Identifying New Product And Service Export Opportunities For South Africa Using A Decision Support Model

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ABSTRACT

In the face of slow economic growth and development, and the perennial problems of unemployment, poverty and inequality, the South African government and business community have long recognised the importance of growing and diversifying the country's tangible goods and services export sectors.

One of the challenges in designing and implementing effective export promotion strategies is identifying the right markets, given South Africa's ever-fluid skills, capacity and trading relationships. The Decision Support Model (DSM) is an export market selection tool that makes use of a sophisticated filtering process to sift through an extensive range of product-/service- and country-related data to reveal those product-/service-country combinations ('export opportunities') that are the most realistic and sustainable. The DSM, which has been applied for Belgium, Thailand and South Africa, not only brings greater precision to the export market selection process, but also unveils opportunities that may not have been contemplated before – thus supporting the quest for export diversification.

This paper examines the role of the DSM for products and the DSM for services, respectively, and illustrates how, using the results from the application of these models, they herald the start of a new era in export market selection and promotion in South Africa.

Keywords: Export Opportunities; Export Promotion; Decision Support Model (DSM)

1.   INTRODUCTION

$\mathcal{L}$ike many developing countries, South Africa faces significant economic challenges, from tackling persistently high unemployment and widespread poverty, to improving the country's image as a trade and investment partner, and generating sustainable economic growth. Many government initiatives have been launched in recent years – at national, provincial and local level – to stimulate greater economic opportunities and put the country on a better economic footing. A key component in several of these initiatives is a stronger and more focused export drive.

Export promotion is important for creating employment opportunities, generating foreign exchange reserves, and improving the living standards of a country's citizens. However, whereas large numbers of possible export opportunities exist, relatively few have a realistic chance of being successfully exploited.

This paper first provides an overview of economic policies and initiatives introduced by the South African government in recent years, with special emphasis on their role in boosting the country's exports.

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Secondly, the paper evaluates South Africa's current export performance and traces the country's trade statistics since 2000. The firms responsible for generating the country's exports are profiled, highlighting the dynamic character of the export sector. This analysis reveals that the majority of exports produced by the firms in question are within the intensive margin (i.e. selling more of the same products to the same markets), which points to the need for export diversification and the role of South Africa's trade promotion organisations in steering firms towards the most promising export opportunities.

Thirdly, the paper discusses the importance of sound and forward-thinking export promotion, and demonstrates how an international market selection method, called the Decision Support Model (DSM), can be applied to identify the most promising realistic export opportunities for South Africa's products and services, against the backdrop of a rapidly changing international trading environment. This study updates, refines and extends – for South African conditions - the Decision Support Model (DSM) originally developed by Cuyvers *et al.* (1995) and Cuyvers (1996). A DSM for services was developed by Grater and Viviers (2012), and the results of the export opportunities relating to various services sectors are also analysed as an important component of the drive to diversify South Africa's exports.

The product-country and service-country combinations identified in this study can be used by South African trade promotion organisations to inform and focus their promotion activities. These export opportunities can guide exporters that want to expand their sales reach into foreign markets. Furthermore, they offer alternatives to current exporters that are facing saturation and/or declining growth in their traditional markets.

The research methodology and findings outlined in this paper are intended to contribute to one of the aims of the South African government, namely, to increase the country's exports and ultimately achieve higher economic growth rates, lower unemployment and less inequality in the country.

2.   RECENT SOUTH AFRICAN GOVERNMENT INITIATIVES

The importance of increased industrialisation, as well as the need to enhance and diversify South Africa's exports, are highlighted in a number of national documents, e.g. the National Growth Path, the National Development Plan, the National Industrial Policy Framework (NIPF) (DTI, 2010a), the South African Trade Policy and Strategy Framework (TPSF) (DTI 2010b), as well as the Industrial Policy Action Plan (IPAP)(DTI, 2011).

The National Growth Path (NGP) and National Development Plan (NDP) are the two over-arching and complementary strategies that aim to guide government departments and businesses alike in their quest to achieve an inclusive, innovative and productive society.

The NGP emphasises the importance of the state in bringing about much-needed development in South Africa, as well as economic and trade policies that are designed to boost economic growth while also supporting labour-absorbing manufacturing. Furthermore, it states that South Africa should be focusing on the BRICS countries and regional partners for international trade and investment opportunities, and selecting foreign markets on the basis of South Africa's ability to competitively and sustainably supply such markets.

The NDP also has job creation as a core component, and subscribes to the idea of the state playing a developmental and transformative role. However, it asserts that the capacity of the state needs to be built up so that it can fulfil its mandate effectively. Export growth and greater competitiveness are two of the cornerstones of the NDP, along with the recognition that other emerging economies (including the rest of the BRICS grouping) are a valuable source of export and FDI opportunities for South Africa. A recurring theme in the NDP is that economic growth and development can be accelerated if there is greater efficiency in both the public and private sectors, value-added and innovative sectors are given priority, and business, labour and government cooperate in determining the best way forward.

South Africa's National Industrial Policy Framework (NIPF) is the government's broad approach to industrialisation and was adopted by the National Cabinet in 2007. The NIPF seeks to encourage value-added, labour-absorbing industrial protection, and diversify the economy away from its current over-reliance on traditional

commodities and non-tradable services, thus creating the catalyst for employment growth (DTI, 2010a). Other features include building a knowledge economy and enhancing the country's productive capacity, especially among previously disadvantaged and marginalised communities. Key ingredients in this process include innovation, education and skills development, a sector-specific focus, and a trade policy framework that supports greater inroads being made into the African continent and South-South collaboration.

The Industrial Policy Action Plan (IPAP) was adopted by the National Cabinet in 2010 (DTI, 2011). Its latest revision, IPAP2, identifies priority sectors for industrialisation, and outlines associated actions and success factors. A major theme of IPAP2 is the need for South Africa to diversify its export mix, and focus on value-added manufactured and service exports that can help to address unemployment and poverty head on. The TPSF, in turn, which was released in 2010 and supports the objectives of South Africa's industrial policy, clarifies the country's trade initiatives at multilateral, regional and bilateral levels, and suggests various tariff adjustments with a view to boosting trade.

Given the knowledge and skills deficiencies that permeate the export sector in the country, the DTI's recently launched (in 2013) National Exporter Development Programme (NEDP) is particularly timeous. The NEDP is a multi-faceted initiative aimed at boosting exporter readiness through the identification of viable products and markets, as well as training, knowledge sharing, and support. Small businesses are the primary target of the development programme, which takes its broad direction from the NDP, NGP, NIPF and TPSF. According to the DTI, "the programme aims to build on existing activities and capacities at the DTI, provincial economic development departments, provincial trade and investment agencies, the Small Enterprise Development Agency (SEDA), and other international and local stakeholders to ensure the delivery of key interventions to emerging and experienced exporters" (Parsons, 2013).

Even the most well-informed and coherent trade policies and initiatives cannot on their own deliver on the challenges of diversifying the export mix, gaining greater market access, and seeing off the competition. Much is dependent on whether the business environment is conducive to the development and expansion of a viable export sector. This assumes, inter alia, that businesses have sufficient incentive to get involved in exporting, and can rely on ongoing and accessible information and practical assistance from both government and private sector trade specialists.

3.   EXPORTER DYNAMICS

3.1   South African Exports

Since the onset of the new millennium but before the global financial crisis, South Africa experienced an average annual export growth rate of 14.32% (in nominal value terms). Since 2008 (through 2012), the growth rate averaged 6.37% (UnctadStat, 2013). Unfortunately, in volume terms, a similarly bleak picture has emerged. According to Parsons (2013), export volumes grew by only 3.9% between 2000 and 2007, and since 2008, the growth rate has declined to 2%.

For many years, South Africa's top export destinations were mainly the high-income countries, such as the United States, Germany, the United Kingdom and Japan. However, given the growing influence of the emerging markets and the slowdown in the United States and Europe in recent years, South Africa's trade alliances and patterns have been changing. China is now South Africa's largest single export destination, although Europe remains the country's biggest export region. Africa, though not without its challenges, is seen as a priority by South Africa's trade officials, as is the BRICS grouping, though time will tell whether BRICS will deliver economic benefits in addition to its obvious political benefits.

South Africa's export performance is extremely important to the country's overall economic wellbeing, contributing 29% to the country's GDP in 2011 (World Bank, 2013). Despite appeals and efforts to build capacity in the manufacturing sector and increase the range of value-added exports, South Africa is still very reliant on commodities for its export earnings. Metals and mineral products, for example, account for at least 50% of the country's merchandise exports. Relatively little agricultural output finds its way to export markets. However, one

shining star in terms of its ability to deliver large volumes of high-value manufactured exports is the automotive industry, which has benefited from a very focused government investment and export promotion campaign in recent years.

Among the many challenges that South Africa's exporters have to face is the reality of the country's declining global competitiveness, which is making it increasingly difficult to run successful operations and attract sustainable business. Though it is a very complex problem that requires a collective effort to fix, competitiveness needs to take centre stage in South Africa's export promotion efforts.

Taking an aggregate view of a country's export performance, however, encourages blunt policy interventions like high-level trade agreements, or incentives that benefit only specific industry interest groups. To achieve focus in the country's export drive, more needs to be known about the firms that export and their behaviour. The following sub-section puts South Africa's exporters under the microscope.

3.2   South African Exporting Firms

In 2012, the World Bank published a new database on exporting firms. The Exporter Dynamics Database contains customs data from 38 developing and 7 developed countries spanning the period 2001 to 2009 (Cebeci *et al.*, 2012). This database provides information on different types of exporters, which illustrates the dynamics of exporting firms. Cebeci *et al.* (2012:15) offer the following definitions of firms included in the database:

- An $exporter_t$ is any firm that exports in year t,
- an $entrant_t$ is a firm that does not export in year t-1 but exports in year t,
- an $exiter_t$ is a firm that exports in year t-1 but does not export in year t,
- an $incumbent_t$ is a firm that exports in both years t-1 and t
- a $survivor_t$ is a firm that does not export in year t-1 but exports in both years t and t+1.

The point of departure in describing the dynamics of South African exporting firms is to consider their basic characteristics, i.e. arrive at a profile of the types of firms that get involved in exporting. Table 1 presents this information for the period 2003 to 2007, as this timespan coincides with the data used in the application of the DSM (see section 5). The number of exporters declined somewhat during the period, whereas the average export value per exporter increased. Furthermore, the number of new exporters decreased, but the number of firms no longer exporting also tapered off. This was also evident in the firm entry and exit rates. On average for the period, the firm survival rate was 47% (this shows that 53% of new entrants in a particular year did not export in the following year). The number of incumbents remained more or less steady over the period, and the same holds for the number of survivors. Moreover, the growth rate of the incumbent exporters over the 5 year period was 6% and that for survivors was 34%. New entrants contributed very little (2%) to the total export value.

Table 1: Basic Characteristics And Firm Dynamics In South Africa's Export Sector

	2003	2004	2005	2006	2007	Average
Number of exporters	22 544	21 661	20 634	21 251	21 399	21 498
Number of entrants	7 852	6 936	5 853	6 114	5 904	6 532
Number of exiters	8 328	7 819	6 880	5 497	5 756	6 856
Number of survivors	3 194	2 906	2 946	3 026	2 983	3 011
Number of incumbents	14 692	14 725	14 781	15 137	15 495	14 966
Firm entry rate	35%	32%	28%	29%	28%	30%
Firm exit rate	36%	35%	32%	27%	27%	31%
Firm survival rate	41%	42%	50%	49%	51%	47%
Average export value per exporter (in SA rands)	1299333	1712595	2075348	2272435	2706501	2013242

Source: World Bank (2012)

The second aspect to consider when examining firm dynamics is the export growth rate over the period. More specifically, the goal is to determine whether the growth in total export value (19% from 2003 to 2007) was the result of increases in the number of exporters or increases in the average size of established exporters. From the

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calculations it is evident that the growth of South Africa's exports was due to an increase in the average export value of existing exporters. A further decomposition of the period shows that the share of the top 1% of exporters in the total export value was 77%, the share of the top 5% of exporters in the total export value was 91%, and the share of the top 25% of exporters in the total export value was 99%. This represents a high concentration of exports in the hands of a relatively small number of established firms. The rest export very little.

The World Bank (2012) provides more data to emphasise the level of concentration or diversification of export supply among South African firms. This is shown in Table 2. The large differences between the mean and median figures highlight the skewed composition of South African exporters. Over the time period considered, the average number of HS products per exporter increased by 4 (1 per year), but the median indicates that this number remained largely unchanged. Likewise, the number of destinations per exporter was more or less constant over the period.

Table 2: Export Concentration/Export Diversification In South Africa

	2003	2004	2005	2006	2007	Average
In terms of HS products and destinations						
Number of HS6 products per exporter (mean[1])	11	12	13	14	15	13
Number of HS6 products per exporter (median[2])	3	3	3	3	3	3
Number of destinations per exporter (mean)	3	3	4	4	4	4
Number of destinations per exporter (median)	1	2	2	2	2	2
In terms of exporters						
Number of exporters per HS6 product (mean)	57	60	63	70	74	65
Number of exporters per HS6 product (median)	21	21	22	24	24	22
Number of exporters per destination (mean)	346	331	339	342	349	341
Number of exporters per destination (median)	50	47	50	50	52	50

Source: World Bank (2012)

For the majority of countries, particularly those in the middle and high-income categories, most export growth takes place in the intensive margin, i.e. selling more of the same products to the same markets (Brenton & Newfarmer, 2009). This is certainly true for South Africa as well (see Table 2). As is the case with other developing countries, it is critically important for South Africa to expand its exports in the extensive margin, which includes creating new trade flows through new product innovation and selling existing products to new markets. This diversification will reduce the country's vulnerability to external shocks. However, to achieve long-term, broad-based growth, a large cross-section of firms must be able to take advantage of the identified export opportunities (Reis & Farole, 2012:5). Furthermore, it is important that these firms are able to overcome the many constraints that are threatening the firms' export operations in their early, start-up phase.

A study of African exporters by Cadot *et al*. (2011a) found that less than 20% of new export initiatives survive the first year. Recent research on export survival suggests that exporting has an element of 'learning by doing' to it, and that exporting the same products to other markets, or exporting other products to the same markets strongly increases the chances of export survival. Furthermore, export survival appears to be affected by spill-overs. For example, Cadot *et al*. (2011b) found that the prospects of a firm surviving in exporting improve in line with the number of other firms also exporting the specific product to a specific market. These findings highlight the importance of knowledge spill-overs across exporters, and point to the potentially valuable role of trade promotion agencies in facilitating information exchange and collective action (Reis & Farole, 2012:5).

In summary, the loss of competitiveness of South African exports at the aggregate level, along with the concentration of exports among relatively few firms in terms of products and destinations, calls into question the effectiveness of current policies to increase exports. There is a clear need for export diversification, a process that South African trade promotion organisations should be driving by marshalling firms' export efforts towards the most promising export opportunities. Given the low survival rate of new exporters and thus the difficulty of increasing exports from this group, the focus of this study is on increasing the exports of existing export products to new

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[1] Average.
[2] A numerical value separating the higher half of the data from the lower half.

markets/destinations, as well as bringing about diversification in the form of more service exports (see section 6). The need for focused export promotion will also be explored.

4. THE NEED FOR EXPORT PROMOTION AND THE ROLE OF THE DECISION SUPPORT MODEL (DSM)

The reality of South Africa's export performance is that there is limited diversification in terms of new destinations and new products. This is evidenced in South Africa's export growth being mainly driven by existing and experienced exporters servicing the same markets. Consequently, on-going research is needed to keep the government and private sector abreast of changing economic conditions and market dynamics, so that their various initiatives have a greater chance of bearing fruit.

With so much attention being paid to expanding South Africa's reach internationally, and diversifying and adding value to its exports, one of the most crucial steps in the export development process is identifying the right foreign markets. This can be a costly and complex exercise as so many variables come into play, and countries' fortunes are in a constant state of motion.

This study makes an important contribution to the national export effort by presenting the rationale for, and findings of, an ingenious instrument that takes the guesswork out of export market selection, enabling businesses – across a wide range of industry sectors – to plan their export marketing activities with a high level of precision. This instrument is the Decision Support Model (DSM), which is designed to identify realistic export opportunities for individual companies or whole industry sectors. By using a powerful filtering system that processes large volumes of data, the DSM ultimately reveals those product-market combinations that show the greatest potential for the company or industry in question. It is primarily a strategic instrument aimed at assisting trade promotion organisations, e.g. the DTI, export councils and industry associations, in devising focused export promotion strategies for identified sectors and/or products. The DSM can be used by experienced and aspirant exporters alike, and is an invaluable aid in the initial, often expensive, stages of export market entry or expansion.

5. THE DECISION SUPPORT MODEL FOR PRODUCTS

5.1 Introduction

The Decision Support Model (DSM) is an analytical tool, incorporating a thorough screening process that facilitates systematic export market selection through the identification of realistic export opportunities for firms wanting to expand their sales reach into foreign markets. It also offers alternatives to exporters where they are facing saturation and/or declining growth in their traditional markets. The DSM methodology takes into consideration all possible worldwide product-country combinations and, using four filters, progressively eliminates less promising markets until those with the greatest prospects of success are revealed. The model therefore goes a long way towards ensuring that export marketing initiatives are executed in a focused and cost-effective way.

5.2 The DSM methodology

Filter 1 of the DSM assesses countries from the point of view of their political and commercial risk, and macroeconomic size and growth performance. Filter 2 assesses the market potential of the various product groups for the remaining countries, as determined by the size and growth of import demand. Filter 3 examines the accessibility of the remaining countries in terms of their different barriers to entry (including shipping time and cost, logistical efficiency, and tariffs and non-tariff barriers) and degree of market concentration (measured by the Herfindahl-Hirschman index). Filter 4 then categorises the final round of potential export markets according to South Africa's current export performance in these markets compared to the performance of the top six competitors in each market. A potential export value is also assigned to each identified product-market combination with a view to prioritising the shortlisted export opportunities.

Table 3 illustrates the categorisation of the potential export markets in filter 4. In the columns of the table, South Africa's relative market share (compared to that of the top six competitors) is classified as small,

intermediately small, intermediately high and high. In the rows of the table, the import size and growth of the identified markets are classified into five different combinations of markets showing above average short-term growth, long-term growth, and size of import demand (based on the analysis in filter 2).

Table 3: Final Categorisation Of Realistic Export Opportunities For South Africa

	South Africa's relative market share			
	Small	Intermediately Small	Intermediately High	High
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, Steenkamp and Viviers (2012)

Twenty different types of markets are distinguished in the DSM (depicted as cells in Table 3), which can assist South African exporters and trade promotion organisations to focus their export promotion efforts. Therefore, before conducting further investigations into a market identified as an export opportunity, they will know whether there is potential in terms of the size and/or growth of import demand, and the extent to which this potential has been exploited by South African exporters. For instance, if a product-country combination is classified in Cell 5, it means that the demand in that market is large and growing over both the short and long term, but South Africa has a relatively small share of that market.

5.3   Results

Given that South Africa's export growth is mainly driven by existing and experienced exporters selling to the same markets, the results discussed in this section will focus on new export opportunities for South Africa's exporters, with an emphasis on increasing the exports of existing export products to new markets/destinations.

In order to extract the results of the DSM for existing export products, only those export opportunities for products in which South Africa has a revealed comparative advantage (RCA) equal to or greater than 0.7[3] are considered in this study. This follows Cuyvers *et al.*'s (2012) argument that export opportunities for which the exporting country has an RCA ≥0.7 can be considered '*actual*' export opportunities, since the country's comparative advantage is sufficiently large to warrant relatively rapid export success.

The *actual* export opportunities for South Africa's existing products, categorised according to the criteria in filter 4, are illustrated in Table 4.

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[3] $RCAj = \left(\dfrac{X_{SA,j}}{X_{World,j}} \right) \Big/ \left(\dfrac{X_{SA,tot}}{X_{World,tot}} \right)$

where $X_{SA,j}$ is South Africa's exports of product *j*, $X_{SA,tot}$ is South Africa's total exports of all products, $X_{World,j}$ is the world's exports of product j and $X_{World,tot}$ is total world exports of all products (Balassa, 1965; Krugell & Matthee, 2009:461).

Table 4: The Distribution Of The Potential Export Value[4] Of South Africa's
Actual Export Opportunities According To Relative Market Position And Market Characteristics

	Market Share Of South Africa Relatively Small	Market Share Of South Africa Intermediately Small	Market Share Of South Africa Intermediately High	Market Share Of South Africa Relatively High	Total
Large Product/Market	(Cell 1) 5.61%	(Cell 6) 3.10%	(Cell 11) 9.94%	(Cell 16) 3.06%	**21.72%**
Growing (Short- And Long-Term) Product/Market	(Cell 2) (10.09%)	(Cell 7) (0.77%)	(Cell 12) 0.507%	(Cell 17) 0.70%	**12.05%**
Large Product/Market With Short-Term Growth	(Cell 3) 4.62%	(Cell 8) 2.31%	(Cell 13) 2.81%	(Cell 18) 1.60%	**11.34%**
Large Product/Market With Long-Term Growth	(Cell 4) 4.08%	(Cell 9) 2.97%	(Cell 14) 3.15%	(Cell 19) 1.68%	**11.88%**
Large Product/Market With Short- And Long-Term Growth	(Cell 5) 18.43%	(Cell 10) 5.70%	(Cell 15) 13.11%	(Cell 20) 5.78%	**43.01%**
Total	**42.83%**	**14.84%**	**29.51%**	**12.82%**	**100%**

Source of data: Authors' own calculations based on DSM results

South Africa has a relatively small market share in the product-country combinations identified as export opportunities in Cell 1 to Cell 10. These can be considered new markets for South Africa's existing export products, and therefore the markets for export promotion organisations to focus on to increase export success when diversifying the country's exports.

Almost 60% of the potential export value of the actual export opportunities for South Africa is located in Cell 1 to Cell 10. Therefore, most of the export potential identified for South African products is in relatively new markets. This again underlines the need for export promotion organisations to focus on these export opportunities and for South Africa to diversify its export mix. The results of the DSM can contribute to these efforts, ensuring that the most attractive and accessible markets are targeted.

Table 5 provides a more detailed breakdown of the product-country combinations displaying the highest export potential for South Africa (based on the potential export value of each combination) if an extensive export strategy (i.e. selling existing export products to new markets) is followed.

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[4]The most recent 2010 application of the DSM (see Steenkamp, 2011, and Steenkamp, Cuyvers & Viviers, 2012) extended the DSM methodology described in section 5.2 by calculating a potential export value for each realistic export opportunity. This was done by dividing the total imports of product *j* by country *i* by the number of countries that supplies 80% of these imports. This estimation gives an indication of the size of the import demand for each product-country combination relative to other export opportunities.

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Table 5: Top 50 Actual Export Opportunities For South Africa In Cells 1-10
(Existing Export Products To New Markets) Ranked According To Potential Export Value

Country	HS 6-Digit Product Code And Description	Filter 4 Cell Classification
Canada	870323 - Automobiles, spark ignition engine of 1500-3000 cc	5
United States	840734 - Engines, spark-ignition reciprocating, over 1000 cc	8
China	740311 - Copper cathodes and sections of cathodes unwrought	10
United States	740311 - Copper cathodes and sections of cathodes unwrought	5
Germany	740311 - Copper cathodes and sections of cathodes unwrought	5
United States	750210 - Nickel unwrought, not alloyed	5
China	870323 - Automobiles, spark ignition engine of 1500-3000 cc	2
Saudi Arabia	870323 - Automobiles, spark ignition engine of 1500-3000 cc	2
China	750210 - Nickel unwrought, not alloyed	5
China	854140 - Photosensitive/photovoltaic/LED semiconductor devices	1
Germany	870323 - Automobiles, spark ignition engine of 1500-3000 cc	1
Germany	750210 - Nickel unwrought, not alloyed	5
Australia	870421 - Diesel powered trucks weighing < 5 tonnes	5
Brazil	870323 - Automobiles, spark ignition engine of 1500-3000 cc	2
Germany	842139 - Filtering or purifying machinery for gases nes	9
Japan	730890 - Structures and parts of structures, iron or steel, nes	9
United Kingdom	870323 - Automobiles, spark ignition engine of 1500-3000 cc	8
Netherlands	284410 - Natural uranium, its compounds, mixtures	5
India	710239 - Diamonds (jewellery) worked but not mounted or set	10
United States	470329 - Chem wood pulp, soda/sulphate, non-conifer, bleached	5
Turkey	740311 - Copper cathodes and sections of cathodes unwrought	5
United States	740200 - Unrefined copper, copper anodes, electrolytic refining	5
United States	401120 - Pneumatic tyres new of rubber for buses or lorries	6
Belgium	870323 - Automobiles, spark ignition engine of 1500-3000 cc	8
United States	870870 - Wheels including parts/accessories for motor vehicles	6
United States	851150 - Generators and alternators	10
China	470329 - Chem wood pulp, soda/sulphate, non-conifer, bleached	10
United States	840820 - Engines, diesel, for motor vehicles	4
Thailand	720839 - Flat rld prod/coils>3mm	5
United States	730890 - Structures and parts of structures, iron or steel, ne	5
Italy	870421 - Diesel powered trucks weighing < 5 tonnes	10
Belgium	760110 - Aluminium unwrought, not alloyed	5
India	310530 - Diammonium phosphate, in packs >10 kg	4
Australia	293491 - Aminorex, brotizolam, clotiazepam, cloxazolam, dextromoramide, haloxazolam, ...	5
Kazakhstan	870323 - Automobiles, spark ignition engine of 1500-3000 cc	2
Italy	720110 - Pig iron, non-alloy, <0.5% phosphorus	10
Country	**HS 6-Digit Product Code And Description**	**Filter 4 Cell Classification**
United States	842139 - Filtering or purifying machinery for gases nes	10
China	721049 - Flat rolled iron or non-alloy steel, coated with zinc, width >600mm, nes	1
Germany	870322 - Automobiles, spark ignition engine of 1000-1500 cc	6
Malaysia	740311 - Copper cathodes and sections of cathodes unwrought	5
Saudi Arabia	740311 - Copper cathodes and sections of cathodes unwrought	10
China	720918 - Flat rld prod/coils>.5mm	3
United Kingdom	710239 - Diamonds (jewellery) worked but not mounted or set	6
Hong Kong	854140 - Photosensitive/photovoltaic/LED semiconductor devices	1
United States	220210 - Beverage waters, sweetened or flavoured	9
Germany	470329 - Chem wood pulp, soda/sulphate, non-conifer, bleached	5
China	760200 - Waste or scrap, aluminium	10
Greece	740311 - Copper cathodes and sections of cathodes unwrought	5
Spain	870323 - Automobiles, spark ignition engine of 1500-3000 cc	10
Hong Kong	711011 - Platinum unwrought or in powder form	1

Source of data: Authors' own calculations based on DSM results

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It is interesting to note that Brazil, India and China, which are part of the BRICS grouping, are among the countries which offer export diversification opportunities to South Africa. Over and above the developed countries, Saudi Arabia, Turkey, Thailand, Kazakhstan, Malaysia and Hong Kong also feature in the top 50. Furthermore, the products featuring most frequently within the top 50 are: 1500 – 3000 cc automobiles; copper cathodes; unwrought, not alloyed nickel; and bleached chemical wood pulp.

The above results give an indication of the power of the DSM to deliver a cross-section of results given the exporting country's particular circumstances.

6.   THE DECISION SUPPORT MODEL FOR SERVICES

6.1   Introduction

Although the IPAP2 document clearly emphasises the need for South Africa to give more attention to value-added products *as well as the services sector*, the current drive by the government is to diversify its product export base.

The trade in services, however, has become a dynamic economic activity as well as an important source of export diversification in developing countries. During 2000-2007, the global trade in services grew as quickly as the trade in goods, i.e. averaging 12% per year (Reis & Farole, 2012:5). Accordingly, it is equally important for South Africa to diversify and expand its exports in the services sector. Moreover, exports of goods and services often create synergetic effects. This is obvious considering e.g., the exports of goods with the provision of required financial services and transportation. Also other products-services combinations can offer better market prospects, such as e.g., exports of specialised equipment and training.

Services can perform two functions within the economy. Many services constitute inputs into production and therefore play a major role in the value-added composition of products, such as financial services, transportation and insurance. In addition, most services can be exported directly to foreign markets (Hoekman & Mattoo, 2008). An increase in direct exports of services is very important for the overall growth in a country's trade. Brenton, Newfarmer and Walkenhorst (2009) assert that services can make a positive contribution to economic growth and export diversification by expanding the exports of existing services to existing markets, as well as developing new services exports or starting to export existing services to new markets.

South Africa's services sector or 'tertiary sector' on average amounted to 66% of total gross value added (GVA) between 2005 and 2010 (SARB, 2013), thus making a substantial contribution to the South African economy. Yet during the same period, the services sector's exports constituted on average only 18% of South Africa's total exports, and revealed a significant trade deficit each year (ITC, 2013). Exports of services during the period were largely concentrated in the travel (tourism) industry and the transportation sector, with much smaller proportions allocated to the remaining services sectors, such as business services, financial services, insurance, communications and construction (ITC, 2013). Clearly, there is a need for further diversification of the current services sector in South Africa, and for other services sectors to be stimulated.

One of the stumbling blocks to the expansion of the services export sector is that there are often vast differences in regulations between countries. Brenton, Newfarmer and Walkenhorst (2009) suggest that trade liberalisation and regulatory reforms should be complementary in order to create competitive services markets. They also stress the need for governments in developing countries to launch initiatives that build an appropriate domestic regulatory framework and assist local services firms to access new opportunities, both locally and abroad. This is one of the many reasons why the DSM for services was developed.

To cater for the very specific nature and conditions surrounding the supply of services, the DSM for products was adapted and applied using the available data for services in South Africa. The results reveal potential services export markets that have the highest demand as well as the lowest regulatory barriers. The South African government can use the information to formulate strategies to diversify and grow services exports, backed up by in-market knowledge from services firms that are already exporting.

6.2   Filters used in the DSM for services

Similar to the DSM for products, the DSM for services uses a progressive filtering process, although some of the filters had to be adapted to compensate for the limited availability of services data, and the specific nature of the services trade and its associated trade barriers.

Filter 1 applies the same methodology as that for the DSM for products, i.e. evaluates all countries' political and commercial risk, as well as macroeconomic size and growth, and eliminates those countries that either indicates very high levels of risk, or very low levels of macroeconomic performance (Grater & Viviers, 2012).

Filter 2 applies the same methodology as that for the DSM for products, using the available import data for services per country on a sector level. The import demand and import growth for services in the short and long term are calculated in a similar way as that for the DSM for products. Those service-country combinations that reflect sufficient market size or growth over the short and long term, are then selected to go through to filter 3 (Grater & Viviers, 2012).

The calculations of market concentration and accessibility, as applied in the DSM for products, cannot be used for the DSM for services since bilateral trade data for South African services are not available. Therefore, filters 3.1 and 3.2 had to be adapted to the available data for the services trade.

In this regard, filter 3.1 calculates market openness for each country on a services sector level, and market openness is then used as a proxy for the ease of entry into the market. Filter 3.2 evaluates the market accessibility of each services sector in each country by allocating a scale value to each country's GATS commitments under the WTO that are made on a sector level.

Filter 4 is not an elimination filter, but only takes the resulting list of service-country combinations that are able to pass through filters 1, 2 and 3, and creates the final list of export opportunities for services from South Africa. These results can be summarised by sector, by country or by region, and can also be combined in a cell structure similar to that of the DSM for products.

6.3   Results

Table 6 shows the number of export opportunities in various countries identified within South Africa's main services sectors revealed through the application of the DSM for services. (This table aggregates the results per sub-sector into main sectors). The table shows that even though there are significant export opportunities within the travel and transportation sectors (293 in total), there are also plenty of other opportunity areas, particularly in the 'other business services' sectors, as well as personal, cultural and recreational services, and computer and information services.

Table 6: Export Opportunities For South African Services Per Main Sector

EBOPS code[5]	Main Services Sector	Number Of Opportunities
236	Travel	162
205	Transportation	131
268	Other business services	106
287	Personal, cultural and recreational services	36
262	Computer and information services	34
253	Insurance services	31
245	Communications services	28
249	Construction services	22
266	Royalties and license fees	16
260	Financial services	10
291	Government services, not indicated elsewhere	2

Source of data: Authors' own calculations based on DSM results

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[5] Extended Balance of Payments for Services classification developed by the United Nations

The results can also be classified according to a cell structure, as displayed in Table 7 below. The cell classification clusters the results according to the market size (as determined in filter 2), as well as the market openness and market accessibility (from filter 3.1 and 3.2). The rows in the table indicate the size of the import market and the columns indicate the level of market openness and access (Grater & Viviers, 2012).

The ideal combinations of export opportunities are in the fourth column where the markets are very open for services and are easily accessible with low trade barriers. These opportunities would be the fastest for South African services sectors to act on, and government can assist firms to diversify to these markets within a relatively short time.

The first column, on the other hand, shows those markets that have very low openness and low market accessibility. This is where government should get involved in opening markets and lowering trade barriers through the negotiation of trade agreements under the GATS agreement.

Table 7: Cell Classification Of The Results Of The DSM For South African Services

	Low Openness & Low Market Access	Low Openness & High Market Access	High Openness & Low Market Access	High Openness & High Market Access
Large Services Market	Cell 1 52 (9%)	Cell 6 88 (15%)	Cell 11 25 (4%)	Cell 16 16 (3%)
Growing (Short-Term And Long-Term)	Cell 2 69 (12%)	Cell 7 74 (13%)	Cell 12 41 (7%)	Cell 17 26 (4%)
Large Services Market With Short-Term Growth	Cell 3 30 (5%)	Cell 8 42 (7%)	Cell 13 9 (1%)	Cell 18 8 (1%)
Large Services Market With Long-Term Growth	Cell 4 7 (1%)	Cell 9 14 (2%)	Cell 14 8 (1%)	Cell 19 3 (1%)
Large Services Market With Short-Term And Long-Term Growth	Cell 5 31 (5%)	Cell 10 16 (3%)	Cell 15 7 (1%)	Cell 20 12 (2%)
Total	**189 (33%)**	**234 (40%)**	**90 (16%)**	**65 (11%)**

Source of data: Authors' own calculations based on DSM results

In the above table, there are 65 service-country combinations (Cells 16 – 20) in markets that are easily accessible and also either very large or growing in the short- and long-term. These are the results that the South African government should give focused attention to with a view to expanding the services export sector. By way of an example, Table 8 shows the results from Cell 16 where the services market is very large for the specific sector, and there are high levels of market openness and market access. The total import value of the country for the specific sector is also shown to give an indication of the size of the market.

Table 8: Results From Cell 16 Of The DSM For South African Services

Country	Region	Main Sector	Sub-Sector	Sub-Sector Or EBOPS Code	Total Value Of Imports 2007 (US$ Thousand)
South Korea	Asia	Transportation	Sea transport - freight	208	12 828 300
Singapore	Asia	Transportation	1.1.2 Sea transport - freight	208	9 117 325
Germany	Europe	Transportation	1.2.3 Air transport - other	213	2 053 323
Netherlands	Europe	Transportation	1.2.3 Air transport - other	213	1 900 387
Germany	Europe	Transportation	1.3.3 Other transport - other	217	4 032 579
Germany	Europe	Transportation	1.9 Other supporting and auxiliary transport services	232	4 231 464
Country	Region	Main Sector	Sub-Sector	Sub-Sector Or EBOPS Code	Total Value Of Imports 2007 (US$ Thousand)
Greece	Europe	Transportation	1.9 Other supporting and auxiliary transport services	232	3 410 684
Azerbaijan	Asia	Construction	4.2 Construction services - construction in the compiling economy	251	1 471 110
Singapore	Asia	Insurance services	5.3 Insurance services - other direct insurance	256	359 432
Singapore	Asia	Other business services	9.3.1.1 Legal services	275	231 661
Singapore	Asia	Other business services	9.3.1.2 Accounting, auditing, book-keeping and tax consulting services	276	351 067
Singapore	Asia	Other business services	9.3.1.3. Business and management consultancy and public relations services	277	1 851 277
Ireland	Europe	Other business services	9.3.2 Advertising, market research, and public opinion polling	278	4 172 436
Singapore	Asia	Other business services	9.3.3 Research and development	279	1 410 476
Singapore	Asia	Other business services	9.3.4 Architectural, engineering and other technical services	280	1 471 627
Ireland	Europe	Other business services	9.3.5.2 Other agricultural, mining and on-site processing	283	156 998

Source of data: Authors' own findings based on DSM results

From Table 8 it is clear that a variety of services show potential in this specific cell of the DSM results for services, particularly in Singapore, Germany and Ireland.

Like the DSM for products, the DSM for services reveals cross-cutting results that can be invaluable in the conceptualisation and planning phases of export promotion programmes for services.

7. CONCLUSION: IMPLICATIONS OF THE DSM FOR THE DIVERSIFICATION AND SUSTAINABILITY OF SOUTH AFRICA'S EXPORT SECTOR

With a country's sector being exposed to so much uncertainty these days, the construction of the Decision Support Models for products and services, respectively, is extremely significant. A notable strength of the DSM is that it reveals export opportunities that may not have been considered in the past, thereby supporting the quest to diversify into non-traditional export markets. Given South Africa's preoccupation with extending the country's reach into new territories, the DSM is set to play an increasingly important, strategic role in trade promotion circles. Furthermore, having a scientific market selection tool for the services export sector – which to date has lacked a formal vision or strategy – is a boon to those tasked with expanding and diversifying the country's services sector where so much potential lies.

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