

CHAPTER 6

MARKET ATTRACTIVENESS ANALYSIS

6.1 INTRODUCTION

Manufacturing expansion and investment opportunities in the South African pharmaceutical formulation industry are expected to emanate from specific product categories on the basis of market attractiveness and sustainable competitive advantages. This chapter provides a market attractiveness analysis of the information collected by the study, with the following chapter providing a sustainability analysis. The focus is specifically on the downstream formulation sector, rather than the upstream API manufacturing. However, it is clear that a viable and efficient downstream formulation industry will depend heavily on a thriving and globally competitive upstream API sector.

6.2 APPROACH

Market attractiveness in specific formulated pharmaceutical product categories is based upon criteria such as:

- existing total market size
- total market growth
- relative value of product
- existing number of
- appearance on the EDL
- relative level of existing local manufacturing
- generic penetration

The basis for identification of attractive pharmaceutical product categories for further manufacturing is information from IMS. IMS is regarded by the pharmaceutical sector as the most reliable source of primary market information on the public and private market sectors. IMS provided information based on the total (private and public) market in South Africa. This information is provided on the basis of the actives consumed in pharmaceutical products. For example, the mass figures indicate total mass of active, rather than total mass of

formulated product. Other data such as value refer to the final formulated products that contain the actives.

IMS released specific data which was regarded as non-confidential. It was therefore not possible to obtain all required information in the necessary detail. For example, actual prices for products were not released.

As was mentioned in Chapter 5 (and provided in more detail in the relevant appendix) the methodology for identification of attractive molecules and thus ultimately manufacturers to survey was derived from IMS data on the top 200 actives by mass as contained on the IMS database. Although the top 200 only accounts for 14,2% of all actives it accounts for 96,3% of the total market. The market attractiveness evaluation therefore focused on a significant portion of the total market.

6.2.1 RATING OF ATTRACTIVE PRODUCT CATEGORIES

The identification process followed to identify those active categories that have the highest relative market attractiveness within the top 200 types was based upon a rating scale system. The elements of this rating are as follows:

Relative Growth Score

For the top 200 actives, the highest consumption growth in the total public and private market over 5 years was 74,5% and the lowest -11%. The relative scores allocated are therefore:

Relative Growth in Consumption Last 5 Years	Allocated Score
Above 100%	2
Between 30% and 100%	1
Between 10% and 30%, or where no figures available	0
Between 0% and 10%	-1
Less than 0%	-2

Relative Consumption Mass Score

The highest consumption weight *per annum* for the top 200 actives is 337 600kg, and the lowest 654,5kg. The relative scores allocated are therefore:

Consumption in Total Private and Public Market	Allocated Score
More than 20 000 kilograms per annum	2
Between 10 000 and 20 000 kilograms per annum	1
Between 4 000 and 10 000 kilograms per annum	0
Between 1 000 and 4 000 kilograms per annum	-1
Less than 1 000 kilograms per annum	-2

Relative Introduction of Generics Score

The relative penetration of generics in an actives category is assumed to be an attractiveness factor for further local manufacturing. The relative scores allocated are therefore:

Percentage Penetration of Generics in Actives Category	Allocated Score
More than 80%	2
Between 60% and 80%	1
Between 40% and 60%	0
Between 20% and 40%	-1
Less than 20%	-2

Relative Specific Value Score

The relative specific value of actives (i.e. value per kg) was not made available by IMS due to confidentiality reasons. The only indication of relative value was the ranking of the top 200 actives in terms of their overall market value.

A scoring factor, F, was therefore developed which was based upon:

$$F = \frac{1}{(\text{Value Ranking} \times \text{Total Mass in kg})} \times 10^6$$

The reasoning behind this formula is that the inverse of a product's value ranking multiplied by the volume of active ingredient provides an indication of the relative specific value of a product. The resultant number is multiplied by 10^6 to obtain a normalised score range for all products. This methodology became necessary due to the non-release of price data by IMS.

The relative scores allocated are therefore:

Relative Value Factor, F	Allocated Score
More than 6,0	2
Between 2,5 and 6,0	1
Between 1,3 and 2,5	0
Between 0,7 and 1,3	-1
Less than 0,7	-2

Appearance on the Essential Drugs List (EDL)

It is generally assumed the presence of an active on the EDL will enhance the market attractiveness in the future due to a dedicated focus on the DOH to enhance the usage rate of such actives. A score of 2 was therefore allocated to those actives on the top 200 list, which appear on the EDL, and a zero to those, which do not.

6.3 RESULTS OF THE MARKET ATTRACTIVENESS RATING EXERCISE

The results of the market attractiveness rating exercise are shown in the following table:

ACTIVE TYPE	Mass	Growth	% generic	Value	EDL	TOTAL
CAFFEINE	2	2	0	2	2	8
HYDROCHLOROTHIAZIDE	0	0	2	2	2	6
AMOXICILLIN	2	0	1	1	2	6
THEOPHYLLINE	1	0	2	1	2	6
PARACETAMOL	2	1	0	1	2	6
PROMETHAZINE	-1	1	1	2	2	5
DOXYCYCLINE	0	1	2	0	2	5
AMITRIPTYLINE	-1	0	2	2	2	5
CODEINE	0	1	0	2	2	5
ATENOLOL	-1	0	2	2	2	5

ACTIVE TYPE	Mass	Growth	% generic	Value	EDL	TOTAL
CEPHALEXIN	-1	0	2	1	2	4
TRIMETHOPRIM	0	0	2	0	2	4
CIMETIDINE	0	0	2	0	2	4
IBUPROFEN	2	0	1	-1	2	4
EPHEDRINE	-1	1	2	2	0	4
DICLOFENAC	0	1	-1	2	2	4
ALLOPURINOL	0	1	2	-1	2	4
INDOMETHACIN	-1	0	2	1	2	4
SULPHAMETHOXAZOLE	2	0	2	-2	2	4
ERYTHROMYCIN	1	0	2	-1	2	4
KAOLIN	2	2	2	-2	0	4
PHENOBARBITAL	-1	1	2	0	2	4
ASCORBIC ACID	2	1	-2	1	2	4
PECTIN	0	2	2	0	0	4
LACTULOSE	2	2	0	-2	2	4
CHLORAMPHENICOL	-1	0	1	2	2	4
ZINC	-1	2	0	1	2	4
CITRIC ACID	2	1	-2	0	2	3
DOXYLAMINE	-1	2	0	2	0	3
DEXTROPROPOXYPHENE	-1	1	-1	2	2	3
ACETYLSALICYLIC ACID	2	1	0	-2	2	3
MEPROBAMATE	1	2	1	-1	0	3
CLOXACILLIN	0	0	1	0	2	3
FUROSEMIDE	-1	-1	2	1	2	3
PSEUDOEPHEDRINE	-1	1	-1	2	2	3
NALIDIXIC ACID	-1	0	2	0	2	3
NICOTINAMIDE	-1	2	-2	2	2	3
AMMONIUM	1	0	1	1	0	3
PROPRANOLOL	-1	0	1	1	2	3
CARBOCISTEINE	0	1	1	-1	2	3
THIAMINE	-1	1	-1	2	2	3
PYRIDOXINE	-1	1	-1	2	2	3
GRISEOFULVIN	-1	0	2	0	2	3
DIPHENHYDRAMINE	-1	1	1	2	0	3
MAGNESIUM	2	1	-2	0	2	3
ISONIAZID	0	1	-1	0	2	2
ETHAMBUTOL	1	0	1	-2	2	2
LIDOCAINE	-2	0	1	1	2	2
AMOBARBITAL	-2	1	2	1	0	2
NAPROXEN	0	0	2	0	0	2
MEFENAMIC ACID	0	1	1	0	0	2
MENTHOL	-1	2	-1	2	0	2
CALCIUM	2	1	-2	-1	2	2

ACTIVE TYPE	Mass	Growth	% generic	Value	EDL	TOTAL
RIFAMPICIN	0	1	-1	0	2	2
PARAFFIN OIL	2	1	-2	-2	2	1
CATHINE	-1	0	0	2	0	1
PHENYLEPHRINE	-2	1	-2	2	2	1
METHYLCELLULOSE	-1	1	1	0	0	1
VALPROIC ACID	0	1	-2	0	2	1
PHENYLTOLOXAMINE	-2	2	-1	2	0	1
CIPROFLOXACIN	-1	0	-2	2	2	1
CHLOROQUINE	-2	0	0	1	2	1
AMINOPHYLLINE	1	1	-1	-2	2	1
SALICYLIC ACID	0	1	-2	0	2	1
PHENYLPROPANOLAMINE	-1	2	-2	2	0	1
ALUMINIUM	2	0	-1	-2	2	1
ORPHENADRINE	-2	1	-1	1	2	1
MEPHENESIN	-1	0	2	0	0	1
NEOMYCIN	-2	1	-2	2	2	1
METFORMIN	2	0	-1	-2	2	1
GLICLAZIDE	0	0	-2	1	2	1
POTASSIUM	2	0	-1	-2	2	1
OXYTETRACYCLINE	0	0	2	-1	0	1
VITAMIN E	1	2	-2	0	0	1
TRIAMTERENE	-2	0	2	1	0	1
CAPTOPRIL	-1	0	-2	2	2	1
BISMUTH	-1	1	-2	1	2	1
AMPICILLIN	0	-2	2	-1	2	1
VERAPAMIL	-1	-1	0	1	2	1
PYRAZINAMIDE	1	0	0	-2	2	1
KETOPROFEN	-2	0	1	2	0	1
MEBEVERINE	-1	0	-1	1	2	1
PHOSPHORIC ACID	1	0	2	-2	0	1
CLAVULANIC ACID	-1	2	-2	2	0	1
CEFAZOLIN	-1	0	-2	2	2	1
CEFUROXIME AXETIL	-1	0	-2	2	2	1
DILTIAZEM	-2	0	-1	2	2	1
PANCREATIN	-1	0	-2	1	2	0
STERCULIA GUM	2	2	-2	-2	0	0
TETRACYCLINE	-1	-2	2	-1	2	0
BENZOYL PEROXIDE	-2	0	-2	2	2	0
CARBAMAZEPINE	1	0	-2	-1	2	0
PHENYLBUTAZONE	-1	1	2	-2	0	0
PENICILLIN G	0	0	-1	-1	2	0
PENICILLIN V	1	0	-1	-2	2	0
FENOTEROL	-2	0	-2	2	2	0

ACTIVE TYPE	Mass	Growth	% generic	Value	EDL	TOTAL
CALAMINE	0	-2	2	-2	2	0
MEDROXYPROGESTERONE	-2	0	-2	2	2	0
NORETHISTERONE	-2	0	-2	2	2	0
METRONIDAZOLE	1	0	-1	-2	2	0
RICINUS COMMUNIS	-2	0	2	0	0	0

Note: The molecule names used in the table are strictly according to data supplied by IMS. This includes products such as kaolin, which is not strictly regarded as an active, as well as general products such as magnesium and zinc. These molecules are according to the industry standard assumed by IMS clients, which involves most industry players. Medicines containing these molecules are traced by IMS in terms of market quantification, and it is therefore necessary to include them in order to address the market in its totality. The general molecules such as zinc would include all compound forms of zinc (i.e. zinc sulphate, zinc carbonate, etc)

Furthermore, The % generic refers to the allocation of generics by IMS, which is more or less empirically done by evaluating the nature of companies represented in a molecule, and allocating them into categories of branded versus generic based companies. This is not strictly according to the definition of generics used in this study, which refers to all off-patented copies, inclusive of branded products.

6.4 PHARMACEUTICAL CLASSES

Pharmaceutical companies generally compete within therapeutic categories, rather than individual products or “molecules”. The data indicates attractive molecules, or products that have a relative high market attractiveness. In theory these attractive molecules are therefore the products which SA companies should focus upon in order to achieve viable further manufacturing. Therefore, it is more practical for companies to focus on therapeutic categories containing these attractive molecules. Out of a total of 297 sub-classes of pharmaceuticals (according to the “Anatomical Classification”), the top 100 actives account for 68 sub-classes.

These 68 sub-classes can therefore be regarded as the most attractive pharmaceutical groups due to the actives utilised in them. These 68 sub-classes are estimated to account for nearly 80% of the total pharmaceutical market by value.

The sub-groups represented by the top 100 attractive actives are shown in the following table:

ACTIVE TYPE	IMS	SUB-GROUP
ALUMINIUM	A02A	Antacids Antiflatulants
CIMETIDINE	A02B	Antiulcerants
MEBEVERINE	A03A	Pln Antispas & Antichol
PHENOBARBITAL	A03C	Antispas/Ataractic Combs
PANCREATIN	A03E;A09A	Antispas/Other Prds Combs; Digestives Inc. Enzymes
PHOSPHORIC ACID	A04A	Antiemetic-Antinauseants
LACTULOSE	A06A	Laxatives
PECTIN	A07B	Intest. Absorbant Antidiar
KAOLIN	A07B	Intest. Absorbant Antidiar
BISMUTH	A07H	Motility Inhibitors
THIAMINE	A08A	Antiobesity Preparations
METFORMIN	A10B	Oral Antidiabetics
GLICLAZIDE	A10B	Oral Antidiabetics
ZINC	A11A	Multivitamins & Minerals
POTASSIUM	A11A;A13A	Multivitamins & Minerals; Tonics
VITAMIN E	A11A;A13A	Multivitamins & Minerals; Tonics
NICOTINAMIDE	A11B	Multivitamins Without Minerals
MAGNESIUM	A11E	Vitamin B Complex
CALCIUM	A12A	Calcium
ASCORBIC ACID	B03A	Haematinics, Iron & Combs
FUROSEMIDE	C03A	Diuretics
TRIAMTERENE	C03A	Diuretics
ATENOLOL	C07A	Beta Blocking Agent Plain
PROPRANOLOL	C07A	Beta Blocking Agent Plain
HYDROCHLOROTHIAZIDE	C07B	Beta Blocking Agent Comb
VERAPAMIL	C08A	Calcium Antagonists Plain
DILTIAZEM	C08A	Calcium Antagonists Plain
CAPTOPRIL	C09A	Ace Inhibitors Plain
GRISEOFULVIN	D01A	Antifungals Dermatologic
BENZOYL PEROXIDE	D01A	Antifungals Dermatologic
CALAMINE	D04A	Topical Antipruritics
METRONIDAZOLE	G01A;D01A	Trichomonacides; Antifungals Dermatologic
TETRACYCLINE	G01B	Gynaecolog Antifungals

ACTIVE TYPE	IMS	SUB-GROUP
NORETHISTERONE	G03A;G03D	Homonal Contracept Syst; Progestog, Excl G3A, G3F
MEDROXYPROGESTERONE	G03F;G03A; G03D;L02A	Oestro & Proges Comb Not G3A; Homonal Contracept Syst; Progestog, excl G3A, G3F; Cytostatic Homones
NALIDIXIC ACID	G04A	Urin Anti-Infec & Anti-Sep
CITRIC ACID	G04B	Other Uro Preps
LIDOCAINE	H02A	Plain Corticosteriods
DOXYCYCLINE	J01A	Tetracyclines & Combs
NEOMYCIN	J01A	Tetracyclines & Combs
OXYTETRACYCLINE	J01A;D07B;S 03C;D06A;S0 1A	Tetracyclines & Combs; Top Corticosteriod Combs; Eye/Ear Ster/A-Infec Comb; Pln Top Antibiot & Sulpho; Ophth Anti- Infectives
AMPICILLIN	J01C	Broad Spectrum Penicill
AMOXICILLIN	J01C	Broad Spectrum Penicill
CLAVULANIC ACID	J01C	Broad Spectrum Penicill
CLOXACILLIN	J01C	Broad Spectrum Penicill
CEFUROXIME AXETIL	J01D	Cephalosporins
CEPHALEXIN	J01D	Cephalosporins
CEFAZOLIN	J01D	Cephalosporins
SULPHAMETHOXAZOLE	J01E	Trimethoprim & Sim. Combinat
TRIMETHOPRIM	J01E	Trimethoprim & Sim. Combinat
ERYTHROMYCIN	J01F	Macrolides & Similar Type
PENICILLIN V	J01H	Med/Narrow Spect Penicill
PENICILLIN G	J01H	Med/Narrow Spect Penicill
ETHAMBUTOL	J04A	Drugs for Tuberculosis
ISONIAZID	J04A	Drugs for Tuberculosis
RIFAMPICIN	J04A	Drugs for Tuberculosis
PYRAZINAMIDE	J04A	Drugs for Tuberculosis
IBUPROFEN	M01A	Antirheumatic Non-Steroid
DICLOFENAC	M01A	Antirheumatic Non-Steroid
PHENYLBUTAZONE	M01A	Antirheumatic Non-Steroid
NAPROXEN	M01A	Antirheumatic Non-Steroid
INDOMETHACIN	M01A;M02A	Antirheumatic Non-Steroid; Topical Anti Rheumatics
KETOPROFEN	M02A;M01A	Topical Anti Rheumatics; Antirheumatic Non-Steroid
MEPHENESIN	M03B	Muscle Relaxants, Central
ORPHENADRINE	M03B	Muscle Relaxants, Central
ALLOPURINOL	M04A	Anti-Gout Preparations
CODEINE	N02A	Narcotic Analgesics

ACTIVE TYPE	IMS	SUB-GROUP
CAFFEINE	N02B	Non-Narcotic Analgesics
DEXTROPROPOXYPHENE	N02B	Non-Narcotic Analgesics
DOXYLAMINE	N02B	Non-Narcotic Analgesics
MEFENAMIC ACID	N02B	Non-Narcotic Analgesics
PARACETAMOL	N02B	Non-Narcotic Analgesics
ACETYLSALICYLIC ACID	N02B	Non-Narcotic Analgesics
VALPROIC ACID	N03A	Anti-Epileptics
CARBAMAZEPINE	N03A	Anti-Epileptics
AMOBARBITAL	N05B	Hypnotics & Sedatives
MEPROBAMATE	N05C	Tranquillizers
AMITRIPTYLINE	N06A	Antidepressants
CHLOROQUINE	P01D	Anti-Malarials
FENOTEROL	R03A;R03G	B2-Stimulants; Anticholinergic & B2, Sys
AMINOPHYLLINE	R03B	Xanthines
EPHEDRINE	R05A	Non Anti-Infekt Cold Prep
PSEUDOEPHEDRINE	R05A	Non Anti-Infekt Cold Prep
PHENYLPROPANOLAMINE	R05A	Non Anti-Infekt Cold Prep
SALICYLIC ACID	R05A	Non Anti-Infekt Cold Prep
THEOPHYLLINE	R05C	Expectorants
DIPHENHYDRAMINE	R05C	Expectorants
MENTHOL	R05C	Expectorants
AMMONIUM	R05C	Expectorants
CARBOCISTEINE	R05C	Expectorants
PHENYLTOLOXAMINE	R05D	Cough Sedatives
PROMETHAZINE	R06A	Antihistamines Systemic
CHLORAMPHENICOL	S01A;J01B;D06A	Ophth Anti-Infectives; Chloramphenicols & Combs; Pln Top Antibiot & Sulpho
CIPROFLOXACIN	S01A;J01G	Ophth Anti-Infectives; fluoroquinolones
PHENYLEPHRINE	S01F;R05A;R01A	Mydriatics & Cycloplegics; Non Anti-Infekt Cold Prep; Topical Nasal Preps
METHYLCELLULOSE	S01K	Artif. Tears & Ocular Lubr
STERCULIA GUM	n/a	N/a
PARAFFIN OIL	n/a	N/a
CATHINE	n/a	N/a
PYRIDOXINE	n/a	N/a

6.5 ATTRACTIVE CATEGORIES FOR FURTHER LOCAL FORMULATION

The active categories identified above and their accompanying sub-classes are regarded as the most attractive from a market perspective. However, a substantial section of these products are already being manufactured in South Africa.

An analysis was made of those actives for which the existing state (COMED) tender are awarded to manufacturers with sites not located in South Africa, or where the state tenders are partially awarded to foreign operations. The results are as follows:

ACTIVE CATEGORY	IMS CODE	COMED TENDER
ALLOPURINOL	M04A	Partially foreign
AMOXICILLIN	J01C	Foreign
AMPICILLIN	J01C	Partially foreign
CALCIUM CARBONATE	A12A	Partially foreign
CAPTOPRIL	C09A	Partially foreign
CEFAZOLIN	J01D	Partially foreign
CEPHALEXIN	J01D	Partially foreign
CHLORAMPHENICOL	S01A;J01B;D06A	Partially foreign
CIPROFLOXACIN	S01A;J01G	Foreign
CLOXACILLIN	J01C	Partially foreign
DILTIAZEM	C08A	Partially foreign
ERYTHROMYCIN	J01F	Partially foreign
GLICLAZIDE	A10B	Partially foreign
LACTULOSE	A06A	Partially foreign
LIGNOCAINE	H02A	Partially foreign
NEOMYCIN	J01A	Partially foreign
PARACETAMOL	N02B	Partially foreign
PHENYLEPHRINE	S01F;R05A;R01A	Foreign
POTASSIUM CHLORIDE	A11A;A13A	Foreign
PROPRANOLOL	C07A	Partially foreign
RIFAMPICIN	J04A	Partially foreign
THEOPHYLLINE	R05C	Partially foreign
VALPROIC ACID	N03A	Foreign

Assuming these actives are all fairly attractive, this list indicates particular areas where South African operations could focus upon for further manufacturing.

6.6 Usefulness of Market Attractiveness Data

The attractive therapeutic categories identified in this chapter are indicative of areas within the generic manufacturing sector where existing or new producers would be able to introduce new products with a relative good probability of market success. However, it is not possible within the scope of this study to proceed further with the feasibility analysis of specific new products within these categories. These tasks are, and remain, the function of individual companies, which should proceed to identify new products to be introduced into the market.

Various approaches could be followed to identify specific new product types to be introduced, including:

- ⇒ Identification of products within attractive categories which are nearing end of patent protection
- ⇒ Development of improved new products, such as innovative method of application or improved efficacy, safety, etc
- ⇒ Licensing of products with attractive differentiation characteristics not currently sold to the South African market