

IDENTIFYING ACCESSIBLE EXPORT OPPORTUNITIES FOR SOUTH AFRICA IN SOUTH AMERICA

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Abstract

Despite the surging demand for imports in South America in recent years, South Africa's exports to the region have shown relatively low growth. A contributing factor is the prevalence of trade barriers between South Africa and various South American countries. The aim of this study is, firstly, to measure the trade barriers to South Africa's exports to South America and, secondly, to identify high-potential export opportunities in the form of product-country combinations that can best surmount such barriers. The investigation, which uses a reconstructed Decision Support Model (DSM), reveals that Brazil, Argentina and Chile offer the greatest potential as export markets (in US\$ terms) for South Africa, while the most promising product categories are transport-related goods, minerals, vegetables and chemicals. The results of this study should be a useful guide to South Africans planning export initiatives in South America.

Keywords

Export opportunities, trade barriers, Decision Support Model, product-country combinations, South America, South Africa, export promotion.

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1. INTRODUCTION

The global financial crisis led to a significant decline in global trade in 2009, with the countries of the South showing stronger signs of recovery than the developed countries (International Trade Forum, 2010; Onguglo, 2010).

South-South trade is currently growing at about 11% per year. Over 70% of South-South trade is among Asian countries, 6% among South American and Caribbean countries, and 2% among African countries. The most active South-South trading nations are Brazil, China, India, the Republic of Korea, Singapore and Saudi Arabia. Clearly, there is scope for African, South American and Caribbean countries to expand their trade with other developing countries, particularly those in the emerging market category (Onguglo, 2010).

South Africa's national trade promotion organisation, the Department of Trade and Industry (DTI), is particularly keen to boost South African exports to South America, thereby taking advantage of numerous market and trade reforms that have been undertaken in that region over the past decade.

Despite the growing demand in South America for imports from the rest of the world and the signing of the SACU-Mercosur Free Trade Agreement in 2004, South Africa's exports to South America over the past decade have not been responsive to the potential of the region (DTI, 2010; Bratt, 2005).

TABLE 1 shows that South America's total imports grew by 58.2% from 2001 to 2009, but its imports from South Africa grew by only 18.6% during the same period. Furthermore, 0.2% of total world exports were destined for South America in 2009, while only 0.1% of South Africa's total exports that year went to South America, highlighting the clear growth potential of the region as an export destination for South Africa.

TABLE 1: Growth in exports from South Africa and the world to South America (2001-2009)

Exporter	Importer	% Change in value of exports		Market share 2009 (%)
		(2005-2009)	(2001-2009)	
World	South America	37.7%	58.2%	0.2%
South Africa	South America	9.3%	18.6%	0.1%
South Africa	World	12.7%	51.7%	0.4%

Source: ITC (2010)

One might be tempted to attribute South Africa's relatively small market share in, and low export growth to, South America to generally lacklustre export performance on South Africa's part. However, the figures in TABLE 1 prove otherwise. Notably, the value of South African exports to the world grew by 51.7% from 2001 to 2009.

The DTI (2010) set out to explain this conundrum by conducting a survey among businesses to determine how South Africa could increase its trade with South America. A key finding was that South African exporters encounter significant trade barriers when doing business with South American countries. Therefore, it seems that barriers to trade may explain the low growth in

exports from South Africa to South America (DTI, 2010b). In other words, the emphasis is on identifying accessible export opportunities.

The main objectives of this study are therefore (i) to reveal the specific trade barriers that constitute a potentially serious impediment to South African exporters in their efforts to access South American markets, and (ii) to identify those export opportunities – expressed as viable product-country combinations – that have the potential to lead to export success despite the presence of trade barriers.

The first objective will be addressed in section 2. Here the different trade barriers and their impact on trade flows will be discussed, with reference to the literature. Then, on the basis of further investigation, the specific barriers that South African exporters face in the various South American countries will be identified, and those barriers and countries that pose the most serious challenges will be highlighted.

In section 3, the methodology for identifying high-potential export opportunities that can best withstand the identified barriers to trade in the various South American countries will be discussed, and the results of an empirical study provided. In this way the second objective of the study will be addressed.

2. INVESTIGATION INTO TRADE BARRIERS ENCOUNTERED BY SOUTH AFRICAN EXPORTERS IN SOUTH AMERICA

This section is divided into two parts. The first part offers an overview, based on the literature, of the main trade barriers affecting global trade, while the second part highlights those barriers – and countries – that present the greatest challenges to South African exporters, specifically in the various South American countries.

2.1 Literature review

'The longer it takes to trade and the more expensive it becomes to import and export, the less competitive traders are and they cannot reach international markets. Economies with cumbersome trade procedures, timely delays and expensive trade costs are minimising their trade potential' (World Bank, 2009:49). Those factors that hinder international trade are commonly known as trade barriers.

A trade barrier can be formally defined as 'any attitudinal, structural, operative or other obstacle that hinders or inhibits companies from taking the decision to start, develop or maintain international trade activity' (Leonidou, 1995:31). Anderson and Van Wincoop (2003) view trade barriers as any part of the trading process that increases trade costs. The higher costs induced by trade barriers inflate prices, which can lead to exports being uncompetitive in foreign markets.

The trade barriers focused on in this study are tariffs, non-tariff barriers (NTBs), transport costs, time to import, logistics, distance to market, cultural/language differences and exchange rate volatility. NTBs can take many different forms, from anti-dumping rules to environmental regulations and labelling requirements (Freudenberg & Paulmier, 2005).

Multiple studies over the years have found that tariffs and non-tariff barriers negatively affect trade volumes (Hoekman & Nicita, 2008). NTBs have become increasingly prominent for various

reasons. For example, NTBs help to reduce the environmental and/or sanitary risks posed by some imported products. However, there is growing evidence that such measures are sometimes used for protectionist purposes. Also, when tariffs are low (which may be required by a bilateral or regional trade agreement), greater relative importance tends to be attached to other forms of trade intervention such as NTBs (Freudenberg & Paulmier, 2005:44).

According to Hoekman and Nicita (2008), tariffs and NTBs are still the main sources of trade restriction despite the presence of preferential access programmes. They found that if tariffs and NTBs were reduced by 10% in low-income countries, the value of imports into those countries would increase by 8.4% (Hoekman & Nicita, 2008). In his study of the United States, New Zealand and five Latin American countries, Hummels (1999) found that if tariffs were increased by 10%, there would be a 56% decline in the value of those countries' trade. Haveman, Nair-Reichert and Thursby (2003) found that, on average, the imposition of tariffs leads to a 5.5% decline in the value of trade of the 15 most developed importing countries. Tariffs, as a quantitative trade barrier, lend themselves to measurement and comparison, but measuring NTBs necessitates a quantification scheme that can pose difficulties (Papadopoulos, Chen & Thomas, 2002). As a result, most research does not attempt to measure NTBs. Furthermore, NTBs tend to be treated very generally in the literature, with little attention being given to how one type of NTB might differ from another.

High transport costs can also have a negative effect on trade (Hoffman, 2002) because they inflate product prices and can make exports uncompetitive. Where export products have a large import component, high import-related transport costs can exacerbate the problem of uncompetitiveness. Limão and Venables (2001) found that if transport costs were increased by 10%, the value of trade between affected countries would decrease by 20%.

The time it takes to import can also be an impediment to trade. Djankov, Freund and Pham (2006) found that each day an export consignment is delayed is equivalent to a country distancing itself 85 km further away from its export destination. This equates to a 1% decline in the value of the exporting country's trade. In the case of time-sensitive products, a 10% time saving in getting goods to a market would increase the value of a country's exports by 30% (Djankov et al., 2006).

Problems in the logistics chain (where logistics refers to, inter alia, warehousing, cargo consolidation, border clearance, physical distribution and payment systems) are much in evidence in less developed parts of the world and can constitute a serious trade barrier. High-quality logistics, however, helps to reduce trade costs (Arvis, Mistra, Ojala, Shepherd & Saslavsky, 2010).

Even though distance to market accounts for only about 10% of the variation in transport costs, it can have an important influence on trade efficiency (Limão & Venables, 2001; Martinez-Zarzoso, Pérez-García & Suárez-Burguet, 2008). This is because countries that are situated close to each other usually have analogous histories, cultures and languages, which can enhance trade relations (Hoffman, 2002).

The wider the cultural and language gap between countries, the higher the cost of trade (Möhlmann, Ederveen, de Groot & Linders, 2009). This is usually because the negotiation and contractual processes carry more risk, and measures have to be adopted to bridge the cultural divide. However, costs associated with the cultural/language gap are different from other trade costs, as they can be mitigated through cultural orientation and language training (Konya, 2002).

There are contradictory arguments surrounding the effects of exchange rate volatility on trade. A volatile exchange rate creates price uncertainty, which can be viewed as a negative factor (Todani & Munyama, 2005:1). However, in some instances it can lead to higher profits, a positive factor. Empirically, the volatility of exchange rates has not been found to have much effect on trade (Tenreyro, 2007:485).

2.2 Identification of trade barriers faced by South African exporters specifically in South American countries

This section presents the results of a further investigation into the particular barriers to trade that South African exporters encounter in South American countries. The following trade barriers were analysed: tariffs, NTBs, distance to market, time to import, transport costs, logistics and cultural/language differences. Exchange rate volatility was excluded from this analysis because its significance as a trade barrier could not be empirically proven.

The figures in TABLE 2 show that, on average, South American countries apply relatively higher tariffs and lower equivalent NTBs to goods imported from South Africa compared with those imported from the world as a whole.

TABLE 2: Average tariffs and non-tariff equivalents applied by South American countries to South Africa and the world

Country	Average ad valorem equivalent tariff		Average ad valorem equivalent NTBs
	World	South Africa	South Africa
Argentina	10.44%	12.78%	5.3%
Bolivia	8.54%	11.17%	7.2%
Brazil	11.15%	13.69%	16.8%
Chile	4.65%	5.99%	5.5%
Colombia	11.12%	8.35%	15.1%
Ecuador	7.31%	10.05%	N/A
Guyana	10.43%	10.95%	N/A
Paraguay	6.65%	10.37%	N/A
Peru	2.86%	3.67%	7.6%
Suriname	10.75%	9.94%	N/A
Uruguay	7.67%	10.52%	16.9%
Venezuela	11.95%	13.33%	10.4%
South America (average)	8.63%	10.07%	7.1%
World (average)	7.88%	6.27%	11.85%

Source: ITC (2011b)

Brazil and Venezuela apply the highest average tariffs to South African products (13.69% and 13.33%, respectively), while Uruguay applies the highest average non-tariff equivalents to South African products (16.9%). Brazil, Colombia and Venezuela also apply relatively high non-tariff barriers. Unfortunately, no non-tariff barrier data was available for four of the 12 South American countries.

TABLE 3: Distances and shipping times between South Africa and each South American country, and between South America and its top five importers

Country	South Africa		Average of top five importers	
	Distance (NM)	Time (days)	Distance (NM)	Time (days)
Argentina	4 437	29	6 080	23
Bolivia	5 796	55	6 314	18
Brazil	4 152	19	6 760	22
Chile	5 796	55	6 204	27
Colombia	6 929	43	4 315	14
Ecuador	7 660	43	5 275	17
Guyana	5 888	48	2 674	19
Paraguay	4 332	47	9 026	22
Peru	7 022	38	5 306	17
Suriname	5 718	52	5 841	31
Uruguay	4 332	47	4 413	21
Venezuela	6 481	44	3 589	14
South America (average)	5 814	43	5 483	20

Source: Linescape (2011); SeaRates (2011)

As shown in TABLE 3, the average distance between South America and South Africa is almost the same as that between South America and its top five importers (5 814 Nautical Miles (NM) vs. 5 483 NM). However, the average time it takes to ship goods from South Africa to South America is double the average time it takes to ship goods from South America to its top five importers (43 days vs. 20 days). Clearly, long transit times should be a key concern of South African exporters and policymakers looking to increase exports to South America.

From the total (domestic as well as international) transport cost and time data presented in TABLE 4, Uruguay is the cheapest market to access (US\$3 259) and Suriname (US\$8 887) is the most expensive. In addition, it takes the fewest days to export to Brazil (36), and the most days to export to Venezuela (115). On average, it takes South Africa 13 days longer to export to a South American country than it would to another country when judged against the world average of 56 days.

TABLE 4: Total cost and time to export goods from South Africa to the different countries in South America

<i>Destination</i>	<i>Total cost (US\$)</i>	<i>Total time (days)</i>
Argentina	4 689	45
Bolivia	7 055	78
Brazil	4 525	36
Chile	6 103	76
Colombia	4 944	56
Ecuador	6 490	72
Guyana	8 873	70
Paraguay	3 679	80
Peru	5 174	55
Suriname	8 887	77
Uruguay	3 259	69
Venezuela	8 397	115
South America	6 006	69
World average	4 772	56

Source: Authors' calculations from the World Bank (2011), Linescape (2011) and quotes obtained from freight forwarders

TABLE 5 presents the Logistics Performance Index (LPI) scores of the various South American countries. From the table it can be concluded that South America's average logistics performance is closely aligned to the world average (2.79 vs. 2.87). Overall, Brazil outperformed all the other South American countries in terms of the LPI, while Guyana put in the worst performance.

TABLE 5: Logistics Performance Index (LPI) scores for South American countries

<i>LPI rank in the world</i>	<i>Country</i>	<i>LPI</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>International shipments</i>	<i>Logistics competence</i>	<i>Tracking & tracing</i>	<i>Timeliness</i>
48	Argentina	3.1	2.63	2.75	3.15	3.03	3.15	3.82
112	Bolivia	2.51	2.26	2.24	2.53	2.38	2.38	3.20
41	Brazil	3.2	2.37	3.10	2.91	3.30	3.42	4.14
49	Chile	3.09	2.93	2.86	2.74	2.94	3.33	3.80
72	Colombia	2.77	2.50	2.59	2.54	2.75	2.75	3.52
71	Ecuador	2.77	2.32	2.38	2.86	2.60	2.84	3.55

<i>LPI rank in the world</i>	<i>Country</i>	<i>LPI</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>International shipments</i>	<i>Logistics competence</i>	<i>Tracking & tracing</i>	<i>Timeliness</i>
140	Guyana	2.27	2.02	1.99	2.31	2.25	2.28	2.70
76	Paraguay	2.75	2.37	2.44	2.87	2.59	2.72	3.46
67	Peru	2.80	2.50	2.66	2.75	2.61	2.89	3.38
77	Uruguay	2.75	2.71	2.58	2.77	2.59	2.78	3.06
84	Venezuela	2.68	2.06	2.44	3.05	2.53	2.84	3.05
	South America average	2.79	2.42	2.55	2.77	2.69	2.85	3.43
	World average	2.87	2.59	2.64	2.85	2.76	2.92	3.41
	World top 10 average	4.01	3.89	4.14	3.58	4.05	4.14	4.35
	World bottom 10 average	1.98	1.82	1.66	2.20	1.84	1.85	2.40

Source: Arvis et al. (2010)

*No data available for Suriname

From TABLE 6, it is evident that there is some similarity between the two regions when it comes to religious orientation. However, religious beliefs do not play a significant role in South Africa's trade relations with South America. In contrast, there are marked language differences between South Africa and the 12 South American countries, which can impact negatively on the cultural fit between the two regions. Although English is spoken as a second or third language in business circles in most South American countries, proficiency is often quite poor and the risk of language- and culture-induced problems is fairly high.

TABLE 6: South African and South American languages and religions

<i>Country</i>	<i>Major language</i>	<i>Major religion</i>
Argentina	Spanish	Christianity
Bolivia	Spanish, Quechua, Aymara, Guarani	Christianity
Brazil	Portuguese	Christianity
Chile	Spanish	Christianity
Colombia	Spanish	Christianity
Ecuador	Spanish, Indigenous languages	Christianity
Guyana	English, Indigenous languages, Creole, Hindi,	Christianity, Hinduism

<i>Country</i>	<i>Major language</i>	<i>Major religion</i>
	Urdu	
Paraguay	Spanish, Guarani	Christianity
Peru	Spanish, Quechua, Aymara	Christianity
Suriname	Dutch , English, Sranang Tongo, Hindi, Javanese	Christianity, Hinduism, Islam
Uruguay	Spanish	Christianity
Venezuela	Spanish, Indigenous languages	Christianity
South Africa (official)	Afrikaans, English, isiNdebele, isiXhosa, isiZulu, Sesotho sa Leboa, Sesotho, Setswana, SiSwati, Tshivenda, Xitsonga	Christianity, Islam, Hinduism, Judaism

Source: *BBC News (2011); Anon (2011)*

It can be concluded that the most prevalent trade barriers that South African exporters face in South America are tariffs (particularly in Brazil and Venezuela), NTBs (particularly in Brazil, Colombia, Uruguay and Venezuela), time to import (on average, almost double that of competitors), cost to import (on average, 26% higher than other destinations), and language differences.

3. IDENTIFYING HIGH-POTENTIAL EXPORT OPPORTUNITIES FOR SOUTH AFRICAN EXPORTERS IN SOUTH AMERICA

In this section, the methodology for identifying high-potential export opportunities that can best withstand the barriers to trade in the various South American countries will be discussed, along with the results of a practical application of the methodology.

3.1 Decision Support Model methodology

The Decision Support Model (DSM), developed by Cuyvers et al. (1995), Cuyvers (1997) and Cuyvers (2004), is an analytical tool that identifies realistic export opportunities for a country wanting to extend its sales reach into foreign markets. Essentially, the DSM offers a systematic means of product and market selection.

The DSM methodology involves taking into consideration all possible worldwide product-country combinations and, using four filters, sequentially eliminating less promising markets with a view to arriving at those with the highest potential for export success.

Filter 1 of the DSM assesses countries on the basis of their political and commercial risk ratings, and macroeconomic size and growth (i.e. GDP [Gross Domestic Product], GDP per capita, growth in GDP and growth in GDP per capita). In the application of the DSM for South Africa exporting to South America, filter 1 was not used, as only the 12 South American countries were included in filter 2 for the purposes of this study.

Filter 2 of the DSM assesses the import size and growth of each product-country combination within the countries in question. Short-term import growth is determined by measuring the simple annual growth rate in imports over two years. Long-term import growth is determined calculating the compounded annual growth rate in imports over a five-year period. The import data per product-country combination is used as an indication of the extent of import demand in each market.

Filter 3 has two parts, namely, filter 3.1, which assesses the degree of market concentration, and filter 3.2, which assesses the prevalence of trade barriers in the countries concerned. Market concentration is measured by means of the Herfindahl-Hirschmann Index (Hirschmann, 1964), which indicates whether it is a monopolistic or a more competitive market. The more concentrated a market, the more difficult it is to enter. Thus, there is a negative relationship between market concentration and export performance (Cuyvers et al., 1995).

A market that shows strong import growth could still be relatively inaccessible due to trade barriers. Therefore Cuyvers et al. (1995) introduced an assessment of barriers to trade to the DSM. Owing to limited data on trade barriers at the time, Cuyvers used an index for the 'revealed absence of barriers to trade' in filter 3.2 of the 1995, 1997 and 2004 applications of the DSM for Belgium and Thailand. It was argued that if the exporting country's neighbours could establish a relatively strong market position in a particular market, it means that trade barriers in this market would not be too difficult to overcome (Cuyvers et al., 1995; Cuyvers, 1997; 2004). In this study, however, a different approach was followed, which included a new method and data from the International Trade Centre (ITC) to more accurately measure the trade barriers faced by South African exporters in the countries of South America. The ITC's market attractiveness index uses three main criteria: (i) market size (ii) market growth and (iii) ease of market access. The *ease of market access index* of the ITC uses two criteria: (i) the *ad valorem* tariff applied to a particular exporting country's product, and (ii) the difference between the tariff applied to the exporting country and the average tariff faced by the top five competitors exporting to the market in question, known as the preferential tariff (ITC, 2011a).

As the literature reveals various other factors that influence market access, e.g. NTBs, transport costs, time to import and logistics issues (see section 2.1), the ITC's *ease of market access index* was expanded for the purposes of this study to incorporate additional variables.

The specific variables used in this study were:

- *Ad valorem* equivalent tariffs faced by South African exporters per product-country combination. This data was obtained from the Market Access Map and the United Nations Comtrade Database.
- Preferential tariffs, which is the difference between the tariff applied to the exporting country and the average tariff faced by the top five competitors in the importing market. This data was obtained from the ITC (Marty, 2012).
- *Ad valorem* equivalent NTBs per product-country combination. This data was obtained from Kee, Nicita and Olarreaga (2008).
- Transport costs, relating to a 20-foot general-purpose container, were calculated by adding the international leg costs (i.e. shipping the container from the port of Durban to South America) to the domestic leg costs in the South American country concerned (e.g. customs documentation and inspection fees, terminal handling charges and domestic transport cost). The data for the domestic leg costs was obtained from the World Bank's

Doing Business Report (2009), while that for the international leg costs was obtained from freight forwarders.

- Time to import, relating to a 20-foot general-purpose container, was calculated by adding the time involved in conveying the container from the port of Durban to the nearest port in each of the South American countries, to the time involved in domestic transportation and completing domestic formalities (e.g. document processing, local transport and handling, and customs clearance and inspection). This information was obtained from the World Bank's Doing Business Report (2009) and freight forwarders, respectively.
- Logistics performance, as reflected in the Logistics Performance Index (LPI). The Index assigns a score to a country according to the standard of its logistics operations (i.e. efficiency of customs clearance processes, quality of trade and transport-related infrastructure, ease of organising competitively priced import shipments, ability to track and trace consignments, and frequency with which shipments reach their destination on time) (Arvis et al., 2010).

Distance and cultural/language barriers were not included in the index. Distance is already taken into consideration in the transport time and cost variables associated with routing, transshipment, loading, waiting time, the condition of the infrastructure, customs clearance and inspections. Cultural/language barriers, in turn, cannot be quantified and included in an index. Nevertheless, it is important for South African exporters to be aware of the language and religious differences highlighted in TABLE 6 when dealing with South American counterparts.

In order to calculate a composite market accessibility index per product-country combination, the above variables were standardised using the method of the ITC (2011a), which overcomes the problem of different units of measure being used. The standardising method converts each value into an index value ranging from 0 to 100, where 0 indicates weak performance and 100 indicates best performance. The simple average of the index values for the six variables was used to arrive at a market accessibility index per product-country combination. This index was used to rank the accessibility of the product-country combinations concerned and to eliminate those with the lowest accessibility. Those with acceptable levels of accessibility enter filter 4.

Filter 4 determines whether the exporting country specialises in producing and exporting the product-country combinations identified by filter 3. This is done by using the Revealed Comparative Advantage (RCA) of Balassa (1965). If the RCA is greater than 1, it means there is a match between the exporting country's production and export capabilities and the export potential of the product-country combination under consideration.

Filter 4 further categorises all the product-country combinations according to 20 possible 'cells' with different permutations of market size and growth, and the share of the importing country's market that the exporting country actually has (see TABLE 7) (Cuyvers et al., 1995; Cuyvers, 1997; Cuyvers, 2004). The final step in filter 4 is assigning a potential export value to each identified product-country combination. Steenkamp (2011) introduced the value calculation in the DSM so that potential export opportunities could be prioritised. The potential export value is calculated as follows:

$$\text{Potential export value} = \frac{\text{The total imports of country } i \text{ of product } j}{\text{Number of countries that contributes to 80\% of these imports} + 1}$$

This estimation of export potential gives an indication of the size of the import demand for each product-country combination relative to one another.

TABLE 7 shows how export opportunities are assigned to specific cells based on market size and growth (filter 2), and the exporting country's relative share of the importing country's market (filter 4).

TABLE 7: Final categorisation of high-potential export opportunities in DSM

	<i>Market share of the importing country held by the exporting country (n)</i>			
	<i>Relatively small</i>	<i>Intermediately small</i>	<i>Intermediately high</i>	<i>Relatively high</i>
Large product market	Cell 1	Cell 6	Cell 11	Cell 16
Growing (short- & long-term) product market	Cell 2	Cell 7	Cell 12	Cell 17
Large product market with short-term growth	Cell 3	Cell 8	Cell 13	Cell 18
Large product market with long-term growth	Cell 4	Cell 9	Cell 14	Cell 19
Large product market with short- and long-term growth	Cell 5	Cell 10	Cell 15	Cell 20

Source: Cuyvers (2004:269)

For example, if an export opportunity is assigned to Cell 20, it means there is high import demand which is growing in the short and long term, and the exporting country's share of that market is already relatively high. In other words, the exporting country has been taking advantage of available opportunities and should continue to do so.

The allocation of export opportunities to different cells can help the exporting country's export promotion authorities to formulate appropriate strategies for each target market. If the export opportunity is assigned to Cell 1 to Cell 10, an offensive/aggressive market expansion strategy is recommended (Cuyvers et al., 1995), because the exporting country's market share could be expanded. If an export opportunity is assigned to Cell 11 to Cell 15, an offensive/aggressive market expansion strategy is also recommended (Cuyvers et al., 1995), because the exporting country's share of the market still has room for growth. For export opportunities assigned to Cells 16 to 20, a defensive market strategy is recommended so that the exporting country can retain its dominant position in the market (Cuyvers et al., 1995).

For more information on specific calculations, formulae and cut-off values, see Jacobs (2012) and Cuyvers, Steenkamp and Viviers (2012).

3.2 Results: export opportunities for South African exporters in South America

For the purposes of this study, 62 986 possible product-country combinations (11 South American countries for which trade data was available multiplied by 5 726 HS [Harmonised System] 6-digit level products) entered filter 2 of the DSM with a view to identifying South

African export opportunities in South America, and 1 756 product-country combinations were identified as realistic opportunities. These are presented in TABLE 8.

TABLE 8: South American countries ranked according to the number of export opportunities identified for South Africa

<i>Country ranking i.t.o. number of export opportunities</i>	<i>Country</i>	<i>Number of products selected in the country</i>	<i>Share in total number of opportunities (%)</i>
1	Chile	264	15.03
2	Brazil	228	12.98
3	Peru	227	12.93
4	Argentina	200	11.39
5	Colombia	200	11.39
6	Ecuador	163	9.28
7	Uruguay	151	8.60
8	Bolivia	123	7.00
9	Paraguay	117	6.66
10	Venezuela	51	2.90
11	Guyana	32	1.82
Total	South America	1 756	100.00

Source: Authors' calculations

Chile is at the top of the list, with the highest number of realistic export opportunities for South Africa (264). Brazil is ranked second (228), with a 12.98% share in the total number of opportunities, and Peru is third (227), with a 12.93% share in the total number of opportunities.

According to TABLE 9, which ranks each country in South America according to its total potential export value for South Africa, Brazil has the largest share in total potential export value (41.03%), followed by Argentina (20.11%) and Chile (12.25%).

TABLE 9: South American countries ranked according to their total potential export value for South Africa

<i>Country ranking i.t.o. potential export value</i>	<i>Country</i>	<i>Potential export value (2010) (US\$ '000)</i>	<i>Share in total potential export value (%)</i>
1	Brazil	5 446 072	41.03
2	Argentina	2 669 790	20.11
3	Chile	1 625 455	12.25
4	Peru	1 298 934	9.79
5	Colombia	1 053 178	7.93
6	Ecuador	519 977	3.92
7	Venezuela	268 452	2.02
8	Paraguay	166 523	1.25
9	Bolivia	118 311	0.89
10	Uruguay	84 571	0.64
11	Guyana	22 611	0.17
Total	South America	13 273 874	100.00

Source: Authors' calculations

To determine the *sectors* in which most of the realistic export opportunities exist, the 1 756 product-country combinations are grouped in terms of the HS 2-digit level categorisation.

As shown in FIGURE 1, the top five HS 2-digit product groups in terms of potential export value are transport (HS 86 to 89: 39%), machinery/electrical (HS 84 to 85: 18%), mineral products (HS 25 to 27: 13%), chemicals and allied industries (HS 27 to 38: 10%), and metals (HS 72 to 83: 6%).

TABLE 10 shows the top 10 products with the highest potential export value for South Africa in South America. Of the top five products, three are in the transport sector (automobiles, spark-ignition engines of 1500–3000 cc and 1000–1500 cc, and diesel-powered trucks weighing < 5 tonnes), one is in the mineral products sector (bituminous coal, not agglomerated), and one is in the vegetable products group (maize, except seed corn).

TABLE 10: Products with the highest potential export value (US\$ thousand) for South Africa in South America

<i>Rank</i>	<i>HS 6-digit product code and description</i>	<i>Potential export value (2010) (US\$ thousand)</i>
-------------	--	--

1	870323 - Automobiles, spark ignition engine of 1500-3000 cc	4 239 158
2	270112 - Bituminous coal, not agglomerated	1 084 383
3	870421 - Diesel powered trucks weighing < 5 tonnes	486 345
4	100590 - Maize except seed corn	484 976
5	870322 - Automobiles, spark ignition engine of 1000-1500 cc	363 052
6	840820 - Engines, diesel, for motor vehicles	324 836
7	270119 - Coal except anthracite or bituminous, not agglomerated	317 851
8	310230 - Ammonium nitrate, including solution, in pack >10 kg	284 198
9	310540 - Monoammonium phosphate & mix with diammonium, <=10 kg	259 210
10	850213 - Generating sets, diesel, output > 375 kVA	244 626

Source: Authors' calculations

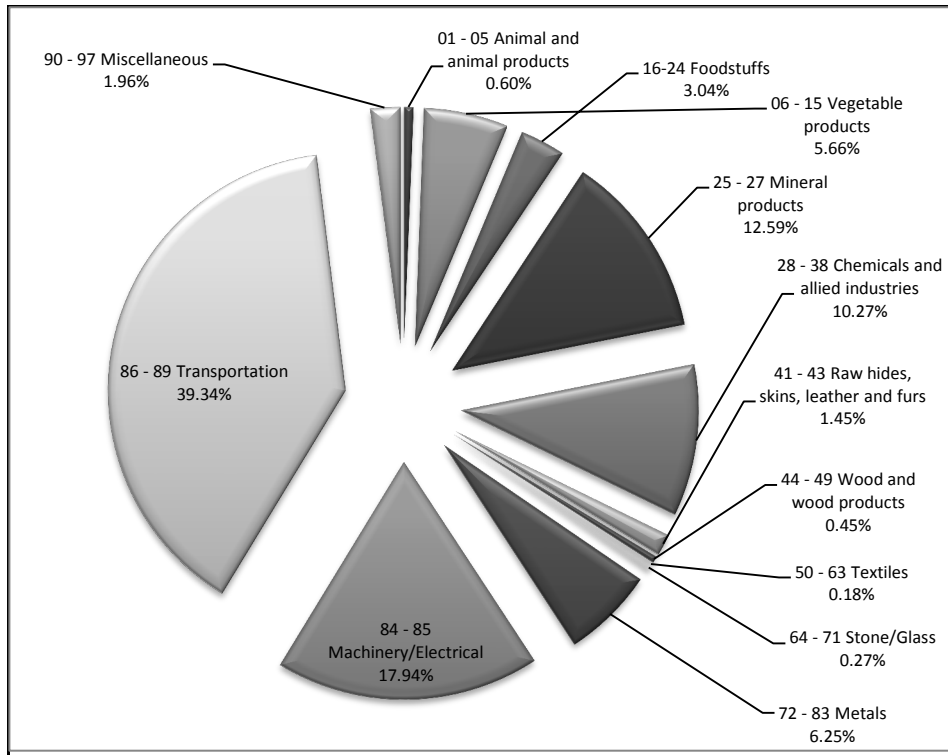


FIGURE 1: Comparison of potential export values (US\$ thousand) of South Africa per HS 2-digit product group in South America

Source: Authors' calculations

The results for the next level of analysis show those product-country combinations in which South African products have the highest potential export value. The relevant breakdown appears in TABLE 11.

The South American countries in the top 20 product-country combinations, ranked according to the greatest export potential (expressed in terms of US\$ thousand), are Brazil (6), Argentina (4), Peru (4), Chile (3), Colombia (2) and Ecuador (1). The product categories are: transport products (e.g. 1500 cc – 3000 cc automobiles, diesel trucks weighing less than five tons and diesel engines for motor vehicles), mineral products (e.g. different variations of coal), vegetable products (e.g. maize except seed corn) and chemicals (e.g. ammonium, monoammonium, hydrazine).

TABLE 11: Top 20 product-country combinations with the highest potential export value (US\$ thousand) for South Africa in South America

<i>Rank</i>	<i>Country</i>	<i>HS 6-digit product code and description</i>	<i>Potential export value(2010) (US\$ thousand)</i>
1	Argentina	870323 - Automobiles, spark-ignition engines of 1500-3000 cc	1 608 281
2	Brazil	870323 - Automobiles, spark-ignition engines of 1500-3000 cc	1 545 458
3	Brazil	270112 - Bituminous coal, not agglomerated	950 502
4	Chile	870323 - Automobiles, spark-ignition engines of 1500-3000 cc	428 658
5	Colombia	100590 - Maize, except seed corn	265 593
6	Brazil	270119 - Coal, except anthracite or bituminous, not agglomerated	262 139
7	Argentina	840820 - Engines, diesel, for motor vehicles	240 971
8	Colombia	870323 - Automobiles, spark-ignition engines of 1500-3000 cc	223 340
9	Chile	870421 - Diesel-powered trucks weighing < 5 tonnes	222 504
10	Peru	100590 - Maize, except seed corn	219 375
11	Brazil	310230 - Ammonium nitrate, including solution, in pack >10 kg	214 163
12	Ecuador	870323 - Automobiles, spark-ignition engines of 1500-3000 cc	208 735
13	Chile	870322 - Automobiles, spark-ignition engines of 1000-1500 cc	208 032
14	Brazil	310540 - Monoammonium phosphate & mix with diammonium, <=10 kg	159 780
15	Peru	870322 - Automobiles, spark-ignition engines of 1000-1500 cc	155 020

<i>Rank</i>	<i>Country</i>	<i>HS 6-digit product code and description</i>	<i>Potential export value(2010) (US\$ thousand)</i>
16	Peru	870323 - Automobiles, spark-ignition engines of 1500-3000 cc	154 244
17	Peru	870421 - Diesel-powered trucks weighing < 5 tonnes	151 778
18	Argentina	270112 - Bituminous coal, not agglomerated	133 881
19	Brazil	292800 - Organic derivatives of hydrazine or of hydroxylamine	123 810
20	Argentina	310540 - Monoammonium phosphate & mix with diammonium, <=10 kg	99 430

Source: Authors' calculations

3.3 Summary of findings and recommendations

It is important to note, with reference to TABLE 12, that the top five countries in terms of potential export value are also the top five countries in terms of market accessibility, i.e. Argentina, Brazil, Chile, Colombia and Peru.

TABLE 12: South American countries' ranking in terms of potential export value and market accessibility

<i>Potential export value</i>		<i>Market access index</i>	
<i>Rank</i>	<i>Country</i>	<i>Rank</i>	<i>Country</i>
1	Brazil	1	Brazil
2	Argentina	2	Argentina
3	Chile	3	Peru
4	Peru	4	Colombia
5	Colombia	5	Chile
6	Ecuador	6	Uruguay
7	Venezuela	7	Paraguay
8	Paraguay	8	Ecuador
9	Bolivia	9	Bolivia
10	Uruguay	10	Guyana
11	Guyana	11	Venezuela

Source: Authors' calculations

The above results offer useful insights into the nature and extent of South African export opportunities in South America, and could form the basis of strategies developed by

stakeholders in South Africa (exporters, the Department of Trade and Industry and other trade promotion organisations, provincial government departments, export councils, industry associations and other sector-specific groups) to reduce the barriers that hinder exports to South America.

With reference to the market expansion strategies outlined in Section 3.1, it is recommended that South Africa, with its limited export-promotion resources, focuses its attention on the export opportunities assigned to Cells 11 to 15 rather than those assigned to Cells 1 to 10, which would need a great deal of export-promotional assistance. At the other end of the scale, those export opportunities occupying Cells 16 to 20 do not need much export-promotional assistance as they are already being tapped.

TABLE 13 lists the 23 product-country combinations that occupy Cells 11 to 15. The products are ranked according to their respective potential export values.

It is important to note that the product-country combinations occupying Cells 11 to 15 emanate from six of the 11 featured South American countries, namely, Argentina, Bolivia, Brazil, Chile, Colombia and Peru. The top five products in terms of potential export value are balls, iron/steel, forged/stamped for grinding mills; grape wines, sparkling; transmission shafts and cranks, cam and crank shafts; bearings, tapered roller, including assemblies and maize (corn) seed.

TABLE 13: Identified product-country combinations assigned to Cells 11 to 15

<i>Country</i>	<i>HS 6-digit product code and description</i>	<i>Filter 4 cell classification</i>	<i>Potential export value (2010) (US\$ thousand)</i>	<i>Actual SA exports (2010) (US\$ thousand)</i>
Chile	732611 – Balls, iron/steel, forged/stamped for grinding mills	15	19 583	1 612
Brazil	220410 – Grape wines, sparkling	12	12 613	37
Chile	848310 – Transmission shafts and cranks, cam and crank shafts	15	9 479	101
Colombia	848220 – Bearings, tapered roller, including assemblies	12	8 070	53
Argentina	100510 – Maize (corn) seed	12	7 680	1 002
Argentina	842890 – Lifting, handling, loading or unloading machinery	13	7 382	199
Colombia	842123 – Oil/petrol filters for internal combustion engines	12	6 738	0
Brazil	310260 – Calcium-ammonium nitrate mix, double salts pack >10kg	14	5 303	91
Colombia	901310 – Telescopes for arms/other equipment, periscopes	14	4 757	119
Chile	848220 – Bearings, tapered roller, including assemblies	12	3 185	61
Colombia	870891 – Radiators for motor	12	1 706	4

Country	HS 6-digit product code and description	Filter 4 cell classification	Potential export value (2010) (US\$ thousand)	Actual exports (2010) (US\$ thousand)	SA
	vehicles				
Peru	820412 – Wrenches, hand-operated, with adjustable jaws	12	1 442	0	
Colombia	846711 – Tools for working in the hand, pneumatic rotary type	12	1 367	31	
Colombia	721923 – Hot rolled stainless steel flat, w >600mm, t 3-4.75mm	12	1 178	572	
Argentina	330112 – Essential oils of orange	12	989	1	
Argentina	282110 – Iron oxides and hydroxides	12	926	15	
Chile	851230 – Sound signalling equipment	12	839	1	
Argentina	950629 – Water-skis, surfboards, other water-sport equipment	12	673	0	
Bolivia	820713 – Rock drilling w/wk p cerme	12	552	150	
Peru	902920 – Speed indicators, tachometers, stroboscopes	12	519	16	
Colombia	720292 – Ferro-vanadium	12	413	392	
Peru	261510 – Zirconium ores and concentrates	12	170	153	
Argentina	220421 – Grape wines, fortified wine or must, pack < 2 litre	12	165	37	

Source: Authors' calculations

Even though Argentina, Bolivia, Brazil, Chile, Colombia and Peru offer the most promising export opportunities, the barriers that typically present themselves in trade with these countries still need to be taken into account when the optimal product-country combinations are selected. In addition, despite the practical value of the DSM results, it is a good idea to complement these with the market intelligence and experiences of trade promotion organisations and existing exporters to South America. Finally, it is advisable to develop a detailed market profile for each chosen product-country combination and use it in conjunction with the DSM results. This is because the DSM focuses on market size, growth, main competitors and market access conditions, and not on specific qualitative market information.

4. CONCLUSION

Despite the surging demand for imports in South America in recent years, South Africa's exports to the region have grown at a low rate. A contributing factor is the prevalence of trade barriers between South Africa and different South American countries.

The main objectives of this study were to reveal the specific trade barriers that constitute potentially serious impediments to South African exporters in their efforts to access South American markets, and to identify those export opportunities – expressed as viable product-country combinations – that have the potential to lead to export success despite the presence of trade barriers.

The most prevalent barriers that South African exporters face in South America are tariffs, non-tariff measures particularly in Brazil, Colombia, Uruguay and Venezuela, time to import (almost double that of competitors on average), cost to import (on average 26% higher than other destinations) and the poor English proficiency in business circles in most South American countries.

By using the Decision Support Model (DSM), it was possible to identify high potential export opportunities in the form of product-country combinations that can best withstand the identified trade barriers.

The results of the DSM indicate that in terms of the share in the total potential export value, Brazil is the South American country with the largest share (41.03%), followed by Argentina (20.11%) and Chile (12.25%). The top five sectors in terms of potential export values are transportation (HS 86 to 89: 39%), machinery/electrical (HS 84 to 85: 18%), mineral products (HS 25 to 27: 13%), chemicals and allied industries (HS 27 to 38: 10%) as well as metals (HS 72 to 83: 6%)

It is important to note that the top five countries in terms of potential export value are also the top five countries with the lowest trade barriers on average. These are Argentina, Brazil, Chile, Colombia and Peru. If the trade promotion organisations know which countries and products hold the highest export potential, they will be better informed to negotiate lower trade barriers for these opportunities. The information on market accessibility provided in this study can also inform these negotiations.

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