

Export Performance of Malaysian Telecommunication Products: Market Prospects and Challenges

¹Ahasanul Haque, ²Seyama Sultana ³Abul Momen

This study tries to examine the export competitiveness of selected telecommunication products by using indicators like Revealed Comparative Advantage (RCA) and Constant Market Share (CMS) analysis and Shift-share method and these are used for identifying potential export markets. The selected four categories of telecommunication products are taken into account on the basis of three digit level Standard International Trade Classification (SITC) for the period between 2000 and 2011. The RCA calculation clearly indicates an increasing strength of comparative advantage of Malaysia, except for the products (SITC- 763) and (SITC- 764). This is mainly due to the negligible import for these products. The CMS results suggest that export gains of Malaysia for telecommunication products are largely attributed to the size of the market and also to its competitiveness effects. The CMS analysis also depicts that the competitiveness effect of telecommunication products are subsequently improved in general during the period III and I (2008-11 and 2000-03) as compared to those of the period I and II (2000-03 and 2004-07) and period II and III (2004-07 and 2008-11). The shift-share indicates that the USA, UK, Netherlands, Switzerland, Japan and Germany are biggest importing countries of Malaysian telecommunication products although major challenges are the asian countries here.

Keyword: Export Competitiveness, RCA, CMS, Shift-share and Market opportunity

Introduction

Structural shift in the Malaysian economy is observed almost in last two decades from an agriculture commodity trading substitution-based economy to a highly diversified manufactured product export led economy. Export growth, led the telecommunication industries and played a vital role in the recovery of the manufacturing sector during last two decades (Haque and Rahman, 2002). Since 1985 the telecommunication industry has grown rapidly in terms of export and investment (Haque et al., 2010). Malaysian telecommunication industry has become very competitive because of the rapid improvement in information technology. The number of subscribers in mobile market of Malaysia has been jumped from twentieth century to twenty first century. And the number is 20 million in 2006 and the industry has an annual growth of 25% (Chong, Chong, & Wong, 2007). The growth is possible because of very advanced technology and information service and other factors are like good communication system and multimedia facilities. Thus this industry needs to play a major role to convert Malaysian economy into knowledge based economy (Chong et al., 2006a). Knowledge has become the most precious

Faculty of Economics and Management Sciences

International Islamic University Malaysia, Box No. 10, 50728 Kuala Lumpur

^{2&3}Graduate Research Assistant, Department of Business Administration

International Islamic University Malaysia, Box No. 10, 50728 Kuala Lumpur

asset in this rising competitive environment of the telecommunication industry (Syed-Ikhsan and Rowland, 2004). Knowledge has become the nucleus of global economic transformation (Bell, 1978) and competitive advantage of an organization (Mayo and Lank, 1994) and a country. Sustainable economic development in highly competitive world markets requires a direct engagement in the generation of knowledge (King, 2004). To achieve sustainable economic growth and to remain globally competitive, Malaysia realizes that it cannot ignore knowledge economy (Wei, Choy, & Yew, 2009). Malaysia has launched the Multimedia Super Corridor, which offers an excellent and conducive information and communications technology (ICT) environment to enhance the development of a K-economy nation from mid 1990s (Chong, 2006a, b). The above discussion and statistics show that the telecommunication industry has great value in Malaysian economy and the industry is highly competitive. Thus the paper will try to analyze Malaysian telecommunication products' competitiveness in the world market, including revealed comparative advantage, constant market share and shift-share analysis.

Literature Review

There are many different concepts and definitions of competitiveness. The term of competitiveness is used to mean many different things by different peoples. It can be used as an excuse for protectionism, cost cutting etc. or it can be used to inspire innovation and productivity increases. Economic dynamism, globalization and social progress and competitiveness go hand-in-hand. Competitiveness can be analyzed in any economy and society at macro level. Competitive advantage is the function of the process through which a firm organizes and manages the activities. Competitive advantage can be born when a firm can innovate a new way which is more effective and efficient than those of its competitors in the industry to deliver value to the customers. In every competitive strategy, there are two different components like one is that, the structure of the industry in which evolves the enterprise: the profitability may change hugely from one industry to another, another thing is that the positioning of the company in any industry (Balkytė & Tvaronavičienė, 2010).

Revealed Comparative Advantage (RCA)

"The revealed comparative advantage index (RCA) is a ratio of A/B , where A stands for the export value of a commodity of a country or region divided by the total export value of all commodities of a country or region, and B stands for the export value of the very commodity of the world divided by the total export value of all commodities of the world" (Gong, 2011). Global business is vastly dependent on the fact of comparative advantage. Comparative advantage results from international trade and originated from the core thought of that a country exports goods more efficiently compared to other countries. Comparative advantage theory measures a country's specialization in the international division of commodity. It is determined by the country's availability of cheap resources. It includes a country's domestic and international competitiveness and its technological advancement and innovation (Russu, 2011). Comparative advantage is the tendency for countries to export those commodities which they are relatively skilful at producing, than the rest of the world. If a country can produce a good at a lower relative cost than other countries, then with trade, that country should devote more of its resources to the production of that particular good (Serin & Civan, 2008). In different stages of product life cycle different competitive advantage strategy will be effective. In the introduction stage

firms should offer relatively higher quality products to the quality conscious buyers and to decrease dissatisfaction with the purchases of defective, new products to gain competitive advantage. As the product reaches to the growth stage customers demand more promotional activities to facilitate them with more information regarding some issues like its performance, longevity etc. In maturity stage competitive advantages may include are "high levels of operational efficiency, application of technological advances that lower manufacturing, distribution, and administrative costs" (Beal & Iii, 2010). Revealed Comparative Advantage was first applied by Balassa (1965). He showed that two of the factors, which determine the value of a country's export share for a particular product, its relative size and the value of its aggregate exports, cause the export share to be a conceptually unsatisfactory measure of its revealed comparative advantage. As a result of eliminating these factors an adjusted export share is obtained for each country, and a set of these shares will correlate perfectly with their matching set of RCA indices.

Constant Market Share (CMS) Approach

The reason for which CMS has greater attention over the question of interpretation than other methods (based on explicit empirical models) is that it is based on an identity and is not derived from an explicit theory. CMS analysis involves a decomposition of terms of an identity and, as such, the empirical results can be consistent with any number of theories (Ahmadi-esfahani, 2006). The constant market share approach is a popular and simplified method of examining export growth by which a given change in a country's exports is partitioned into structural and competitive components.

Ariff (1984) made assessment on the Malaysian import and export performance using the CMS model. His study included destination countries such as Australia, Canada, some European countries, Japan, USA and other newly industrial countries like Hong Kong, South Korea, Taiwan and Singapore. The model assessed Malaysia export pattern to the destination countries and their import from Malaysia. He pointed out that the estimates of each effect (standard growth effect, commodity composition effect and market share effect) would depend crucially on the standard used in the computation. In other words, the magnitude of this effect would be affected by the standard against which the focussed exporting countries export to the focussed destination was matched. A positive commodity composition effect would suggest that exports consisting mainly of those items, for which import growth had been particularly strong in the focussed destination, while a positive market destination effect would suggest that the exports concentrated mainly on the most rapidly growing markets. The market destination effect however is relevant only where the focussed destination refers to a region. However, both the commodity composition and market distribution effect depend on the structure of exports in the base year and those subsequent changes in the commodity composition or market distributions during the intervals of investigation. Richardson (1971) used the constant market share approach to analyze the export growth over four levels of commodity aggregation between 1960 to 1965. It basically described favorable or unfavorable export growth either to a country's export structure or to its "competitiveness". This study was designed to demonstrate the theoretical pitfalls for examining export growth. The author suggested some improvements of the CMS approach. He pointed out that this technique was subjected to a number of critical problems of

theoretical foundation and application. These were: 1. the calculation of several sets of CMS effects by using different base weights, all from the same body of data. These multiple calculations provided means of judging whether the structural effects improved or declined over the period. They improved the quality of conclusions about a country's true competitiveness, and they enabled more reasonable forecasts of future export performance; 2. The need for considerable care in selecting an appropriate "world" of effective competitions for a particular focus exporter, and perhaps for each of the export commodities and/or markets; 3. The employment of quantity data or quantity proxies (rather than values) if they can be computed. Further Richardson (1971) carried out some sensitivity test for a CMS analysis of export growth ascribed either structural or competitive factors. The simplicity and popularity of CMS analysis have, however, obscured some critical problems of theoretical foundation, interpretation and application. He pointed out variability of CMS results, which followed from some of the most serious problems of application. The author illustrated the sensitivity of CMS results to these methodological criticisms and interpretational improvements. CMS analysis was applied to the 1960 to 1965 growth in exports for eleven countries. However, the classification of commodities was varied over four options. The consolidation of importing regions varied over the two periods, the commodity effect was calculated both "before and after" the market effect, and the variations were specified in this study, these factors were performed simultaneously, leading to some different sets of CMS effects for each focused country. He indicated that the variation was substantial and sign changes were frequent. In light of the fact, however, that such variation could be used to draw calculations about changing structure and competitiveness. It was not arbitrary in the same way as that variation because of commodity effect.

Shift-Share Technique

The essential idea is to analyze the extent to which the difference in growth between each region and the national average is due to the region performing uniformly better than average on all industries or to the fact that the region happens to be specialized in fast growing sectors (Esteban, 2000). It measures the growth of individual markets relative to all members of a chosen group. The shift share method is used as a technique for identifying export opportunities (Ahmed and Mark, 1995, Khalifa, 1996, and Peh Kian- Heng, 1999). Vitail (1990) examined the international trade of the machine tool industry by using shift-share analysis. This analysis allowed the effects of market composition and exporting firm's competitiveness to change according to export figures. In addition, this method eliminated the influence of price exchange rate factors on data (during the period of 1980-1987). The author obtained the results that Japanese firms possessed the most aggressive penetration strategy in international markets. Green and Larsen (1991) used the shift-share analysis to examine the trade changes between countries. They examined the changes that occurred in the composition and direction of U.S. trade between 1985 and 1989 with the help of shift-share analysis. They first applied shift-share technique to the total U.S. exports and imports from each of the other nations in the world. They identified the nations, which increased or decreased their market shares of total imports into the U.S, and total exports from the U.S. The second set of shift-share analysis was performed on total exports represented by individual product categories. They intended to look into the changes of individual product categories representing their shares of U.S. exports and import. Shift-Share technique is a method, which is useful

for identifying export opportunities. It analyses change in trade over time on the basis of the changes in a country's export growth occurred in market share. This method aims at determining the percentage net shift, which is the relative gain or loss in growth of a particular member, relative to the group in the time period chosen. The net shift should be positive for members gaining shares over the period and negative for member losing market share. The members identified positive net shifts are the most potential.

Methodology

Three major methodological tools will be used in this study. Firstly, to measure the changes of comparative advantage and competitiveness of a country's export using the Revealed Comparative Advantage (RCA) and Constant Market Share Analysis (CMS) method, secondly, for identifying the potential export markets using the Shift-Share method. Detail descriptions on these three approaches are provided in the following paragraphs:

Revealed Comparative Advantage (RCA)

Revealed Comparative Advantage (RCA) measures the change in the comparative advantage of a country's exports. Two major indicators are normally used to capture the changes in the comparative advantage of textile and apparel product exports; these are: export performance ratios and net export/total trade ratio (Balassa 1965, UNIDO 1982, Ariff and Hill 1985). These two indicators are interrelated and highlight different facts of the same phenomenon.

Export Performance Ratio

Export Performance Ratio (EPR) is used to measure Revealed Comparative Advantage of a country. Export performance ratio (ep_{ij}) measure expresses the share of country i 's export of commodity j in total world export of commodity j , as a ratio of the share of country i 's total export in the world total exports. If the export performance ratio is one, this indicates a normal export performance of commodity j relative to the size of country i 's of commodity j exporter. If the export performance ratio is two, this suggests that the commodity j 's share in country i 's export is twice the corresponding world share and so forth. A ratio of more than one is taken as an indication of revealed comparative advantage. A rise in the ratio suggests a strengthening in terms of revealed comparative advantage (Balassa 1965, UNIDO 1982, Ariff and Hill 1985).

The measure yields a ratio ranging from zero to infinity but for certain reasons large numbers will be unusual. An export performance ratio of more than unity is regarded as a revealed comparative advantage, while a rise in the ratio suggests a strengthening on the basis of Revealed Comparative Advantage. Export performance ratio (ep_{ij}) exposes the share of the country i 's export of commodity j , as a ratio of the share of country i 's total exports in the world total exports. It is presented as:

$$ep_{ij} = \frac{X_{ij}/X_{wj}}{X_{ie}/X_{we}}$$

Where, X_{ij} = country i 's export of commodity j ; X_{wj} = world exports of commodity j ; X_{ie} = country i 's total exports; X_{we} = total world exports.

Net Export / Total Trade Ratio

A rough understanding of a country's shifting pattern of comparative advantage or disadvantage in an economic activity may be gathered from changes in the percentage ratio of net export to total trade. Net export of commodity j, as a percentage of total trade in commodity j, for country i, is explained by the measure (nx_{ij}). Net exports are usually expressed by a negative sign. It can be expressed as:

$$nx_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}} \times 100$$

Where, X_{ij} = country i's exports of commodity j; M_{ij} = country i's imports of commodity j. The ratio for this measure ranged from +100 (suggesting a commodity is exported, but not imported) to -100 (implying a commodity is imported but not exported). A positive sign does not necessarily indicate revealed comparative advantage, nor a negative sign indicates revealed comparative advantage. However, an increase in the ratio can be assumed to have some strengthening revealed comparative advantage.

Constant Market Share (CMS)

The constant market share model decomposes actual gain or loss in country's exports into four components: 1. size of market or market share; 2. commodity composition effect; 3. market distribution effect; and 4. competitiveness effect (which is essentially captured as a residual). Thus, export growth either ascribes to structural or competitive factors. Based on Richardson (1999), Bowen and Pelzman (1984), the generalised CMS method can be considerably improved in the critical consistency as well as in empirical applicability, if initial year weights are used throughout the calculations. Secondly, the economic interpretation of the residual terms is made explicit. Under this approach, the generalised CMS identifies an actual change in the focus country's export between two time periods. The CMS model is employed to describe a country's export growth. Here, the export performance of a particular country is compared with the 'world average'. The specific CMS model used in this study can be written as:

$$\frac{q_i^1 - q_i^0}{q_i^0} = \frac{q_{ij}^1 - q_{ij}^0}{q_{ij}^0} + \frac{q_{ij}^1 - q_{ij}^0}{q_{ij}^0} + \frac{q_{ij}^1 - q_{ij}^0}{q_{ij}^0} + \frac{q_{ij}^1 - q_{ij}^0}{q_{ij}^0}$$

Where, i = 1,2, n, be the number of commodity; j = 1,2, m, be the number of markets, The superscript 1 and 0 refer to the terminal and initial time period respectively. q⁰_i = total exports by the focus country of commodity i, in the initial period; q¹_i = total exports by the focus country of commodity i, in the terminal period; q⁰_{ij} = export by the focus country of ith commodity, to the jth market in the initial period; q¹_{ij} = export by the focus country of ith commodity, to the jth market in the terminal period; r = proportionate change in total world exports in aggregate from initial time period (0) to terminal time period (1); r_i = proportionate change in world exports of the ith commodity in aggregate from initial period (0) to terminal period (1); r_{ij} = proportionate change in the world exports of ith commodity to the jth market in aggregate from initial time period (0) to terminal time period (1); The total change, Δq, in exports of the focus country is given by

$$\Delta X = \sum_{i=1}^n q_i - q$$

That is, Total Change in Export = World trade effect (1st term) + (Commodity composition effect (2nd term) + Market distribution effect (3rd term) + Competitiveness effect (4th term). These four components are briefly discussed as model specification.

World Trade Effect: The first term on the right hand side of the identity is the world trade effect or size of market, and it measures the hypothetical increase in the focus country's export if its exports are to grow at the same rate as the world exports. It indicates that part of the export growth attributes to the general increase in world exports. Hence rq_i may alternatively be viewed as the increase or decrease in a country's exports due to expansion in world trade under the assumption that initial market share is maintained. Thus, given a constant overall market share in individual markets, a country's export volume may increase as a result of a general expansion in the total market size. In other words, a country may gain from share in world demand if it is able to maintain its market share.

Commodity Composition Effect: The second term is the commodity composition effect and it measures the extent to which the focus country's export composition is concentrated in commodities with high import demand. It is the .weighted sum of values of export to different commodities. The weights are the deviations of the growth rates of individual commodity exports, from the growth rate of world exports in aggregate. The change in exports due to commodity composition depends mainly on the factor endowments of the country and the income and price elasticity for the products in which it specializes. The commodity composition effect would be negative if the focus country concentrates its export on commodities for which the world demand expanded slower than the average growth rate of world exports in general.

Market Distribution Effect: The market distribution effect measures the extent to which a country's export is concentrated in market where demand is growing either faster or slower than total world export demand in those markets. The term is the weight sum of the values of each class of exports going to each market. The weight is the deviation of the growth of a particular market for a particular commodity from the average growth rate of world exports for that commodity. The change in exports due to market distribution depends on trade policies and income growth of foreign countries. The deviations in growth rates of exports to different directions may occur when, 1. the income elasticity of demand trends varies from commodity to commodity; 2. the income elasticity of demand for the same commodity tends to vary from one region (market) to another, and 3. the real income may not grow at the same rate in all the regions. In other words, given two markets with unequal rate of expansion, the maintenance of a constant share in each market does not ensure that the overall market share will remain unchanged. This is because the less rapidly expanding market may not necessarily offset the change in the relative contribution of the more rapidly expanding market to overall market share. Distribution effect reflects the extent to which a country's exports are concentrated in markets where demand is faster or slower relative to total world demand. The positive distribution effect suggests that the market distribution indicate that the exports of focus

country's are concentrated on the relatively expanding areas in world trade. If a negative sign is then indicated, distribution effect suggests that exports are concentrated in a market where demand is growing slower than world demand.

Competitiveness Effect: The fourth and final term is the competitiveness effect that measures the difference between actual increase in the focus country's actual exports and the increase that would have occurred if the focus country maintained its market share in those markets. Alternatively, it is the difference between the actual increase in a country's export and increase that would have happened if a country maintains its market share. This residual term indicates the improvement or deterioration in the competitiveness of exports depending whether the term has a positive or a negative sign. A negative sign of the term means that the country fails to maintain market share because of lack of competitiveness. It may be possible that the residual may provide a biased measure of general competitiveness due to interaction of the effects of commodity composition, market distribution and the residual effect. In fast growing markets, the country may experience a declining share in world market, if it cannot cope with the growth to that extent. The net effect is to be reflected in the negative sign of competitive effect because of favorable market and commodity growth. The interdependence among the three effects of market distribution, commodity composition and the residual become minor in most cases if the ratio of exports to total production become less.

Shift- Share Method

Shift-share analysis identifies export growth differentials based upon the changes that have occurred in market share over the period, in contrast to most other forms of trend analysis which expresses growth in terms of absolute or percentage change in the variable of interest. It is the feature plus its relative simplicity, which makes shift-share analysis an attractive technique for screening export opportunities. For a complete discussions of the technique and its benefits for analyzing trade data, based on Green and Couture, 1985, Huff and Sherr, 1967. Shift share technique first discussed by Perloff et al. (1960). It is a method, which measures the growth of individual markets relative to all members of a chosen group. The shift-share method is used as a technique for identifying export opportunities (e.g. Green and Larson, 1991, Ahmed et al., 1992 and Ahmed and Mak, 1995, Wee and Wong 1987). This method requires measurement on a variable of interest at the initial period and terminal period of analysis. An expected growth figure is calculated based on the average growth of all markets studied. Each market's expected growth is compared with its actual growth. The difference and the net shift is positive for market that gain share over the period, and negative for country's losing market share. The magnitude of the gain or loss represents the difference between that market's actual performance and the performance it would have had if its growth rate had been equal to the average growth of the entire market. The shift-share analysis is calculated based on the computation technique, which is explained below.

Computation Technique

The statistical technique employs in the study to analyse the data is called shift-share analysis. This technique analyses changes in trade over the time period on the basis of the export changes that occurs in market share. Computation steps are as follows:

Actual Change

The actual change for each market is calculated to identify the absolute growth value. The actual change of the growth variable in a given market is simply the difference in values from one time period to another. Let $V_{j,t}$ represents the values of the export for market j at the end of the terminal time period t , and ΔV_j be the actual change in market j over the specified period of time. Therefore,

$$\Delta V_j = V_{j,t} - V_{j,t-1}$$

It is clear from this equation that the following relationships exist. If $\Delta V_j < 0$ the j^{th} market experienced a decline; $= 0$ the j^{th} market experienced remained unchanged; > 0 the j^{th} market experienced an increase. It should be noted that $\Delta V_j > 0$ implies only that market j increased in value. This relationship does not show the growth of this market relative to the other markets.

Total Growth Rate

The total value of growth variable for all markets K at the end of the initial time period is equal to the sum of the values for each of the individual markets, that is $\sum_{j=1}^m V_{j,t-1}$. Similarly, the total value of the growth variable for all markets at the end of the terminal time period is $\sum_{j=1}^m V_{j,t}$. The growth rate for all markets K , is equal to the ratio of the total value in the terminal time period to the corresponding value in the initial time period.

$$K = \frac{\sum_{j=1}^m V_{j,t}}{\sum_{j=1}^m V_{j,t-1}}$$

Where, K = the growth rate for all markets; $V_{j,t}$ = the value for each market j for the terminal time period t ; $V_{j,t-1}$ = the value for each market j for the initial time period $t-1$; $j = 1, 2, \dots, m$.

Expected Value

If a given market has grown at the rate achieved for all markets, the expected value of the growth valuable at the end of the terminal time period, $E(V_{j,t})$, is the product of the actual value of this market at the end of the initial time period and the rate of change for all markets. To get this, multiply the value between the initial time period ($V_{j,t-1}$) and growth rate for all market (K). That is,

$$E(V_{j,t}) = K(V_{j,t-1})$$

Expected Change

Expected change in the value of a growth variable for a particular market in a given time period is the difference between the expected value and actual value for the market at the end of the initial time period. Let $E(\Delta V_j)$ represents the expected change. Thus,

$$\begin{aligned} E(\Delta V_j) &= E(V_{j,t}) - V_{j,t-1} \\ &= V_{j,t-1}(K-1) \end{aligned}$$

Net Shift

The difference between the actual change and the expected change of a given market is the net shift. This difference is denoted as N_j . Thus,

$$N_j = \Delta V_j - E(\Delta V_j)$$

It should be noted that, $N_j > 0$ does not necessarily imply that the j^{th} market's growth increases by a greater amount than it would have if it has grown at the total market rate. This conclusion would be true only if, $E(\Delta V_j) > 0$. But if $E(\Delta V_j) < 0$ and $E(\Delta V_j) < \Delta V_j < 0$, then $N_j > 0$. However, this implies that the j^{th} market does not decrease as rapidly as it would be expected. Thus a ratio between the actual and expected change will not be a suitable measure.

The sum of the net shift values for all markets should be zero:

$$\sum_{j=1}^m N_j = \sum_{j=1}^m (\Delta V_j - E(\Delta V_j)) = \sum_{j=1}^m (V_{jt} - V_{j,t+1}) - \left[\frac{\sum_{j=1}^m V_{jt}}{\sum_{j=1}^m V_{j,t+1}} \right] \sum_{j=1}^m V_{j,t+1} = 0$$

If the set of numbers ΔN_j , $j = 1, 2, \dots, m$, is separated into those numbers that are greater than or equal to zero and those that are less than zero, these subsets are identified as ΔN_j , $j = 1, \dots, p$, and ΔN_j , $j = 1, 2, \dots, q$, respectively, (where $p + q = m$): Therefore,

$$\sum_{j=1}^m \Delta N_j = \sum_{j=1}^p \Delta N_j + \sum_{j=1}^q \Delta N_j = 0$$

Total Absolute Net Shift

The sum of the positive net shift or the sum of the negative net shift "S" represents the total absolute net shift. That is,

$$S = \frac{\sum_{j=1}^m |\Delta N_j|}{2} = \sum_{j=1}^p \Delta N_j$$

Percentage Net Shift

The relative gain or loss in the value of a growth variable for a particular market j , in a given time period is defined as the percentage net shift P_j .

Therefore,

$$P_j = \frac{N_j}{S} (100)$$

It can be seen that the sum of the percentage net shift for all markets is zero. The sum of the positive net shift is one, and the sum of the negative net shift is minus one.

Data Sources

This study is mainly based on secondary data. The secondary data will be collected mainly from the publications of various agencies, statistical booklets and annual reports of different institutions. The country specific data of import export figures for this study were compiled from annual trade statistics, published by the Department of Statistics Malaysia, various reports of the Malaysian Industrial Development Authority (MIDA), reports of the Malaysian Telecommunication Association, and

reports on Ministry of International Trade and industry (MITI). The world export data were collected mainly from United Nation's International Trade Statistics Yearbook, New York. This study will consider some specific commodities from the three-digit code of Standard International Trade Classification (SITC) product category to assessing the export performance.

This study covered twelve-year export data of Malaysia from 2000 to 2011 for the selected telecommunication companies. The selection of this twelve-year period was based on the following considerations among the three methodological tools. For Constant Market Share (CMS) analysis, this twelve-year period was decomposed into three sub periods of equal span each containing the four-year average such as 2000-2003, 2004-2007 and 2008-2011 on export values of the selected telecommunication products of Malaysia under this study. Like the CMS analysis, the Revealed Comparative Advantage (RCA) also considered the total twelve-year data and these data was divided into the three sub-periods. The reasons for analysis of three time periods are to make fruitful comparisons between the durations and to determine the robustness of the methodology. Finally, the shift-share calculation involved only two spans of time. The following factors are taken into account. First, the duration between the time periods should be long enough to show a reasonable life cycle. At the same time it should not be too long because it might cancel meaningful trends within the life cycle. It would be useful to have a long duration between the time periods, like ten to fifteen-year for examining a number of shifts within this duration. Second, the values of the analysis would be enhanced if the time periods were chosen for the effects of other economic forces. Twelve years export data was considered for this study and divided into two time periods. Each period contained six-year average export values. The first time period was from 2000 to 2005 which will refer as to the initial period, and 2006-2011 is considered second time period referred to as terminal time period.

Results and Discussion

To study the changes in the comparative advantage of the selected telecommunication products or services using the two indicators of RCA are estimated from the export values of three defined periods. The results of the RCA indicators of the selected telecommunication products in accordance with SITC codes are as follows.

Export Performance Ratio: The findings of export performance ratio of Malaysia for selected telecommunication products are also presented in Table 1. SITC- 761 (TV Broadcast Receivers), SITC- 762 (Radio Broadcast Receivers) and SITC- 764 (Telecommunication Equipment) show a rising comparative advantage in all the three defined periods as compared to other product. In period I, the ratios of those products show at 2.78%, 3.12% and 9.87%; in period III are at 4.43%, 6.46% and 16.87% respectively. The export performance ratio of SITC- 763 (Sound Recorders) shows a declining trend of RCA in three consecutive periods (Table 1).

**Table 1: Export Performance Ratio of Malaysian Telecommunication Products
for the three Periods
(USD Million)**

Telecommunication Products			
Product Code	Period I 2000-2003	Period II 2004-2007	Period III 2008-2011
SITC 761	2.78	3.04	4.43
SITC 762	3.12	5.57	6.46
SITC 763	7.17	4.72	3.61
SITC 764	9.87	11.65	16.87

Net Export/Total Trade: The findings of Net Export/Total Trade of Malaysia register positive ratios for all the three periods. It is shown in Table 2. In period I SITC- 764 (Telecommunication Equipment) shows 100% NE/TT ratio and in period II SITC- 762 (Radio Broadcast Receivers) and SITC- 763(Sound Recorders) both show 100% NE/TT ratio and in period III SITC- 762 (Radio Broadcast Receivers) again shows 100% NE/TT ratio. SITC- 761 (TV Broadcast Receivers), SITC- 762 (Radio Broadcast Receivers) and SITC- 763 (Radio Broadcast Receivers) all of them show an increasing trend from period I to period II. The ratios are: 85.13% to 97.34%, 99.40% to 100% and 97.45% to 99.87% respectively. Only SITC- 764 (Telecommunication Equipment) shows a slight declining trend from period I to period II and the ratios are 100% to 96.56% consecutively (Table2).

**Table 2: Net Export/Total Trade Ratio of Malaysian Telecommunication
Products for the three Periods
(USD Million)**

Telecommunication Products			
Product Code	Period I 2000-2003	Period II 2004-2007	Period III 2008-2011
SITC 761	85.13	95.59	97.34
SITC 762	99.40	100.00	100.00
SITC 763	97.45	100.00	99.87
SITC 764	100.00	89.96	96.56

Constant Market Share: The constant market share (CMS) model has been used to examine export performance and an indicator of the direction of competitiveness. The results of the CMS analysis depict actual gain/loss in exports are decomposed into four structural components under the three defined periods.

The World Trade Effect: The World Trade Effect of telecommunication products of Malaysia are presented in Table 3. All the telecommunication products of Malaysia like SITC- 761 (TV Broadcast Receivers), SITC- 762 (Radio Broadcast Receivers), SITC- 763(Sound Recorders) and SITC- 764 (Telecommunication Equipment) show positive World Trade Effect in the comparison Periods I and II, II and III, and III and I. For the product SITC – 761 (TV Broadcast Receivers), the values are 18.65%, 68.93%, 20.24% respectively in the comparison Periods I and II, II and III and III and I. For the product SITC – 762 (Radio Broadcast Receivers), the values are 22.98%, 27.02%, 27.98% respectively and in the case of SITC – 763 (Sound Recorders), the values are 52.84%, 57.57%, 43.70% respectively and the product SITC – 764 (Telecommunication Equipment) shows the values like 16.00%, 12.10%, 11.34% respectively (Table 3). The results of CMS analysis shows rising trend in export of all

the telecommunication products of Malaysia. Here the World Trade Effect contributes the positive share for all the products under the three defined periods. It indicates the dominating role of the size of market in export growth.

Commodity Composition Effect

The results of CMS analysis of telecommunication products are presented in Table 3, all the telecommunication products show positive commodity composition effect for all the three periods, except SITC- 761(TV Broadcast Receivers) in the comparison Period II and III and the value is -1.17%. But in other two comparison periods I and II, III and I, this product shows positive values like 4.63% and 1.34% respectively (Table 3).

Market Distribution Effect

Market Distribution Effect of telecommunication product is presented in Table 3. Malaysia attains positive Distribution Effect for all the products like SITC- 762 (Radio Broadcast Receivers), SITC- 763(Sound Recorders) and SITC- 764(Telecommunication Equipment) in all the three periods, except SITC- 761 (TV Broadcast Receivers) shows negative Market Distribution Effect in the comparison Period II and III and the value is -10.97%. This is the only product which shows negative Market Distribution Effect (Table 3).

Competitiveness Effect: The Competitiveness Effect of telecommunication products is positive for all the four categories. But for the products like SITC- 761 (TV Broadcast Receivers), SITC- 762 (Radio Broadcast Receivers) and SITC- 763 (Sound Recorders) the percentages of change are declining. The competitiveness is increasing for the product SITC- 764 (Telecommunication Equipment). The percentages of the two comparison periods like Period I and II, Period II and III, are 64.82% and 70.84% respectively. The good sign is that there is no negative value (Table 3).

Table 3: Decomposition of Export Gain/Loss of Malaysian Telecommunication Products among the three Periods (USD Million)

Telecommunication Products						
SITC Product Code	Period I and II 2000-03 and 2004- 07		Period II and III 2004-07 and 2008- 11		Period III and I 2008-11and 2000- 03	
761 (TV Broadcast Receivers)						
Change in Export	159.8	100.00	196.0	100.00	391.4	100.00
World Trade Effect	29.8	(18.65)	135.8	(68.93)	79.2	(20.24)
Commodity Composition Effect	7.4	(4.63)	-2.3	(-1.17)	5.3	(1.34)
Market Distribution Effect	18.3	(11.45)	-21.5	(-10.97)	12.4	(3.17)
Competitiveness Effect	132.6	(82.98)	93.1	(47.5)	182.6	(46.5)
762 (Radio Broadcast Receivers)						
Change in Export	91.4	100.00	270.5	100.00	351.6	100.00
World Trade Effect	21.0	(22.98)	73.1	(27.02)	98.4	(27.98)
Commodity Composition Effect	5.3	(5.80)	10.2	(3.77)	20.2	(5.75)
Market Distribution Effect	11.8	(13.05)	12.1	(4.48)	16.1	(4.58)
Competitiveness Effect	53.4	(58.42)	106.8	(39.48)	175.6	(49.94)
763 (Sound Recorders)						
Change in Export	162.2	100.00	272.9	100.00	385.6	100.00
World Trade Effect	85.7	(52.84)	157.1	(57.57)	168.5	(43.70)
Commodity Composition Effect	4.8	(2.96)	72.1	(26.47)	60.1	(15.59)

Market Distribution Effect	38.0	(23.43)	38.1	(13.96)	143.9	(37.72)
Competitiveness Effect	51.3	(31.63)	43.2	(15.83)	49.3	(12.79)
764 (Telecommunication Equipment)						
Equipment	248.7	100.00	340.5	100.00	429.4	100.00
Change in Export	39.8	(16.00)	41.2	(12.10)	48.7	(11.34)
World Trade Effect	-9.2	(3.70)	12.4	(3.64)	15.8	(3.68)
Commodity Composition Effect	23.4	(9.41)	35.1	(10.31)	32.2	(7.50)
Market Distribution Effect	161.2	(64.82)	241.2	(70.84)	312.1	(72.68)
Competitiveness Effect						

Note: Within bracket are indicated percentage change figure

Shift- Share Analysis

Table 4 represents the Standard International Trade Classification (SITC) products and percentage net shift values of four selected telecommunication products that were ranked in terms of net shift value during the specified period for world export market. The two methods i, e. absolute and percentage growth results are also represented in this table, which are identified as different growth rates for the products. In the case of TV Broadcast Receivers (SITC- 761), the results indicated that Netherland attained highest absolute growth of USD 78.73 million, followed by Bahrain and Austria. In terms of percentage growth again Netherland shows the highest growth of 4811 followed by Indonesia and Philippines. In the Shift- Share list, Switzerland is identified as the most potential market with the net shift of 115.30% followed by Netherlands and Philippines, which are at 97.50% and 58.35% (Table 4). USA is the largest importer of Radio Broadcast Receivers (SITC- 762) as indicated by the absolute growth estimate. The other major importers are Australia and Germany. In terms of percentage growth Germany offers the highest opportunity recording a growth of 1356.86 percent. In the shift- share analysis USA is the highest potential market at 40.53% net shift percentage, followed by Australia 23.32% and Germany 20.15% (Table 4). In the case of Sound Recorders (SITC- 763), USA attains the highest absolute growth of USD 154.95 million. It is followed by other major importing countries such as Switzerland and Germany among the exporting countries of Malaysia. In the percentage growth list Japan, Spain and Italy show better export opportunity. Based on the net shift percentage UK shows the highest market opportunity and attains the net shift of 40.63%. It is followed by Singapore at 27.09 % and Germany at 18.60% (Table 4).

Table 4: Market Opportunities for Malaysian Telecommunication Product During the period 2000-06 and 2007-11 (USD Million)

Shift Country	Absolute Growth		Percentage Growth		Shift-Share	
	Growth (USD)	Country	Growth %	Country	Net %	
SITC-761 (TV Broadcast Receivers)						
Netherlands	78.73	Netherlands	4811.76	Switzerland	115.30	
Bahrain	54.77	Indonesia	3960.92	Netherlands	97.50	
Austria	32.67	Philippines	1374.47	Philippines	58.35	
Switzerland	20.85	Bahrain	1203.92	Indonesia	25.75	

Italy	7.80	Greece	1162.82	Bahrain	25.41
SITC-762 (Radio Broadcast Receivers)					
USA	177.82	Germany	1356.86	USA	40.53
Austria	131.21	Belgium	974.41	Austria	23.32
Germany	84.83	UK	799.46	Germany	20.15
UK	50.61	Italy	672.77	Netherlands	10.86
Netherlands	25.03	USA	558.74	UK	5.95
SITC-763 (Sound Recorders)					
USA	154.95	Japan	10602.84	UK	40.63
Switzerland	121.42	Spain	3830.03	Singapore	27.09
Germany	69.99	Italy	2235.18	Germany	18.60
Singapore	39.54	UK	1033.81	Netherlands	13.16
Netherlands	26.60	Hong Kong	838.07	Japan	5.88
SITC-764 (Telecommunication Equipment)					
USA	101.31	USA	745.39	USA	60.73
UK	45.96	Italy	621.99	Italy	26.10
Italy	30.30	Canada	471.66	Canada	10.20
Canada	25.47	France	447.38	UK	7.53
France	14.65	UK	328.34	France	5.44

Note: Only top five potential countries are presented

For Telecommunication Equipment (SITC- 764) USA exhibits the highest imports from Malaysia in absolute growth. Other major importers are UK and Itali. However, USA again is registered as the highest percentage growth of 745.39. It is followed by Italy and Canada. In terms of net shift percentage measure, none other but USA once again emerges as the top most export potential country for Malaysia with net shift of 60.73%. Other countries are Italy and Canada with net shift of 26.10% and 10.20% respectively. According to all types of measure USA is the top most potential country of export from Malaysia in the case of Telecommunication Equipment (SITC-764) (Table 4).

Conclusion and Implications

Telecommunication industry of Malaysia is highly competitive nationally and internationally. Competitiveness can be defined as the ability of an organization to compete successfully with its commercial rivals (Law 2009). Telecommunication products of Malaysia have reached world's most developed nations. Thus to maintain and enhance the export of these products Malaysia should patronage this sector. Hence this research has great value. With the help of this information and analysis it is clear that the country has great opportunity to become a great telecommunication product exporting nation. Several important implications can be emerged from this study.

First, export performance ratio indicates that all the telecommunication products like TV Broadcast Receivers (SITC-761), Radio Broadcast Receivers (SITC-762), and

Telecommunication Equipment (SITC-764) are in good position that is they show upward growth but Sound Recorders (SITC- 763) shows declining trend thus in this case appropriate action should be taken so that it can have increasing trend like other products.

Second, from the ratio of net export/total trade it is clear that all the products except Telecommunication Equipment (SITC- 764) shows declining trend which is not a good sign. Care should be taken to improve this situation for this product. This export performance ratio is very important in the measurement of export competitiveness of a country (Momaya, 2001).

Third, in the aspect of export gain/loss of Malaysian telecommunication products most of the products show positive percentage except some products of TV Broadcast Receivers (SITC- 761) product line. This is recovered in the next measured period. Again proper monitoring and continuous corrective actions should be taken to maintain the positive trends and if there is any negative trend it should be brought under proper consideration. Fourth, The CMS results suggest that export gain of Malaysia for telecommunication products are largely attributed to the size of the market and also to her competitiveness effects. The CMS analysis also depicts that the competitiveness effect of telecommunication products are subsequently improved in general during the period III and I (2008-11 and 2000-03,) as compared to those for period I and II (2000-03 and 2004-07) and period II and III (2004-07 and 2008-11). **Fourth**, actual and potential big markets for Malaysian telecommunication products can be clearly defined from the shift- share analysis. The shift- share can indicate competitive advantage (Porter, 1990b). The countries like USA, UK, Netherlands, Switzerland, Japan and Germany are biggest importing countries of Malaysian telecommunication products. Some other potential countries such as Bahrain, Indonesia, Austria, Belgium, Singapore and some other countries are also huge markets for the product. Malaysia should emphasize to sale more products to all these markets and the country should penetrate their products in some new emerging markets.

In the competitive international market producers or exporters and processors are challenged greatly by today's more knowledgeable and conscious global buyers (Vorley and Fox, 2004). Those places, countries or cities can be defined as competitive where companies and people want to invest and to purchase from these (Kitson *et al.* 2004). According to Edmonds (2000) Competitiveness is the ability to produce the right goods and services, at the right price, at the right time maintaining the quality. Thus the country needs meet customers' needs more efficiently and more effectively than other countries do (Edmonds 2000). Hence Malaysia can gain more and achieve higher status in the world market for its telecommunication product by taking proactive actions. The challenges faced by this industry include: though competition from other countries such as India, Thailand, China and Vietnam, to progress of their high technology adoption and inflow foreign investment.

References

- Ahmadi-esfahani, F. Z. (2006). Constant market shares analysis : uses , limitations and prospects, Vol. 50, pp. 510–526. doi:10.1111/j.1467-8489.2006.00364.x
- Ahmed, Mohd. Ismail and Y. M. Mak; 1995. Identifying Export Opportunities for Malaysia Using the Shift- Share Technique, Paper Presented at AAM Conference.
- Ahmed, Mohd. Ismail, Gendall, P. J and Taufa, P. T. (1992). *The Shift-Share Technique: Its Use in Identifying Export Opportunities*, Paper Presented at the Australian Marketing Educator's Conference, Edith Cowan University Parth, Australia.
- Ariff, M. & Hill; 1985. Export – Oriented Industrialization: The Asian Experience, Sydney.
- Balassa, B. (1965). *Trade Liberalisation and Revealed Comparative Advantage*, Manchester School of Economics and Social Studies, 33 (2): 99-122.
- Balkytė, A., & Tvaronavičienė, M. (2010). Perception Of Competitiveness In The Context Of Sustainable Development : Facets Of “ Sustainable Competitiveness ”, 11(2), 341–365.
- Beal, R. M., & Iii, A. L. (2010). European Journal of Innovation Management contingency approach Quality differentiation for competitive advantage : a contingency approach, Vol. 2 No. 2, pp. 71-81.
- Belkacem, L (2002) *Meaning and Definitions of Competitiveness*. Posting at E-conference on Arab competitiveness, The Arab Planning Institute - Kuwait [http://www.arabapi.org/ecac/posting_e2.htm] Accessed 16 April 2004.
- Bell, D. (1978), *The Cultural Contradictions of Capitalism*, Heinemann, London.
- Bowen, H. P. and Pelzman, J. (1984). “*US Export Competitiveness: 1962-77*”, *Applied Economics*, 16: 461-473.
- Chong, C. W., Chong, S. C., & Wong, K. Y. (2007). Emerald Article : Implementation of KM strategies in the Malaysian Implementation of KM strategies in the Malaysian telecommunication industry An empirical analysis, Vol. 37 No. 4, pp. 452- 470 doi:10.1108/03055720710838524
- Chong, C.W., Chong, S.C. and Yeow, H.P. (2006a), “KM implementation in Malaysian telecommunication industry: an empirical analysis”, *Industrial Management & Data Systems*, Vol. 106 No. 8, pp. 1112-32.

- Chong, S.C., Wong, K.Y. and Lin, B. (2006b), "Criteria for measuring KM outcomes in organizations", *Industrial Management & Data Systems*, Vol. 106 No. 7, pp. 917-36.
- Edmonds, T. 2000. Regional Competitiveness & the Role of the Knowledge Economy, *House of Commons Library. Research paper*. London: Research Publications Office, 73–55.
- Gong, X. (2011). A Study on Trade of Complementarity among Xinjiang and Its Neighboring Countries, 7(1), 128–133.
- Green, R. T. and Couture, L. A. (1986). *Market Trends in Singapore/US Trade*, Singapore Marketing Review, 1 (March): 45-50.
- Green, R. T. and Larsen, T. L. (1991). *Japanese Trade in International Perspective*, International Marketing Review, 8 (5): 12-26.
- Haque, A. K. M. Ahasanul and Rahman, Sabbir (2010) *Service quality and customer behavioural intention: a study on Malaysian telecommunication industry*. Kegess Journal of Social Sciences, 2 (1). pp. 3-49. ISSN 0975-3621
- Haque A.K.M. Ahasanul and Rahman, Mahbubur (2002), Textile and Apparel Export from Bangladesh: Measure of Competitiveness Journal of Applied Sciences 2 (9): 882-888
- Huff, D. L. and Sherr, L. A. (1967). *Measure for Determining Differential Growth Rates for Markets*, Journal of Marketing Research, 4: 391-395.
- Khalifa, N. A. 1996. Identifying Malaysia's Export Market Growth: A Shift- Share Analysis, *Asia- Pacific Devel. J.*, 3 (1): 73- 92.
- King, W. (1996), "IS and the learning organization", *Information Systems Management*, Vol. 13, No. 33, pp. 78-80.
- Kitson, M.; Martin, R.; Tyler, P. 2004. The Regional Competitiveness: An Elusive yet Key Concept? *Regional Studies* 38(9): 991–999. doi:10.1080/0034340042000320816
- Law, J. 2009. *A Dictionary of Business and Management*. Oxford University Press [Oxford ReferenceOnline]. National Library of Lithuania [cited 10 March 2010]. Available from Internet:<<http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t18.e1333>>.
- Mayo, A. and Lank, E. (1994), *The Power of Learning: A Guide to Gaining Competitive Advantage*, IPD, London.
- Momaya, K. (2001), *International Competitiveness*, Hindustan Publishing, New Delhi.

National Competitiveness Council (NCC 2003)

Norman, C. (2002), The Malaysian Telecommunications Industry, Vol. 15 No. 4, pp. 44-73.

Peh Kian- Heng; 1999. Growth in Singapore's Exports, 1991- 96: A Shift- Share Analysis, Asian Economics J., Vol. 13 (3): 321- 344.

Porter, M.E. (1990b), "New global strategies for competitive advantage", Planning Review, Vol. 18, No. 3, pp. 4-14.

Richardson, D. J. and Zhang, C. (1999). *Revealing Comparative Advantage: Chaotic or Coherent Patterns across Time and Sector and U.S Trading Partner*, Working Paper 7212, National Bureau of Economic Research 1050 Massachusetts Avenue, Cambridge.

Richardson, J. D., 1971. Constant Market Share Analysis of Export Growth, J. of International Economics, 1: 227- 238.

Richardson, J. D., 1971. Some Sensitivity Tests for a Constant Market Share Analysis of Export Growth, the Review of Economics and Statistics, 53: 300-304.