INTERNATIONAL MARKET SELECTION MODEL USING NEWLY DEVELOPED GEOMETRIC INTERNATIONAL MARKET SELECTION SPACE

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By

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INTERNATIONAL MARKET SELECTION MODEL USING NEWLY DEVELOPED GEOMETRIC INTERNATIONAL MARKET SELECTION SPACE

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March 2019

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International Market Selection (IMS) is literally a process in identifying and selecting feasible international market opportunities for exporting. It is a methodological process whereby suitable variables are vetted through a model in order to produce output in the form of processed information that would help export marketers in decision making. Literatures affirm that there are many IMS models available. Focusing on detailed literature review of prominent models reveals that there are inherent shortcomings in addressing market selection. The utilisation of too many input variables in the filtering and weighting scheme makes the process of IMS complex, cumbersome and bias. It is the main objective of this thesis to propose a new IMS model in attempt to address these weaknesses. The pinnacle of this thesis consisting of closely related chapters is the design and construction of a new Trade Intensity (TI) index for possible use in international market selection. The design and construction of the TI index is geometrically illustrated using a newly constructed Geometric Trade Intensity Space Box (GTISB). The new IMS model, introduced as Geometric International Market Selection Space (GIMSS), rooted from the TI index and GTISB is proposed as a complimentary tool for use by international marketers. In principal it utilises two trade base elements (import and export) as input variables. The GIMSS model is designed to consist of five stages and is capable of processing secondary data either Standard International Trade Classification (SITC) or Harmonised System (HS). The result can be transpired and visualised into a geometrical space square box for any number of products or period of study.

A comparative performance analysis of this new approach with a previous study (see Tong (2012)) is also conducted. Results indicated firstly the absence of import elements and the absence of some key filtering elements in the previous study. In contrast, this thesis offers new elements in IMS modelling, in particular new tools in identifying International Export Opportunities (IEO). The constructed GIMSS model utilises both trade elements (exports and imports) with no filtering and weighting processes, employs changes within changes measurement, embeds quality perspective

measurement as alternative game changer in identifying IEO, and able to do future projection of IEO.

In addition, even though this GIMSS model does not have weighting scheme, it can still perform trade-off process between volume and quality elements. This would allow marketers with flexibility to trade-off strategy application impartially. Furthermore this new GIMSS approach enables the possibility of being utilised in cross sectional studies using simple calculations while maintaining the triad essentials of symmetry, scaling, and proportionality in the analysis. As such, these features of the new model enables the visualisation of changing IEO patterns throughout the analytical space with consistent, copious and yet easy to interpret results.

From the findings of this thesis, there are two potential policy implications that policy makers may apply in legislating policy and decision making process. Firstly, the GIMSS is capable of identifying and categorising the host country market potential into low, intermediate or high market potential at product level. With that policy maker would be able to employ this information conjointly with competitive index of exporting country and make assessment in the perspective of cross checking between host country market potential levels with exporting country competitive advantage status. Thus policy makers would have a better vision in developing more effective and well organised marketing strategy and resource allocation. Secondly, GIMSS is capable of identifying niche market potential of high risk country. Thus policy makers may set a new direction of not to filter out the high risk countries from their potential and explore them for either market expansion or new market breakthrough.

In summary, this paper addressed the existing shortcomings of prominent IMS models in the literature in particular the Green and Allaway (1985) shift-share model, the Papadopoulos, Chen and Thomas (2002) trade-off model, and the decision support models of Cuyvers, De Pelsmacker, Rayp and Roozan (1995) and Cuyvers (2004) and proposed the new GIMSS model consisting of the TI index and the GTISB extending earlier work done in the literature.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

MODEL PEMILIHAN PASARAN ANTARABANGSA MENGGUNAKAN RUANG PEMILIHAN PASARAN ANTARABANGSA GEOMETRI YANG BARU DIBANGUNKAN

Oleh

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Pemilihan Pasaran Antarabangsa (IMS) secara harfiahnya merupakan proses mengenal pasti dan memilih peluang pasaran antarabangsa yang berdaya maju untuk eksport. Ia merupakan proses metodologi yang melibatkan penggunaan model untuk menyaring pemboleh ubah yang sesuai bagi menghasilkan output dalam bentuk maklumat diproses yang akan membantu pemasar eksport dalam membuat keputusan. Literatur mengesahkan tentang kewujudan banyak model IMS. Berdasarkan kajian literatur terperinci mengenai model-model terkemuka, terdapat beberapa kelemahan dalam menangani pemilihan pasaran. Penggunaan terlalu banyak pemboleh ubah masukan dalam skim penapisan dan pewajaran menjadikan proses IMS kompleks, rumit, dan tidak seimbang. Objektif utama tesis ini adalah untuk mencadangkan model IMS baru dalam usaha untuk menangani kelemahan-kelemahan sedia ada. Hasil utama tesis ini yang mengandungi bab-bab yang berkait rapat antara satu sama lain ialah reka bentuk dan pembinaan indeks Keamatan Perdagangan (TI) baru yang berpotensi untuk digunakan dalam pemilihan pasaran antarabangsa. Reka bentuk dan pembinaan indeks TI ini diilustrasikan secara geometri menggunakan Kotak Ruang Keamatan Perdagangan Geometri (GTISB) yang baru dibina. Model IMS yang baru ini, diperkenalkan sebagai Ruang Pemilihan Pasaran Antarabangsa Geometri (GIMSS) dan berasaskan daripada indeks TI dan GTISB, dicadangkan sebagai alat pelengkap untuk digunakan oleh pemasar antarabangsa. Pada dasarnya, ia menggunakan dua unsur asas perdagangan (import dan eksport) sebagai pemboleh ubah masukan. Reka bentuk model GIMSS ini terdiri daripada lima peringkat dan ia berkeupayaan untuk memproses data sekunder sama ada Piawaian Klasifikasi Perdagangan Antarabangsa (SITC) mahupun Sistem Berharmoni (HS). Hasilnya dapat dijelaskan dan digambarkan dalam bentuk kubus ruang geometri untuk sebarang bilangan produk atau tempoh kajian.

Di samping itu, analisis perbandingan prestasi antara pendekatan baru ini dengan kajian sebelumnya (rujuk Tong (2012)) telah dijalankan. Pertama, keputusan menunjukkan ketiadaan unsur import serta ketiadaan beberapa unsur penapisan utama dalam kajian terdahulu. Sebaliknya, tesis ini menawarkan unsur baru dalam pemodelan IMS,

khususnya alat baru bagi mengenal pasti Peluang Eksport Antarabangsa (IEO). Model GIMSS yang dibina ini menggunakan kedua-dua unsur perdagangan (eksport dan import) tanpa proses penapisan dan pewajaran, menggunakan perubahan dalam pengukuran perubahan, mengandungi pengukuran perspektif kualiti sebagai alternatif yang membawa perubahan ketara dalam proses mengenal pasti IEO, dan berkeupayaan untuk melakukan unjuran IEO masa depan.

Walaupun model GIMSS ini tidak mempunyai skim pewajaran, ia masih boleh melakukan proses tukar ganti antara unsur jumlah dan kualiti. Dengan itu, pemasar akan mempunyai fleksibiliti untuk menggunakan strategi tukar ganti secara saksama. Pendekatan GIMSS baru ini juga berpotensi untuk digunakan dalam kajian keratan rentas dengan menggunakan pengiraan mudah di samping mengekalkan asas-asas penting triad dalam analisis iaitu simetri, penskalaan, dan perkadaran. Oleh itu, ciri-ciri model baru ini membolehkan pembayangan dilakukan terhadap perubahan pola IEO pada keseluruhan ruang analisis dan seterusnya menghasilkan keputusan yang konsisten serta banyak namun mudah untuk ditafsirkan.

Berdasarkan dapatan tesis ini, terdapat dua potensi implikasi dasar yang mungkin boleh digunakan oleh penggubal dasar dalam menggubal dasar dan proses untuk membuat keputusan. Pertama, GIMSS berkeupayaan untuk mengenal pasti dan mengkategorikan potensi pasaran negara tuan rumah kepada potensi pasaran rendah, menengah atau tinggi pada peringkat produk. Dengan itu, penggubal dasar dapat menggunakan maklumat ini bersama dengan indeks persaingan negara pengeksport dan membuat penilaian dari perspektif semakan silang antara tahap potensi pasaran negara tuan rumah dengan status kelebihan bersaingan negara pengeksport. Oleh itu, penggubal dasar akan mempunyai visi yang lebih baik dalam membangunkan strategi pemasaran dan membuat peruntukan sumber yang lebih berkesan dan teratur. Kedua, GIMSS berkeupayaan untuk mengenal pasti potensi pasaran *niche* bagi negara berisiko tinggi. Oleh itu, penggubal dasar boleh menetapkan hala tuju baru tanpa menyaring keluar negara-negara berisiko tinggi daripada potensi mereka dan menerokai peluang negara-negara tersebut dengan tujuan untuk mengembangkan pasaran ataupun menembusi pasaran baru.

Rumusannya, kertas kerja ini menangani kelemahan yang sedia ada dalam model IMS terkemuka dalam literatur khususnya model sisih-agih Green dan Allaway (1985), model tukar ganti Papadopoulos, Chen and Thomas (2002), dan model sokongan keputusan oleh Cuyvers, De Pelsmacker, Rayp and Roozan (1995) dan Cuyvers (2004) di samping mencadangkan model GIMSS baru yang terdiri daripada indeks TI dan GTISB sebagai kesinambungan daripada kajian terdahulu dalam literatur.

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Last but definitely not least, thank you Allah for this achievement which marks a special milestone in my life.

I certify that a Thesis Examination Committee has met on 13 March 2019 to conduct the final examination of Mazlan bin Hussein on his thesis entitled "International Market Selection Model Using Newly Developed Geometric International Market Selection Space" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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This is to confirm that:

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ARCA	Additive Revealed Comparative Advantage
ARTNeT	Asia-Pacific Research and Training Network on Trade
ASEAN	Association of Southeast Asian Nations
BLEU	Belgium-Luxembourg Economic Union
BRCA	Balassa's Revealed Comparative Advantage
CE	Competitiveness Effect
CMS	Constant Market Share
CMSC	Constant Market Share Competitiveness
CMSS	Constant Market Share Space
DOSM	Department of Statistics Malaysia
DSM	Decision Support Model
EIA	U.S. Energy Information Administration
EPRINC	Energy Policy Research Foundation, Inc.
ERIA	Economic Research Institute for ASEAN and East Asia
EU	European Union
F	Foreign Country
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GE	Growth Effect
GIMSS	Geometric International Market Selection Space
GNP	Gross National Product
GQISB	Geometric Quality Intensity Space Box
GRCA	Geometric Revealed Comparative Advantage
GTISB	Geometric Trade Intensity Space Box
GVISB	Geometric Volume Intensity Space Box
GVQISB	Geometric Volume Quality Intensity Space Box
H	Host Country
HHI	Herfindahl Hirschmann Index
HMP	Host Market Potential
HS	Harmonised System
IEEJ	Institute of Energy Economics Japan
IEO	International Export Opportunities
IIT	Intra Industry Trade
IMF	International Monetary Fund
IMS	International Market Selection
ISIC	International Standard Industrial Classification
ITC	International Trade Centre
LNG	Liquefied Natural Gas
MATRADE	Malaysia External Trade Development Corporation
MIIT	Marginal Intra Industry Trade
MITI	Ministry of International Trade and Industry
MOW	Mode of Entry
MNCs	Multinational Companies
MQ	Marginal Quality
MTOE	Million Tons of Oil Equivalent
NEC	National Export Council
NRCA	Normalised Revealed Comparative Advantage
NTI	Net Trade Intensity

OECD	Organisation for Economic Cooperation and Development
PhD	Doctor of Philosophy
PM	Prime Minister
QTAS	Quality Adjusted Trade Adjustment Space
RCA	Revealed Comparative Advantage
SAH	Smooth Adjustment Hypothesis
SAH_Q	Quality Smooth Adjustment Hypothesis
SAH_V	Volume Smooth Adjustment Hypothesis
SAH_{VQ}	Volume and Quality Smooth Adjustment Hypothesis
SI	Specialisation Index
SITC	Standard International Trade Classification
SMEs	Small and Medium Enterprises
TAS	Trade Adjustment Space
the dti	the Department of Trade and Industry
TI	Trade Intensity
TIS	Trade Intensity Space
TRAINS	Trade Analysis Information System
TTI	Total Trade Intensity
UN	United Nations
UNCOMTRADE	United Nation Commodity Trade
UNCTAD	United Nations Conference on Trade and Development
UPM	University Putra Malaysia
UV_M	Import Unit Value
UV_X	Export Unit Value
UVS	Unit Value Adjustment Space
UV	Unit Value
WITS	World Integrated Trade Solution
WTO	World Trade Organisation

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

This thesis is basically an essay about International Market Selection (IMS) model in identifying International Export Opportunities (IEO) across the globe. As such the IMS is literally a process in identifying and selecting the feasible international market opportunities from an available list. The IMS can be regarded as a structural and systematic procedural whereby various variables shall be input into a procedure. The procedure then processes the inputs in order to produce output which supplies marketer with processed information in making suitable decision. Cuyvers, De Pelsmacker, Rayp and Roozan (1995) denoted that a decision support system is essential that offers data on export markets and data processing procedures in order to derive appropriate actions in relevant export markets. Prior to going into deeper discussion, below subsection will outline the overview on the significant and drivers of IMS.

1.2 Significance and Drivers of IMS

1.2.1 The Importance of Export

In business environment, export must be considered as one of market expansion plan options for growth strategy. Exclusive dependency on domestic market would not bring a country to supercilious growth rhythm. Logically once domestic market is fully harvested and utilised it would become stagnant hence country would be facing limited growth scope situation. Product differentiation through quality enhancement and customer service improvement would help to generate new opportunities in domestic market. However this strategy is still dwelling and competing in the same market scope hence limited growth scope situation would eventually be stumbled upon again. As such new frontier of market needs to be explored in order to achieve next and beyond level of growth. Intuitively going beyond own soil or domestic country i.e. investing into global market would be an appealing option to be ventured. On top of that, with the emergence of glocal conceptual strategy i.e. think globally and act locally, has further impetus global business. The adaptation to local condition while maintaining global status enables business to be both local and global, which previously could be seen as two separate spectrums.

In addition, perhaps it is not an extreme to state that there is not a single country that could produce and supply everything that could cater its own country needs and wants. For example oil, the natural resources that is essential as source of energy to drive industrialisation and transportation is not available in every country. Moreover, there

are certain products that are cheaper to be produced in other countries due to for example cheaper labour cost, skills and competencies standard availability, strategic geographical location etc. Multinational Companies (MNCs) would usually prefer and practice this modus of operandi where product concept and design to be done in country A, software and information technology to be outsourced in country B, production to be done in country C, while marketing and decision making to be done in home country D. This is a form of Foreign Direct Investment (FDI) mechanism where goods and services are moved across the globe that facilitate and shape the world economy further. With all of these scenarios, inter-country dependency existed in driving own country economy and as such export opportunity does exist to cater these dependencies.

Global market with its huge diversification of socio economic backgrounds across the globe would definitely promise a lot of interesting opportunities and prospects. Accordingly World Trade Organisation (WTO) has 164 members and 23 observer governments (WTO, 2019). This could be translated into 187 of global market country opportunities and they are something that should promise huge potential to be tapped and explored. In addition, according to Standard International Trade Classification (SITC) Revision Four classification scheme there are 2970 of product items classification. Thus, if combining and mix matching the SITC product classification with the 193 countries, a very huge country/product combination potential can be obtained. This is a very huge opportunities that are something very priceless for not to be explored to. Even though each country does have variation of opportunities in term of buying power, poverty issues, political differences and instability issues, local geographical needs and wants diversification etc, nevertheless with proper marketing tool and strategy of suitable product/country combination, a fruitful opportunity perhaps can be tapped and materialised.

Furthermore, global marketing has become increasingly important over the years with the upward trend of internationalisation most probably due to growth in infrastructures that connects countries and people across the globe. Nowadays, infrastructures that connects countries across regions and continents have made communications, products, goods and service deliveries and movements become faster, easier and cheaper. Low cost flights and high speed internet with bigger bandwidth are emerging and strengthening year on year. People, goods, communication and information exchange can be done quicker at lower cost with better quality and standard. With this scenario, ordinary and business people are more likely to engage and interact with each other. As such global marketing through exports and imports activities can soar and prosper tremendously by taking advantage of improvement in the infrastructure across regions and countries. These infrastructures could be regarded as one of the enablers for globalisation to actually materialise.

With all the huge market opportunities promised globally and the betterment in infrastructures connecting countries, the next element that exporters possibly need to consider would be are all the opportunities of product/country combinations are viable and profitable to be entered. Faced with too many choices, marketers have the challenge of determining which international markets to enter, which product could succeed in that market and the appropriate marketing strategies to be applied. As

shown in Figure 1.0 below, the survey conducted by World Economic Forum in 2014 revealed that the most problematic factors for exporting is identifying potential markets and buyers.

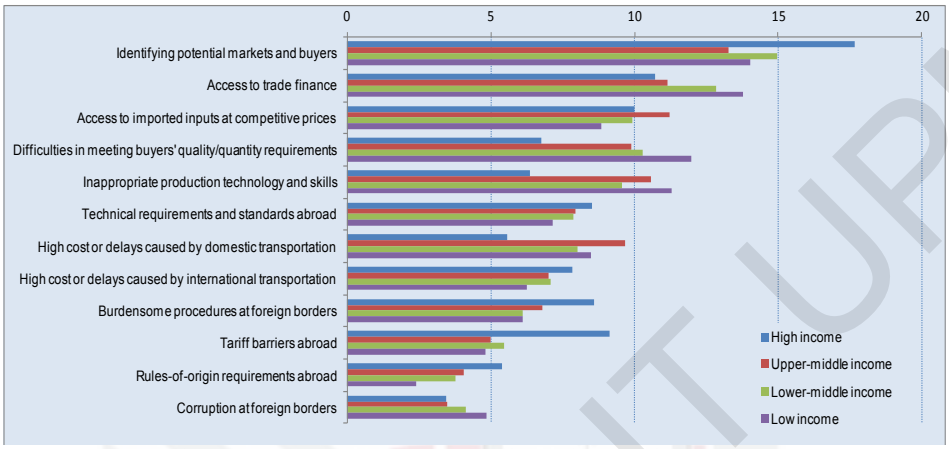

Figure 1.0: The Most Problematic Factors for Exporting, by Income Group Weighted scores in points, 2014
(Source: World Economic Forum, Executive Opinion Survey 2014)

Thus marketers need to have tools and techniques in selecting which global market to be entered to with which type of product classification that would excel in that global market. The first party that identify and select the correct product/country opportunity would have the pioneer advantage as market leader. Decision made has to be not only precise but also executed at the most appropriate time. This is because of the huge amount of investment and cost involved in this international business venture. Thus, there is a need to choose the right opportunity, and this is undeniably crucial.

Moreover, one of the tips for successful exporting as advised by Malaysia External Trade Development Corporation (MATRADE) is the need to select product and target market. Those who are able to identify potentials from the product/market combination first would definitely have advantage over the others. Viviers, Steenkamp, Lubbe, and Oliver (2014) states, "as organisations are operating with scarce resources, a subsequent selection of opportune markets and product groups (product/country combinations) has to be made. The determination of export opportunities can be a helpful instrument in this regard" (p. 3).

Steenkamp, Rosso, Viviers, and Cuyvers (2009) further emphasized in their literature overview that the prevalent reason for international marketer failures in entering market is mediocre market selection resulting from inappropriate evaluation of markets. With that Steenkamp et al. (2009) pointed a few good points that must be considered in venturing international export:

1. The need to be able to distinguish between the vast numbers of export combinations due to the fact that in most circumstances, a large number of

export opportunities exist and only a limited number of these can be explored because of scarce resources.

2. The need to be able to select the "right" market is vital as a first step in growing exports to ensure export success, determining foreign marketing strategies and determining where to establish bases to establish a favourable competitive position in those markets.

Thus in going abroad for market extension and growth perspective, identifying the export opportunities is very important. The world provides vast and huge market opportunities. Hence it would be very tough and complex in assessing, evaluating and select the right market(s). As Papadopoulos and Denis (1988) states, "selection is used here to mean the choice among two or more alternatives" (p. 38). Steenkamp et al. (2009) pointed out that the process of assessing international export opportunities is complicated for a number of reasons such as the difficulty in examining all possible export opportunities to all the countries of the world and the availability of data for specific consumers, businesses or governments that restricts the screening process to using only published data. Viviers et al. (2014) highlighted that the challenge lies in how to select and prioritise markets from a global list of export opportunities. As such there is a need to have a systematic procedure, method or model of identification and selection in ensuring high return on investment and increasing success rate. With that IMS models and methods emerged and it has attracted considerable attention in the literatures. IMS is a framework for selecting countries and products where opportunities for successful exporting exist.

In analysing the opportunity, risk must be factored in too. Risk could be categorised as known and unknown. Some known and unknown risks are volatile and some are stable over period of time. The stable risks should be predictable to manage but the volatile risks require an agile tools and techniques that can simulate and analyse the volatile scenario. Furthermore, some of these known and unknown risks are quantitative in nature, while others are qualitative, for example politics, economy, currency, culture, regional treat, terrorism, climate change etc. The risks must be factored and scale so that proper mitigation plans can be established and prepared in order to manage uncertainty in the global business venture. Proper insight on risks provides better decision making and better promise of future business endeavour. Hence it is imperative that global marketer to have a schematic and structured process with embedded risks analysis, either explicitly or implicitly, in identifying and selecting global market opportunities. The schematic and structured process should also be reliable and stay relevant through times despite global change. Some minor adjustment or improvement to the process can be tolerated to suit current situation, but a major adjustment or improvement must be avoided.

As such, it is suffice to state that IMS is important for marketers in selecting which global market opportunities to exploit. A model of IMS is needed and required. With availability of IMS model, it is hoped that a structural approach can be obtained in making decision for export venture. The IMS model can be used as test probe that can provide vital analysis. Additionally, this modelling should be able to assist in providing insights for proper decision making. A good structured IMS model with foundation of measurable economic data should be able to draw an intelligence decision in choosing

which markets and products to promotes, advocates and proceeds. Besides, the IMS model may offer some guiding principle as to the differentiation in promotional strategy according to the nature of the export market opportunity. Finally, it will become as an instrument to gauge the economic relevance of past and historical export promotion activities s well.

1.2.2 Malaysia Scenario – A Quick Overview

Malaysia government has set up National Export Council (NEC) in December 2014 to steer export growth. It is chaired by the Prime Minister (PM), it comprises a total of eighteen members, eleven from public sector and seven from the private sector. The NEC has laid out a few strategies to drive export. One of the strategies is to push more Malaysia companies to be export champions in the regional and global markets, through the Mid-Tier Companies Development programme. The aim is to create more MNCs from Malaysia. Perhaps in conjunction with this strategy, after chairing the third NEC meeting in Putrajaya on first September 2016, PM launched a brand awareness campaign, 'Beyond Nations', which aims to encourage and promote more small and medium enterprises (SMEs) to export. During the 2016 launching event, MATRADE CEO, Datuk Dzulkifli Mahmud said, "we want SMEs to go beyond borders, beyond their local mindset and to break out of their comfort zone into a vast overseas market".

According to MATRADE (n.d.) there were over 900,000 SMEs in Malaysia (published as of 21st April 2017). Majority of those SMEs, despite making up about 97 per cent of business establishments in Malaysia, only catered to the local market. Their export contribution is only 17.8 per cent and this is targeted to be 23 per cent in year 2020. MATRADE has advised SMEs that they have to strive for export markets to ensure business sustainability. There are abundances of opportunities in overseas market. Looking at population perspective only, ASEAN is having 625 million people, China 1.4 billion people and India 1.3 billion people. In addition, the role of SMEs is crucial to the economy and social development as they contribute nearly 36 per cent of the Malaysia's gross domestic product (GDP) and 65 per cent of Malaysia's employment.

SME Corporation Malaysia, in their business guides for SMEs to grow their business, advises SMEs to indulge into export as one of options for growth. They advocated that by having the right balance of between international and domestic trade can act as protection if there is a recession in one of the markets. In addition, exporting will also expose SMEs to new ideas, marketing techniques and ways of competing that SMEs wouldn't usually experience at domestic level. The challenges and victories that SMEs experience through exporting to foreign markets will also help SMEs aptitude and ability to compete more robustly in domestic market. However SME Corporation Malaysia also highlighted that exporting requires appropriate export strategy too. In fact, exporting strategy is one of their tips for exporting success. This is very essential to the fact that it is very important to be able to identify export aims, export environment, product and service offerings and potential markets. Next, the strategy needs to be compensated with good implementation plan and method to evaluate success. SME Corporation Malaysia also stressed on risk management. They tips that

venturing into global markets will expose businesses to a new range of risks such as foreign exchange exposure, legal issues, political stability, shipping, customs clearance days, quarantine and standard regulations. Hence the needs to add risk management strategy are embedded in export strategy.

Malaysia external trade statistics for November 2018 (released on Friday 04 January 2019), as stated by Department of Statistics Malaysia (DOSM) are summarised in the following Table 1.1, Table 1.2, Table 1.3 and Table 1.4 as tabulated below and in subsequent pages.

Table 1.1: Malaysia exports, imports, total trade and trade balance, November 2018

Exports	Imports	Total trade	Trade balance
RM84.8 billion (↑1.6%)	RM77.2 billion (↑5.0%)	RM162.0 billion (↑3.2%)	RM7.6 Billion (↓24%)

As per Table 1.1 total trade was RM162.0 billion, an increased of RM5.0 billion or 3.2% from last year. However, according to DSOM total trade dropped RM14.4 billion or 8.2% when compared to October 2018. The trade surplus was RM7.6 billion, a decline of RM2.4 billion (-24.0%) from November 2017. DSOM also highlighted that it was also lower by RM8.8 billion (-53.7%) when compared to October 2018. Some key facts as stated by DOSM:

- On a year-on-year (y-o-y) basis, exports increased RM1.3 billion (+1.6%) to RM84.8 billion
- On a y-o-y basis, imports increased RM3.7 billion (+5.0%) to RM77.2 billion
- On a month-on-month (m-o-m) basis, exports decreased 12.0% or RM11.6 billion from RM96.4 billion
- On a m-o-m basis, imports also decreased by 3.5% or RM2.8 billion from RM80.1 billion
- On a y-o-y basis, exports rose due to higher exports to Taiwan (+RM1.1 billion), Vietnam (+RM938.5 million), Hong Kong (+RM876.8 million), Singapore (+RM872.2 million) and China (+RM435.3 million)
- On a y-o-y basis, higher imports were mainly from European Union (+RM773.3 million), Saudi Arabia (+RM581.8 million), Republic of Korea (+RM456.8 million), Russian Federation (+RM411.4 million) and Taiwan (+RM409.4 million)

Table 1.2 below shows Malaysia major trading partners for November 2018. From that table, Malaysia exports to ASEAN and Singapore exceeds its imports, Malaysia imports from China exceeds its exports, whereas Malaysia exports and imports to and from European Union (EU) did not differ much.

Table 1.2: Malaysia major trading partners, November 2018

	Exports				Imports			
Country/Region	ASEAN	China	Singapore	EU	ASEAN	China	Singapore	EU
Share	30.9%	13.7%	15.5%	8.9%	25.9%	19.2%	11.9%	10.2%
Value	RM26.2 billion (↑6.4%)	RM11.7 billion (↑3.9%)	RM13.1 billion (↑7.1%)	RM7.5 billion (↓7.7%)	RM19.7 billion (↑0.9%)	RM14.9 billion (↓3.3%)	RM9.2 billion (↑3.9%)	RM7.8 billion (↑10.9%)

Looking at Table 1.3 below, it shows Malaysia exports of major products for November 2018. On y-o-y basis, exports increased 1.6% from RM83.5 billion. The main products which contributed to the increased were:

- Refined petroleum products which accounted for 7.7% of total exports, rose RM2.2 billion or 49.0% to RM6.5 billion due to the increased in both average unit value (+28.7%) and export volume (+15.8%)
- Liquefied natural gas (LNG) which accounted for 5.4% of total exports grew RM953.0 million or 26.4% to RM4.6 billion due to the increase in both average unit value (+21.3%) and export volume (+4.2%)
- Crude petroleum which contributed 3.4% to total exports increased RM430.4 million or 17.7% to RM2.9 billion due to the growth in average unit value (+33.6%) although export volume dropped 11.9%

Table 1.3: Malaysia exports of major products, November 2018

Products	E&E	Refined Petroleum	Palm Oil and Palm Oil-based
Share	36.8%	7.7%	6.5%
Value	RM31.2 billion (↓1.7%)	RM6.5 billion (↑49%)	RM5.5 billion (↓18.6%)

However the following products recorded a decrease:

- Palm oil and palm oil-based products (6.5% of total exports), decreased RM1.3 billion (-18.6%) to RM5.5 billion. Exports of palm oil, the major commodity in this group of products declined RM832.2 million or 20.9% due to the decrease in both average unit value (-19.6%) and volume (-1.5%)
- Electrical and electronic (E&E) products (36.8% of total exports), dropped RM528.2 million (-1.7%) to RM31.2 billion
- Timber and timber-based products (2.3% of total exports), declined RM146.8 million or 7.0% to RM2.0 billion
- Natural rubber which contributed 0.4% of total exports, recorded a marginal decrease of RM8.5 million or 2.7% to RM304.8 million due to the drop in average unit value (-12.6%) although export volume increased 11.3%

On a m-o-m basis exports decreased RM11.6 billion (-12.0%) from RM96.4 billion. The main products that contributed to the decline were:

- E&E products declined RM7.2 billion (-18.8%) from RM38.4 billion
- Crude petroleum shrank RM927.8 million or 24.5% from RM3.8 billion due to the decrease in export volume (-25.0%) as average unit value increased 0.7%

- Palm oil and palm oil-based products dropped RM620.1 million or 10.1% from RM6.2 billion. Exports of palm oil decreased RM459.9 million or 12.7% due to the decline in both export volume (-11.1%) and average unit value (-1.9%)
- Timber and timber-based products decreased RM201.2 million (-9.3%) from RM2.2 billion
- Refined petroleum products dropped RM151.2 million or 2.3% from RM6.7 billion due to the decline in export volume (-2.6%) although average unit value rose 0.3%
- Natural rubber recorded a decrease of RM10.0 million or 3.2% from RM314.7 million due to the decrease in both export volume (-2.3%) and average unit value (-0.9%)
- Nevertheless exports of LNG registered an increase of RM492.1 million or 12.1% from RM4.1 billion due to the growth in export volume (+17.4%) as average unit value decreased 4.5%.

Looking at Table 1.4 below, it shows Malaysia imports of major goods for November 2018. On imports perspective, on a y-o-y basis, imports increased 5.0% to RM77.2 billion. This growth by end use was mainly attributed to consumption goods and capital goods as elaborated below:

- Consumption goods
  - These goods constituted for 8.6% of total imports recorded an increase of RM59.0 million (+0.9%) to RM6.6 billion. The increase was attributed to durables (+RM163.1 million, +19.5%), non-durables (+RM122.7 million, +8.2%), and food & beverages, processed, mainly for household consumption (+RM52.2 million, +2.9%). However semi-durables recorded a decrease of RM201.4 million (-13.7%).
- Capital goods
  - These goods accounted for 13.6% of total imports rose RM39.6 million (+0.4%) to RM10.5 billion due to the growth in transport equipment, industrial (+RM1.0 billion, +168.2%). However capital goods (except transport equipment) recorded a decline of RM996.1 million (-10.1%)
- Intermediate goods
  - These goods constituted 52.1% of total imports decreased RM137.5 million (-0.3%) to RM40.2 billion. The decline was attributed to parts & accessories of capital goods (except transport equipment) (-RM2.5 billion, -17.2%). However increases were recorded in fuel & lubricants, processed, others (+RM1.1 billion, +71.2%) and industrial supplies, processed (+RM906.5 million, +5.7%)

Table 1.4: Malaysia imports by end use & BEC, November 2018

Goods	Intermediate goods	Capital goods	Consumption goods
Share	52.1%	13.6%	8.6%
Value	RM40.2 billion (↓0.3%)	RM10.5 billion (↑0.4%)	RM6.6 billion (↑0.9%)

On m-o-m basis, imports declined RM2.8 billion or 3.5% from RM80.1 billion as elaborated below:

- Capital goods

- Imports expanded RM1.1 billion (+11.3%) from RM9.4 billion due to the increase in both transport equipment, industrial (+710.0 million, +75.4%) and capital goods (except transport equipment) (+RM351.7 million, +4.1%)

- Intermediate goods
  - These goods grew RM921.3 million (+2.3%) from RM39.3 billion. The main components attributed to the increase were parts & accessories of capital goods (except transport equipment) (+RM1.9 billion, +18.0%) and industrial supplies, processed (+901.0 million, +5.7%). However fuel & lubricants primary shrank RM1.6 billion or 40.4%
- Consumption goods
  - These goods registered an increase of RM207.0 million (+3.2%) from RM6.4 billion. The increase was due to durables (+RM139.1million, +16.2%), semi-durables (+RM107.7 million, ++9.2%) and food & beverages, processed, mainly for household consumption (+RM94.3 million, +5.3%). However non-durables declined RM138.2 million or 7.8%.

As for SMEs exports perspective, according to DSOM SMEs performance 2017 report which was released on Friday 03, August 2018, SMEs exports increased RM12.3 billion (2017: 7.9%) to RM167.4 billion in 2017. This increased was supported by expansion in services (2017: 6.7%), manufacturing (2017: 7.8%) and agriculture (2017: 48.1%) sectors. In terms of contribution, the share of SMEs exports to total exports recorded 17.3 per cent in 2017 (2016: 18.6%) where 8.7 per cent was from the services sector, 8.2 per cent manufacturing sector and 0.4 per cent Agriculture sector. According to MATRADE CEO Dr. Mohd Shahreen Zainooreen Madros, the contribution of SMEs is still low despite their huge number of over 900,000 local SMEs.

In gist Malaysia trade was dynamic and experienced changes either yearly or monthly basis. As such with IMS model perhaps it would help marketers and SMEs to analyse the trade changes in term of markets potential penetration, either existing markets or new markets. For instance, IMS could facilitate a new breakthrough of product/country market penetration to further increase Malaysia exports to existing major trading partners as well as opening up new possibilities to break into or enhance trade with other unexplored or under explored regions or countries, for example South America region.

1.3 Problem Statements

As briefly elaborated in the above sections, venturing into international markets via exports is undeniably important. However concern arises as to which and what product/country combination that has export opportunities that would excel and provide valuable return of investment. Global market would be a huge market place, thus product/country combinations would undoubtedly be huge as well. With that, logically a huge amount of data information needs to be obtained, considered and

factored in prior to making a complex and sound decision. Thus IMS model is highly hoped could help international marketers in addressing the concern as well as able to process huge amount of data information. As such an IMS model is ideally expected to be having features and processes that is simple, easy, data availability, impartial, minimal cost and not complex in executing it and also able to be generalised and globally inclusive of all product/country combination throughout its end to end process in producing processed information for fast and swift decision making.

However many existing IMS models could not cater all those characteristics. For example Papadopoulos, Chen and Thomas (2002) Trade-off Model employed methodology that uses many input variables in multiple steps in order to arrive at conclusion. With many input variables to be processed, this would make the procedure of decision making complex and intricate. Steenkamp et al. (2009) indicated that Papadopoulos et al. (2002) Trade-off Model is very extensive and time consuming when dealing with large data of country/product combinations.

In another IMS model by Cuyvers et al. (1995) and Cuyvers (2004) Decision Support Model (DSM) employed filtering scheme. Cuyvers et al. (1995) did point out that "such a procedure has its drawback" (p. 176). This means product/country combinations that have been filtered out would no longer be considered in the next stage. As such there is a risk of wrongly eliminating product/country that may have promising niche markets potentials. Furthermore DSM extensively used the traditionally Balassa's Reveal Comparative Advantage (BRCA) index as competitiveness measurement decision in its filtering process which Azhar and Elliott (2006) highlighted that BRCA index have issues of scaling, proportionality and symmetry that could possibly cause doubtful result analysis interpretation. There was attempt by Tong (2012) in geometrically addressing this issue via Geometrical Revealed Comparative Advantage (GRCA) index however it was used as substitute of BRCA in DSM filtering processes, not as an IMS model.

Green and Allaway (1985) Shift-Share Model utilised import element only. Papadopoulos et al. (2002) exposed empirical proof of unreliability and several theoretical shortcomings of this model such as bias, uncorrelated random noise in the variables and high association with the simple growth model which depicts redundancy. The GRCA (Tong, 2012) used export element only. Thus there is a gap of an index or a model that utilises both import and export elements only which would probably makes the analysis not entirely holistic. Papadopoulos and Denis (1988) viewed this as a disadvantage as it does not examine the whole set of strategic or environmental dimensions in IMS. Multiple criteria methods and trade-off model do utilise both import and export elements. However besides those elements, they also utilised many others elements which makes the process complex and lengthy. To sum up, the existing simple IMS model does not produce a holistic analysis, while the more complex IMS model does produce the desired holistic analysis even though it requires more extensive works.

In addition product quality perspective is yet to be incorporated as variable in IMS models. Through literatures review of Papadopoulos et al. (2002) Trade-off Model,

Cuyvers et al. (1995) DSM model, Green and Allaway (1985) Shift-Share Model and Tong (2012) GRCA index there was no mentioning on product quality aspect. Cuyvers (2004) did highlight the important of product quality as another aspect that require awareness and concerns in determining exports success. Nevertheless he did not incorporate quality as an input variable in his DSM model.

As for Malaysia SMEs export scenario, SME Corporation Malaysia conducted survey as parts of its surveillance activity to monitor the development and assess the performance of SMEs in Malaysia. The survey is also meant to identify current challenges on the ground and structural issues faced by SMEs in Malaysia. Their surveys result which was conducted in the first quarter 2016, the first quarter 2017 and the third quarter 2017. These survey results shared here are focusing on constraints for SMEs to export only.

The survey conducted on the first quarter 2016 found out that inadequate market intelligence and trade financing were the main concerns among respondents with regards to export market. Undoubtedly, access to market information such as on global demand and business competitors is very vital as it gives more information to current or potential exporters, thus allowing them to strategise their business needs with regard to exports. The survey conducted on the third quarter 2017 cited that inadequate information on the targeted market, higher operating cost expected as well as inadequate knowledge on global demand for products or services are the some constraints faced by SMEs in going abroad.

It is interesting to notice that after a lapse of more than a year, SMEs still reiterated that these two constraints (inadequate information on the targeted market and inadequate knowledge on global demand) are restraining them to export. These surveys result could be interpreted that these two constraints pose high impact to the SMEs that they need to be properly addressed.

It is apparent that these two constraints are not new and somehow still haunt the SMEs. As Alexandrides show (as cited in Md Zain, Khalili and Mokhtar, 2008) that the difficulties in identifying foreign market opportunities was some of the major reasons for the failure of firms to initiate exporting. In addition as Bilkey (as cited in Md Zain et al., 2008) too discovered that insufficient knowledge of marketing opportunities abroad is one of the problems faced by small firms. Abdul Rahman, Yaacob and Mat Radzi (2016) revealed that marketing is among the frequently focused as the main challenges that hinder SMEs growth which revolve around lack of knowledge of foreign markets amongst the concerns. Moorthy, Tan, Choo, Chang, Tan and Tan (2012) found out that the use of marketing information can influence the performance of SMEs at the highest. In addition, Abdul Razak, Abdullah and Ersoy (2018) observed that Malaysian SMEs faced issues with marketing assistance and lack of knowledge in term of marketing techniques and exporting. They also highlighted that although Turkey as a member of EU has a big niche and international market but somehow it could not able to benefit due to lack of knowledge in marketing techniques.

In short, the problems with the process of IEO through existing IMS models can be regarded as complex, distorted, not conclusive and lack of vital product differentiation criteria (quality). Furthermore SMEs faced with major marketing issues of inadequate knowledge and information of targeted market. As such a motivation arises to investigate whether there is possibility to introduce a new IMS model that could possibly address those issues. With problem statements identified, next the research questions are to be proposed.

1.4 Research Questions

From the above problem statements, the followings are research questions to be addressed in this paper. Is it possible to conceive an IMS model that:

1. utilise both trade element (import and export) only?
2. can perform objective analysis without cognitive bias, free from firm's strategic direction, no filtering and perform trade-off between variables without weighting scheme?
3. is embedded with product quality analysis?
4. is uncomplicated that can suit both small and big firm business scenario?
5. can be geometrically represented with scaling, proportionality and symmetry properties?
6. able to perform cross sectional analysis across span period of time?

1.5 Research Objectives

With the above research questions, thus the objective of this thesis is to construct a new IMS model that can be represented by a scaling, proportionality and symmetry geometrical square box, which to be called Geometric International Market Selection Space (GIMSS) that would consist of below features and functionality:

1. Utilise trade elements (import and export) variables only which enable a cross sectional analysis across a span period of time
2. To introduce quality dimension as one of the feature in IMS model which is lack in existing IMS model
3. To apply empirical data into GIMSS model and compare with Tong (2012) GRCA geometrical competitive advantage
4. To empirically test whether is there any niche potential exporting market opportunity for high risk country that has been filtered out by Cuyvers et al. (1995) DSM model

1.6 Significance of the Study

This GIMSS model should be simpler, less time consuming and less complex to execute as it shall be using two inputs variables only. With that SMEs could utilise this new IMS model with less concerns to allocate special resources in order to implement it. Besides this GIMSS model comes with change concept that enables

cross sectional change analysis that could supply SMEs and policy makers with international market potential historical trending information of target market condition at product/country level that can be utilised in crafting market penetration strategy.

In addition, this GIMSS model has quality analysis perspective embedded in it on top of volume analysis perspective. As such SMEs can make use of this information as product differentiation strategy in lieu of stiff price competitions. Likewise, SMEs and policy makers may evaluate whether target market product/country emphasises on either quality or volume which can help shape their marketing strategy and be set as a new marketing game changer in market penetration. Furthermore this GIMSS model can be used hand in hand with competitive advantage analysis. A cross checking test can be performed to probe a target country's market potential viability in a situation whereby a source country has a competitive advantage in exporting a product to that target country. This is beneficial to SMEs and policy makers as it facilitate them to assess whether to increase or decrease exporting or to perform some necessary adjustments in order to follow suit target market potential situation.

Besides, the GIMSS model can perform quick analysis for countries that have been left out as potential target for exporting due to high risk rating. These countries might have niche market potential that could be an opportunity lost if left untapped. This feature is highly beneficial to Policy makers and SMEs as it could contribute to a new scope of exporting opportunities. Moreover the GIMSS model comes with scaling, proportionality and symmetry geometrical square box representation that permits an analysis to be confined within a uniform square space of impartial quadrants with proportional equi-lines that can be arranged within that space. This sets up a new way of performing analysis that could provide policy makers an alternative investigation of processed information in identifying international export opportunities.

With the objectives and significances highlighted above, it is now to proceed with the research activity. This thesis starts with literature review of existing IMS models. It further review the S index in Marginal Intra Intensity Trade (MIIT) and existing trade intensity measurements in lieu of coming out with GIMSS model. The following sections are the methodological framework of GIMSS, a comparative analysis of GIMSS with GRCA and DSM model, findings and discussions. This thesis ends with summary and policy implications as well as limitations.

1.7 Organization of the Study

This thesis is structured into five chapters. Chapter one presents a detail background on the importance, significance and drivers of IMS. This is followed by the highlights of problem statements, research questions, research objectives and significance of the study. Chapter two provides review on empirical literatures related to the research topic. Chapter three presented the methodological framework of GIMSS model while chapter four presented its empirical application. Lastly, chapter five conclude the study by summarising the findings and highlighting the policy implications. The chapter also includes discussion on the limitations of the study and some suggestions for future research.

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