. Tea drinking has been part of Northlandia's culture for many years and it remains popular.

The company was listed on the Northlandian Stock Exchange in 1974.

Piping has grown steadily, focussing exclusively on black tea, and has been Northlandia's leading tea manufacturer for many years. Piping now produces several varieties of tea, including two of the most popular teas in the country:

- Piping Tea (in teabags and as loose tea)
- Piping Strong Flavour (in teabags)

Piping was the first company to manufacture teabags in Northlandia, introducing them to the market in 1958. Since then, it has created a number of innovative designs of teabags. Each design change is claimed to improve the flavour of the tea made from its teabags.

Northlandians prefer teabags to loose tea. Piping manufactures 360 million teabags every week. The company also sells loose tea in packets to cater for the demand from the minority of consumers who prefer to make tea from loose leaves.

Piping's teas are regarded as premium products that are slightly more expensive than competing brands. The company buys good quality tea leaves. It spends heavily on advertising in order to promote brand awareness. Piping's packaging is both visually appealing and is designed to keep the contents fresh.

Piping Tea is popular because it matches the preferences of Northlandian consumers, who generally like a strong flavour that can be enhanced by adding both milk and sugar. Most of the company's output is sold through retailers in Northlandia, although it exports tea to countries that share a preference for strong tea. Exports are also driven by demand from Northlandian expatriates who have settled abroad and wish to continue drinking their favourite tea.

Operations

Piping has a factory in Central City in Northlandia, where it employs 700 staff. A further 200 staff are involved in buying, marketing and administration. They are based at a Head Office building that is close to the factory.

Black tea is purchased at auctions held in the various tea-producing countries. Piping has a sophisticated digital buying system that predicts the company's requirements for tea from different locations and matches those requirements to the timing of scheduled tea auctions. That enables the purchasing department to identify buying opportunities that are relevant to the company. Inventories of tea can then be managed efficiently, minimising holding costs and wastage. The price of black tea varies according to supply and demand, but it is always the single most expensive component of Piping's costs, typically exceeding 40% of total manufacturing cost.

Each batch of tea purchased is sampled on delivery by Piping's tea blenders. The company has six blenders, who have a tasting laboratory beside the factory. Each batch of leaves has its own unique flavour, which means that Piping's teas would not be consistent over time. The blenders have the skill to taste each batch and to adjust for slight differences in flavour, colour and aroma by altering the proportions of teas from different countries and different plantations. They use their judgement to decide the precise mix of different batches to be used in blending teas for production.





Black tea leaves are packed in large paper sacks at the plantation. The sacks are shipped to Piping's factory on wooden pallets that are stacked inside shipping containers. Unprocessed black tea can be stored for years, although its flavour will deteriorate slightly if stored for more than a few months. Manufacturers will, in any case, be keen to minimise inventory holding costs by processing black tea and selling the finished product as quickly as possible.



When they are required for production, the paper sacks are transported mechanically and emptied into massive metal drums, with the number of sacks from each batch of black tea specified by the tea blenders. The drums rotate slowly until the leaves from each batch have been mixed evenly. A sample is tasted by the factory's quality control technicians to confirm that the mixture of leaves in the drum is satisfactory before any further processing.



If the blended tea leaves are to be sold as loose tea then they are loaded onto production lines that weigh out the correct amount for each packet of tea. The tea leaves are then dropped onto sheets of foil that are cut, folded and sealed using heat to create packets of tea. The packets are placed in cardboard boxes that are formed on the production line. That creates the retail boxes of tea that are ready to be stacked onto retailers' shelves. The retail boxes are loaded into cardboard boxes for shipping.



The process for making teabags is very similar. The loose leaves required for each teabag are placed on a strip of paper. A second strip of paper goes on top and the two strips are fused together around the tea leaves. The fused strip is then cut to separate the individual teabags. More expensive brands of teabags, including Piping's, have a tag attached to make it easier for consumers to lift them out of their cups. Individual teabags can also be packaged in a paper envelope to maintain freshness and to permit branding to be printed on each teabag. Teabags are then packed in foil, boxed

and placed in outer cardboard boxes for transportation to retailers.

There are two separate production lines for loose tea and teabags. All processes are highly mechanised. The 700 production staff are employed to monitor the operation of the machinery on the production lines, make adjustments, carry out preventive maintenance and deal with breakdowns. The machinery undertakes almost all of the manufacturing and handling of inventory.

Marketing and Distribution

Piping's products are sold through most major retailers in Northlandia. The Marketing and Distribution Department has two main functions:

Advertising	<p>Piping invests heavily on advertising in order to maintain brand awareness. The company's brand name is one of the most recognisable in the country, but it remains important to advertise through traditional and online channels in order to prevent loss of market share.</p> <p>Advertising also helps Piping to develop brand loyalty from younger customers who might switch to other drinks such as coffee.</p> <p>The advertising team is part of Piping's Marketing and Distribution Department. It has a substantial budget for the development of new adverts and for broadcasting and publication.</p>
Account management	<p>Piping is the largest tea manufacturer in Northlandia and most food retailers wish to sell Piping's products. Piping strives to maintain a strong relationship with major retailers by having a designated account management team in its Marketing and Distribution Department. This team's function is to engage with buyers employed by retailers.</p> <p>Typically, a major retail customer will be assigned an account manager who will be the designated contact between Piping and the retailer's buying department. Account managers will also seek to encourage buyers to place regular orders, increasing their spend as much as possible. For example, an account manager might be authorised to offer a discount in return for an increase in the retailer's regular order. Account managers also keep retailers informed about forthcoming promotions, such as new advertising campaigns that will hopefully increase demand.</p> <p>Account managers frequently visit supermarkets to check the placement of Piping's products on the shelves. Supermarket shelf space is always limited and the extent and location of products on the shelves can have a significant impact on sales. For example, products placed at eye level tend to sell better than those on higher or lower shelves.</p>

Piping's Marketing and Distribution Department keeps close contact with consumers to ensure that its teas remain popular. The company makes several varieties of tea, each of which aims to attract its own specific niche of tea drinkers. For example, Piping Strong Flavour was developed 5 years ago because of feedback from a sizeable minority of consumers who were using two bags per cup to get the strength of flavour that they wished. Piping's tea blenders developed a new blend that could deliver a stronger flavour from a single teabag and so created a popular new product.

Piping's Marketing and Distribution Department also has a small team of sales managers who seek to expand Piping's export sales, although the company's brand image is strongly associated with Northlandia. There are, nevertheless, some other countries in which Piping brands are popular. There are also several countries where retailers sell Piping tea to meet the demand from local communities of Northlandian expatriates, who enjoy drinking Piping tea because it reminds them of home.

Social responsibility

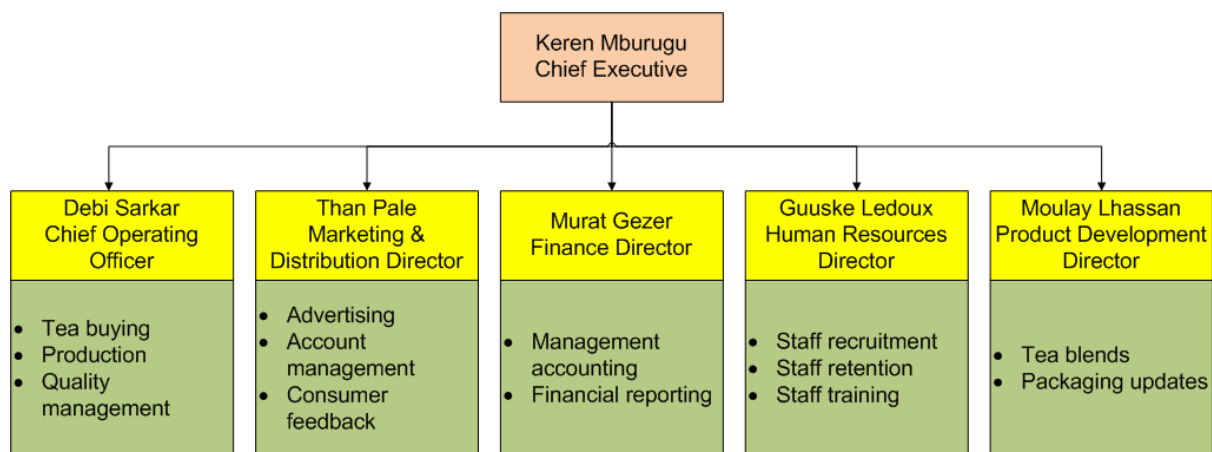
Most tea plantations are located in developing countries, which has led to some controversy over the rates of pay and the working conditions imposed on plantation workers. Piping, in common with most tea manufacturers, buys tea leaves from auctions and so the company has very little direct contact with the plantations themselves. The fact that prices are set at auction means that there is, at least, some transparency over pricing.

Piping supports a number of local charities and other initiatives in tea growing countries that are intended to encourage plantation owners to treat their workers fairly. These initiatives also offer practical support, such as funding schools and medical facilities in tea-growing regions that are too remote for government facilities to be available.

Piping's manufacturing processes are designed to use resources efficiently and with the minimum of waste. Its production lines are maintained regularly in order to reduce the amount of power required for their operation. Products are designed to eliminate waste. For example, all packaging is recyclable and uses as little material as possible in order to reduce weight, and so transportation cost.

Piping's teabags and loose tea leaves can be recycled by consumers. The paper in teabags is biodegradable and used tea leaves make excellent fertiliser. Piping's packaging provides consumer advice on recycling.

Piping's management structure



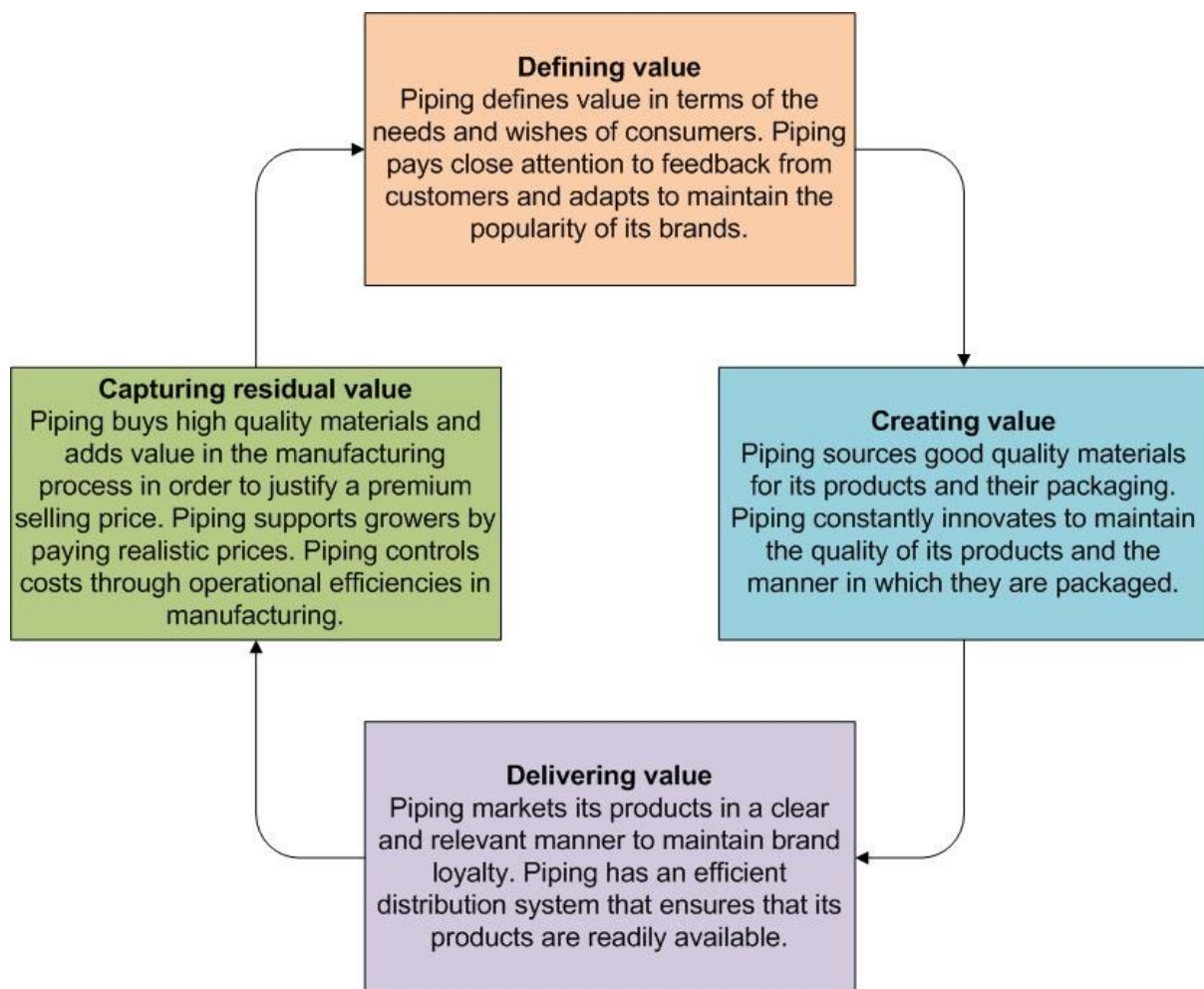
Piping's Board also includes the following non-executive directors:

- Victoria Tsang – Non-Executive Chair
- Tunde Ope-Davies
- Zasha Swan
- Fredrik Ekengren
- Juliane Pasos
- Bernard Watler

Each of the executive directors, other than the Chief Executive, is responsible for a specific functional area. Marketing and Distribution is managed as a profit centre. The other four functional areas are cost centres.

Piping's business model

The company's business model might be viewed as follows:



Piping has always used good quality tea leaves in order to ensure that consumers were prepared to pay a premium price in comparison to its main competitors. Piping's teas are slightly more expensive than competing brands. Even so, tea is a relatively inexpensive beverage when compared to other drinks such as coffee, fruit infusions or cold drinks such as sodas. Many tea drinkers are prepared to pay a little more for a brand of tea that they will enjoy.

Piping has always been at the forefront of innovation. For example, it introduced teabags to the Northlandian tea market. Since then, it has introduced a number of different products, primarily through packaging. For example, Piping has redesigned its teabags several times. The current design is a complex shape that has been engineered to permit boiling water to flow through more effectively and so to give consumers a better tasting drink. The company also uses a patented process that seals the foil that contains its loose teas and teabags so

that they remain fresh for longer. Apart from extending the shelf life, it also improves the tea's flavour.

Piping pays close attention to consumer feedback:

- The company has a website and consumers are encouraged to leave comments. The Marketing and Distribution Department has a team that monitors social media looking for comments about tea drinking in general and Piping in particular.
- Marketing and Distribution has a group of facilitators who hold focus group meetings and tea tastings in supermarkets across Northlandia. Facilitators ask small groups of consumers to discuss their opinions about tea drinking. Participants are also asked to taste and comment on samples of teas made from Piping and from competing brands.

Consumer feedback has driven a number of changes, including the launch of new teas to meet changing preferences and the modification of packaging. For example, some consumers complained that the new foil packaging was difficult to open and so the design was modified slightly so that it was easier to use while still preserving the freshness of the product.

Piping's market research indicates that consumers believe that tea has health-enhancing effects. It would be against the law for tea companies to make claims to that effect unless they conducted the same tests and trials that are applied to pharmaceutical drugs. There is nothing to stop tea companies making general statements in their advertising but they must not claim health benefits:



Legally, Piping would only be in breach if it claimed that the high antioxidant quality of its tea made consumers healthier. Stating that the tea is high in antioxidants is factually correct and

any inference by consumers that they will benefit from drinking a substance that is high in antioxidants is up to them.

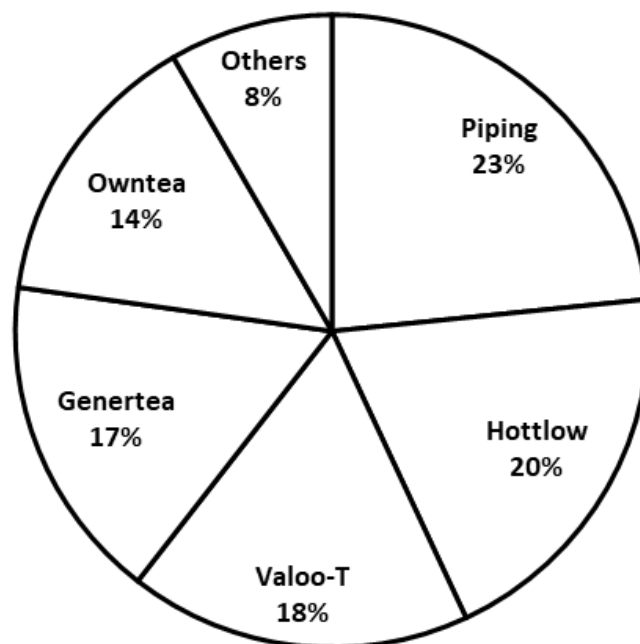
Competition

Piping's most direct competitor is Hottlow Tea ("Hottlow"). Hottlow competes in Piping's market space by producing good quality loose tea and teabags. Hottlow follows Piping's policy of selling its products in attractive and practical packaging that reflects the quality of the tea itself.

Piping also faces competition from three other large manufacturers that sell to the Northlandian market:

Valoo-T	sells its own budget brand of low-priced loose tea and teabags
Genertea	manufacture own-brand tea for retail chains
Owntea	

NORTHLANDIAN TEA MARKET BY REVENUE



Extracts from Piping's annual report

Piping Beverages Group

Consolidated statement of profit or loss

For the year ended 31 December

	2021	2020
	N\$ million	N\$ million
Revenue	3,080.5	3,008.3
Cost of revenues	(1,704.0)	(1,635.2)
Gross profit	1,376.5	1,373.1
Administrative expenses	(243.4)	(268.1)
Selling and marketing expenses	(757.3)	(777.4)
Operating profit	375.8	327.6
Finance costs	(49.0)	(52.5)
Profit before tax	326.8	275.1
Tax	(75.0)	(58.0)
Profit for year	251.8	217.1

Piping Beverages Group

Consolidated statement of changes in equity

for the year ended 31 December 2021

	Share capital and premium	Retained earnings	Total
	N\$ million	N\$ million	N\$ million
Balance at 31 December 2020	500.0	629.2	1,129.2
Profit for the year		251.8	251.8
Dividends		(74.0)	(74.0)
Balance at 31 December 2021	500.0	807.0	1,307.0

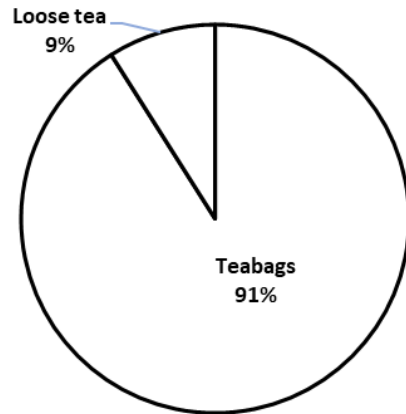
Piping Beverages Group
Consolidated statement of financial position
As at 31 December

	2021	2020
	N\$ million	N\$ million
Non-current assets		
Property, plant and equipment	1,501.5	1,415.1
Intangible assets	329.6	269.5
	<u>1,831.1</u>	<u>1,684.6</u>
Current assets		
Inventory	32.8	31.4
Trade receivables	330.1	331.2
Bank	47.4	41.8
	<u>410.3</u>	<u>404.4</u>
Total assets	<u><u>2,241.4</u></u>	<u><u>2,089.0</u></u>
Equity		
Share capital and share premium	500.0	500.0
Retained earnings	807.0	629.2
	<u>1,307.0</u>	<u>1,129.2</u>
Non-current liabilities		
Borrowings	700.0	750.0
Current liabilities		
Trade payables	163.4	156.8
Tax	71.0	53.0
	<u>234.4</u>	<u>209.8</u>
	<u><u>2,241.4</u></u>	<u><u>2,089.0</u></u>

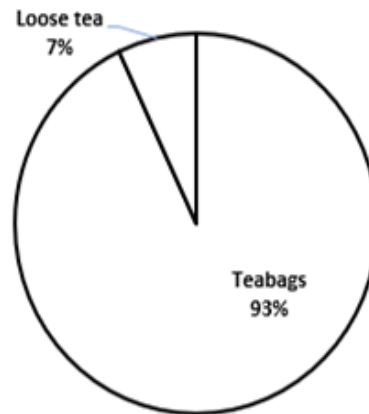
Breakdown of revenues and operating profits

	Year ended 31 December 2021 N\$ million	Year ended 31 December 2020 N\$ million
Revenue from teabags	2,803.3	2,797.7
Revenue from loose tea	277.2	210.6
Total	3,080.5	3,008.3
Operating profit from teabags	349.5	304.7
Operating profit from loose tea	26.3	22.9
Total	375.8	327.6
Revenue from Northlandian sales	2,926.5	2,918.1
Revenues from exports	154.0	90.2
Total	3,080.5	3,008.3
Operating profit from Northlandian sales	364.5	317.8
Operating profit from exports	11.3	9.8
Total	375.8	327.6

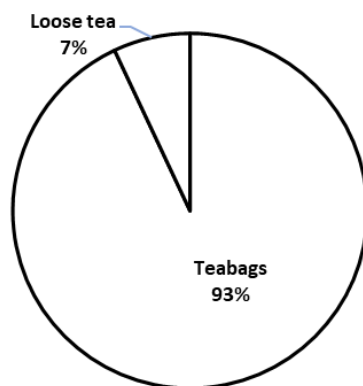
**REVENUES FOR YEAR ENDED
31 DECEMBER 2021**



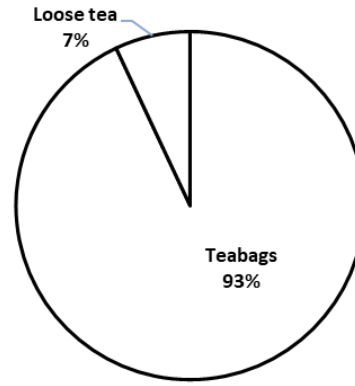
**REVENUES FOR YEAR ENDED
31 DECEMBER 2020**

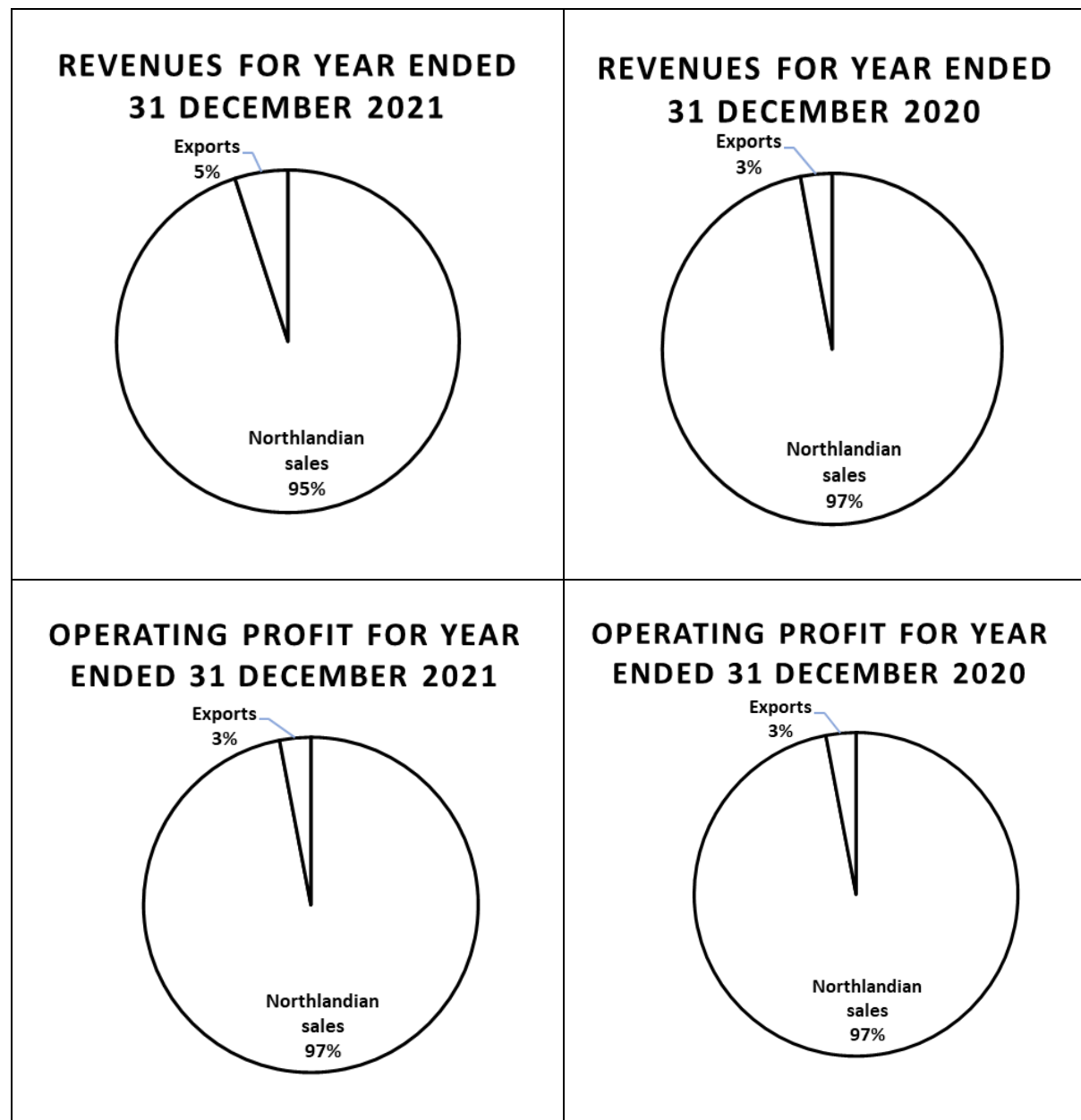


**OPERATING PROFIT FOR YEAR
ENDED 31 DECEMBER 2021**



**OPERATING PROFIT FOR YEAR
ENDED 31 DECEMBER 2020**





Extract from Hottlow's annual report

Hottlow is Piping's most direct competitor in the Northlandian tea market. Both companies sell products that are regarded as good quality. Some consumers drink one brand of tea exclusively, but others switch between brands, based on price or personal taste.

Hottlow is based in Northlandia and is quoted on the Northlandian stock exchange.

Hottlow Group

Consolidated statement of profit or loss

For the year ended 31 December

	2021	2020
	N\$ million	N\$ million
Revenue	2,587.6	2,466.8
Cost of revenues	(1,465.4)	(1,373.6)
Gross profit	1,122.2	1,093.2
Administrative expenses	(209.3)	(227.9)
Selling and marketing expenses	(621.0)	(629.7)
Operating profit	291.9	235.6
Finance costs	(51.0)	(48.0)
Profit before tax	240.9	187.6
Tax	(55.4)	(43.1)
Profit for year	185.5	144.5

Hottlow Group

Consolidated statement of changes in equity

for the year ended 31 December 2021

	Share capital and premium	Retained earnings	Total
	N\$ million	N\$ million	N\$ million
Balance at 31 December 2020	600.0	426.1	1,026.1
Profit for the year		185.5	185.5
Dividends		(115.8)	(115.8)
Balance at 31 December 2021	600.0	495.8	1,095.8

Hottflow Group
Consolidated statement of financial position
As at 31 December

	2021	2020
	N\$ million	N\$ million
Non-current assets		
Property, plant and equipment	1,411.4	1,344.3
Intangible assets	260.4	207.5
	<u>1,671.8</u>	<u>1,551.8</u>
Current assets		
Inventory	28.2	26.4
Trade receivables	269.6	257.5
Bank	41.3	39.7
	<u>339.1</u>	<u>323.6</u>
Total assets	<u><u>2,010.9</u></u>	<u><u>1,875.4</u></u>
Equity		
Share capital and share premium	600.0	600.0
Retained earnings	495.8	426.1
	<u>1,095.8</u>	<u>1,026.1</u>
Non-current liabilities		
Borrowings	680.0	640.0
Current liabilities		
Trade payables	183.2	171.7
Tax	51.9	37.6
	<u>235.1</u>	<u>209.3</u>
	<u><u>2,010.9</u></u>	<u><u>1,875.4</u></u>

News reports

Northlandia Business Daily

Botanists make their mark



Botany is the scientific study of plants. It was once regarded as a narrow and uninteresting branch of biology, but it is now becoming increasingly important in a variety of industries. Apart from providing food, plants are the basis for a host of products ranging from cosmetics to the rubber for car tyres. The characteristics of plants can have a significant impact on a wide variety of industries.

Research conducted by botanists can identify varieties of plants that are suited to specific needs. For example, different varieties of wheat make different varieties of flour. They also grow differently according to local weather conditions. Some are more tolerant of plant diseases or other pests. Thus, a farmer might consider seeking advice about the best seed to sow in order to get a good crop from a particular field, taking account of climate, soil type and the local insect population.

Botanists can also create their own new plant varieties. Fertilising plants of one variety with pollen from another can lead to varieties that combine the best qualities of both. So, a variety of wheat that is resistant to drought can be mixed with another that is resistant to pests and the result will hopefully be a variety of wheat that is resistant to both drought and pests.

Northlandia Daily News

Dr Maina's health column



Patients often ask me whether tea is healthier than coffee. That is a more complicated question than you might imagine because both drinks have their health benefits and their health risks.

Most of the benefits associated with tea and coffee arise because both are rich sources of antioxidants. These are chemical compounds that protect the human body from all sorts of diseases.

Tea and coffee both contain caffeine, which is a stimulant. A cup of coffee usually contains twice as much caffeine as a cup of tea. In moderation, caffeine can be beneficial. The most obvious benefit is that it can be refreshing, which explains why so many people enjoy tea or coffee with their breakfast or during work breaks. A moderate caffeine intake can also reduce the risk of certain diseases. Caffeine can, however, prove harmful to some people, particularly when consumed to excess, because it can cause anxiety, irregular heartbeat, raised blood pressure and can disrupt sleep patterns. A small number of people are sensitive to caffeine and will have a reaction that is similar to an allergic reaction if they consume even a small amount.

Tea and coffee both contain different types of antioxidants that increase resistance to different diseases. That alone makes it difficult to claim that one is healthier than the other. Tea generally contains less caffeine than coffee, but that does not necessarily make it beneficial to drink tea in large quantities.

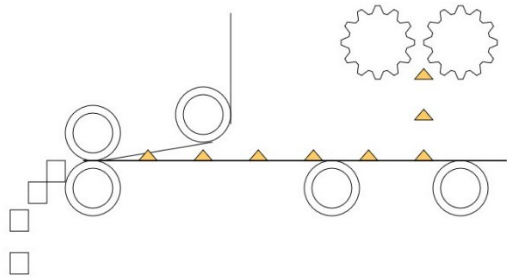
It is possible to buy decaffeinated tea and coffee that have been processed to remove most of the caffeine. That requires a chemical process to be applied to the tea leaves or coffee beans. The process removes most of the caffeine, but it also removes a lot of the antioxidants. It is impossible to remove all of the caffeine, so "decaffeinated" really means "very low in caffeine". A cup of decaffeinated coffee won't keep you awake at night, but it should still be avoided by those who are sensitive to caffeine.

Happy Comic

Readers' questions

Question: My dad opened a new box of teabags this morning and it made me think about how difficult it must be to fill all those tiny little bags with just the right amount of tea. How do they do that?

Sandy, age 11



Answer: Teabag factories start with large rolls of special paper. The paper is cut into strips by machines in the factory and portions of tea leaves are poured onto each strip to make little heaps. Another strip of paper is laid on top and the two layers of paper are fused together so that the heaps of tea are now sealed between the paper strips. Finally, the machinery cuts the paper strips in exactly

the right place to separate the individual teabags. It all happens so quickly that we use machinery to do this because people wouldn't be able to keep up with production. The people who work in the factory are there to check the machinery and make sure that there is always plenty of tea and paper.

Question: When paper gets wet it disintegrates, but teabags are made out of paper and they can be dunked in boiling water for ages. How is this possible?

Vijay, age 10



Answer: It is true that water and paper don't usually mix, but teabags use paper that is made from fibres taken from banana leaves. Teabag paper wouldn't be very good to write on, but it does stand up to boiling water.

Some companies add plastic to the paper to make their teabags stronger still.

Question: I was marked wrong in a school essay because I said that peppermint tea is a type of tea. My teacher said that I should have referred to it as "peppermint infusion". Was I really wrong?

Anya, age 11

Answer: I hope that you didn't lose too many marks because most retailers sell boxes of "peppermint tea" as well as many other drinks that are called "tea" because they require leaves to be soaked in boiling water. Strictly speaking, only the leaves of the *Camellia sinensis* shrub and the drink that those leaves are used to make it should be described as "tea". Products made from different plants should be called "infusions".

Question: Why don't they grow more valuable crops, such as wheat, on tea plantations?

Dara, age 12



Answer: The best tea leaves are grown high up in mountainous regions. Good luck getting the equipment required by a modern wheat farm onto a typical tea plantation! It is lucky that tea shrubs grow there because the land is generally unsuitable for any other purpose, including farming most other crops. Harvesting tea is an ongoing and labour-intensive process. Tea pickers work their way along rows of shrubs and pluck the fresh growth of leaves from the top. Each row of shrubs is harvested every two weeks or so.