

# SCMS JOURNAL OF INDIAN MANAGEMENT

## Contents

Volume 6	October - December 2009	Number 4
Title of the Article	Author / Authors	Page No.
"Dutch Disease" and Indian Trade Policy	: Kishore G.Kulkarni, Brijesh P., : and Arvind Kumar Jha	005- - 030
Businesses and Global Warming Interface: Carbon Credit	: Dharmesh S.Raval :	031- - 040
Technology Transfer: Biotechnology Industry	: Hesamedin Madani and : Reza Radfar	041- - 047
Awareness and Adaptability of Economic Value Addition	: Satish R. and : Rau S.S.	048- - 057
Computing Practices: Going Green	: Kumar Chandar S. :	058- - 064
Students and Employers: Perceptual Chasm	: Rajasekaran B. and : Rajasingh S.	065- - 076
Clinical and Contract Research: Potential	: Pankaj M.Madhani :	077- - 088
Wings Wider above Global Economic Crisis	: Maruti Rao N. and : Iftikhar M.Naikwadi	089- - 098
Word of Expertise to solve SCM Issues	: Satyendra Kumar Sharma and : Anil Bhat	099- - 105
Global Competitiveness: Iranian SME	: Seyed Mozaffar Mirbargkar :	106- - 116
<i>Financial Services and System</i>	: Asha E.Thomas	117- - 118
<i>Financial Institutions and Markets</i>	: Sudheendran M.	119- - 120
<i>Cases in Corporate Finance</i>	: Filomina P.George	121- - 122
<i>Sales Force Management</i>	: Deepa Pillai	123- - 124
<i>System Forensics</i>	: Anand Sasikumar	125- - 126
<i>Leadership</i>	: Jitha G.Nair	127- - 129
<i>English for Business Communication</i>	: Rebecca Thomas	130- - 131

# The Chairman speaks ...



Indian economy has been witnessing phenomenal growth since the last decade. India's share in world trade has also improved considerably during the period. These are, no doubt, positive signs for a country with the second largest population in the world.

However, in spite of these promising trends, the country is facing some daunting challenges that call for appropriate policy decisions if the nation has to sustain the present trend of economic growth and pass on its benefits to all sections of the people.

The current high growth rate has been driven mainly by our high-tech services sector, which provides employment and income to only less than one percent of our workforce. Well over half of our population is still making a living from agriculture. Growth in this sector has stagnated at a level less than three percent for the last decade.

The research paper on 'Duch Disease and Indian Trade Policy' by Dr.Kishore G.Kulkarni, Mr. Brijesh P. and Mr.Arvind Kumar Jha published as the lead article in this issue becomes topical in this context.

The first and only international legal treaty to combat climate change is the Kyoto Protocol which sets an ambitious global target for reducing green house gas emission. The matter is now being discussed world over consequent on the heated debates on it at the historic Copenhagen Summit of world leaders on climate change. Therefore, our second lead article is on 'Carbon Credit.'

You will find a variety of other topics discussed in this issue which, I am sure, will make interesting and informative reading.

**Dr.G.P.C.NAYAR**  
**Chairman, SCMS Group of Educational Institutions**

## SCMS Journal of Indian Management

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## Editorial



### “Icon,” “Index,” “Symbol,” and Others

Meaning of a word is given to it using different kinds of relationships. The study of meaning is semantics. The discipline that deals with the collection and classification of meaning is semiotics. How does one arrive at meanings, what does the meaning of a text suggest, and how does one derive meanings? - All these are interesting issues.

What does the word MBA (form) generate in our mind as its meaning (content)? It appeals to our mind as “icon” of management skill and expertise. It suggests as “index” of management knowledge and experience. It relates to as “symbol” of management programme and information. It also appertains to a management degree/diploma awarded by a statutory authority.

MBA post-graduate is the icon of management: The notion of an icon is a case of replacement. The form of the word replaces the person with management attributes: dexterity and astute expediency in the execution of skills which one has acquired in a b-school. It is the inherent property of the form that gets externalized in the person. In flesh, blood, and bone, he must be a prospective, potential manager. He becomes an icon: the management expertise incarnate. Such a product rolls out of b-schools of the stature of an IIM, IIFT, ISB, XLRI, SYMBIOSIS, SCMS-COCHIN, and other like institutions.

MBA postgraduate is an index of management: Notion of the index is a case of sequence. The merit of the person is unraveled through the connected sequence one leading to the other. One manifestation of knowledge is let known to others through experiential events. One after the other every activity will expose his managerial ingenuity and competence. He will show how managerial situations are handled with vivacity and propriety. As we witness smoke we infer that there is fire so we see the managerial performance, we confirm the competence behind. There are many b-schools of the second order, which produce MBAs to the level of index.

MBA is a symbol of management: A symbol of management presumes that it is a partial replacement. The information and programme in a b-school may have influenced him, but to the core the transformation may not have affected. Partially the training has had its influence. The symbol also performs well at times when occasion demands. This solely depends on the individual, not solely owing to the b-school. Many of the b-schools train students to this level.



The fourth one called “others” forms the category of MBA which gives the person an appellation MBA. That’s all. The qualities of the three levels of icon, index, and symbol may be found lacking in this. Hundreds of b-schools and the b-departments of some universities and colleges produce such meanings to the MBA.

As “each tree is known by its fruit,” so is the b-school known by its products.

**Dr.D.Radhakrishnan Nair**

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# “Dutch Disease” and Indian Trade Policy

Kishore G.Kulkarni, Brijesh P. , and Arvind Kumar Jha

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## Fending Off

*Main questions this paper tries to answer are, "How does an economy suffer from hardship amongst plenty?" and "What are the lessons for India from the experience of Brazil, Nigeria, Malaysia and Russia?" Unbalanced and unmonitored international trade, increased capital inflows, and overall mismanagement of an economy are capable of inflicting serious hardships. Economies of Nigeria, Russia, Malaysia and Brazil depended heavily on certain commodities which had created macroeconomic challenges of various dimensions to them. In India's case the rise in software exports should not lead to the neglect of traditional labour intensive sectors. In this context this paper attempts to filter out some important experiences of these countries which will be useful for the policy makers in preventing adverse effects of resource abundance.*

Many countries around the world have experienced economic growth that was either wiped out by a sudden short term financial or other non-economic crisis (e.g. Venezuela, Chile, the

Philippines, Argentina, Indonesia, Malaysia, Mexico) or have developed a new phenomenon of "growth with increased unemployment of labour" (e.g. Brazil, Nigeria). Main question to be answered is, "how does an economy



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suffer from hardship amongst plenty?" This paper has main aim of pointing out the economic linkages that lead to higher economic hardships if the economy is unable to buffer the external pressures. Hence in the initial part of this paper we explain the origins of Dutch Disease. Several economists have already tested (and have attempted to explain) theoretical points that lead to Dutch Disease phenomenon. We devote first section to reviewing relevant applications of this topic done by other researchers. We include in it the review of these studies' findings and summarize their conclusions.

Next section of our work involves explaining and testing the Dutch Disease phenomenon for Brazilian economy. Other sections that follow, carry out similar tests for Malaysia, Nigeria and Russia. While studying the experience of these economies is beneficial, learning from these experiences seems to be even more important. Therefore in the section that follows these experiences, we discuss the relevance to the Indian economy. Our conclusion is that unless policy makers keep a careful eye on external disturbances, the international trade dominated economic growth has a future potential of putting greater challenges in front of policy makers. Our specific recommendations are listed at the end of this paper.

Findings of each section on Brazil, Malaysia, Nigeria, Russia and India are complemented by Vector Auto Regression (VAR) analysis to test the validity of effects of Foreign Reserves on Price Level (CPI), and on real GDP (Y), and effect of Exchange Rate on real GDP. In a standard VAR model, dependent variable is regressed with two time period lagged value of dependent variable, and two time period lagged value of explanatory variable whose impact on the dependent variable is to be observed. Hypothesis testing is done with 99 percent, 95 percent, and 90 percent confidence intervals by observing Z values. Standard error of regression, the duration of the data set and R squared values are reported at the end of respective sections along with our observations about these results.

The variables used in the text sections for different countries and respective econometrics sections sometimes are not same. This is because of non-availability of longer time series data on required variables. We tried numerous ways to come up with a reliably

estimable model and have reported the best possible results. A negative effect of the stock of foreign exchange reserves on the level of GDP is a sign of the presence of Dutch disease effect. Lags are used to see if the effect of independent variables is any more significant if some time is allowed to elapse. Our concluding section is followed by the bibliography and references.

### **Section 1: Explanation of Problem of Dutch Disease and Survey of Literature**

The term, "Dutch Disease" appears to have been coined originally in the weekly magazine, "The Economist" in November 26, 1977 issue. It is the phenomenon of early 1970s when prices of oil increased; the Dutch economy experienced growth in her major export of Natural Gas. This led to increase in foreign exchange reserves which increased the domestic money supply leading to inflation. Simultaneously there was an increase in Dutch economy's major imports which led to the increased cost of production and the overall decline in aggregate supply. As the aggregate supply decreased, there was an increase in domestic unemployment. Thus in late 1970s, despite the growth in export sector, the Dutch economy experienced the stagflation phenomenon which is popularly called the "Dutch Disease."

Interestingly, the "Dutch Disease" is a misnomer because the Netherlands economy did not take very long to recover from this disease in 1980s. It is also not a norm to name a disease after a patient. In fact if a disease has to be judged by a patient, and is to be named after the most serious patient, then many other countries had more resemblance to this disease and the disease lasted longer in countries such as Nigeria.

In terms of studies that concentrate on developing countries, Spatafora and Warner (2001) in their data set made up of 18 oil countries between years 1965 and 1989 found that favourable terms-of-trade shocks boost non-tradable output but that Dutch Disease effects are remarkably lacking. While some countries have found a way to keep the Dutch Disease out of their economies, some others such as Nigeria could not do so. A study by Stokke (2005) indicated how the gold price boom can help explain the de-industrialization and disappointing growth experience in South Africa.

According to IMF (World Economic Outlook, 2005), remittances from foreign countries, like any other foreign exchange inflow, carry a potential for the Dutch Disease-type issues. In general, this does not appear to have had major adverse effects on economic performance. This argument is relevant in case of India where remittances from Non-Resident Indians (NRIs) have increased tremendously and foreign reserves have reached to record levels in recent years.

Latsis (2005), in the case of Russia, indicates that the symptoms of Dutch Disease are more acute as export trade expands due to the soaring prices of export commodities. Russia's fuel and energy sectors alone account for nearly two-thirds of total exports. Oomes and Kalcheva (2007) in their study examined whether recent economic developments in Russia have been symptomatic of Dutch Disease. The four main symptoms the study tested include (1) an appreciation of the real exchange rate; (2) a slowdown in manufacturing growth (deindustrialization); (3) an increase in service sector growth; and (4) an increase in wage growth. In this context the study pointed out that there is evidence that oil prices have strengthened the real ruble exchange rate. However, it is not clear that this real exchange rate appreciation has been responsible for the observed slowdown in manufacturing growth. The study finds clear evidence of high real wage growth in all sectors since 2000, which is consistent with both the resource movement and the spending effect.

Acosta, Lartey and Mandelman (2007) using data for El Salvador (a country for which remittances amounted to 16 percent of the GDP in 2005) found that the inability of the economy to absorb remittances leads to the Dutch Disease phenomenon.

Lopez, Molina and Bussolo (2007) recognize that while remittances have a positive impact on a good number of development indicators of recipient countries, however, they may bring a number of undesired problems (appreciation of exchange rate); especially if flows are large relative to the size of the recipient economies (Latin American countries). According to Stiglitz (2004), an easy way to avoid currency appreciation is as follows: keep the foreign exchange earned from oil exports out of the

country. And further, invest the money in other developed countries or bring it in only gradually. But in most developing countries, such a policy is viewed as using oil money to help someone else's economy. Thus from the above discussion it is clear that the symptoms of Dutch Disease are observed all over the world.

## **Section 2: The Case of Brazil**

The main theme is to recognize that the possibility of the Dutch Disease is higher when trade is dependent upon only few commodities. Hence higher is the commodity concentration in trade, greater is the possibility of economic problems created by international trade. Second, we shall see that the higher concentration of trade to a specific country or a region creates a greater chance for economic disturbance.

### **Description of Brazilian Economy**

The Brazilian economy is expected to have symptoms of the Dutch Disease because of the importance of coffee in her traditional exports during 1960s and growing concentration in manufactured exports in recent years. In the early 1960s coffee accounted for around 60 percent of the total exports, with manufactured exports negligible.

Brazil had some major economic concerns in 1980s, especially the hyperinflation that was primarily caused by tremendous increase in domestic money supply. Brazilian policy makers followed Import Substitution Industrialization (ISI) strategy until the 1980s, but eventually started to open up the economy in the 1990s. The problems that ISI created were numerous: the neglect of agriculture and other exports which brought along Balance of Payments (BOP) issues; the low productivity and quality, etc. One of the main policies adopted to restore equilibrium was to introduce significant exchange rate devaluations that ultimately contributed to the acceleration of inflation.

### **Brazil's International Trade in Recent Years: Rise of Manufacturing Sector**

When Brazil liberalized its trade regime in the early 1990s, its overvalued exchange rate discouraged exports. It was

only after 2000, a tighter fiscal policy and greater exchange rate flexibility improved Brazil's external competitiveness, laying the basis for rapid export growth. Brazil has one of the highest proportions of manufacturing exports to GDP in Latin America, and has been able to penetrate a wide range of markets. Brazilian merchandise exports reached to \$137.8 billion in 2006. Manufactured products were the key driver of this result and it is highly diversified. Currently, Brazil is home to large manufacturing plants making it an important player in the world aerospace industry. The Embraer (aircraft manufacturing company) is one of the largest exporters in the country. Further, the share of agriculture in total exports of Brazil has also gone up to 11.7 percent in 2003 from 9.3 percent in 1992. Thus the available data in Table 1 show that currently there is no significant domination of any particular sector in Brazilian exports.

The disaggregated data on manufacturing sector exports for the year 2003 indicate that metal manufactures constituted maximum share of 25.9 percent of the total

exports of manufacturing sector, followed by food, beverages and tobacco with 17.6 percent. Among the manufacturing sector exports there is no substantial domination by any particular industry leading to Dutch Disease (Table 2). Thus we see that there is no significant evidence of Dutch Disease like phenomenon in Brazil in recent years.

### Currency Fluctuations in Recent Years in Brazil

The system of exchange mini-devaluations functioned up until February 1990. In March 1990, the dirty flotation exchange rate system was adopted and used until June 1994. Beginning in July 1994, Brazil implemented a limited flexible exchange rate system.

### Dutch Disease in Brazil, Are there any Symptoms?

Strictly speaking, the Dutch Disease is not really a disease if the higher inflows are expected to be permanent. In these cases, the Dutch Disease may simply represent the

**Table 1: Brazilian Exports in 2006 (Main products)**

	US \$ Billion	Share in Percent
<b>Total Exports</b>	137.8	100
Iron ore and concentrates	8.9	6.5
Petroleum oils, crude	6.9	5.0
Soybeans, including grinded	5.7	4.1
Passenger motor vehicles	4.6	3.3
Other	4.2	3.1
Cane sugar, raw	3.9	2.9
Airplanes	3.2	2.4
Meat of bovine animals, fresh, chilled or frozen	3.1	2.3
Transmission and reception apparatus, and components	3.1	2.2
Parts and accessories for motor cars and tractors	3.0	2.2
Coffee, not roasted	2.9	2.1
Meat and edible offal of chicken, fresh, chilled or frozen	2.9	2.1
Iron or nonalloy steel flat-rolled products	2.7	2.0

Source : Banco Central Do Brasil, website



**Table 2: Disaggregated Exports of Manufacturing  
(percent of total exports under manufacturing)**

	Food, Beverages, Tobacco	Textiles	Wood & Products	Paper and Products	Chemicals	Basic metals	Metal Manufactures
1995	19.9	7.3	2.1	6.1	9.9	13.4	22.0
2000	13.7	6.3	2.5	4.8	10.6	10.1	31.1
2001	17.1	6.2	2.5	3.9	10.4	8.0	29.7
2002	17.4	5.8	2.8	3.6	10.4	9.2	27.3
2003	17.6	5.5	2.7	4.1	10.8	9.5	25.9

Source: United Nations, International Trade Statistics Year book, Various Issues

economy's adaptation to its new found wealth, making the term 'disease' a misnomer. A shift in the production from the tradable to the non-tradable sector is simply a self-correcting mechanism, a way for the economy to adapt to an increase in domestic demand. Thus the increased foreign reserves and fluctuating exports are not serious reasons to worry about, and self correction is a natural process.

Further, the rise of manufacturing sector in recent years (2008) has not led to any substantial erosion in Brazil's traditional coffee export sector causing major unemployment in that industry.

To test the evidence of the Dutch disease, in this section as well as in other sections we decided to run Vector Auto-Regression (VAR) which essentially measures an effect of one variable on the other variable by calculating direct "Impact Multipliers." There is also an adjustment made by taking a lagged independent variable to measure the last time period's effect of change in independent variable on this time period's dependent variable value.

Hence in equation form the following models were tested:

$$P(t) = a_1P(t-1) + a_2P(t-2) + a_3FR(t-1) + a_4FR(t-2) \dots \dots \dots (1)$$

$$Y(t) = b_1FR(t-1) + b_2FR(t-2) + b_3Y(t-1) + b_4Y(t-2) \dots \dots \dots (2)$$

$$Y(t) = c_1Y(t-1) + c_2Y(t-2) + c_3ER(t-1) + c_4ER(t-2) \dots \dots \dots (3)$$

Where

- P = general price level (measured by Consumer price index (CPI))
- Y = real GDP
- FR = stock of foreign reserves

ER = Exchange rate measured as domestic currency units per unit of the foreign currency, increase in this rate would make a depreciation of the domestic currency (t-1) and (t-2) represent lagged values of the variable by one and two time periods respectively.

To be economically consistent, and to observe the presence of the Dutch Disease, the expected signs of the estimated coefficients (a1, a2, a3, a4, b1, b2, b3, b4, c1, c2, c3, c4) are as follows:

$$a_1, a_2, a_3 \text{ and } a_4 > 0, b_1 \text{ and } b_2 < 0, c_3 \text{ and } c_4 < 0.$$

We shall use the same expected values for all country cases. The annual data for tests of all countries were collected from International Financial Statistics (IFS) published by International Monetary Fund (IMF).

VAR was run for Brazil for the period of 1970-2007 on the annual data series and the econometrics tests for this country show that, General Price Level (P) is positively affected by foreign reserves indicating presence of effect of foreign reserves on the prices (Table 3). The estimated coefficient however is not significant. What is significant is the positive effect of foreign reserves on the real GDP, making it clear that increased foreign reserves have aided the economic growth. Hence increased foreign reserves have helped Brazilian economy in the period studied to prosper indicating no evidence of Dutch Disease in that

sense of the term. Increased exchange rate however, has a positive and significant effect on real GDP meaning that higher Exchange Rate (depreciation of domestic currency) has increased real GDP via increased exports. The high value of estimated coefficient for Exchange rate can be explained by the continuous depreciation of Brazilian currency in late 1980s and in early 1990s. Table also shows that with number of observations of 36, the R squared is pretty high, indicating a pretty decent model fit and the relationship.

**Table 3: Statistical Results for Brazil**

Brazil	Price Level		GDP		GDP
Price Level(lagged)	1.431***		.		.
	(0.16)		.		.
Price Level (twice lagged)	-0.447***		.		.
	(0.16)		.		.
Foreign Reserves (lagged)	1.24E-04		0.011***		.
	(1.90E-04)		(0.00)		.
Foreign Reserves (twice lagged)	5.21E-05		0.002		.
	(2.07E-04)		(0.00)		.
GDP (lagged)	.		0.154		0.385
	.		(0.27)		(0.55)
GDP (twice lagged)	.		0.375*		1.095**
	.		(0.21)		(0.53)
Exchange Rate (lagged)	.		.		-62.026
	.		.		(198.00)
Exchange Rate (twice lagged)	.		.		362.759**
	.		.		(170.54)
Observations	36		10		10
R-squared	0.988		0.9041		0.8532

Note: \* denotes significance at the 10 percent level, \*\* at 5 percent, and \*\*\* at 1 percent

### Section 3: The Case of Malaysia

#### Review of Malaysian Economy:

In case of Malaysia the propensity to the Dutch Disease experience was mainly due to increasing exports based

on electronic components in recent years and the emphasis of policy makers on international trade as the engine of economic growth. In this section we review the experience of Malaysian economy, and investigate if it is consistent with our story of the Dutch Disease.

Malaysia's investment ratio between 1970 to the mid-1990s was one of the highest in the Asian region, resulting in a dramatic shift in the structure of the economy from agriculture and mining to manufacturing. Much of the investment went into electronics and other export-oriented industries, while large portion also went into non-tradable sectors including capital-intensive infrastructure and the real estate sector. Malaysia's strong economic performance continued during the early 1990s until the onset of East Asian economic crisis in 1997. Malaysia went through a currency crisis and a banking crisis, but its low level of external debt spared it from a major external debt crisis.

Malaysia's recovery in 1999-2000 was one of the strongest amongst the Asian crisis ridden economies, led by buoyant world demand for electronics products. In 2003, the marked appreciation of the dollar led to an appreciation of the East Asian currencies, thereby eroding the competitiveness of Malaysian exports. In 2004 however, as a result of Ringgit peg to the weakening dollar, the value of domestic currency declined by 6.0 percent against a trade-weighted basket of currencies. This was good news for Malaysia's exporters. The buildup in

Malaysia's reserves in 2004 was reinforced by a rise in portfolio investment resulting from renewed interest by international investors in Asia, and the apparent undervaluation of the ringgit. In the Malaysian context, there are many incidences that prove that the export growth has strongly contributed to GDP growth.

### Is Malaysia Prone to the Dutch Disease?

Even though we cannot point out any direct harmful consequences of large increase in electronics exports of Malaysia, the serious shortcoming of Malaysian export sector was her high degree of concentration in the electronics sub-sector. The electrical machinery sub-sector, including production of semiconductors and other electronic components, computers and peripherals, telecommunications and consumer electronics, accounted for 67.5 percent of manufactured exports of Malaysia in 1995. As we noticed in the case of Brazil in the earlier section, a high concentration on few manufactured products to drive exports is inherently risky, leaving the extremely open Malaysian economy vulnerable to cyclical downturns in prices of these products. The

**Table 5: Composition of Exports  
(As a percentage of merchandise export)**

Year	Agricultural raw materials exports	Food exports	High-technology exports	Manufactured exports
1980	31.0	15.0	..	18.8
1985	18.4	17.4	..	27.2
1990	13.8	11.7	38.2	53.8
1995	6.2	9.5	46.1	74.7
2000	2.6	5.5	59.5	80.4
2002	2.2	7.5	58.2	79.7
2003	2.4	8.6	58.9	76.9
2004	2.4	8.0	55.6	75.7
2005	2.5	7.0	54.7	74.6
2006	2.7	7.0	53.8	73.7

Source: World Bank Online Database

high degree of dependency on foreign capital has left Malaysia with little indigenous capability for her export-led growth. The US continues to be the major export market for Malaysia and decrease in demand for Malaysian import from the United States can have a significant effect on Malaysian economy.

Table 4 and 5 indicate that the share of agricultural raw materials and food exports in total exports of Malaysia has come down drastically, but the share of manufactured exports is showing a steep increasing trend.

According to Abeysinghe (2000), the slump in the demand for electronics adversely affected the Malaysian

exports. In late 1995 and early 1996, an acute glut in semi-conductor production developed and this led to an outright collapse in US dollar prices. Malaysia is one of the top exporters of semiconductors in the world and in 1995 had approximately 10 percent of world's market share in semiconductors (Doraisami (2004)).

Malaysia was particularly hard hit by worldwide decline in the prices of electronic sector in 1992-1997, given exports of semiconductors [corresponding to Standard Industrial Trade Classification (SITC 776)] is its top export earner and that exports from the electronics sector also strongly feature in its top ten exports (Table 7).

**Table 6: Export by Manufacturing Sector (as a percentage of Total Value)**

	(Total Manufacturing)	Food, beverages, tobacco	Textiles	Wood and Products	Chemicals	Metal Manufactures
1992	79.9	8.8	6.4	6.1	4.8	47.6
1995	89.6	8.5	4.9	5.1	5.7	59.4
2000	90.1	4.8	3.7	2.7	7	66.9
2002	91.3	6.7	3.3	2.4	7.9	65.5
2003	89.9	7.9	3.1	2.2	8.7	62.4

Source: United Nations, International Trade Statistics Year book, Various Issues

**Table 7: Semi Conductor Industry in Malaysia (in US \$ million)**

	Thermionic, Microcircuits, transistors, valves, etc.	Total Export	Share in percent
2000	18,729	81,290	23.0
2001	15,929	73,079	21.8
2002	19,208	78,674	24.4
2003	22,417	82,741	27.1

Source: United Nations, International Trade Statistics Year book, Various Issues

**Econometrics Test for Malaysia:**

As mentioned before, we use the same data source (IFS – IMF) and same VAR equation forms to estimate the coefficients for Malaysia on annual data series for the period of 1970 – 2006 as in case of Brazil (Table 8). In case of Malaysia, there is no evidence of effect of foreign

reserves on price level. However, the positive effect of foreign reserves on real GDP is significant. Thus in Malaysia, just like in case of Brazil, the increased stock of foreign reserves has helped boost the economic growth. Exchange rate does not have effect on real GDP, the R squared value is high and the number of observations is 35.

**Table 8: Statistical Estimates for Malaysia**

Malaysia	Price Level	GDP	GDP
Price Level(lagged)	1.365*** (0.14)	.	.
Price Level (twice lagged)	-0.399*** (0.14)	.	.
Foreign Reserves (lagged)	-7.12E-06 (4.31E-05)	0.583** (0.20)	.
Foreign Reserves (twice lagged)	6.74E-05 (5.27E-05)	-0.499* (0.27)	.
GDP (lagged)	.	1.041*** (0.16)	0.841** (0.26)
GDP (twice lagged)	.	-0.033093 (0.16)	0.222 (0.28)
Exchange Rate (lagged)	.	.	-9366.669 (7647.76)
Exchange Rate (twice lagged)	.	.	8928.832 (6102.75)
Observations	35	35	35
R-squared	0.998	0.9955	0.9947

Note: \* denotes significance at the 10 percent level, \*\* at 5 percent, and \*\*\* at 1 percent

Hence our conclusion is that just like in case of Brazil, there is no significant evidence of the Dutch Disease in case of Malaysia. In fact there is a remarkable recovery of the Malaysian economy from the credit crisis of the late 1990s. It is possible that the absence of the disease is mainly due to the commodity diversification of the international trade and a well managed trade policy.

**Section 4: The Case of Nigeria  
Introduction to Nigerian Economy**

Nigeria is the most populous and third largest country of African continent. Oil dominates the economy, traditionally accounting for roughly 30 percent of GDP and 95 percent of foreign exchange earnings. Agriculture

is another dominant economic activity in terms of labor employment. The principal agricultural export crops are cocoa and rubber, which together account for nearly 60 percent of non-oil merchandise exports. Nigeria has vast oil reserve estimated at 18 billion barrels and proven natural gas reserves of 3.4 trillion cubic meters (with energy content slightly higher than the country's oil reserves). Export of gas is expected to increase in this decade.

### Reasons for Dutch Disease in Nigeria:

According to International Monetary Fund's World Economic Outlook (1997), in case of Nigeria, in 1969 the oil sector accounted for less than three percent of GDP and 42 percent of exports. By 1980, the oil sector had accounted for nearly 30 percent of GDP and oil exports contributed 96 percent of total exports. The steady decline of competitiveness of the non-oil tradable goods sector was reflected in the substantial decline of agricultural exports, which began in the mid 1960s and continued through 1976, when oil production reached its peak.

Notwithstanding, the dramatic rise in oil revenue in the 1970s, the Government failed to strengthen public finances. The excessive public expenditure, from an average of 13 percent of GDP during 1970-73 to 25 percent in 1974-80, moved the fiscal balance from a small surplus to deficit, averaging two and a half percent of GDP a year. The monetary financing of these deficits contributed to a rapid growth in broad money and a sharp acceleration of inflation.

The oil boom created disincentives for agricultural exports through its impact on relative product and factor prices, including the appreciation of the exchange rate and enhanced profitability of investments in non-tradable commodities and services. As a result, the rising wages in the public sector drained labour from rural areas and put an upward pressure on rural wage rate. Nigeria's real effective exchange rate appreciated by 63 percent between 1970 and 1980 and further by 84 percent between 1980 and 1984. Another consequence of the oil boom was the high level of effective demand that it induced, which grossly curtailed exportable output.

Increases in nominal incomes that are not matched by increased productivity and output, led to inflationary pressures. Kulkarni-Erickson (1999) tested the presence of Dutch Disease in Nigeria by conducting a Two Stage Least Square regression of real GDP against the Nigerian exchange rate and crude oil production. They confirmed that increase in major export price has created foreign reserve inflow which became inflationary and has retarded the growth in real GDP.

Analysis of sectoral contributions to long-term growth indicates that the services sector has been the most consistent, with an average growth of five percent per annum. By contrast the performance of the agricultural sector has been highly cyclical: decline (1965-1969); sharp rise (1970-1974); decline (1975-1985), and steady rise (1985-2000). Continued neglect of the agriculture sector, while oil exploration was prioritized, amounted to misplacement of emphasis in the country's economic development effort. It signaled to people that only participation in the oil-based urban sector provided viable employment opportunities. This resulted migration from the agriculture sector to oil sector. Thus, the rural agriculture sector, that was the major source of domestic food supply and industrial raw materials, suffered severe manpower loss. This was one factor that made the economy readily vulnerable to the Dutch disease later in the early 1980s. The structure of the Nigerian economy before the redirection of priorities during the 1970s was that of a strong agrarian economy. Damachi and Seibel (1973) show that before the oil era, Nigeria was not only self-sufficient in domestic food production (up to 85 percent), but also was the world's leading exporter of palm oil, the world's second largest exporter of cocoa, and ranked among the top ten in the world in the production and export of timber, cotton, rubber, groundnut, hides and skin. This however all changed by the mid-1980s. By 1985, Nigeria had lost its lead in palm oil and cocoa exports. Oshikoya (1990) reported that by 1986, Nigeria had to rely on import for 58 percent of its food, and 72 percent of its industrial raw material. It was clear that the country's economic structure had become seriously maladjusted.

Nigeria's foreign exchange earnings are more than 90 percent dependent on crude oil export receipts (Chart

1). As the oil prices increased in 1970s, there was influx of foreign reserves, but in 1980s that influx was replaced by scarcity as the oil prices stabilized. In fact the export of agriculture and manufacturing sector is almost negligible. Due to this, volatility of the world oil market prices has a direct impact on the supply of foreign exchange.

Diversification of the economic output away from oil and enhancing productivity growth in a stable macro-economic environment were at the centre of Nigeria's Structural Adjustment Programme (SAP) adopted in 1986.

### Econometrics Test for Nigeria

In case of Nigeria, Consumer Price Index data were not easily available, so we tested only the effect of foreign reserves on real GDP (Equations 2 and 3 in our models) which happened to be positive and significant. Observing the economic conditions of Nigeria however, it was clear that the inflation rate increased, as unemployment rose and the real GDP growth slowed down in last 30-40 years. Hence the economic hardships were clearly witnessed, which can indicate the advent of Dutch Disease.

Econometrics exercise (VAR) was run on annual data of GDP, Foreign Exchange Reserves and Exchange Rate for the period of 1970 – 2007. It was clear from the test that in Nigeria the foreign reserves inflows have improved the economic growth only after one time period (one year here). However the effect of foreign reserves on real GDP is negative after two time periods, (albeit non-significant) as witnessed in our results. Exchange rate changes (possibly because they were controlled by the monetary authorities in Nigeria) have not shown any significant effect on the real GDP. Again R squared value is high and the number of observations is 29 (Table 9). This may also prove that the non-economic factors such as administrative bottlenecks, corruption and mismanaged policies in Nigeria have contributed greatly to the economic slowdown.

Thus, the phenomenon of the Dutch Disease is most evident in case of Nigeria. This is partly due to inefficient policies to internalize the economic growth and partly due to excessive reliance on only one good for economic prosperity namely minerals and fuels. The vast mineral (including fuels) wealth of some countries has not always translated into benefits for either the country's economy or for her trading partners. In fact it has become a



**Table 9: Statistical Estimates for Nigeria**

<b>Nigeria</b>	<b>GDP</b>	<b>GDP</b>
Foreign Reserves (lagged)	1.199**	.
	(0.21)	.
Foreign Reserves (twice lagged)	-0.247	.
	(0.21)	.
GDP (lagged)	-1.023	1.085***
	(1.15)	(0.17)
GDP (twice lagged)	1.442	0.119
	(1.05)	(0.18)
Exchange Rate (lagged)	.	-9366.669
	.	(7647.76)
Exchange Rate (twice lagged)	.	8928.832
	.	(6102.75)
Observations	29	29
R-squared	0.9476	0.9456

Note: \* denotes significance at the 10 percent level, \*\* at 5 percent, and \*\*\* at 1 percent

'resource curse,' as it curtailed economic development. According to United Nations Report (1998), despite the fact that agriculture is the dominant economic activity in developing Africa in terms of its share in GDP (and in terms of the labour force), mineral fuels and related materials account for more than two thirds of the exports. Nigeria is a typical case for this influence of minerals and oil on economy's exports.

## **Section 5: The Case of Russia**

### **Introduction to Russian Economy**

Russia holds the world's largest natural gas reserves, the second largest coal reserves and the eighth largest oil reserves. Russia is also the world's largest exporter of natural gas, the second largest oil exporter and the third largest energy consumer. In this section we present the experience of Russian economy in recent years in the context of rising oil price. Some of the information in this section is based on an informative paper by Smirnova and Kulkarni (2005) on a similar topic.

One of the main issues on the Russian development agenda is the creation of infrastructure that will ensure the sustainability of growth. Current economic progress provides certain reasons to worry about Russian economy's endurance. Numerous incidences indicate that the success of the Russian economy is generated exclusively by a favourable external situation rather than internally evolved economic mechanisms. High gas and oil prices over the past five years are considered to be the major source of current GDP growth. However these sources of income are rather unreliable and cannot be regarded as a reasonable base for sustained economic growth. Russia is considered to be experiencing the so-called "Dutch Disease" when a booming export sector increases the relative price of non-tradable goods and services, thus hurting the rest of the tradable goods sector. As we know from the experience of Nigeria, throughout the 1980s and 1990s, some resource abundant countries have suffered from low growth.

It is useful to consider some background information of Russia's foreign trade in recent year. Russian foreign trade



**Table 10: Russian GDP 2000 by Sector of Origin, Basic Prices.**

	Share in published Russian GDP Percent	Adjusted Russian GDP,			
		UK Margins	Dutch Margins	Share in GDP, percent	Change in share, percent
		Share in GDP, percent	Change in share, percent		
Industry – total	31.8	51.6	19.8	54.6	22.8
Electro energy	2.8	2.8	0.0	2.8	0.0
Oil and gas total	8.8	25.2	16.4	24.9	16.1
Oil extraction	6.5	12.9	6.4	12.9	6.4
Oil processing	1.2	5.0	3.8	4.7	3.5
Gas	1.1	7.3	6.2	7.3	6.2
Coal	0.5	1.2	0.7	1.0	0.5
Chemicals	1.9	2.9	0.9	3.1	1.1
Machinery	5.1	5.3	0.2	5.2	0.0
Trade	30.8	11.0	-19.8	9.4	-21.4

Source: World Bank Country Reports, Russian Economic Memorandum (2004)

balance has been strongly positive since 1998, mainly due to the high world prices of oil. The most important trading partners for the Russian economy are Germany, Belarus, U.S.A and Ukraine (OECD, 2004). Russia's foreign trade reached \$370.4 billion in 2005. Minerals and fuels were 51.1 percent of total exports, industrial products, 46.9 percent, and agricultural exports, 2.0 percent. World prices continue to have a major effect on export performance, since commodities, particularly oil, natural gas, metals, and timber, comprise 80 percent of Russian exports. Russian GDP growth and budget surplus/deficit are closely linked to world oil prices.

Using trade margins from statistics of other countries (UK, Canada, Denmark) along with input-output table of Russian economy World Bank re-estimates the shares of industries and finds that the share of oil and gas industries could be as large as 25 percent of GDP (Table 11). The oil and gas sectors in Russia account for more than 30 percent of total government revenues. Such strong dependence on

resource revenues is a common characteristic of resource-rich countries.

Rautava (2002) supports the view that Russia's output and fiscal policy are sensitive to changes in international oil prices and real exchange rate of Ruble. He uses quarterly data on Russian GDP, budget revenues, real exchange rate and oil price and shows that a 10 percent permanent increase in the level of international oil prices would in long run cause the level of real GDP to increase by 2.2 percent and 3.0 percent increase in change in federal real revenues. Analyzing short-run consequences of oil price change.

The data on sectoral output dynamics do not support significantly the existence of "Dutch Disease" effect in modern Russian economy. The lagging growth of services and retail turnover relative to machinery does not completely fit the overall story behind the "Dutch Disease." The possible explanation for such counterfactual results

can be that the reallocation of resources does not follow relative price movement. The reason for this could be low factor mobility that is well documented in case of Russia. However, even if the Dutch Disease in the modern Russian economy may seem insignificant, one may not conclude that it did not exist at all. The analysis in the time periods of 1995-1998 and 1999-2001 of the Russia's economy proves some presence of the Dutch Disease, the economic crisis of 1998 presenting the strongest proof of it.

### **Policy responses to avoid Dutch Disease in Russia**

Many of the potential macroeconomic problems arising from resource dependence can be resolved by the right macroeconomic policies. A stable set of institutions and policies have helped Russia use resources in a better way. Attempts should be made to avoid sharp movements in exchange rates in relatively short time-spans as it can be justified in case of Indian policy intervention. Fiscal policy can be counter cyclical to the oil price, a substantial stabilization fund can be established, and wide range of monetary sterilization mechanisms can be instituted (OECD, 2004). The tax structure of the economy can be used to assist the development of the non-resource sector. There should also be attempts to increase taxation of not only oil industry but also other resource related sectors. Taxing a larger part of resource rent could also lead to relatively lower wages in the resource sector. This will also enable to reduce the general tax levels which will boost other sectors. But this is a prerequisite for a fairly efficient and non-corrupt administration. Further, the non-resource tradable sector must increase productivity and restrain unit labour costs to stay competitive in order to increase export. The recent improvements in efficiency must be sustained if Russia wants to maintain high growth rates and achieve a more diversified industrial structure. However for foreseeable future Russia is almost certain to remain highly dependent on natural resource exports. Long term solution will be provided by diversification of industries.

### **Econometrics Test for Russia**

In case of Russia, mainly due to the restricted inflows of capital, due to non-existence of market structures and

due to severe foreign exchange controls, significant results were neither expected nor were received only significant effect is one of the Exchange rate movements on real GDP which happened to be negative (for two time periods lagged variable). In case of Russia we were further constrained for Dutch Disease like experience because the phenomenon was quite recent and we therefore had only 12 annual observations for the period 1993-2006. R squared value is high, however.

Russian oil price data show close link between the oil price and the level of fixed investments in Russian economy. Therefore, it is not only the level of GDP that is influenced by oil price but the growth rate of economy that is subject to variation due to oil price fluctuation on the world market. Most researchers attribute high growth rates that Russia achieved over last four years to high oil prices (Rautava 2002). At the same time the 4-fold increase in oil price over last four years also causes worry with respect to Dutch Disease effect that can influence the further development of the country: real wages grew three times faster than productivity over 2003-2004. Sosunov and Zamulin (2006) have demonstrated that the real appreciation of the Ruble in 1999-2005 is fully consistent with the growth of the oil export revenues that took place during this period. Therefore we could expect the Dutch Disease effect to be quite important for future policies of Russian economy.

## **Section 6: Case of India**

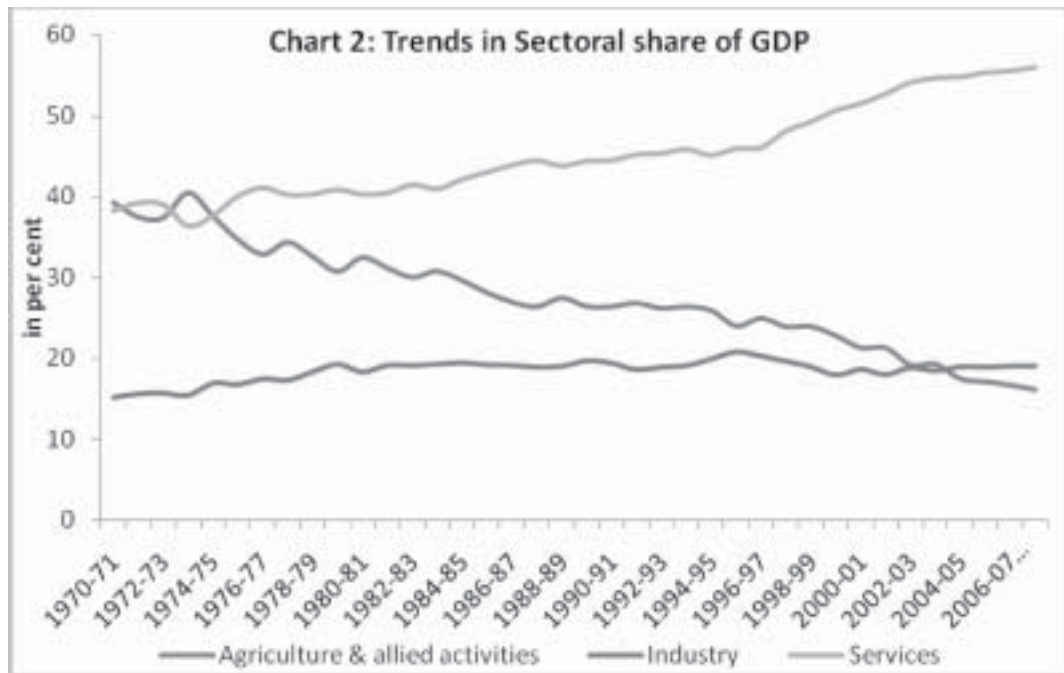
### **Background**

The experience of Brazil, Nigeria, Russia and Malaysia provides an important lesson for an emerging economy like India. In India we look at movement in its foreign exchange reserves, exchange rates, behaviour of exports and diversification in trade and foreign exchange receipts to examine the potential of Dutch disease. India in recent time has shown enormous growth potential which is supported by acceleration in service sector led by software and associated industries. In this context it may be noted that, the traditional role of developing countries are changing from mere recipients of developed countries finished product to important providers of long distance services (Jalan (2002).

**Table 11: Statistical Results for Russia**

Russia	Price Level		GDP		GDP
Price Level(lagged)	0.969***		.		.
	(0.27)		.		.
Price Level (twice lagged)	0.144		.		.
	(0.32)		.		.
Foreign Reserves (lagged)	-2.80E-04		30.179		.
	(3.08E-04)		(161.10)		.
Foreign Reserves (twice lagged)	3.00E-04		-7.137		.
	(4.31E-04)		(186.04)		.
GDP (lagged)	.		0.745***		1.906***
	.		(0.23)		(0.24)
GDP (twice lagged)	.		-0.503**		-0.743***
	.		(0.22)		(0.27)
Exchange Rate (lagged)	.		.		1206.539***
	.		.		(470.23)
Exchange Rate (twice lagged)	.		.		-894.8482*
	.		.		(496.90)
Observations	12		12		12
R-squared	0.9879		0.9707		0.9538

Note: \* denotes significance at the 10 percent level, \*\* at 5 percent, and \* at 1 percent

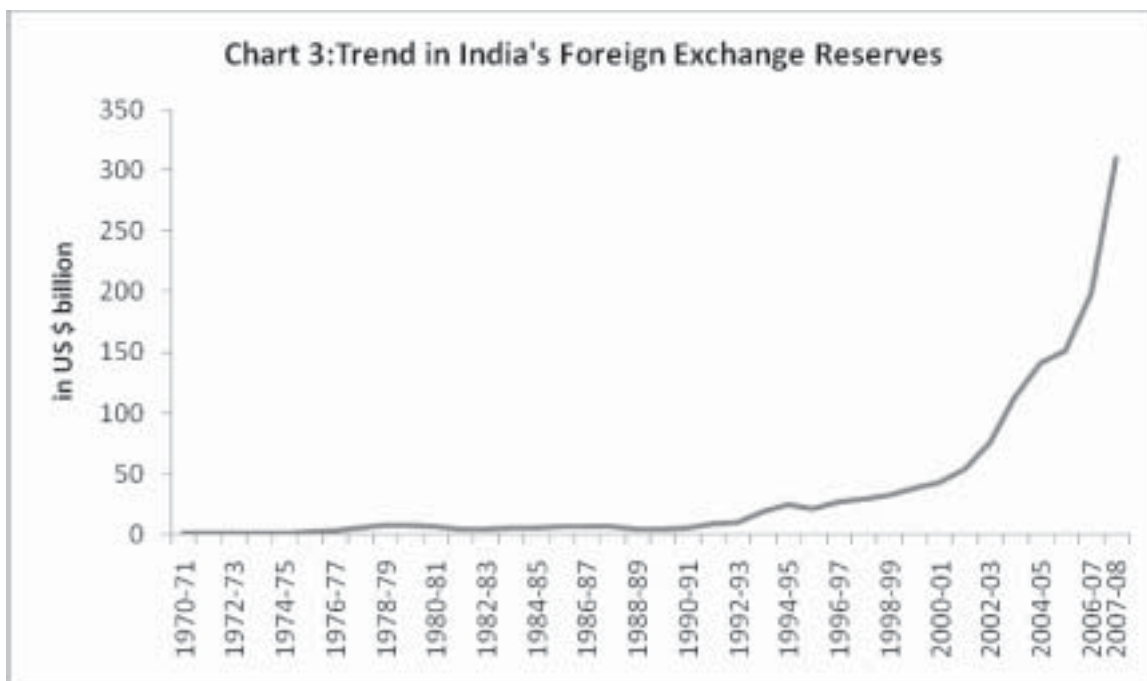


An important reason for this is the 'services revolution' in which geography and levels of industrialization are no longer the primary determinants of the location of facilities for production of services. Most of the developing countries, in recent years, have undergone a significant structural shift in their economy. The share of agriculture in total value added has significantly declined, correspondingly the share of manufacturing and services sector has increased with the share of manufacturing sector growing at a faster pace than that of services sector. However, India has undergone a slightly different kind of shift. In India, rather than the manufacturing sector, services sector picked up fast and it now accounts for

more than 50 percent of the GDP (Chart 2). This trend seen in the developing countries is in agreement with the world trend, i.e. rising share of services in world transactions.

**Potential for Dutch Disease in India**

As mentioned earlier one of the major reason for Dutch disease is inflow of foreign exchange leading to appreciating currency and decline in competitiveness and growth of other tradable sectors. India's foreign exchange reserves started rising steeply since the beginning of this decade (Chart 3).



The traditional economic theory indicates that when reserves accumulate, currency will appreciate and exports will suffer if other things remain the same. However, India's merchandise exports registered a high growth rate of more than 20 percent per annum between 2002-03 and 2007-08. The growth rate stood high, even if the exports of petroleum products, which grew at more than 50 percent annum, are excluded from the total goods exports. Further exports of services sector

also continued to show a good performance. The important point is that this high export growth occurred despite some appreciation of the real effective exchange rate (REER) (Table 12). However, it is said that the actual growth of exports might have been larger had the REER not appreciated (Veeramani, 2008). India continue to be one of the fastest growing economy in the world with average real GDP at factor cost growing by 7.3 percent between 2000-01 and 2007-08.

**Table 12: India's Exports and REER**

	REER	Appreciation / Depreciation	Merchandise Exports (US \$ million)	Growth Rate (in percent)	Service Exports (US \$ million)	Growth Rate (in percent)
2001-02	98.59	-0.1	43,827	-1.6	17,140	5.4
2002-03	95.99	-2.6	52,719	20.3	20,763	21.1
2003-04	99.07	3.2	63,843	21.1	26,868	29.4
2004-05	98.30	-0.8	83,536	30.8	43,249	61.0
2005-06	100.54	2.3	1,03,091	23.4	61,404	42.0
2006-07	97.42	-3.1	1,26,361	22.6	76,181	24.1
2007-08	104.52	7.3	1,59,007	25.8	87,687	15.1

Note: 36-currency export weighted REER (base 1993-94 = 100)

Source: Reserve Bank of India, Hand Book of Statistics on Indian Economy.

**Table 13: Industrial Distribution of Total Workforce in India**

	1951	1961	1972-73	1993-94	1999-00
Agriculture	74.6	76.2	73.9	64.7	59.9
Mining & Quarrying	0.4	0.5	0.4	0.7	0.6
Manufacturing	8.2	8.6	8.8	10.5	11.0
Services	16.8	14.7	16.9	24.1	28.5

Source: Banga (2005)

But there is a negative side for this service sector oriented growth. Banga (2005) indicates that the rise in the share of services in employment has been much slower than the decline in the share of agriculture and manufacturing in total employment. In short, while output generation has shifted to services, employment generation in services has lagged far behind (Table 13). Table 16 also indicates that from 1951 to 1990 the service sector contribution was either declining or stable. It is only after 1990 the service sector has become a prime contributor to the real GDP. In the year 1999-2000 services contributed around 28.5 percent of total employment in contrast to 30 percent in middle income countries, 70 percent in Singapore and 39 percent in Indonesia. A probable reason for fall in employment in faster growing services can be improvements in their labour productivity. Gordon

and Gupta (2004) also attribute the slow rise in employment in services to the fact that growth in services has concentrated in those services where labour productivity has risen or are skilled labour intensive. A substantial manufacturing base is essential to absorb the workforce moving out of agriculture.

### Diversification in India's Trade

In recent times, India's merchandise export growth was broad based across major sectors (Table 18) even though it is dominated by manufactured sectors (Chart 4). Agricultural and allied commodities exports witnessed a sharp acceleration in recent years. The commodity composition of manufactured exports has witnessed a notable shift with engineering goods emerging as the key



**Table 14: Industry Share in India's Total Exports (in per cent)**

	Agriculture and Allied Products	Chemicals and related Products	Engineering Goods	Textile	Gems and Jewellery	Petroleum
1990-91	18.5	9.5	12.4	23.9	16.1	2.9
1995-96	19.1	11.3	13.8	25.3	16.6	1.4
2000-01	13.4	13.2	15.3	25.3	16.6	4.2
2006-07	10.0	13.7	23.4	13.7	12.6	14.8
2007-08	11.4	12.9	23.1	12.0	12.4	15.6

Source: Directorate General of Commercial Intelligence and Statistics, Government of India.

driver of growth. This is attributable to the growing competitiveness and increasing technological sophistication of India's manufacturing exports. In 2007-08, engineering goods exports remained as the mainstay, accounting for the highest share of 23.1 percent of the total exports.

Destination-wise, India's merchandise trade has moved increasingly towards developing countries. In the recent years, the Asian economies are emerging as major trading partners of India. India's trade has grown faster with

these countries than its overall trade growth. These changes (diversification) in India's trade is attributable to deliberate policy measures, involving trade liberalization, reduction of tariffs, promotion of SEZs and regional cooperation efforts. Regarding regional cooperation efforts in Asia, India signed many agreements like, Economic and Social Commission for Asia and Pacific (ESCAP), BIST-EC / BIMSTEC, SAFTA, ASEAN etc. All these are positive developments which will help India to reduce the risks associated with international trade.

### Trends in Software Exports and Remittances

It may be indicated that India is now the leading exporter of software and ITES, particularly to the United States (Table 15). However, The United Nations, Trade and Development Report (2005) pointed out that, it is highly uncertain whether the share of software and IT-enabled services in India's export earnings will continue to rise substantially over the medium term. This is because of strong competition in the software market from producers with equally well-educated labour forces (in Central and Eastern Europe, as well as elsewhere in Asia). Also, greater automation of software development may reduce the scope of outsourcing such activities from developed to developing countries. However, as of now, India remains an attractive source for software exports mainly due to lower cost, high quality and favourable time zone. Further Indian companies have started moving up the value chain.

Another major one in India's invisible items is private transfers from non-resident Indians (Table 16). Remittances from Indians working in the US, UK, South-

East Asia and Europe have expanded in comparison with the traditional base of the Middle-East. In this regard recent surveys conducted by RBI indicate a shift from Middle East to North America as the most import source region of remittances to India (about 44 percent of total remittances) indicating the increasing diversification.

In capital account, foreign investment flows into India, comprising foreign direct investment (FDI) and foreign portfolio investment, have risen sharply during the 1990s reflecting the policies to attract non-debt creating flows. India has steadily improved its rank of both inward and outward FDI performance index (World Investment Report, 2005) indicating improved investment climate and better growth prospects. Foreign investment flows have increased from negligible levels during 1980s to around US \$62 billion by 2007-08. In the same year, FDI (US \$32 billion) which is relatively non-volatile is more than portfolio investment (US \$29 billion) to India. As a proportion to FDI flows to emerging market and developing countries, FDI flows to India have shown a consistent rise from 1.6 percent in 1998 to 3.7 percent in 2005.

**Table 15: India's Software Exports**

Year	US \$ million	Annual Growth (percent)
1995-96	747	53
2000-01	6,341	57.9
2004-05	17,200	34.4
2005-06	23,600	37.2
2006-07	31,300	32.6
2007-08	40,300	28.8

Source: Reserve Bank of India, Annual Report, Various issues

### Scope for Stabilization Fund

Many countries world over are setting up separate stabilization fund using a part of growing foreign exchange receipts to absorb the excess inflow. The stabilization fund is expected to help stabilize exchange rate. The stabilization fund of Russia was established in 2004 to

serve as an important tool for absorbing excessive liquidity, reducing inflationary pressure and insulating the economy from volatility of oil and gas export earnings. The investment and spending pattern of the stabilization fund will lead to capital outflows when oil prices are high and capital inflows when they are low. In Russia these flows will be an important mechanism to counteract

**Table 16: Inward Workers’ Remittances to India**

Year	Total Remitt (US \$ billion)	Share in (percent) current receipts	As a percent of GDP
1990-91	2.1	8.0	0.7
1995-96	8.5	17.1	2.4
2000-01	13.1	16.8	2.8
2004-05	20.7	13.4	3.0
2005-06	24.6	12.5	3.1
2006-07	28.9	11.9	0.7
2007-08	42.6	14.0	0.9

Source: Reserve Bank of India, Annual Report, Various issues

current account pressure on the exchange rate, thus shielding the economy from potentially damaging sharp exchange-rate fluctuations. Surplus revenues resulting from high oil prices (about US \$20/bbl (Ultras) are accumulated in the fund automatically). The legislation in Russia stipulate that, until the fund accumulates a total of Ruble 500 billion, the revenues accumulated in the stabilization fund may be spent only to finance the federal deficit arising from oil price below the baseline US \$20 level for Ultras crude. If the fund exceeds Ruble 500, the Government may use such revenues to repay foreign debt. World Bank (2008) indicates that Brazil is planning to set up sovereign wealth fund using its growing reserves. There are indications that government can use a part of these reserves for funding education and health care in Brazil. Nigeria is having Excess Crude Account which acts as a stabilization fund, closing budget deficits that are a product of oil price.

There have been suggestions that India should consider setting up a wealth fund on the lines Stabilization Fund which will smooth the revenue flows arising out of volatility in export proceeds. In this context (Reddy, 2007) it is pointed out that India has experienced consistent current account deficits, barring a modest surplus for few years. Hence stabilization fund may not be justified in India’s case. India imports more than 70 percent of its petroleum requirements and rising oil price is matter of concern. Its food grain production is still dependent on unpredictable monsoon conditions. Further, large part of the capital

flows to India are portfolio flows and a significant component of Foreign Direct Investments is utilized for acquisition of existing firms and not in Greenfield projects. It is also pointed out that it is difficult to judge how much is ‘adequate reserves’ to divert part of ‘excess’ reserves to special funds. Further, India is having a negative international investment position (liabilities exceeding assets). It is also said that increasing reserves reflect, in part, the lower absorption capacity of the economy, which may pick up with the economy moving on to a higher growth trajectory (Reddy, 2008). All this points towards likely vulnerabilities of India to various shocks and a reasonable stock of foreign exchange reserve is very much required to cushion the impact. Therefore, consideration of separate stabilization fund for India may ideally await ‘more comfortable economic situation.’

**Econometrics Test for India**

The Econometrics exercise (VAR) for India is run for the period of 1970–2006 on annual data series. The positive and significant effect of foreign reserves on price level is evident for one time period lagged value, but non-significant for two time period lagged value of the foreign reserves. Hence after one time period in India there is an upward pressure on price level, something policy makers can be careful about. It is interesting to point out that foreign reserves in case of India have a negative (significant) effect on the real GDP which means the increased foreign reserves can retard the real GDP after



one time period, but the effect is reversed after 2 time periods. Our important conclusion is that the foreign reserves inflow therefore helps economic growth in case of India only in the long run (after two years). As

can be seen from Table 21, the effect of exchange rate movement on real GDP is non-existent. The R squared value is high and satisfactory while the number of observations is 35.

**Table 17: Statistical Results for India**

India	Price Level		GDP		GDP
Price Level(lagged)	0.602***		.		.
	(0.16)		.		.
Price Level (twice lagged)	0.319**		.		.
	(0.15)		.		.
Foreign Reserves (lagged)	8.02E-07*		-1.251		.
	(-4.7 E-07)		(1.61)		.
Foreign Reserves (twice lagged)	-5.96E-07		3.84**		.
	(-4.91 E-07)		(1.64)		.
GDP (lagged)	.		0.555***		0.936***
	.		(0.14)		(0.15)
GDP (twice lagged)	.		-0.145		0.080
	.		(0.15)		(0.16)
Exchange Rate (lagged)	.		.		16482.760
	.		.		(10228.57)
Exchange Rate (twice lagged)	.		.		-15606.250
	.		.		(10027.50)
Observations	44		44		43
R-squared	0.9924		0.9593		0.9345

Note: \* denotes significance at the 10 percent level, \*\* at 5 percent, and \*\*\* at 1 percent

**Concluding Observation: Lessons for Indian Policy Makers from the Dutch Disease**

The main observation from the Dutch disease phenomenon, as it is made clear in our analysis of Brazil, Nigeria, Malaysia and Russia, is that the worldwide events and the unbalanced international trade are capable of inflicting serious hardships to the economy. Economy of Nigeria and Russia depends heavily on oil price and oil exports even in recent years. Malaysia depends heavily on semiconductor exports, while the study of Brazilian case point that diversification of economy may help in a great way to avoid Dutch disease like syndrome. The

experience of Nigeria points out that quick revenue from one sector should not lead to neglect of traditional sectors. Further quick revenue may aggravate the problem of corruption. In India’s case the rise in software and related exports should not lead to neglect of agricultural sector which employ a majority of its population. A review of Malaysia’s economy taught us the lesson that dependence on a single export commodity is risky as international prices are subjected to cyclical downturns. Further, high concentration of FDI in nations primary export sector creates an undesirable dependency. Russian experience taught the lesson that, sharp movements in exchange rates in relatively short time-spans can create

severe problems for smaller but emerging sectors of the economy. However, India has done well in this regard by not allowing wide fluctuations in its exchange rate.

Russia also shows how stabilization fund and other fiscal measures like taxation can help stabilize an unbalanced growth. Even though we do not recommend a stabilization fund for India at this stage, it will be useful to monitor the experience of other countries with such funds.

Policy steps have to be taken before the damage is done. As a precaution and prevention, policy makers should avoid excessive dependence of international trade on only one commodity or a sector. One can point the finger towards the increased and substantial role of software exports in Indian international trade in recent years. While the leading sector can bring increased foreign reserves, a set-back in its growth can also bring lower economic welfare. The first thing noticeable is the dependence of international trade on one sector and commodity concentration. Of course, a solution to this discomfort is not to restrict the exports of increasing, dominant and leading commodity, but to make special efforts in commodity diversification by inventing new channels of other trade patterns. While Indian trade in software sector has increased magnificently, we do not think that it is right to label it as the serious concentration problem. Nonetheless new avenues for higher trade have to be invented by considering comparative advantage in production of such finished products as fruit products, agricultural food processing, scooter, toys, computer products, refined petroleum products, machinery equipment etc.

Second sign of major concern is the regional concentration of the trade. If country is exporting same good to same region for a long time and has the major part of her trade created by this dominant sector, event of Dutch Disease is more likely to occur. Hence besides the commodity diversification one has to look for regional diversification of trade. Recent attempts by Indian government such as a call for number of Free Trade Agreements are encouraging in this respect. Even if the theoretical concepts of trade creation and trade diversion (made popular by Jacob Viner) have practical meaning in

signing new trade agreements, deliberate regional diversification in international trade is a precondition for avoiding symptoms of Dutch Disease. A casual observation of efforts by Indian policy makers in this regard shows that India has already taken many actions in this regard.

Third area of concern is the foreign reserves inflow. In our model, this can become a culprit if left unchecked by the monetary policy. While the studies show that Indian monetary policy has done an impressive job of sterilizing the foreign reserve inflow so far, in future more attention has to be paid to its influence on the domestically originated money supply. The movement in REER and exports growth clearly point that, besides exchange rate, other policy measures like implicit subsidies related to exports can play major role in preventing crisis in export sector. In last two decades inflation has been impressively low in Indian economy and the money supply growth has been moderate, but care needs to be taken that the inflow of foreign reserves does not affect these notable developments. Our study shows that this effect of foreign reserves so far has not been adverse.

The skilled student/research/labour supply to other important sectors should not get eroded because of the lure of quick money from the software –ITES sector. Further, the rise in pay and incentives in software sector may lead to demonstration effect and increase in cost of production in other sectors. Already there are reports indicating IT companies recruiting even from outside the area of specialization to compensate for temporary shortages. However, this is an area for further study to arrive at concrete conclusion. Natural disasters, "man-made" conflicts, and supply constraints in foreign countries are also responsible for a disruption in imported goods' supply. Hence the old idea of keeping some stocks for rainy days and finding ways to substitute the dominant imports (such as oil exploration) in the most economical ways is another policy option government can consider. In recent years, besides the oil dependence the Indian economy is free from such drastic influence. Nonetheless we expect a close watch on such import dependence and avoidance of getting into the trap of such commodity dependence in international trade. All in all, one has to be aware of the reasons for avoidance

of Dutch Disease in case of India and continue the impressive record for the future.

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# Businesses and Global Warming Interface: Carbon Credit

Dharmesh S.Raval

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## Black Monster

*It is said that a problem is the back door for an opportunity. World is facing a critical issue of Global Warming and it is up to us as how can we (humanity) convert this problem, into opportunity to grow and emerge stronger. Those who are responsible for this global warming have accepted their responsibility and have united to come ahead to solve the problem, and needless to say we have also identified the opportunity for creating a better tomorrow. United Nations have reacted to Global Warming problem and it has got considerable satisfactory support from the Business-world. This paper is a modest effort to study about Carbon Trading and Carbon Credit and how businesses are looking to Global Warming as an opportunity.*

A lot has been discussed on social responsibilities of business and a lot credit has also been taken by business houses in fulfilling their social responsibilities. Responsibility means doing something for which one is responsible. It is said that those who smoke are responsible for their bad health in future and they are the ones who have to take the curative steps to fight the disease. If we apply this meaning to business it means businesses are responsible for all damage it has done to society which includes environment.

Industrial revolution has fuelled the wave of economic development which has delivered modern society's greatest

accomplishments, such as electric lighting, the automobile, and aircraft. However, in the later half of the last century we learned that these advances were not without cost, as the costs of all these to humankind were becoming visible.



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This issue of global warming is serious to the extent that it has influence on existence and survival of humankind. It remained a topic of discussion for the environmentalists and governments but here we are going to discuss response of businesses to this global concern. Or what this global warming as a problem and its solution has impact on businesses

It is said that problem is the back door for an opportunity. World is

facing a critical issue of Global Warming and it is up to us as how can we (humanity) convert this problem, into opportunity to grow and emerge stronger. Those who are responsible for this global warming have accepted their responsibility and have united to come ahead to solve the problem and, needless to say we have also identified the opportunity for creating a better tomorrow. Inter Governmental Panel on Climate Change (IPCC)<sup>1</sup> and United Nations Framework Convention on Climate Change (UNFCCC)<sup>2</sup> have reacted to Global Warming problem in the form of Kyoto Protocol and Marrakesh Accords. Business world has identified opportunity in the form Carbon Trading and Carbon Credits. In this way a problem has also been solved and an opportunity is also discovered. This paper is a modest effort to study about Carbon Trading and Carbon Credit and how businesses are looking to Global Warming as an opportunity.

## Global Warming

Carbon is the essential ingredient of all fossil fuels - coal, oil or gas, unlocking the power of carbon based fuel sources release carbon gases into the air. Or, when these fuels are burned to provide energy, carbon dioxide (CO<sub>2</sub>), a "greenhouse gas," is released to the Earth's atmosphere. Green House Effect refers to emission of six Green House Gases (GHG) – Carbon Dioxide, Methane, Nitrous Oxide, Sulphur Hexafluoride, Hydro Flu Carbons and Per Flu Carbons.

As we have become more dependent on carbon-based fuels, we have seen a rapid increase in the atmospheric concentration of CO<sub>2</sub>; from around 280 parts per million (ppm) before the industrial revolution (1850s), to more than 380 ppm today.<sup>3</sup> If current trends of fossil fuel use continue without modification, the concentration of CO<sub>2</sub> is likely to exceed 700 ppm by the end of this century according to the Intergovernmental Panel on Climate Change. The average temperature of the earth's surface has risen by 0.74 degrees C since the late 1800s. It is expected to increase by another 1.8° to 4° C by the year 2100<sup>4</sup> - a rapid and profound change - should the necessary action not be taken. Even if the minimum predicted increase takes place, it will be larger than any century-long trend in the last 10,000 years.

"Desperate situations require desperate remedies" and the same is applicable for environment protection as well. If protection of natural environment is becoming difficult, it

suggests that its time to think differently and apply effective ways to solve the problem. Anand Arvind Wadadekar and C.S. Monika Bharadwaj in their working paper "Towards Greener Environment" has suggested using Economic Instruments [EI] and Market Based Instruments [MBI]. Introduction of market based instruments will help to reduce emissions, pollution and increase social responsibility of industries. Eco-taxes, tradable emission allowances and negotiated agreements are some of the types of instruments. "Market Based Instruments refer to the environmental policies which encourage change in technology, behaviour or products through financial incentives like subsidies, taxes, price differentiation or market creation."

President of India, Smt. Pratibha Devisingh Patil also stressed on the issue of climate change while addressing the joint session of 15<sup>th</sup> Loksabha in New Delhi. Thus global warming has become the prime concern for mankind. It can be controlled only if the GHG is reduced, this was the prime topic for discussion in the 1997 Climate Change Convention in Kyoto, Japan.

## Kyoto Protocol

Kyoto Protocol can be regarded as an important breakthrough of the 1997 Climate Change Convention in Kyoto towards controlling global warming. The convention was arranged on 11 December 1997 in Japan for encouraging industrialized countries to control GHG emission and this binding agreement "Kyoto Protocol" commits them to control their GHG emissions.

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. It came into force on 16th February 2005. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions which amount to an average of five percent against 1990 levels over the five-year period 2008-2012. Separate national targets have been given to US (7 percent), European Union (8 percent), Japan (6 percent) and Russia (0 percent). The Protocol came into force in February 2005 giving GHG emission limits for each developed (Annex I) country included in the protocol. 184 Parties (Annex I and Non-Annex I Countries) of the Convention have ratified its Protocol to date. The detailed



rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh in 2001, and are called the "Marrakesh Accords."<sup>5</sup>

The Kyoto Protocol sets a specific time period – known as the first commitment period – for Annex I Parties to achieve their emission reduction and limitation commitments, commencing in 2008 and ending in 2012. The Protocol has put in place an accounting and compliance system for this period with a set of rules and regulations.

Each Annex I Party has a binding commitment to limit or reduce GHG emissions and innovative mechanisms have been established for Parties to facilitate compliance with this commitment. Other commitments include:

- Each Annex I Party must undertake domestic policies and measures to reduce GHG emissions and to enhance removals by sinks;
- In implementing these policies and measures, each Annex I Party must strive to minimize any adverse impact of these policies and measures on other Parties, particularly developing country Parties;
- Annex I Parties must provide additional financial resources to advance the implementation of commitments by developing countries;
- Both Annex I and non-Annex I Parties must cooperate in the areas of: <sup>6</sup>
  - (a) The development, application and diffusion of climate friendly technologies;
  - (b) Research on and systematic observation of the climate system;
  - (c) Education, training, and public awareness of climate change; and
  - (d) The improvement of methodologies and data for GHG inventories.

The core commitment under the Kyoto Protocol, (contained in Article 3, para. 1) requires each Annex I Party to ensure

that its total emissions from GHG sources (listed in Annex A) to the Kyoto Protocol over the commitment period do not exceed its allowable level of emissions (Annex A covers GHG emissions from the energy, industrial processes, solvent and other product use, agriculture and waste sectors; see appendix I). The allowable level of emissions is called the Party's assigned amount.

Each Annex I Party has a specific emissions target inscribed in Annex B to the Kyoto Protocol, which is set relative to its emissions of GHGs in its base year. The Annex B emissions target and the Party's emissions of GHGs in the base year determine the Party's initial assigned amount 1 for the Kyoto Protocol's five-year first commitment period (2008 – 2012). The quantity of the initial assigned amount is denominated in individual units, called assigned amount units (AAUs), each of which represents an allowance to emit one metric tonne of carbon dioxide equivalent (t CO<sub>2</sub> eq).

### **Kyoto Mechanism: How Kyoto Protocol Works: Implementation of Kyoto Protocol**

As the target is to reduce the current level of emission of GHG to the levels which existed in early 1990s each Annex I Party has a specific emissions target inscribed in Annex B to the Kyoto Protocol. The Annex B emissions target and the Party's emissions of GHGs in the base year determine the Party's initial assigned amount 1 for the Kyoto Protocol's five-year first commitment period (2008 – 2012). The quantity of the initial assigned amount is denominated in individual units, called assigned amount units (AAUs), each of which represents an allowance to emit one metric tonne of carbon dioxide equivalent.

The Kyoto Protocol allows Annex I Parties to add to and subtract from their initial assigned amount, in effect changing the level of their allowed emissions over the commitment period, through LULUCF activities and through participation in the Kyoto mechanisms. Through these activities, Parties may generate, cancel, acquire or transfer emission allowances, which will raise or lower their assigned amount. These emission allowances are collectively called Kyoto units, and are subject to specific rules, depending on the particular unit type.

LULUCF activities refer to forest land management, cropland management, grazing land management and/or re-vegetation. Accounting of these activities is optional, which means that each Party must choose whether to account for emissions and removals from each activity during the commitment period. Once committed it must continue to account for it over the full commitment period. Each Party is subject to a 'forest management cap' that applies to both additions to and subtractions from its assigned amount. In contrast to emissions from Annex A sources, the Kyoto Protocol requires Parties to account for emissions and removals from LULUCF activities by adding to or subtracting from their initial assigned amount. Net removals from LULUCF activities result in the issuance of additional emission allowances called removal units, or RMUs, which a Party may add to its assigned amount; Parties must account for any net emissions from LULUCF activities by canceling Kyoto units.

The Kyoto Protocol allows Annex I Parties to add to or subtract from their initial assigned amount, thus raising or lowering the level of their allowed emissions over the commitment period, by trading Kyoto units with other Parties. These additions and subtractions are carried out in accordance with the so-called Kyoto mechanisms:

- Emissions trading (ET)
- Joint implementation (JI)
- Clean development mechanism (CDM)

These Kyoto mechanisms enhance the flexibility of Annex I Parties to meet their emission reduction or limitation commitments, by allowing these Parties to take advantage of lower-cost emission reductions outside their territories. Annex I Parties must meet specific methodological and reporting requirements, or criteria, in order to become and remain eligible to participate in each of these mechanisms.

### **Emission Trading (ET)**

As the name suggests it's a system under which emission units, also called Kyoto Units can be traded among Annex I countries. Thus total assigned amount to the Annex I countries does not change but its proportion to each country changes due to this trading. Parties with commitments under the Kyoto Protocol (Annex B Parties) have accepted targets for limiting or reducing emissions. These targets are expressed as levels

of allowed emissions, or "assigned amounts," over the 2008-2012 commitment periods.

Emission Trading refers to a mechanism wherein parties can buy and sell emission units amongst. This is possible because some countries have excess units whereas some countries have shortage of these units. It is another commodity added to the world of trading. Among various gases emitted CO<sub>2</sub> is principle hence this trading is known as "Carbon Trading" in "Carbon Market."

More than actual emissions units can be traded and sold under the Kyoto Protocol's emissions trading scheme.

The other units which may be transferred under the scheme, each equal to one tonne of CO<sub>2</sub>, may be in the form of:<sup>7</sup>

1. A removal unit (RMU) on the basis of land use, land-use change and forestry (LULUCF) activities such as reforestation
2. An emission reduction unit (ERU) generated by a joint implementation project
3. A certified emission reduction (CER) generated from a clean development mechanism project activity.

These member countries, under their National Allocation Plans (NAPs) assign these units to different industries. If the units (of carbon or other GHGs) emitted by an entity are more than units assigned to it, that entity will have to buy the extra units to meet the target committed. Similarly, if the units emitted are less than the assigned quantum, the spare units could be sold internationally. This will adjust each nations 'Pool' of AAUs.

### **Joint Implementation (JI)**

Joint Implementation (JI) is a project based mechanism developed under the Kyoto Protocol, designed to assist Annex B countries in meeting their emission reduction targets through joint emission reduction or emission removal projects with other Annex B countries for earning Emission Reduction Units (ERUs).

Each ERU is equivalent to one tonne of CO<sub>2</sub>. One or more investors (Government, companies, funds etc) will agree with

partner in a host country to participate in project activities which generate ERUs, in order to use them for compliance with targets under the Kyoto Protocol. Emissions from the host country are limited under the KP; JI projects reduce the emissions in the host country and free up the part of their total amount (Assigned Amount) which can then be transferred to the investor country in the form of ERUs, which are subtracted from the host country's allowed emissions and are added to the total allowable emissions of the investor country.

While host country benefits from foreign investment and technology transfer, investor country gets benefit in terms of addition to the total allowable emission.

### **Clean Development Mechanism (CDM)**

The Clean Development Mechanism was basically devised to support the developed countries to fulfill their reduction commitments and also to help them develop new technologies and methods for clean processes which would not only reduce emissions but also help in the development of the developing economies.

In the CDM, an organization from a developed country (Annex I country) can obtain CERs (one unit is equal to one tonne of CO<sub>2</sub>) by reducing emissions in a developing (non-Annex I) country where a comparable reduction requires substantially smaller investments. The country and the organization receiving the CERs from the CDM project are allowed to add the corresponding amount of CO<sub>2</sub> emissions to its emission quota.

CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers.

India is considered as one of the most potential countries in the world for CDM projects. This is due to its large power sector that depends on fossil fuels, and to the proactive policies of the Indian government towards CDM. The power sector alone is estimated to emit 433 million tonnes of CO<sub>2</sub> per annum. The total CO<sub>2</sub> reduction potential through CDM projects in India is estimated to be around 300 million tonnes. The largest potential is in the renewable energy sector with 90 million tonnes CO<sub>2</sub> equivalents. The total expected average

annual CER's from registered projects by India are about 22 million having a 15 percent world share.

In India the Designated National Authority (DNA) is hosted by the Ministry of Environment and Forests (MoEF). In addition to the DNA, India has many state-level nodal agencies promoting and facilitating CDM-projects in their area. These organizations can be of assistance in setting up contacts with public organizations to arrange CDM projects, or in approaching a larger number of small-scale possible project proponents. They can act also as bundling agencies, i.e. combine a number of small-scale CDM projects and handle financial management for bundled projects. The CDM also allows an industrial actor in the non-Annex I country to reduce its Green House Gas emissions and to sell the reduction units to a party in the Annex I countries. The GHG reductions and the way to reduce them have to be approved by the CDM EB. The GHG reduction achieved through a CDM project is quantified as a CER, one CER corresponding to one tonne of CO<sub>2</sub> equivalent. An industrial actor in a non-Annex I country can execute the project activity all by itself, in which case the project activity is called unilateral. If a party from an Annex I country takes part in the project through funding, a project is called bilateral.

The technical way to reduce Green House Gas emissions is called a methodology. A methodology is a description detailing the new way of operating with the result of generating less GHG emissions than in a business-as-usual case. The business-as-usual case is referred to as the baseline in the methodology description. The comparison between emissions of the new and the baseline case yields CERs, provided that the project activity is judged as additional.

A project activity is additional if it would not be executed without the CDM. Article 12 of the Kyoto Protocol defines additionality as "Reduction in emissions that are additional to any that would occur in the absence of the certified project activity." Moreover, project activities funded by Overseas Development Aid (ODA) are deemed automatically to be non-additional.

### **Certified Emissions Reductions**

Carbon Credits or Certified Emissions Reductions (CER) are a "certificate" just like a stock. A CER is given by the CDM

Executive Board to projects in developing countries to certify they have reduced green house gas emissions by one ton of carbon dioxide per year. For example, if a project generates energy using wind power instead of burning coal, it can save 50 tons of carbon dioxide per year. There it can claim 50 CERs (one CER is equivalent to one ton of carbon dioxide reduced).

Most of the beneficiaries of the carbon trading are those companies that are investing in windmills, Biodiesel, and Biogas. Actually, by investing in such an alternative, non-polluting source of energy, these companies will earn carbon credit in the form of CER's equivalent to the amount of environmental pollution they have prevented. These CER's could be sold by Indian companies, to companies, say in Japan, at market prevailing rate of CER's, and thus make profit.

### **Carbon Credit**

Carbon credit is one such MBIs which is applied for controlling the environmental degradation. Carbon credit can be defined as a permit that allows the holder to emit one ton of carbon dioxide; Credits are awarded to countries or groups that have reduced their green house gases below their emission quota.

Since developing countries could start with the clean technologies so they would be rewarded and would get paid by those who were still polluting the environment and did not meet the norms.

They provide means to reduce greenhouse effect emissions on an industrial scale by capping total annual emissions and letting the market assign a monetary value to any shortfall through trading. These credits can be exchanged between businesses and can be bought or sold at prevailing market prices in international markets. Credits can be used between trading partners and around the world to finance carbon reduction schemes. There are many companies that sell carbon credits to commercial and individual customers interested in lowering their carbon footprint on a voluntary basis. These carbon offsetters purchase credits from an investment fund or a carbon development company that has accumulated credits from individual projects. The quality of the credits is partly based on the validation process and partly on the sophistication of the fund or development

company that acts as the sponsor to the carbon project, the reflection of which can be seen in the price. Typically, voluntary units have less value than the units sold through the rigorously-validated CDM.

Thus, Carbon credits are certificates issued to countries that reduce their emission of GHG which causes global warming. Carbon credits or CER are a "certificate" just like a stock. A CER is given by the CDM Executive Board to projects in developing countries to certify they have reduced green house gas emissions by one ton of carbon dioxide per year. For example, if a project generates energy using wind power instead of burning coal, it can save 50 tons of carbon dioxide per year. There it can claim 50 CERs (one CER is equivalent to one ton of CO<sub>2</sub> reduced).

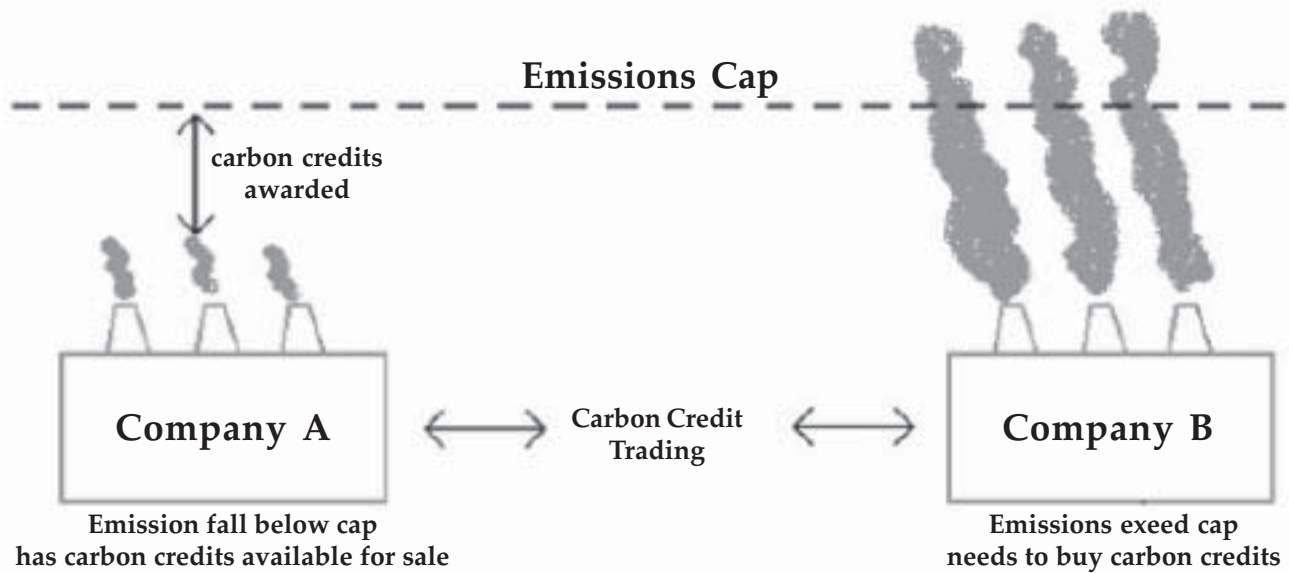
Ideally, Carbon credits can essentially be viewed as a means of empowering the market to care for the environment. The legislations can set inflexible environmental targets for the industry with the flexibility to meet the objectives in any manner, it chooses to. The industry must find the lowest cost solutions to meet these objectives with all the flexibility at their disposal. The emissions cap is decided under the Kyoto Protocol and the level of reductions by time frames has been specified. The emissions are easily tradable and thus results in lower abatement costs. All this allows permanent reduction in emissions from a certain decided baseline. However, a certain industry can purchase emission credits to offset its emissions from somewhere else at a lower cost.

### **Carbon Trading**

Carbon Trading is a mechanism which can partially transfer the money from rich developed countries to the developing ones. Say a company in India can prove it has prevented the emission of x-tonnes of carbon, it can sell this much amount of points (or carbon credits) to a company in say, USA which has been emitting carbons.

Carbon credits are essentially licenses that enable the holder to emit one tonne of CO<sub>2</sub> equivalent into the atmosphere within a certain period. Carbon credits are generated by parties that emit below their legal cap, and by those whose activities remove carbon from the atmosphere. These credits can then be sold to parties who need to offset their own emissions in order to achieve regulatory compliance. The

**Figure: Carbon Trading Mechanism**



(Source: Carbon Trading The Carbon Market – The Essential Guide, Part 1 May 01, 2008 Tim Morris, wise-owl.com analyst)

cost of purchasing a carbon credit provides a price signal on the value of clean air.

Consider another example, a business that owns a factory putting out 100,000 tons of greenhouse gas emissions in a year. Its government is an Annex I country that enacts a law to limit the emissions that the business can produce. So the factory is given a quota of say 80,000 tons per year. The factory either reduces its emissions to 80,000 tons or is required to purchase carbon credits to offset the excess. After costing up alternatives the business may decide that it is uneconomical or infeasible to invest in new machinery for that year. Instead it may choose to buy carbon credits on the open market from organizations that have been approved as being able to sell legitimate carbon credits.

One seller might be a company that will offer to offset emissions through a project in the developing world, such as recovering methane from a swine farm to feed a power station that previously would use fossil fuel. So although the factory continues to emit gases, it would pay another group to reduce the equivalent of 20,000 tons of carbon dioxide

emissions from the atmosphere for that year. Another seller may have already invested in new low-emission machinery and have a surplus of allowances as a result. The factory could make up for its emissions by buying 20,000 tons of allowances from them. The cost of the seller's new machinery would be subsidized by the sale of allowances. Both the buyer and the seller would submit accounts for their emissions to prove that their allowances were met correctly.

**Carbon Credit Market**

There are many companies that sell carbon credits to commercial and individual customers who are interested in lowering their carbon footprint on a voluntary basis. These carbon off-setters purchase the credits from an investment fund or a carbon development company that has aggregated the credits from individual projects. The quality of the credits is based in part on the validation process and sophistication of the fund or development company that acted as the sponsor to the carbon project. This is reflected in their price; voluntary units typically have less value than the units sold through the rigorously-validated Clean Development Mechanism.

Carbon trading was initially conducted through direct over the counter transactions between governments and companies. The entry of commercial banks into the market in early 2005, as Kyoto came into effect, sparked the evolution of dedicated carbon exchanges whose sole purpose was to facilitate trade in carbon credits. The global market for carbon credits has grown 24 fold since the Kyoto protocol came into effect in 2005.

Europe is the heart of the global carbon market, where futures and options contracts over carbon credits are traded on dedicated 'climate exchanges.' Carbon credit prices are driven by changes in the level of the legal emissions cap, the weather, fuel prices, and increasing market penetration as emission regulations are extended to more companies. Australia hosts the world's second largest carbon credit market in NSW, but a national trading system has yet to be established. Investment in environmentally friendly carbon offset projects, which generate carbon credits, has also grown strongly. The market will create opportunities for the renewable energy and forestry sectors, although use of forestry projects is restricted. In 2006 the World Bank estimated the size of the market to be around \$30bn.

### **Kyoto Compliance**

So how exactly the Protocol is enforced? Kyoto agreement recognises the need for a flexible approach for achieving emission reductions, offering three ways for governments and corporate to achieve compliance.

1. Direct emission reductions: This involves a company or government changing their existing activities to directly reduce their emissions. A simple example would be switching off the factory machines overnight.
2. Invest in Emission Offset Projects: When it is not feasible to directly reduce one's own emissions enough to meet legal requirements, companies and governments are able to invest in separate projects that remove carbon from the atmosphere, to essentially offset their own activities.
3. Financial Compliance: By either paying a penalty for emissions beyond the legal limit, or through buying carbon credits, which are emerging financial instruments that permit the holder to emit beyond their legal limit.

A nation that finds it hard to meet its target of reducing GHG could pay another nation to reduce emissions by an appropriate quantity. The developing countries have been exempted from any such restrictions. These certificates can be traded in the market and purchased by firms which find purchasing emission credits to offset its emissions lower in cost. Thus an opportunity has emerged for firms in developing countries like India, Brazil and China to boost their earnings by complying with norms.

### **Conclusion**

By enforcing companies and governments to spend money on reducing their emissions, Kyoto has attributed a monetary value to clean air, causing environmental issues to enter the territory of corporate financial strategy. Economic logic suggests that companies and governments will pursue the lowest cost means of achieving compliance. For the largest polluters, such as power plants and industrial companies, meaningful direct emission reductions are often unfeasible and very costly.

Therefore we have witnessed strong growth around the later two compliance mechanisms involving carbon credits, and offset projects, which benefits those whose emissions fall below their legal limit, and those whose activities actually reduce atmospheric CO<sub>2</sub> levels.

Global challenge has in real sense become advantage for developing countries and a lot of credit goes to corporate world for taking this challenge as opportunity. We all are global citizens and any effort in saving planet earth is a step towards saving us. Although industries do not have license to harm atmosphere and make money but yes we can save planet earth and make money too!

### **Reference as per numbers given in text of article**

1. The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP). Its constituency is made of the governments of all member countries of WMO and UNEP. Governments participate in plenary Sessions of the IPCC where main decisions about the IPCC work programme are taken and reports are accepted, adopted and approved. Hundreds of

scientists also from all over the world contribute to the work of the IPCC as authors, contributors and reviewers (Source: <http://www.ipcc.ch/about/index.htm>).

2. The United Nations Framework Convention on Climate Change (UNFCCC or FCCC) is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from 3 to 14 June 1992. The treaty is aimed at stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (Source: <http://unfccc.int/2860.php>).
3. As per observation at Mauna Loa Observatory, Hawaii by Earth System Research Laboratory, Global Monitoring Division of US Department of Commerce. <[www.esrl.noaa.gov/gmd/ccgg/trends](http://www.esrl.noaa.gov/gmd/ccgg/trends)>.
4. <[http://unfccc.int/essential\\_background/feeling\\_the\\_heat/items/2917.php](http://unfccc.int/essential_background/feeling_the_heat/items/2917.php)>.
5. <[http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php)>.
6. Kyoto Protocol Reference Manual on Accounting of Emissions and Assigned Amount, UNFCCC.
7. <[http://unfccc.int/kyoto\\_protocol/mechanisms/emissions\\_trading/items/2731.php](http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php)>.

## Keywords

Kyoto Protocol, Kyoto Mechanism, Carbon Credit, Carbon Trading.

## Annex I countries

Annex I Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

Annex I countries (industrialized countries): Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States of America (40 countries and separately the European Union).

Source: [http://unfccc.int/parties\\_and\\_observers/parties/annex\\_i/items/2774.php](http://unfccc.int/parties_and_observers/parties/annex_i/items/2774.php)

## Annex A: Emissions and Sources

### Table: 1: GHG

Carbon Dioxide: CO<sub>2</sub>, Methane: CH<sub>4</sub>, Nitrous Oxide: N<sub>2</sub>O, Sulphur Hexafluoride: SF<sub>6</sub> Hydrofluorocarbons : HFCs, Perfluorocarbons: PFCs.

### Table: 2: Sectors / Source Categories

**Energy:** Fuel Combustion (Energy Industries, Manufacturing Industries and Construction, Transport, Other Sectors, Other)

Fugitive Emission from fuels (Solid Fuels, Oil and Natural Gas, Other)

### Industrial Processes:

Mineral Products, Chemical Industry, Metal Production, Other Production Production of Halocarbons and Sulphur Hexafluoride, Consumption of Halocarbons and Sulphur Hexafluoride, Other

### Solvent and Other Product Use Agriculture

Enteric Fermentation, Manure Management, Rice Cultivation, Agriculture Soils, Prescribed burning of savannas, Field burning of agricultural residues, Other

### Waste

Solid Waste Disposal on land, Wastewater handling, Waste Incineration, Other

## Annex B

Annex I Parties	Emission Limitation or Reduction
Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, EU, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Liechtenstien, Lithuania, Luxembourg, Monaco, Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland	-8%
United States of America	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
NewZealand, Russian Federation, Ukraine	0
Norway	+1%
Australia	+8%
Iceland	+10%

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# Technology Transfer: Biotechnology Industry

Hesamedin Madani and Reza Radfar

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## Bio-Logistics

*The purpose of this research is to identify and grade technology transfer methods and the effective factors of successful transfer of technology for Iran's biotechnology industries. The paper reveals the impact rating of these factors on the success of transferred technology. The research findings indicated that most of the firms utilized modern methods for technology transfer and among effective factors in successful technology transfer, are factors of financial support (sufficient and on time), organizational interpretation on appropriate technology transfer process, organizational attitude towards the relationship between technology transfer and research, and importing technology proportion with requirements.*

The present research specifically focuses on recognition and grading technology transfer methods and effective factors of successful technology transfer in a range of technology, technology transfer, biotechnology and effective factors on successful technology transfer in biotechnology industries in Iran. Technology is defined differently by Sociologists, Economists, and Management scientists. They have their own definitions of technology. Apparently there are professional definitions for this word, but all of them have common aspects. Yet, technology has different aspects too:

- √ From the cultural aspect, it contains goals, values, morals, beliefs, awareness, and creativity.
- √ From the organizational aspect, it includes

industrial, economical, professional and technical activities, users, customers, and commercial unions.

- √ From the technical aspect, knowledge, skills, techniques, tools, machineries, sources, and production are considered as technology in this article.

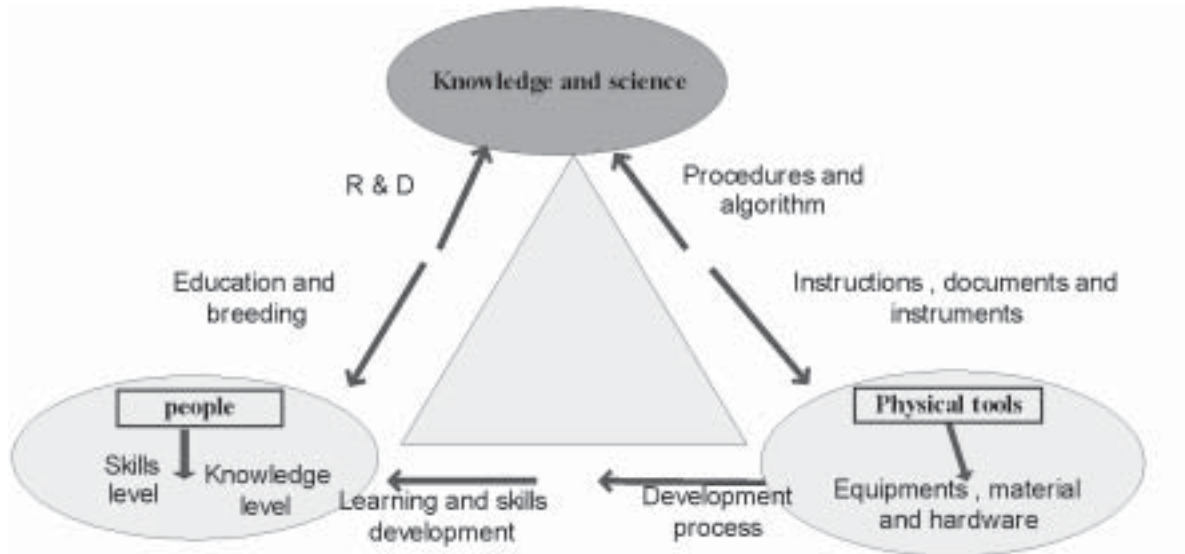
Therefore, technology definition has been illustrated by technology triangle in the picture. Technology triangle




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Figure 1: Technology Triangle



contains three components (figure 1):- human resources, technical knowledge, hardware, know-why and know-how. The angles are related to each other and reciprocal. Effective technology application depends firmly on the interactions among the three components, and it is a unique process for every company or country. Of course there is a new definition of technology that is defined and presented in three groups (Paul, Lowe and APCTT, 1986). General: technology as a key factor of success. Common: general features of technology without noticing its usage. Special: function of a scientific domain. The Common meaning is important here. There are a lot of common definitions. One of the most usable ones is which Richard, coopey and Etc 1993) have presented. That which responds to social needs in the form of product and process and changes input to output, is technology (Akhavan, Amir Nasser, 1995).

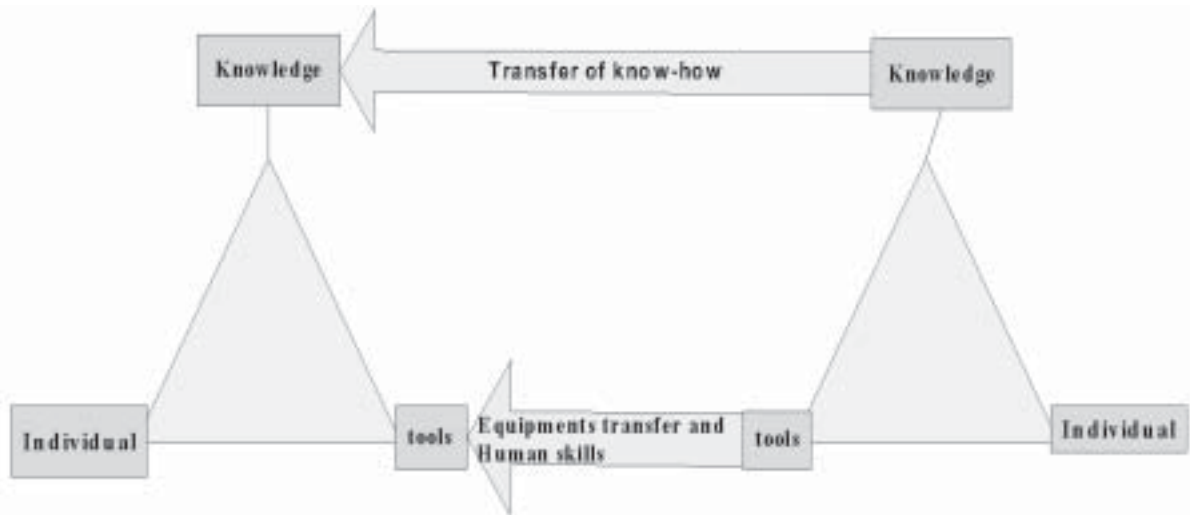
**Technology Transfer**

Technology transfer can take place between affiliated parties intra-firm or non-affiliated parties inter-firm. To transfer technology to non-affiliated generations in other countries (inter-firm transfer of technology) would mean that the technology must be absorbed into the production process of the organization in the host-country. The effective transfer of technology often requires an adequate infrastructure, which may include scientific

institutions, R&D facilities, vocational, technical and management training institutes, and skilled personnel of different specializations within the recipient country. It also requires a suitable cultural environment (ARCS, 1995). Technology transfer is widely considered to be a potentially powerful source of innovation which can provide construction firms with new technologies that can appropriately transform and complement current technologies to create and sustain better levels of performance (Ibid). Technology transfer is viewed as the movement of knowledge and technology via some channel from one individual or firm to another (Amir Nasser Akhavan, 1995). Further, we take a broad view of technology, defining it as the know-how about the transformation of operational technologies and processes; material technologies; and knowledge technologies. Technology transfer among different countries and organizations with various levels of technical knowledge covers limitations and problems for less developed recipients. Technology transfer is a complex and challenging process which needs deep and all out study. In case of overlooking of different aspects of the technology transfer; it may lead to weaknesses of national technology. Technology transfer process includes some preventive scales, which should be addressed, before selecting the technology transfer method. The factors included are:

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| <ol style="list-style-type: none"> <li>1) Awareness of fundamental and important factors required for technology transfer.</li> <li>2) Awareness of failure factors of technology transfer.</li> </ol> | <ol style="list-style-type: none"> <li>3) Effort to acquire the appropriate technology for achieving organizational appropriate position, and</li> <li>4) Consideration of existing and old technologies.</li> </ol> |
|--|--|

**Figure 2: Technology Transfer Process**



**Biotechnology**

High extension and the varieties of biotechnology applications make its definition and explanation a little difficult. These varieties in definition result from its nature. Some of the experts count biotechnology as industrial Microbiology and micro-organisms application and some define it as genetic engineering. Therefore, we refer to the different definitions of biotechnology which have many common aspects as well.

- a) A series of techniques and methods in which live organisms or part of them are used in production, change and improvement processes of plants and animals.
- b) Applying genetic engineering techniques in producing agricultural, industrial, clinical, and diagnostic products with higher quality, lower prices, more products and less danger.
- c) Commercial exploitation of organisms of their components.

- d) Managing and using organisms along with human interests.

None of the above definitions of biotechnology is a perfect definition, but we can find a comprehensive explanation for biotechnology through summarizing all of them.

**Successful Technology Transfer**

Successful Technology transfer occurs when the technology recipient can use imported technology in line with its requirements and meet it's entire announced and unannounced expectations (Unesco-MOT, 1988). In fact, successful technology transfer occurs when the technology recipient can achieve their predicted goals with different quantitative and qualitative profits (Franz Beeler and Partner, Innovation and Venture management, 2000).

**Effective Factors on Successful Technology Transfer**

According to Malekifar, Aghil, (1999) effective factors on successful technology transfer are a series of factors

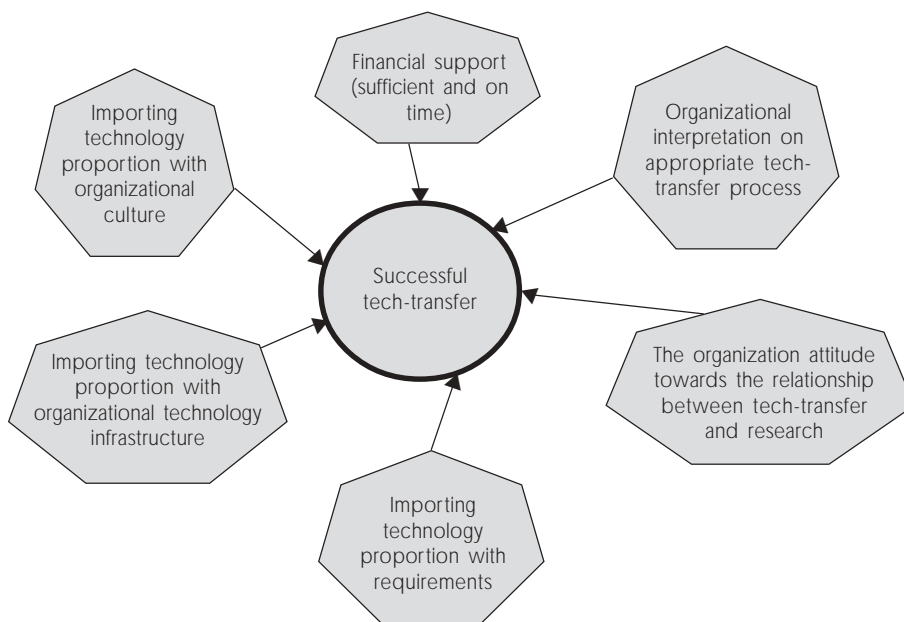
which play a vital role in technology transfer. These factors are: 1) Financial support (sufficient and on time), 2) Organizational interpretation on appropriate technology transfer process, 3) The organizational attitude towards the relationship between technology transfer and research, 4) Importing technology proportion with requirements, 5) Importing technology proportion with organizational technology infrastructure, 6) Importing technology proportion with organizational environment

and 7) Importing technology proportion with organizational culture.

### Research Theoretical Model

According to the review that has been done on the pervious study, there are various influential components in successful tech-transfer, the number of the most important of them have been shown in figure 1.

**Figure 3: The Most Important of Influential Components on Successful Tech-transfer according to Theoretical Model**



What is the need among various influential components (figure 2 ) on successful tech-transfer selected sole variables, of Financial support (sufficient and on time), Organizational interpretation on appropriate technology transfer process. The organization attitude towards the relationship between technology transfer and research and importing technology proportion with requirements, to review in this research?

It is a reason, why a majority of technology academics and practitioners in their studies have stressed on these elements. Actually, the above mentioned components are an intersection for the scholars working in the area of technology. The components will be taken into consideration in modern organizations. For this reason

the research stands as a role, which they have as the scope of the study (biotechnology companies in Iran).

### Technology Transfer Methods

Technology transfer method means a series of predefined activities through which the needed technology is submitted to the applicant. Regarding the fact that technologies, currently, are divided into two general groups of classics and modern technologies, the methods of technology transfer are different (Koreas Strategy for leadership in R & D, 1997). The common and most important methods of technology transfer and the modern technology transfer systems include:

Figure 1  
Methods of techtransfer

**Classification of methods of technology transfer**

Modern Tech-Transfer	Classic Tech-Transfer
Establishing affiliate companies in the original country	Joint venture
Establishing research centers in the original country	Conditional contracts
Training staffs in the industrial of international developed countries	Turn-key
Participating in scientific & technical meetings.	Establishing montage industries
Establishing high level educational research centers in the country with the management of the Scientifics and research and educational institutions of the world	Relations between the governments
Academic movements	Financial direct methods
Partnership between internal and external industry	Financial direct investment
Strategic cooperation	Licensing agreements
Registration of the inventions in the country	Reversed engineering
Ownership of foreign companies or purchasing some of their share	Mutual sale contract
Employing foreigners	Importing capital products and machinery
Creating a powerful informative site	

### Methodology of the Study

The aim was twofold: to investigate the methods of technology transfer in biotechnology companies and effective factors on successful transfer technology for Iran's biotechnology companies. The paper reveals the impaction rating of these factors in success of the transferred technology. In gathering information for the research a questionnaire was used as the main instrument for data collection. The target respondents were experts related to technology and various levels of managers for the second section of the questionnaire and top managers (25 companies) for the first section of the questionnaire. The questionnaire comprised two different sections. The first section contains 23 questions to consider technology transfer methods in biotechnology companies. The second section contains 58 questions measuring the independent variables. In the survey, the number of respondents was 210. To make sure of receiving enough questionnaires, a total of 225 questionnaires were distributed to all target respondents. A total of 205 questionnaires were returned of which 10 of them were not useable. Therefore, the number of final questionnaires for analysis was 194. Among the

questionnaires 169 were from experts, levels mangers except top mangers and 23 of them were from top managers. In this study, a five-point Likert-type scale, ranging from 1 to 5 (to a very great extent) - where 3 represented as moderate level, was applied.

### Research Questions

- ❑ What are the technology transfer methods in Iran's biotechnology companies?
- ❑ What are the effective factors on successful technology transfer for Iran's biotechnology companies?
- ❑ What are the ranking orders of the factors?

### Major Findings

As figure 5 and 6 show many more biotechnology companies were selected 4 modern methods of tech-transfer which are: 1. Research cooperation in Product Process Section in the country of origin 2. Human resources training in the country of origin 3. Applying foreign expert human resources. They were chosen only

as a classic method of tech-transfer that is a joint venture. Applying foreign expert human resources had the most application among entire tech-transfer methods.

### Rating Factors

To explore the ranking orders of affective factors on successful tech-transfer, the amount of eigen-values are a good criteria. Table 7 and 8 provide a list of the effective factors (dependent variables) and their ratings. As can be seen from, figure 7 and 8 financial support (sufficient and on time) with an eigen-value of 6.37 stands for 25.50 percent of variance of effective factor. To put it in other words, this factor is the most important successful factors in the implementation of successful tech-transfer in the biotechnology companies of Iran. While the importing technology proportion with requirements has low rank (1.96), rank measures for organizational interpretation on appropriate tech-transfer process, technology adaptation, and the organizational attitude towards the relationship between tech-transfer and research 12.23, and 9.5 respectively, all of them determine 55.16 variance in the implementation of successful technology transfer.

### Limitation of the Study

This research would be faced with two limitations: Natural Limitation and Unnatural limitation. Natural limitation occurs as the total data is provided by the questionnaire and it is liable to conceptual and judgement errors. Unnatural limitation is due to the fact that technology is a strategic resource for the organization. Therefore the companies indicate sensitiveness in presenting information; actually they will be having a conservative behaviour. Considering that the companies are public, the researcher would be dealing with a bureaucracy.

### Conclusion

We have to agree to the fact that technology transfer from one environment to another requires applying production methods and techniques, management, and generally all the technology properties that lead to organizational development increases. It must be referred to that the environment is not the only requisite for a successful technology transfer, but it is one of the main requisites to

pass the entire process of technology transfer (generally), and biotechnology (specially). In this way, all the components related to technology will enter the receiver environment. The fact is that most biotechnologies are imported and each of them is transferred by different institutions, companies and, apparently, some of the imported technologies have been successful in their processes. Many of them were incomplete. Therefore they could not achieve their predicted goals with different quantitative and qualitative profits. Technology transfer often does not only provide enough productivity for the recipient but has some problems like inability to continue profits, different problems in production process, unacceptable tolerance with different qualities and rapid technology deletion or surplus of old, expensive with no economical technology to continue production, etc. Therefore, referring to problems in biotechnology transfer in Iranian industries, considering selection of technology transfer method and effective components on successful technology transfer is needed for entire industries in general and specific biotechnology industries.

**Keywords:** Technology Transfer, Technology Transfer, and Biotechnology.

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# Awareness and Adaptability of Economic Value Addition

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## **B - Performance**

*This paper highlights the awareness and applicability of Economic Value Added in Indian Banks on the basis of survey report. Indian Banks listed on the Mumbai Stock Exchange BSE were analyzed. It is further divided into sub-parts which include awareness and use of value-based financial performance, adaptability to Economic Value Added in select Indian Banks, ownership pattern-wise Economic Value Added, and discussion on such time-honoured statistical propensities. The Study concludes that Economic Value Added is slowly gaining an increased attention as a financial measure of business performance of banks. It holds up the researchers' view that the concept of Economic Value Added has been emerging in the brains of the top brass of the corporate world in India and has nurtured a remarkably excellent time ahead.*

The fundamental principle of capitalism is that organizations are expected to take financial capital from shareholders and make it worth more. The Success of the firm depends on its proficient management having theoretically sound knowledge of time-honoured tools for planning, decision-making, forecasting and monitoring. Developing new-fangled financial and management accounting tool is an incredibly contemporary subject matter for both the academicians engaged in business research and financial consultants in practice. During the last few years, the field of finance has become even more prominent. The concept of the

Economic Value Added is similar to the traditional accounting concept of Residual Income [RI]. The concept emerges in several variations and incarnations including the trade-marked Stern Stewart and Co's EVA with its

copious accounting adjustments. Corresponding to Stewart [1991] view, EVA is a residual return measure that subtracts the cost of invested capital from net operating profit after tax.

$$EVA = NOPAT - [WACC \times IC]$$

Where

NOPAT = Net Operating Profit After Tax

WACC = Weighted Average Cost of Capital

IC = Invested Capital



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To compute EVA, Stewart [1994] considers more than 160 adjustments to NOPAT and IC. Most of the adjustments are intended to shifting the traditional accounting closer to 'economic value' accounting in order to encourage managers to perform like owners and to discourage earnings management. The adjustments also improve comparability externally [across firms] and internally [across divisions] by the accounting on a similar basis. Thus, the litmus test behind any decision to raise, invest, or retain a rupee must be to create more value than the investor might have achieved with an otherwise alternative investment opportunity of similar risk. Lay investors tend to focus far too much on size and income-based metrics such as share price, earnings, earnings growth and earnings per share. Such metrics do not take into account how much additional capital has been poured into the business to generate the additional income. To add wealth, managers focus on Economic Value Added and Market Value Added. MVA is an ideal measure of wealth creation in the long term. EVA tells us how much shareholder wealth the business has created in a given time. Proponents of EVA argue that EVA is a superior measure as compared to other performance measures on four counts:

- It is nearer to the real cash flows of the business entity;
- It is easy to calculate and understand;
- It has a higher correlation to the market value of the firm and
- Its application to employee compensation leads to the alignment of managerial interests with those of the shareholders, thus minimizing the supposedly dysfunctional behaviour of the management.

### Objectives of the Study

- To examine the extent of awareness and adaptability of Economic Value Added Concept of the Indian Banks Listed in BSE-SENSEX.
- To make Suggestions and Recommendations for the use of Economic Value Added as a measure of financial performance to the Banking Sector.

### Methodology

Various Studies including this maintain the surfacing of EVA as significant independent variable to MVA for companies in India through secondary data but the studies conducted so far do not suggest about the sensible implementation of EVA in India by the Indian Banking Sector. In simple words, to the best of the knowledge of the researcher, there is no verification through primary information on the awareness and adaptability of value-based financial performance measures in Indian Banks [Both public and private sector banks]. With this reason in mind, the select Indian Banks from BSE-200 have been approached through a well-structured questionnaire for evaluating the realistic face of EVA in India.

To obtain information on the indicators considered most important by Banks, the primary data has been collected through a well-structured questionnaire mailed to all 39 Selected Indian Banks listed at the Mumbai Stock Exchange [BSE]. The questionnaire was also made available upon request of some banks through e-mail; it was specifically designed to obtain information on the preferred financial performance measures on the awareness and adaptability of new value-based performance measures, as well as on the conditions and scope of adaptability of the new performance measures in respective banks.

The broad research task of this paper is to survey and assess how the EVA Model behaves under different realistic corporate situation and compares it to the instantaneous behaviour of other traditional financial variables. To embark upon the posed problems suitable cases of banks are looked-for which highlight each of the bits and pieces. The humdrum alternative is to rummage around the theory and practice of EVA in Indian context.

### Awareness and Adaptability to Eva in Indian Banking Sector

An attempt has been made here to bring out the lattice outcome of the survey so conducted through the questionnaire. The results of the survey have been

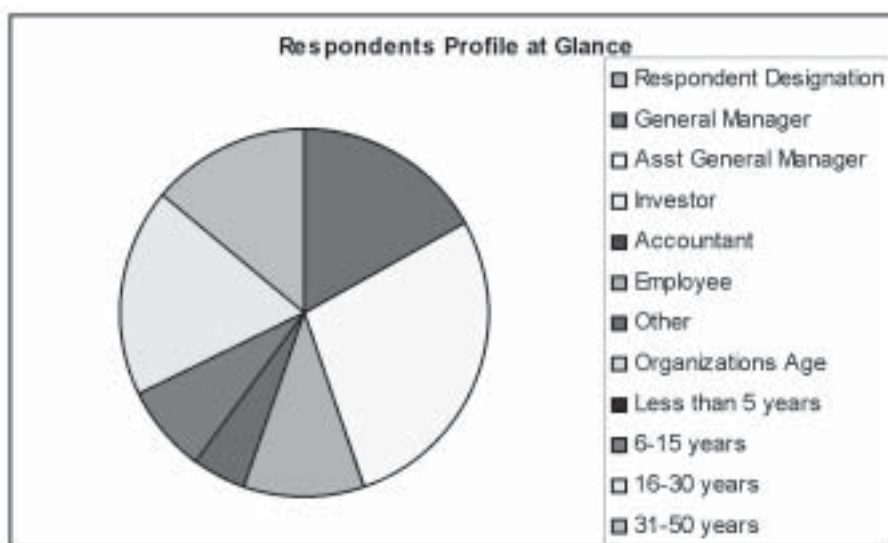
presented by Tables 1 to 7. Table 1 offers the profile of the respondents in Indian Banking Sector which includes both private and public banks listed in BSE. The majority of the respondents who fill up the questionnaire are either General managers (28.2 percent) or Assistant General Managers (46.2 percent). The preponderance percentage of the banks selected for the purpose of the survey is mostly more than fifteen year old established organizations and unquestionably all the companies are willing to maximize shareholders' wealth.

The Significance of different Variables in the growth of the banks is perceived in a different way by the respondents as evident from Table 2. The table depicts that as many as 33 percentage respondents consider net non performing loans as significant variable followed by another 28 percent who find the return on assets as better indicator of the organizational growth. About 18 percent feel that return on owned funds may be the significant variable whereas capital adequacy ratio is given priority by 13 percent of the respondents. One thing emerged here is that all the respondents consider only four variables as significant and all these variables demand better performance on the part of the banking. It sounds that the efficiency and effectiveness if go up may be observed as significant variable in the growth of the organization and same is expected from a corporate generating positive EVA. Hence, the observations of the respondents authenticate the inevitability of such performance measure approach in

an organization that may truthfully prove to be significant for the persistent escalation.

In Table 3, the opinion of the respondents regarding the effectiveness of various financial measures for performance evaluation of the banking sector is brought together. It is undoubtedly clear that nine [23.07 percent] respondents assign first rank to EVA as the best indicator of performance evaluation of bank followed by rate of return, return on owned funds and net operating profit margin. If top five ranks are taken into account, it is observed that 33 [84 percent] respondents consider EVA among top as the best financial measures followed by ROF [71.79 percent], Rate of Return [69.23 percent], and Business per Employee [64.10 percent], NOPAT [61.54 percent], Market Share [48.72 percent], and EPS [28.21 percent].

The concept of Economic Value Added is based on the sound economic principle that firm value increases only if it is able to generate surplus over its cost of capital and therefore it is based on strong theoretical foundation. However its calculation involves significant subjectivity and this reduces its informative value. Moreover it fails to provide better signals to the capital market as compared to conventional accounting measures like return on investment, however hard selling of EVA has contributed positively in highlighting the fundamental economic principle, long forgotten by managers.



**Table 1: Respondents Profile at a Glance**

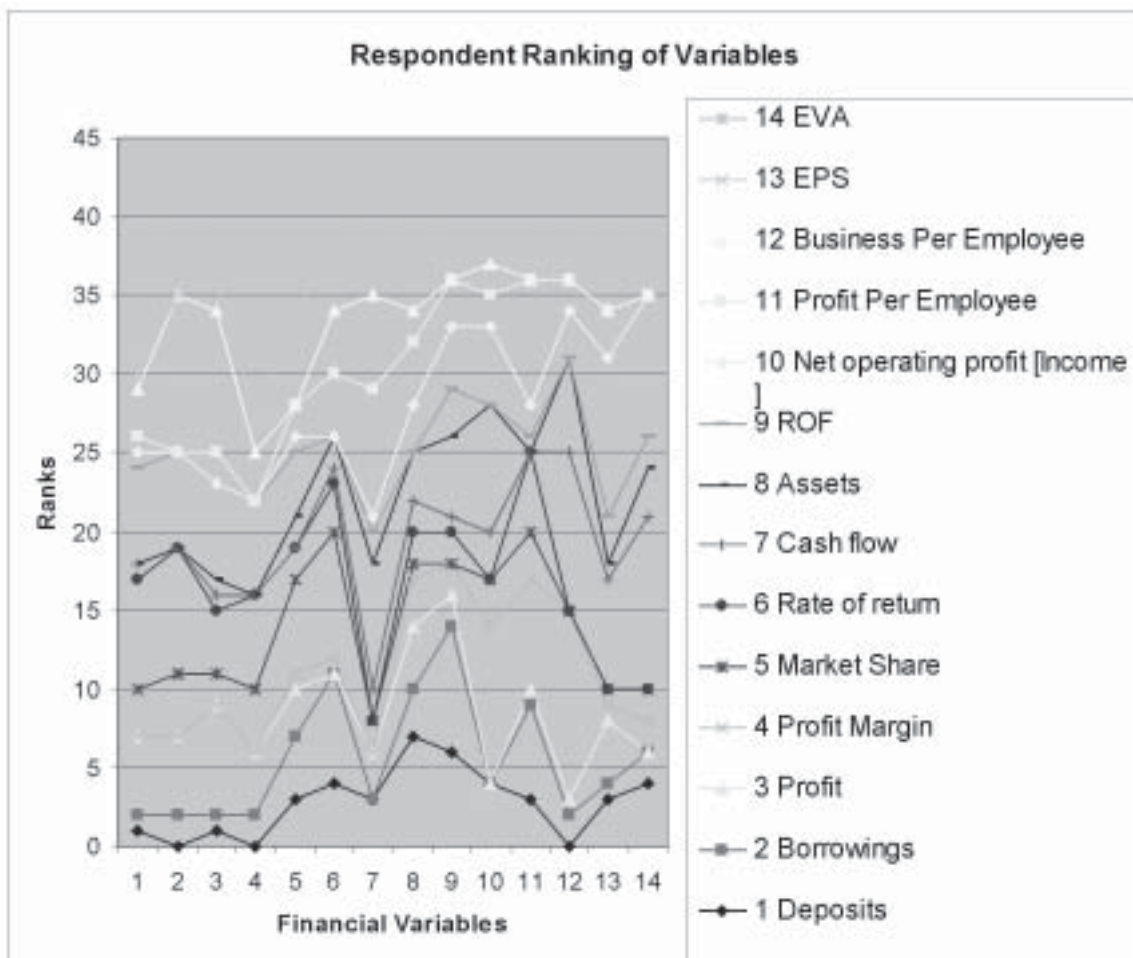
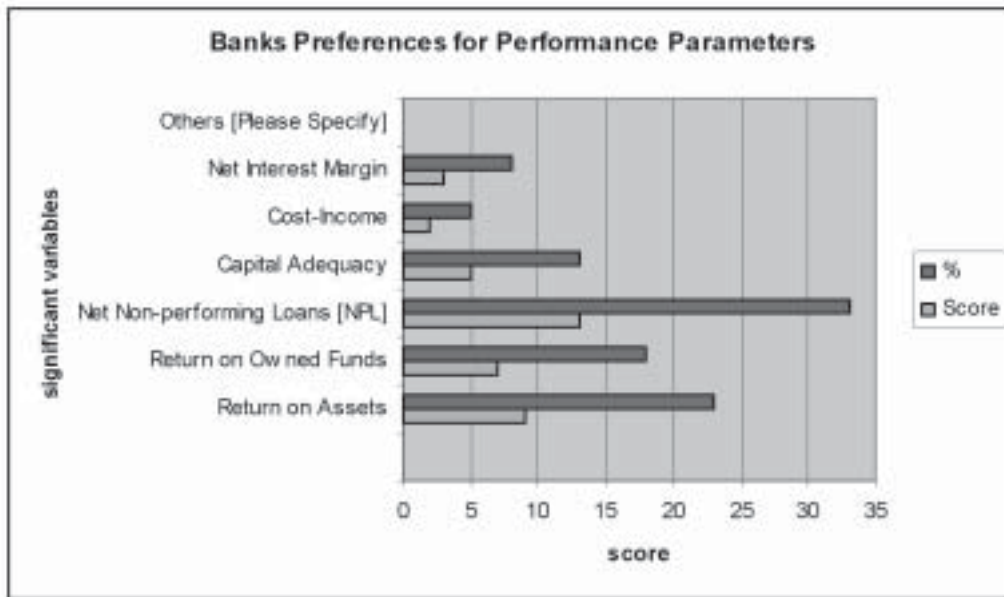
<b>Respondent Designation</b>	<b>Score</b>	<b>%</b>
General Manager	11	28.2
Asst General Manager	18	46.2
Investor	0	0
Accountant	0	0
Employee	7	17.9
Other	3	7.7
Organizations Age		
Less than 5 years	0	0
6-15 years	5	12.8
16-30 years	12	30.8
31-50 years	9	23.1
More than 50 years	13	33.3
Financial Objectives		
Maximize Shareholders wealth	39	100
Remain profitable	0	0
Be competitive	0	0
Others [please specify]	0	0

Source : As per our survey

**Table 2: Banks Preferences for Performance Parameters**

<b>Significant Variables</b>	<b>Score</b>	<b>%</b>
Return on Assets	9	23
Return on Owned Funds	7	18
Net Non-performing Loans [NPL]	13	33
Capital Adequacy	5	13
Cost-Income	2	5
Net Interest Margin	3	8
Others [Please Specify]	0	0

Source : As per our survey



**Table 3: Respondents Ranking of Different Financial Variables**

Sl.No.	Financial Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
1	Deposits	1	0	1	0	3	4	3	7	6	4	3	0	3	4	39
2	Borrowings	1	2	1	2	4	7	0	3	8	0	6	2	1	2	39
3	Profit	5	5	7	4	3	0	3	4	2	0	1	1	4	0	39
4	Profit Margin	0	0	0	0	1	1	0	3	2	10	7	12	1	2	39
5	Market Share	3	4	2	4	6	8	2	1	0	3	3	0	1	2	39
6	Rate of return	7	8	4	6	2	3	0	2	2	0	5	0	0	0	39
7	Cash flow	1	0	1	0	0	1	2	2	1	3	0	10	7	11	39
8	Assets	0	0	1	0	2	2	8	3	5	8	0	6	1	3	39
9	ROF	6	6	6	6	4	0	2	0	3	0	1	0	3	2	39
10	Net operating profit [Income]	1	0	0	0	1	0	1	3	4	5	2	3	10	9	39
11	Profit Per Employee	1	0	2	0	2	4	8	4	3	2	8	2	3	0	39
12	Business Per Employee	3	10	9	3	0	4	6	2	0	2	0	0	0	0	39
13	EPS	1	0	2	2	6	4	3	4	2	1	2	3	5	4	39
14	EVA	9	4	3	12	5	1	1	1	1	1	1	0	0	0	39
	TOTAL	39	39	39	39	39	39	39	39	39	39	39	39	39	39	-

Source : As per our survey

**Table 4: Respondent's Ranking of Different Financial Variables : Statistical Analysis**

Descriptive Statistics						
	N	Mean	Std. Deviation	Minimum	Maximum	Mean Rank
Assets	14	2.7857	1.7177	.00	7.00	8.79
Cash Flow	14	2.7857	2.7225	.00	8.00	7.46
EPS	14	2.7857	2.9399	.00	10.00	7.36
EVA	14	2.7857	3.4009	.00	11.00	7.18
Profit	14	2.7857	2.7506	.00	9.00	7.39
Market Share	14	2.7857	2.0069	.00	6.00	8.21
PPE	14	2.7857	2.6941	.00	8.00	7.36
NOPAT	14	2.7857	3.0929	.00	10.00	7.25
Borrowings	14	2.7857	3.4234	.00	10.00	7.04
BPE	14	2.7857	3.9062	.00	12.00	6.43
Return	14	2.7857	2.5474	.00	8.00	8.21
Profit Margin	14	2.7857	3.4681	.00	12.00	6.93
ROF	14	2.7857	2.2931	.00	8.00	8.07
Deposits	14	2.7857	2.8603	.00	9.00	7.32
Test Statistics <sup>a</sup>						
N	14	Chi-Square	4.139	df	13	Asymp. Sig.
(a) Friedman Test.						

**Table 5: EVA's Significance : Respondent's View**

<b>Familiarity with EVA</b>	<b>Score</b>	<b>%</b>
Unfamiliar	7	18
Somehow	5	13
Familiar	23	59
Very Familiar	4	10
Adaptability of EVA in Banks		
EVA Concept is unknown to our bank	7	18
We collect information about EVA and will decide later	15	39
EVA is already implemented and we are satisfied with it.	0	
EVA is already implemented and is somehow useful to us	0	
EVA is already implemented and we are not satisfied with it	0	
We plan to implement EVA to our bank	17	43
EVA is of no use to us	0	
EVA as the Most Important Decision –making Factor		
Yes	10	26
No	29	74
EVA as True Indicator of Financial Performance		
Yes	8	21
Sometimes	12	31
Cannot Say	17	43
No	2	5
EVA's Worthwhile ness in Future		
Very Worthwhile	8	21
Worthwhile	11	28
Somewhat Worthwhile	10	26
Not very Worthwhile	6	15
Not Worthwhile	4	10
EVA used as a Evaluation Variable		
Short term Financial Performance	2	5.1
Long term Financial Performance	0	0
Management Decision	28	71.8
Any other [please specify]	9	23.1

Source: As per our Survey

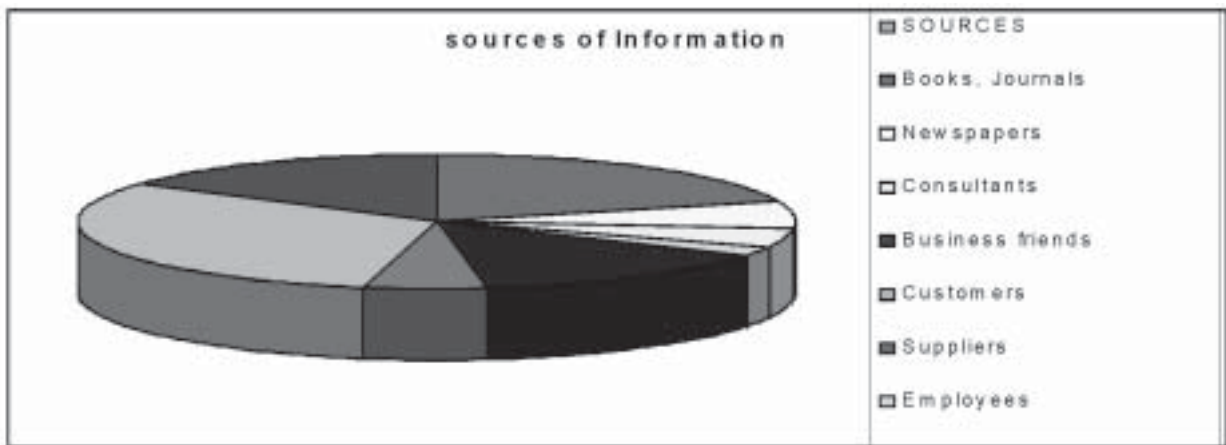
Table 4 depicts the statistical analysis of these ranks assigned by the respondents. The values show the volatility in EVA and that of standard deviation. Table 5 also presents the results on the EVA's worthwhile ness in future. Taken together, 74 percent of the respondents make a clean breast about the good future of EVA in Indian Banking. When called for the use of EVA as valuation variable, the vast majority finds it valuable in the strategic decisions made

by the banks and about one-fourth portray that the concept is used by different stakeholders for their particular rationale in decision-making. The overall inference may be drawn from the Table 6 that most of the banks are aware about the concept, they are serious about its implementation in their respective banks, and find EVA as true indicator of financial performance and also foresee the bright future of EVA in India in the times to come.

**Table 6: Sources of Information for New Tools of Corporate Financial Performance**

Sources	Score	%
Books, Journals	18	20
Newspapers	6	6.7
Consultants	4	4.4
Business friends	0	0
Customers	0	0
Suppliers	0	0
Employees	2	2.2
Internet	13	14.4
Universities	5	5.6
Government Agencies	0	0
Workshops, Conferences , Seminars	28	31.1
Professional Organizations	14	15.6
Others [ Please specify ]	0	0

Source: As per our survey



In Table 6, the outcome of the sources of information exploited by the banks for taking into deliberation the innovative tools of corporate financial performance is summarized. The Table delineates that majority of the banks rely upon the workshop, conferences, seminars organized

by the professional bodies like IBA, CII, FICCI, etc. One-fifth finds the relevant information from the books and journals. About one-seventh of them depend on the information made available websites on Internet. Universities, newspapers, consultants and others account for only about 20 percent.

**Table 7: Implementation and Disclosure of EVA**

Plan to implement or already implemented	Score	%
Yes	10	25.6
Somehow interested	28	71.8
No	1	2.6
Calculated EVA in Your Annual Report		
Yes [in future]	7	17.9
No	32	82.1

Source: As per our survey

When the respondents accede to the query, as depicted in Table 7, about the implementation of EVA in their respective banks, responses received are rather thrilling. The table views that over one-fourth of the banks are already planned to implement EVA and over 70 percent of them are some how interested in implementing it in very near future. On the other hand, only about 18 percent of the banks interested to disclose their EVA in the annual report in future. The overall results of the table indicate that the corporate world in India, has possibly become conscious on the subject and the worth of the concept in its letter and spirit has been enormously appreciated by the majority of them. It holds up the researchers' view that the concept of EVA has been emerging in the brains of the top brass of the corporate world in Indian Banking and

has nurtured a remarkably excellent time ahead. India has found supporters for EVA. It has already earned favour with journalists and leaders in corporate reporting. However most of them do not calculate EVA rigorously, rather they take casual approach in calculating and reporting EVA. The study published by Economic Times neither adjusted book capital to bring it closer to economic capital nor used rigorous model to compute the cost of equity. Perhaps the short cut was adopted by the study to circumvent difficulties in estimating equity and converting book capital into economic capital. Indian companies have started using EVA for improving internal governance. It is expected that EVA will gain popularity more as a management planning and control tool.

**Table 8: Summary of Key Responses**

Sl.No	Top Five Variables Preferred by Indian Banks	Familiarity with EVA	EVA as True Indicator of Performance	EVA's Worthwhileness in Future	Plan to implement
1	EVA			Very much-21%	
2	Return on Owned Funds	Unfamiliar-18%	Yes-21%	Worthwhile-28%	
3	Rate of Return	Somehow-13%	Sometimes-31%	Somewhat-26%	Yes-25.6%
4	Business Per Employee	Familiar-59%	Can't say-43%	Not very worthwhile-15%	Somehow interested-71.8%
5	Net Operating Profit After Tax	Very familiar-10%	No-5%	Not worthwhile-10%	No-2.6%

Source: As per our survey



## Conclusion

Most of the Public and Private sector banks in our country have already started looking at their portfolio of services offered and what they should do in the future for remaining competitive in the industry. As public sector banks are likely to undergo major consolidation, suddenly for many Indian banks things have changed. One should however consider that the banks' objective is to maximize Market Value Added, since it reflects the premium or discount of the market value relatively to the capital invested in the bank. However, the future research might examine which components of Economic Value Added contribute to increase or decrease its information content. It would also be interesting to assess the explanatory power of Economic Value Added from both a time series perspective and over a larger universe of firms. Some finer models, such as industry-specific and sector-specific models based on large number of organizations may provide additional insights. Shareholders Value is gaining an increased attention as a criterion of business performance. For Indian Banks there seems to be enough empirical evidence to support Stern Stewart's claim that EVA is superior to traditional performance measure. First, this research brings into play contemporary apprehensions regarding the performance measures, and it also does take into account the expectations of stakeholders in the financial valuation of banks. All the respondents have no disagreement on the usefulness of the EVA. However, many of the respondent banks still use traditional accounting measures that are known to be ineffective. Bank managers can understand the intricacies in EVA, but seldom have they succeeded in prevailing on the floor employees and managers on the need to adopt the EVA as a performance indicator in order to achieve better results. We, however feel that all this should not be a barrier to present more reliable results.

**Key Words:** Economic Value Added, Market Value Added, Cost of Capital.

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# Computing Practices: Going Green

Kumar Chandar S.

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## Sans Excess Energy

Consumers haven't cared about ecological impact when buying computers. They have cared only about the speed and price. But as Moore's Law marches on, consumers will become pickier about being green. The first generation computers - ENIAC drew roughly 15,000 watts of electricity. By comparison, today's PCs consume about 200 watts. But there was only one ENIAC and there are more than 100 Million PCs used today. The growing use of computers in the world has caused a dramatic increase in energy consumption, putting negative pressure on environment. Each year more and more computers are purchased and put to use, but it is not just the number of computers that is driving energy consumption upward. The way that we use computers will also lead to the increasing energy burden. This Article is outlined to use the energy efficient computing practices to reduce the energy consumption.

A typical desktop PC system is comprised of the computer itself (the CPU), a monitor and printer. The CPU may require approximately 200 watts of electricity power and 70-150 watts for a 15-17 inch monitor. LCD monitors, also known as flat-panel displays, are more expensive than CRT monitors, but use only 10-20 percent as much power. Other advantages are ergonomic and adjustable. The LCD Monitors will not lose its sharpness over time, and could be potentially have a longer usable life than CRTs.

### Energy Efficient Computing Practices Enable Power Management features

The "Energy Star" computes and monitors can be programmed to

automatically "power down" to a low power state when they are not being used. These efficiency gains can be achieved without any sacrifice in computer performance. The Environment protection agency has estimated that providing computers with "sleep mode" reduces their energy use by 60 to 70 percent. The recommended settings are 20 minutes for monitor sleep and 30 minutes for system sleep.

### Some Specific Suggestions

- ◆ Unless you require immediate access to e-mail or other internet services, break the habit of turning on all your computer equipment as soon as you enter the office each day.



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	17 CRT	17 LCD	19 CRT	19 LCD	21 CRT
Power Consumption (watts)	70	35	100	45	115
Energy cost / unit (Rs)	5.00	5.00	5.00	5.00	5.00
Hours / day	8	8	8	8	8
Day / week	5	5	5	5	5
Energy consumption / year (kWh)	145.6	72.8	208	93.6	239.2
Annual energy cost (Rs)	728.00	364.00	1040.00	468.00	1196.00
Year of operation	4	4	4	4	4
Total energy consumption	582.4	291.2	832	374.4	956.8
Total energy cost (Rs)	2912.00	1456.00	4160.00	1872.00	4784.00

Note: As per Tamil Nadu Commercial Tariff average taken as Rs.5 (Does not include cost associated with air conditioning, which may add another 50% to the total energy cost).

- ◆ If practical, group your computer activities and try to do them during one or two parts of the day, leaving the computer off at other times.
- ◆ If you use a laser printer, don't turn your printer on until you are ready to give print.
- ◆ Turn off your entire computer system or at least your monitor and printer when you go to lunch or will be out of office for a meeting.
- ◆ For "Computer servers" which must be on to serve network functions, explore ways to turn servers off at night.
- ◆ If monitors are not needed for "Servers" to operate, keep server monitors off. If server monitor is needed during the day, at least turn it off at night and weekends.
- ◆ Activating the power management features on your computer save energy. Your computer's sleep and hibernate settings are two effective ways for you to make your computers more environmentally friendly. You can activate these functions through your operating systems pre-set power management settings.

### Reducing Paper Waste

Rather than creating paperless office, computer use has

vastly increased paper consumption and paper waste. Virgin paper may cost you less money, but it costs the environment so much more. One tone of virgin paper creates 60 pounds of air pollution, uses 17 trees, 7,000 gallons of water, and 3.3 cubic yards of landfill space. Some suggestions for reducing waste:

- ◆ Print as little as possible. Review and modify documents on the screen and use print preview. Minimize the number of hard copies and paper drafts you make. Instead of printing, save information to disks.
- ◆ Buy and use recycled paper in your printers and copiers. From an environmental point of view, the best recycled paper is 100 percent post consumer recycled content.
- ◆ Look for acid-free, 100 percent post-consumer recycled and chlorine-free paper. Such post-consumer recycled paper reduces energy consumption by 60 percent.
- ◆ Save e-mail instead of faxes or send faxes directly from your computer to eliminate the need for a hard copy. When you must fax using hard copies, save paper using a "Sticky" fax address note and not a cover sheet.
- ◆ On larger documents, use smaller font sizes (Consistent with readability) to save paper.

- ◆ Reducing font size and single-spacing are not always an option, but switching to slimmer margins and printing on both sides is a good start.
- ◆ If your printer prints a test page, whenever it is turned on, disable this unnecessary feature.
- ◆ Before recycling paper, which has print on only one side, set it aside for use as scrap paper or in printing drafts.
- ◆ When documents are printed or copied, use double sided printing and copying. If possible, use the multiple pages per sheet option on printer properties.
- ◆ When general information-type documents must be shared within an office, try circulating them instead of making an individual copy for each person. It can also be done easily by e-mail.

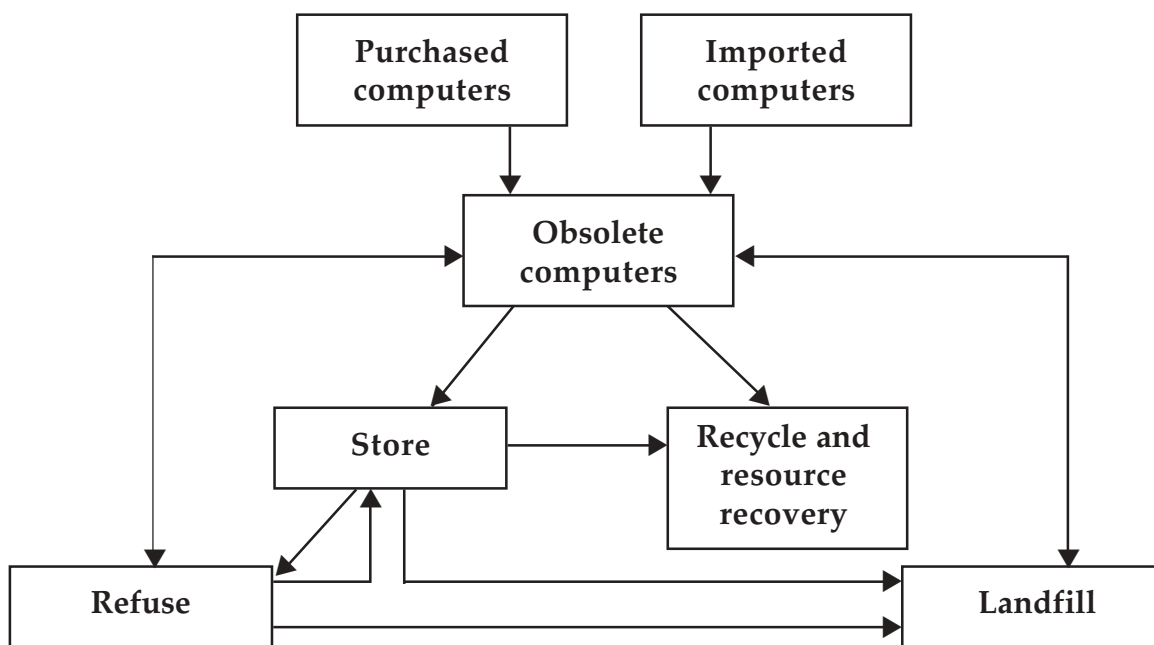
### Air Conditioning—The hidden Environmental Cost

The added heat from inefficient computers can increase the demand on air conditioners and cooling systems, making your computing equipment even more expensive to run. A single PC generates more heat than a 100 watt light bulb. A classroom, computer lab, or office room, with PCs warm up very quickly. Air conditioners in the computer lab raise electricity costs and require large capital expenditure to buy, install and maintain them.

### E-Waste

E-Waste is a collective name of discarded electronic device that enters the waste stream from various sources. It includes electronic appliances such as televisions, personal computer, telephone, air conditioners, cell phone and electronic toys. E-waste is very large and further including lifts, refrigerator, washing machines, dryers, kitchen utilities. Nearly 315

Figure – 1: Flow Diagram of Computer Waste



Million Personal Computers were obsolete by 2005 and other 700 Million Personal computers will be obsolete by 2009. According to Moor's Law, the Computer Chip processing power doubles every 18 months and the memory doubles every nine months. Due to the rapid advancement, the average computer life span has shrunk within two years and new models with better processing power and memory is coming up. The various source of E-Waste comes from

- Individual House holds
- Government, Public and Private sector
- PC retailers
- PC Manufacturers
- Foreign embassy
- Secondary market of old PCs, and
- Dumping from other part of the world

Thousand of substances are used to manufacture a computer. To produce one computer 240 kg of fossil fuel, 22kg of chemicals and 1500kg of water are needed. The 22kg of chemicals can be divided as 32 percent ferrous metals, 23 percent plastic, 18 percent non ferrous metals (lead, cadmium, chromium and mercury), 15 percent glass and 12 percent electronic boards (gold, palladium, silver and platinum). The consumers are finding difficult to dispose an obsolete computers.

When dead computers are placed in landfills, burned or improperly recycled these substances are leached into the ground, air, and water. The Table-2 consists of list of e-Waste chemicals, Source and its impact of Health Effects.

e-Waste Chemicals	Source	Health Effects
Arsenic	Computer Chips / Light Emitting Diodes	Skin Cancer / Lung Cancer
Cadmium	Central Processing Unit / Monitors	Blood Pressure / Kidney damage
Chromium	Plastic Materials used in the Chip	Cause DNA Damage
Lead	Old Battery / Flat screen with fluorescent tubes	Lung damage / Eye irritation. Damage to brain and Kidney
Polyvinyl Chloride (PVC)	Cables used in ICT Equipment	Hormone disruptor

The E-Waste can be prevented by following the three ways

**Reduce**

- ◆ Practice good preventative maintenance to extend the life of a computer
- ◆ Upgrade your computer instead of buying a new one
- ◆ Use Free and Open Source software. It replaces commercial software and requires very less computer resources.

**Reuse and Recycle**

- ◆ Buy a used computer.
- ◆ Donate your old computer to a friend, school, community group or non-profit organization for re-use.
- ◆ Reuse introduces the idea of "Wearable Computing," where parts of a laptop are held together by snap fits that can be readily separated. Snap fits will restrict the use of difficult types of plastic and result in easy assembly, disassembly, maintenance, reusability and recyclability.

**Figure-2: Computer Waste generated from an Office**

### Corporate Initiatives in e-Waste

Computer manufacturers/Corporate has to undertake the job of recycling and de-manufacturing the computer products. The corporate are encouraging in educating people and keep computers out of landfills. The computer manufacturers are conducting research on new materials, that would be cost effective and environment friendly. The Corporate / Computer Manufacturing companies' initiatives are discussed below.

- Epson received the old/unused printers from the customers. Epson sends the received items to licensed recycling facilities where components are shredded and then separated for reuse.
- The computer manufacturers, such as Compaq, Dell, IBM and HP are taking initiatives to getting the computers back from the users, who don't know what to do with them.
- The companies like Compaq offer 6-9 percent discount on a product, if the customers return old/unused systems.
- Computer manufacturers are conducting research on new materials that would be cost-effective and environment friendly.
- Fujitsu and Sony are attempting to reduce landfill waste by incorporating biodegradable plastic in their electronic products.
- Dell computers are designed to meet stringent international standard for upgradeability and disposability.
- Intel has improved its microprocessor design in more modular and upgradeable.
- Nokia is introducing New Eco-friendly mobile phones in the area's including energy efficiency, materials used in products, take back, recycling, and packaging. The package of the phone is made of 60 percent recycled content.

Figure-3: Sample Production Facts Label

## Production Facts

Power Consumption Per Unit 28W  
Total Unit Weight 515g

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**Amount Per Unit**

<b>Recyclability (TRM)</b> 396g	<b>77%</b>
---------------------------------	------------

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**Toxicity (1/TLV)\***

<b>Total Toxins</b> 24g	<b>3.9</b>
Arsenic 0.0mg	<b>100</b>
Cadmium 4.5mg	<b>100</b>
Mercury 0.0mg	<b>100</b>
Lead 2.5g	<b>20</b>
Chromium 21g	<b>2</b>

---

**Precious Metals** 49mg

Platinum 0.0mg
Gold 4.5mg
Silver 36mg
Palladium 7.9mg
Copper 0.0mg

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0 180000 60170 12301A 7

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\*Total Recyclable Mass (TRM) is the sum of all of the materials deemed recyclable by the computer recycling industry including how much of the material is recoverable. The percentage assigned to the TRM is in relation to the total mass of the specific product.

\*Threshold Limit Value (units are in mg/m<sup>3</sup> of sulfuric acid) - The TLV reciprocal unit (1/TLV) is used by the Phoenix Project to accurately assign values of toxicity to each specific product:

Toxicity:	(TLV)	(1/TLV)
Cadmium	0.01	100
Mercury	0.01	100
Lead	0.05	20
Chromium	0.50	2

---

**Disclaimer:**  
This product meets all applicable safety standards for normal use. Toxins listed above may represent an environmental threat after computer is disposed and do not necessarily pose a threat to the user.

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**Questions and/or Comments for Phoenix Project?**  
Toll-Free: 1-800-GREENBLUE  
Email: facts@greenblue.org

The Phonix Design team started an initiative by creating industry-wide database to track the material content of computer equipment, beginning at the level of those Original Equipment Manufacturers (OEMS) which design and construct their products. A "Nutrition Facts" label will communicate toxic level and recyclability, information to computer users. The recycling companies identify recyclable computers from the computer users to collect and send it to the computer manufacturers with any easy searchable catalogue. The computer users can compare the products of two or more different companies, in terms of price, toxic level and its impact on environment. It will create the market pressure among the computer manufacturers to design less toxic and environment friendly products.

### 10 Tips for Effective Green Computer use

1. Turn off your computer at night. So it runs only 8 hours a day. You will reduce your energy use by 810 kWh per year and net a 67 percent annual savings.
2. Purchase flat-screen monitor. They use significantly less energy and are not as hard on your eyes as CRTs.
3. Purchase an energy star compliant computer. The laptop modules use much less energy than desktop units.
4. Consider a small monitor – 14-Inch display. It uses 40 percent less energy than a 17-inch one.
5. Enable the standby / sleep mode and power management settings on your computer.
6. Consider using an ink-jet printer, although a bit slower than laser printers, inkjet use 80 to 90 percent less energy.
7. Buy vegetable or non-petroleum based inks. They are made from renewable resources, require fewer hazardous solvents, and often produce brighter, cleaner colours.
8. Choose dark backgrounds for your screen display. Bright coloured displays consume more power.

9. Network and share printers where possible.
10. Print on recycled content paper. Look for non chlorine bleached paper with 50 to 100 percent post-consumer waste.

## Conclusion

Electronic giants are about to roll out eco-friendly range of computers (like desktops and laptops) that aim at reducing the e-waste in the environment. The IP-enabled network connects all parts of the utility grid equipment, control systems, applications and employees. It also enables automatic data collection and storage from across the utility based on a common information model and service-oriented architecture (SOA), which enables a flexible use of information technology. The entrepreneurs can play a major role to open e-Waste recycling facilities. The government has to play a major role in reducing the e-Waste by comprehensive law and regulations. The awareness should be created among the computer user to access the channels to deliver unwanted computer system safely and responsibly. The government-public initiatives would be taken to help consumers to realize the impact of e-Waste on the environment. The Industry has to take initiative to take cradle-to-cradle production system with least environmental impact. The feature of a green computer design would be like: efficiency, recyclability and self-powering.

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- < <http://www.nwf.org> >
- < <http://www.pcpowermanagement.com> >
- < <http://www.peninsula.wednet.edu/conservation/Energy/office/htm> >
- < <http://www.recyclingteam.org/educationmaster.html> > , < <http://www.svtc.org/> >
- < [http://www.uh.edu/infotech/news/story.php?story\\_id=130](http://www.uh.edu/infotech/news/story.php?story_id=130) >
- < [http://www.vitalgraphics.net/waste/html\\_file/36-37\\_ewaste.html](http://www.vitalgraphics.net/waste/html_file/36-37_ewaste.html) >





# Students and Employers: Perceptual Chasm

Rajasekaran B. and Rajasingh S.

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## Academic Lacuna

*Higher Education Institutions in India are expected to deliver quality outcomes to the stakeholders namely employers, society and higher educational institutions. But the stakeholders of higher education belonging to various sectors have different perspectives towards these outcomes. This paper proposes to address the gap in the quality perceptions of the Students and Employers. It will divulge the perceptual divide between the students and employers with respect to the quality outcomes of the students and the teaching faculty. Sequentially it will support the policymakers and the higher educational leaders to design and implement best practices in higher educational institutions. It will result in quality education that will be aligned to the expectations of the employers. Consequently it will restructure the education process in tune with the demand for quality students in the Globalized environment.*

**E**ducation is a social process. The form and content of education of any age and society are products of society-education dialectics. Education, particularly higher education, as the instrument of individual, societal and economic transformation in India became well recognized in the second half of the twentieth century. Since independence in 1947, there have been larger investments in higher education, with the concomitant increase in the number of students who opt for higher education. The transformation of Indian education system from the ancient guru kula system to today's virtual learning system is a reflection of the changing social context.

The new social realities, particularly the interplay between democratization of education, emergence of knowledge society and globalization, greatly influence the educational processes in all societies.



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In the context of the Information Technology Revolution, Communication Explosion, the Knowledge Economy and Globalization, India's production of Professionals is phenomenal. With over 300 Universities and 15,600 Colleges spewing out 2.5 million graduates each year, in terms of the volume of production India trails behind only the US and recently China. Each year India produces 350,000 Engineers, twice the number produced by the US.

A recent evaluation of Universities and Research Institutes all over the world, conducted by a Shanghai University, has not a single Indian University in the world's top 300 - whereas there are six Chinese Universities.

Within a context of Higher Education gaining an international dimension, Universities and Higher Education Institutions are expected to be sensitive to Local, National and Global expectations. In short, Leaders of Universities and Higher Education Institutions are expected to play a very different, dynamic, role than Universities of twentieth Century in India. UGC grants many Higher Education Institutions the status of Deemed Universities. Universities and Deemed Universities are increasing student intake, course offerings, partnerships, non-traditional modes of learning, flexible lifelong learning initiatives etc. In the case of affiliating Universities, their role in promoting the concept of academic autonomy for colleges and in providing academic leadership for Quality enhancement is being emphasized.

The various dimensions of changing conditions and emerging trends discussed above - starting from 'mass higher education of comparable quality' to 'new models of management and performance evaluation' - have brought both quality and standards of higher education to the forefront. The need to move from 'ensuring minimum Quality and Standards' towards 'assuring higher Quality and Standards' is apparent. Today, performance evaluation, accountability and higher standards have become watchwords in any discussion on revamping Higher Education.

At this juncture, India's burning issue is not that of lack of talent pool, but the lack of talent pool which is on par with quality of world class and employable. Employers presume that only 15 percent of people coming out of Indian colleges are employable. The rest are branded 'not employable.' Again, not for the lack of theoretical knowledge, but for the lack of skills and attitude necessary for doing the job successfully. This is truly a challenge as well as a social responsibility. The Employers are caught in a pincer between rising employment costs on one hand and a 30 percent rate of attrition on the other. While the need of the hour is to produce employable and quality manpower, it may not be fair to fully transfer this

responsibility to the Employers; there must be some share of this responsibility owned by the institutions producing talent and the students, as well.

Perceptions of the role of the University and Higher Education Institution had also changed by then. It is expected that Academic Leaders and Students be involved in enhancement of Quality of Higher Education and the transformation of society and its economic development through partnership activities and University-Industry linkages. In the academic world Quality assessment has traditionally assumed two apparently contradictory objectives: Quality improvement and accountability. Universities mostly emphasise quality improvement, which has been a concern for higher education institutions since the Middle Ages while the government pays special attention to accountability, aiming at guaranteeing the quality of the services provided to society by Higher Education Institutions. Quality has become the defining element of Higher Education in the 21st Century.

Hitherto, only the Academic Leaders are playing the vital roles in Quality Assessment and Quality Enhancement through Quality Assessment bodies like National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA). The perceptions of Academic Leaders on Criteria for Quality of Students, Faculty and Higher Education Institutions are prevailing in the process of Quality Assessment of Higher Education. However the role of Employers and Students is very much limited in the Quality Assessment Process and their perceptions on the criteria for the Quality of Students, Faculty and Higher Education Institutions are not considered.

At this juncture, the study of perceptual chasm between Students and Employers on the Quality of Higher Education is highly relevant and significant. Hence it is our objective is to study the Perception Gap between the Students and Employers on Criteria for Quality of Higher Education in general and Quality of Students and Faculty in particular.

### **Literature Survey**

Quality Assessment in Higher Education is of worldwide interest; government and public demand for accountability from higher education institutions has steadily increased

over the past decade<sup>1</sup> (Brennan, Fedrowitz, Huber, and Shah, 1999). The need for ensuring the validity and utility of the assessment process has also increased. To be useful, the assessment must meet the needs of the people whom it is intended to benefit and aid the evaluated institution to make improvements. Quality assessment is frequently undertaken in response to external authorities who expect clear, ratified criteria to be used in the accountability process. If the assessment is to be beneficial, however, change must be effected within the institution. This means that administrators, faculty members, and students also need an understanding of the criteria that can guide and facilitate improvements in the way they function.

Diana Green<sup>2</sup> defined the Quality of Higher Education as "Producing Graduates to meet the Human Resources needs of an Organization in the Business, Industrial and Service Sectors." Quality of the product or service is measured in terms of its conformation to the specification. The definition of Quality adopted by most analysts and policy makers in Higher Education is that of Fitness for Purpose. Definition of Quality varies, and to some extent, reflects different perspectives of the individual and society. However, because different types of stakeholders in higher education the public, administration, faculty, or students have their own perspectives and goals, they assign different values to criteria or specification for quality.

Several researchers have investigated the criteria for Quality of Higher Education based on the perceptions of stakeholders namely Public, administration, faculty, or student. The public wants students to graduate with general abilities and emphasizes criteria such as communication skills (Cave and Hanney, 1992)<sup>3</sup>. University administrators are expected to show that resources are being used efficiently and effectively; for them, student completion of programme requirements is an important criterion (Nadeau, Donald, and Konrad, 1992). Faculty view the primary obligation of the university to students to be the development of intellectual independence (Baird, 1988) and hence focus on criteria such as the ability to think critically (Barnett, 1988; Trice and Dey, 1997). Students, meanwhile, are increasingly pre-occupied with career concerns; they value criteria such as the ability to get a job (Dey, Astin, and Korn, 1991). The most common

approaches to quality assessment are based on reputation and resources (Astin, 1985). Reputation is a global assessment of the perceived status or excellence of an institution or programme, typically measured by asking knowledgeable experts to rate the institution or programme. For example, presidents of research universities might rate other research universities for excellence (Cave and Haney, 1992). The resource approach to quality uses input measures of faculty and student quality and physical and fiscal resources (endowments, per-student expenditures). Within the resource approach, one of the most frequently used measures of quality is the academic ability of students at entry to college or university. A third approach uses performance indicators or global outputs to define quality indices such as programme or degree completion rates, the proportion of undergraduates admitted to graduate education, or alumni satisfaction ratings. The flaw in these approaches is that they do not suggest how improvements in quality could be made. Astin recommended that quality be considered in terms of talent development. The criteria for quality in Astin's approach are grounded on an institution's ability to affect its students and faculty favourably. Students are a central focus in assessments of educational quality. What is less frequently acknowledged is that they are also major stake holders in Higher Education.

Many years quality criteria have reflected administrators' or faculty priorities. As both the subjects of assessment and stakeholders, Janet G. Donald and D. Brian Denison<sup>10</sup> argued that students and their perceptions of quality criteria need to be incorporated into the assessment process. Higher Education Institutions with the greatest educational impact are those with clear and consistent educational goals that are shared by faculty and students (Chickering and Reisser, 1993; Schroeder and Hurst, 1996)<sup>11</sup>. The stakeholders were governors of university and college boards, administrators, faculty, students, and members of the larger community. They independently identified criteria of quality in universities and colleges that they considered to be important then verified the criteria over three rounds of a Delphi procedure (Linstone and Turoff, 1975)<sup>12</sup>. Higher Education Institutions with the greatest educational impact are those with clear and consistent educational goals that are shared by faculty and students.

To date, the perceptions of the major stakeholder "Employers" and "Students" on the quality criteria of students (out put) and faculty (input) is ignored and left unaddressed. Hence we sought to determine the perception of Students and Employers on the criteria for both the Quality of Students and Faculty. The Perception Gap between Students and Employers is sought to be identified on criteria / factors for quality of Students such as communication skills, academic performance, generic skills, learning skills, social responsibility, employment competence and academic preparedness. It is also sought to determine the perception gap between faculty and Industry on criteria / factors for quality of faculty such as presentation skills, academic competence, interpersonal skills and team bonding skills. We sought to determine the effects of gender, marital status education and experience on employers perceptions on students' quality

## Methodology

### Sample

A sample of 100 persons from Industry and 487 students from Higher Education Institutions offering Engineering and Management Courses, affiliated to Anna University, Chennai were chosen for the study. 63 percent of Industry persons were from IT Industries and 37 percent from Non IT Industries. Male and female from 78 percent and 22 percent respectively. 49 percent of the Industrial Respondents had less than five years of Experience and the remaining 51 percent had more than five years of Experience in the Industry. Married people were 43 percent and the unmarried people from the Industry were 57 percent.

Among the 487 students, 43 percent were male and 57 percent were female. 59 percent of students were from Undergraduates and 41 percent were from Post Graduates. With the combination of the above, the samples had been chosen for the study.

### Procedure

A questionnaire with 25 criteria for the quality of Students and faculty was designed based on the recent research articles to examine the perception of criteria for the quality of Students and Faculty. The questionnaire was administered to 100 Students and 10 Employers as a pilot study. After conducting the validity test and the factor analysis, the questionnaire had been redesigned with 23

criteria for the quality of students and 18 criteria for the quality of faculty. The validated and redesigned questionnaire was administered to 487 students from five different Institutions offering Engineering and Management Courses in person. The Questionnaire was also mailed to 200 Industrial persons and received 100 responses from both IT and Non IT Industries. Students and Employers were informed that their participation was being solicited to achieve a better understanding of the perception of the Employers and Students on Quality of Students and Faculty and to improve the Quality of Higher Education Institutions. In one section of the questionnaire, Students and Employers were presented with the set of 23 criteria for Quality of Students and in another section with the set of 18 criteria for the quality of faculty. Students and Employers were asked to use a 5-point response scale (1 = not at all important, 2 = somewhat important, 3 = important, 4 = quite important, 5 = extremely important) to indicate how important they felt each criterion was for evaluating the quality of a student and faculty. Factor analysis and the reliability test were conducted on the collected data and the tables were formulated (Table 1 – 4).

## Analysis and Results

Communication Skills, Academic Performance, Generic Skills, Learning Skills, Social Responsibility, Employment Competence and Academic Preparedness are found as the factors for the criteria for the quality of Students. The loading of the perceptions of Employers and Students on the criteria for the quality of Students were calculated and tabulated. The relationship coefficient was determined ( $r = 0.425$  and  $p = 0.342$ ) and it was found that there is no relationship between the perceptions of Employers and Students. The Deviation between the Employers and Students was found to be very high on Learning Skills by seven percent ( $p < 0.01$  and  $t = 4.339$ ). Perceptions of Employers were higher than the Students. The gap needs to be bridged to improve the employability of students. There is also gap between the perceptions Employers and Students on Employment Competence and Academic Preparedness. The perception of Students on Employment Competence and Academic Preparedness is higher than the Employers by 5.11 percent ( $p < 0.01$ ,  $t = 2.99$ ) and 5.24 percent ( $p < 0.01$ ,  $t = 3.389$ ) respectively. The perception gap between Employers and Students was on three factors Learning Skills, Employment Competence and Academic Preparedness (Table 5 and Figure 1).

**Table 1: Criteria for Quality of Students according to Students' Perspective**

**Reliability Test: Alpha = 0.832 KMO = 0.842**

**Factor Analysis**

Sl.No	Questionnaire	Factor	Loading	Alpha	Mean	Variance
COMMUNICATION SKILLS						
18	Leadership Skills	I	0.513 R	0.686	3.933	1.006
19	Ability to apply knowledge	I	0.561 R			
20	Written communication skills	I	0.624 R			
21	Presentation skills	I	0.785 R			
22	Oral Communication skills	I	0.611 R			
LEARNING SKILLS						
5	Commitment to Learning	II	0.488 R	0.554	3.51	1.321
16	Commitment to Life Long Learning	II	0.703 R			
17	Commitment to Physical Fitness	II	0.620 R			
23	Commitment to Social Concerns	II	0.422 R			
GENERIC SKILLS						
6	Sense of Responsibility	III	0.581 R	0.613	3.91	1.027
7	Openness and Flexibility	III	0.724 R			
8	Ability to interact with others	III	0.738 R			
EMPLOYMENT COMPETENCE						
14	Ability to get a job	IV	0.765 R	0.618	4.256	0.888
15	Performance on the job	IV	0.672 R			
ACADEMIC PERFORMANCE						
10	Moral & Ethical Reasoning	V	0.577 R	0.575	3.556	1.152
11	Personal Student Development	V	0.672 R			
12	Completion of Program requirements	V	0.621 R			
13	Expertise at the end of the program	V	0.397 R			
ACADEMIC PREPAREDNESS						
1	Secondary School Preparation	VI	0.763 R	0.454	3.7	1.046
2	Preparedness for a specific program	VI	0.587 R			
3	Basic Mathematical Competency	VI	0.487 R			
INTELLIGENCE						
4	Intelligence	VII	0.584 R	0.381	3.807	0.964
9	Effective study skills & habits	VII	0.626 R			

**Table 2: Criteria for Quality of Faculty according to Students' Perspective**

**Reliability Test: Alpha = 0.831 KMO = 0.858**

**Factor Analysis**

Sl.No	Questionnaire	Factor	Loading	Alpha	Mean	Variance
SOCIAL RESPONSIBILITY						
9	Leadership Skills	I	0.565 R	0.707	3.678	1.192
10	Commitment to Knowledge updation	I	0.553 R			
11	Commitment to Ethical Values	I	0.776 R			
12	Commitment to Social Concerns	I	0.746 R			
INTERPERSONAL SKILLS						
2	Ability to Encourage the students	II	0.478 R	0.705	3.954	0.973
5	Approachable by Students	II	0.366 R			
13	Enthusiasm	II	0.617 R			
14	Confidence	II	0.433 R			
15	Friendliness with Students	II	0.719 R			
16	Temperament	II	0.484 R			
17	Sense of Humour	II	0.676 R			
PRESENTATION SKILLS						
4	Presentation Skills	III	0.361 R	0.609	3.813	1.047
6	Ability to use Computer & Technology	III	0.682 R			
7	Ability to work as a Team Member	III	0.727 R			
8	Problem Solving Skills	III	0.520 R			
ACADEMIC COMPETENCE						
1	Ability to Explain Clearly	IV	0.775 R	0.490	4.336	0.803
3	Depth of Knowledge	IV	0.693 R			
REASERCH SKILLS						
18	Commitment to Research	V	0.690 R			

**Table 3: Criteria for Quality of Students according to Employers' Perception****Reliability Test: Alpha = 0.832 KMO = 0.732****Factor Analysis**

Sl.No	Questionnaire	Factor	Loading	Alpha	Mean	Variance
<b>COMMUNICATION SKILLS</b>						
20	Written Communication Skills	I	0.789 R	0.781	4.13	0.723
21	Presentation skills	I	0.742 R			
22	Oral Communication skills	I	0.818 R			
<b>ACADEMIC PERFORMANCE</b>						
7	Openness and Flexibility	II	0.573 R	0.606	0.37	0.85
12	Completion of Program requirements	II	0.712 R			
13	Expertise at the end of the program	II	0.714 R			
<b>GENERIC SKILLS</b>						
3	Basic Mathematical Competency	III	0.684 R	0.594	4.017	0.778
6	Sense of Responsibility	III	0.757 R			
8	Ability to interact with others	III	0.635 R			
<b>LEARNING SKILLS</b>						
9	Effective study skills & habits	IV	0.487 R	0.62	3.86	0.881
10	Moral & Ethical Reasoning	IV	0.555 R			
16	Commitment to lifelong learning	IV	0.686 R			
19	Ability to apply knowledge	IV	0.795 R			
<b>SOCIAL RESPONSIBILITY</b>						
17	Commitment to Physical Fitness	V	0.618 R	0.515	3.41	0.980
23	Commitment to Social Concerns	V	0.763 R			
<b>EMPLOYMENT COMPETENCE</b>						
11	Personal Student Development	VI	0.411 R	0.687	4.00	0.725
14	Ability to get a job	VI	0.846 R			
15	Performance on the job	VI	0.722			
<b>ACADEMIC PREPAREDNESS</b>						
01	Secondary School Preparation	VII	0.806 R	0.313	3.44	1.159
02	Preparedness for a specific program	VII	0.675 R			
18	Leadership Skills	VII	0.407			
<b>INTELLIGENCE</b>						
04	Intelligence	VIII	0.576 R	0.542	4.01	0.80
05	Commitment to Learning	VIII	0.447 R			

**Table 4: Criteria for Quality of Faculty according to Employers' Perception**

**Reliability Test: Alpha = 0.866 KMO = 0.808**

**Factor Analysis**

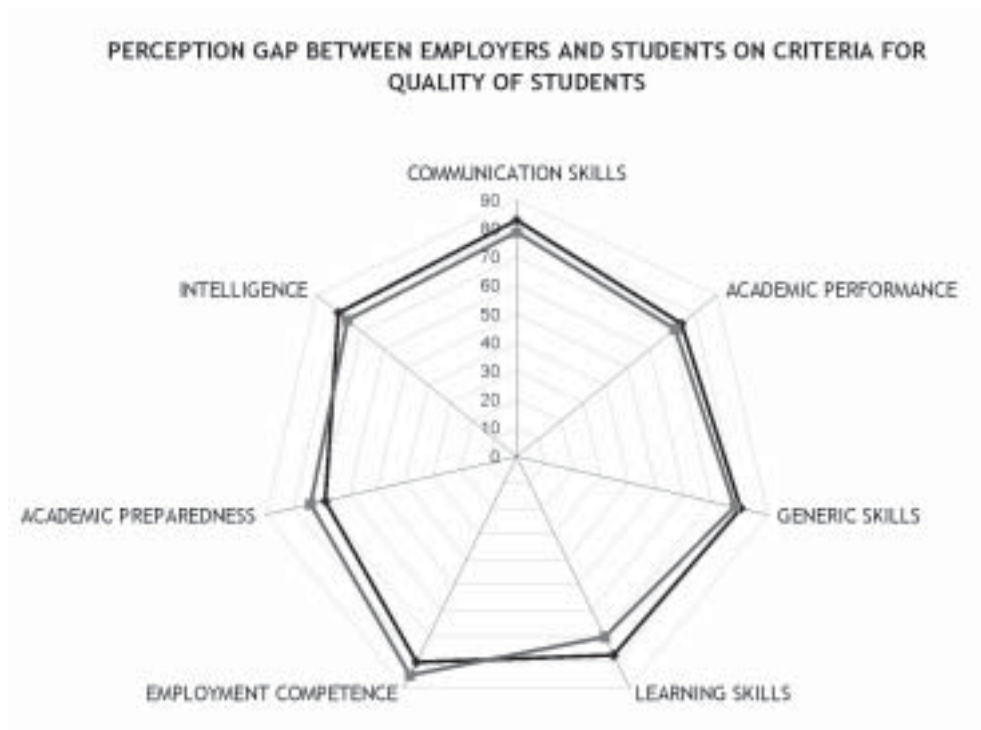
Sl.No	Questionnaire	Factor	Loading	Alpha	Mean	Variance
PRESENTATION SKILLS						
4	Presentation Skills	I	0.559	0.676	4.128	0.703
5	Approachable by Students	I	0.663			
9	Leadership Skills	I	0.572 R			
15	Friendliness with Students	I	0.847 R			
SOCIAL RESPONSIBILITY						
12	Commitment to Social Concerns	II	0.688 R	0.732	3.5	1.066
16	Temperament	II	0.645 R			
17	Sense of Humour	II	0.488 R			
18	Commitment to Research	II	0.745 R			
ACADEMIC COMPETENCE						
1	Ability to Explain Clearly	III	0.643 R	0.714	4.308	0.542
3	Depth of Knowledge	III	0.754 R			
8	Problem Solving Skills	III	0.549 R			
10	Commitment to Knowledge Updation	III	0.641 R			
INTERPERSONAL SKILLS						
2	Ability to Encourage the students	IV	0.757 R	0.666	4.193	0.67
11	Commitment to Ethical Values	IV	0.477 R			
14	Confidence	IV	0.593 R			
13	Enthusiasm	IV	0.536 R			
TEAM BONDING SKILLS						
06	Ability to use Computer & Technology	V	0.758 R	0.594	3.81	0.815
07	Ability to work as a Team Member	V	0.735 R			



**Table 5: Perceptions of Employers and Students on Criteria for Quality of Students**

Criteria / Factors	Perceptions of		Deviation (D)	Relationship Coefficient (r)
	Employers	Students		
Communication Skills	82.86667	78.6529774	4.213689	
Academic Performance	74	71.1293634	2.870637	
Generic Skills	80.33333	78.1382614	2.195072	
Learning Skills	77.2	70.2053388	6.994661	0.542489
Employment Competence	80	85.1129363	5.112936	P value = 0.208
Academic Preparedness	68.73333	73.9767282	5.243395	
Intelligence	80.1	76.1396303	3.96037	

**Figure 1**



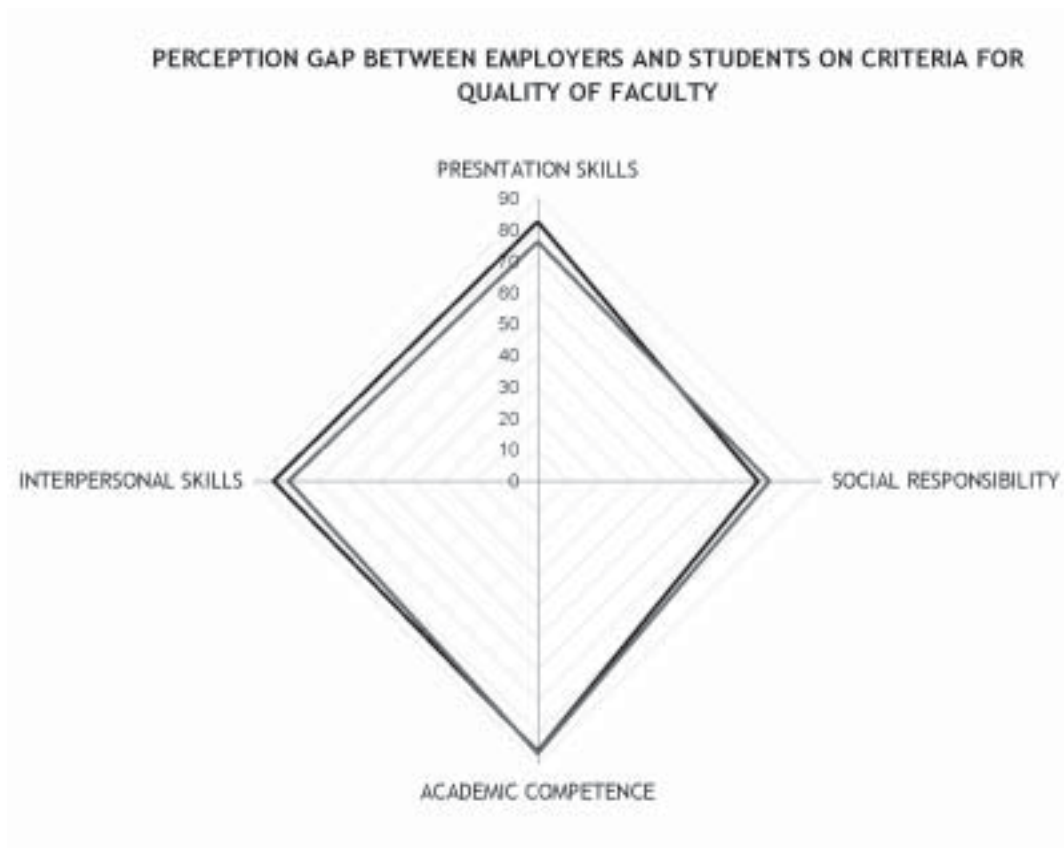
Presentation Skills, Academic Competence, Interpersonal Skills and Team Bonding Skills are found as the factors for the criteria for the quality of faculty. The loading of the perceptions of Employers and Students on the criteria for the quality of faculty were calculated and tabulated. The relationship coefficient was determined and it was found that there is no relationship between the perceptions of Employers and students ( $r = 0.773557$ ,  $p = 0.226$ ). The

deviation between the Employers and students on Presentation Skills was found to be very high by 6.29 percent ( $p < 0.01$ ,  $t = 4.225$ ). It was also observed that on all factors, the perceptions of Employers on criteria for quality of Faculty were higher than the students. The Gap between them was considerably high on Interpersonal skills also by 4.77 percent ( $p < 0.01$ ,  $t = 3.682$ ) (Table 6 and Figure 2).

**Table 6: Perceptions of Employers and Students on Criteria for Quality of Faculty**

Factors	Perceptions of		Deviation (D)	Relationship Coefficient (r)
	Employers	Students		
Presentation Skills	82.55	76.25257	6.297433	
Social Responsibility	70	73.55236	3.552361	r = 0.773557
Academic Competence	86.15	86.71458	0.564579	P Value = 0.226
Interpersonal Skills	83.85	79.07891	4.771091	

**Figure 2**



**Limitations**

The samples were taken mostly from Engineering Institutions offering Engineering and Management Courses and IT Industries. Extending the samples to Arts and Science Colleges, Leading Research Institutions and other professional colleges may yield better insight.

**Further Research**

The results of this study suggest several avenues for further research. It may be extended to Arts and Science colleges and Leading research organisations. Differences in the perceptions of Employers on criteria for Quality of faculty and students signify a need for further exploration as they

are the input and output for higher education. The study on Perceptions gap between Faculty and Industry and Alumni and Industry would be a great boon to improve the Quality of the Higher Education.

## Conclusion

Investigations revealed that there was wide gap between the perceptions of Employers and Students on criteria for Quality of students especially on Learning Skills, Employment Competence and Academic preparedness. The gap was even wider on the criteria for quality of faculty especially on presentation skills and Interpersonal skills of the faculty. The perception gap between Employers and Students must be bridged to improve the employability of students and enhance the quality of Higher Education. Policy makers should introduce Indian Educational Services Examination which includes the criteria for quality with respect to Industry perception to recruit faculty on par with Civil Services Examination. The salary of IES qualified faculty should be the most attractive package best among all Industries to enhance the quality of Higher Education.

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## Appendix

### (A) Criteria for Evaluating Quality of Students

1. Secondary School Preparation
2. Preparedness for a specific program
3. Basic Mathematical Competency
4. Intelligence
5. Commitment to Learning
6. Sense of Responsibility
7. Openness and Flexibility
8. Ability to interact with others
9. Effective study skills and habits
10. Moral and Ethical Reasoning
11. Personal Student Development
12. Completion of Program requirements
13. Expertise at the end of the program
14. Ability to get a job
15. Performance on the job
16. Commitment to lifelong learning
17. Commitment to Physical Fitness
18. Leadership Skills
19. Ability to apply knowledge
20. Written communication skills

21. Presentation skills
22. Oral Communication skills
23. Commitment to Social Concerns

### (B) Criteria for Evaluating Quality of Staff

1. Ability to Explain Clearly
2. Ability to encourage the students
3. Depth of Knowledge
4. Presentation Skills
5. Approachable by Students
6. Ability to use Computer and Technology
7. Ability to work as a Team Member
8. Problem Solving Skills
9. Leadership Skills
10. Commitment to Knowledge updating
11. Commitment to Ethical Values
12. Commitment to Social Concerns
13. Enthusiasm
14. Confidence
15. Friendliness with Students
16. Temperament
17. Sense of Humour
18. Commitment to Research



# Clinical and Contract Research: Potential

Pankaj M.Madhani

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## Research Scene

*The purpose of this paper is to discuss the resources that have contributed to the competitive position of the Indian clinical and contract research organizations (CROs). In accordance to resource based view (RBV) approach, the main source of firm's market performance lies on the specific nature of their resources and accumulated competences. A combination of resources including supportive government policies, size and composition of population, skilled workforce, sound medical infrastructure, established pharma industry, and global linkages etc. help create a sustainable advantage for the Indian CROs. RBV helps explain the contribution of various resources and capabilities to the Indian CROs.*

India has emerged as key resource center for conducting clinical trials, drug discovery and development and contract research services. India is recognized as most preferred destination for clinical trials and contract research mainly because of certain key attributes viz. large pool of patients, well trained clinical investigators, relatively lower cost of conducting clinical trials compared to developed countries. At present, 88 percent of global audited prescription drug sales (US \$518 billion) are jointly accounted for by North America, Europe and Japan. US alone can be a huge value driver for Indian clinical and contract research organizations (CROs).

The global pharma industry spends nearly US \$70 billion on R&D activities, with the US leading with an estimated spending of US \$25 billion. About 40 percent of US pharma companies outsource some of their R&D work and about

33 percent of drug development funding is spent on outsourcing from CROs. The total pharmaceutical outsourced market is currently pegged at \$36 billion and is expected to reach to \$48 billion whereas R&D outsourcing expenditure is around 50 percent of the total market. India is proving to be the most preferred destination to carry out their clinical trials, drug discovery and development activities. Availability of a vast patient population, low cost, skilled R&D workforce and a favourable regulatory



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environment are the main driving forces to transform India into the hub of R&D activities for successful drug discovery and development and clinical research.

### Resource Based View (RBV)

The popularity and wide spread acceptance of the 'resource based view' (RBV) of the competitive advantages has shifted the focus of management researchers to the internal environment or black box of the firm. The central premise of RBV theory addresses the fundamental question of why firms are different from each other and how firms achieve and sustain competitive advantage by deploying and harnessing their resources. During the last 50 years, many management researchers have contributed to the development of this area of management. For example, an organization's 'distinctive competence' is directly related to the RBV concept (Selznick, 1957). Also, study of an internal appraisal of strengths and weaknesses provides a framework for the identification of distinctive competencies (Andrew, 1971).

However, the founding idea of viewing a firm as a bundle of resources was originated by Edith Penrose (1959). According to Penrose, each firm gets its unique character from heterogeneity, and not the homogeneity of the productive services available from its resources. The idea of firm's resources heterogeneity is the basis of the RBV. RBV came in limelight again by a path-breaking article of Wernerfelt (1984). Wernerfelt was pioneer in recognizing the significance of the resource perspective as a new direction in the field of strategic management. Wernerfelt suggested that evaluating firms in terms of their resources could lead to insights that differ from traditional IO (Industrial Organization) perspectives.

Barney (1991) subsequently popularized RBV concept. Barney provided a more comprehensive framework to identify the required characteristics of firm resources in order to generate sustainable competitive advantages. These characteristics include whether these resources are: *rare*, *valuable*, *inimitable* and *non-substitutable* (Barney 1991). *Rare* resources are unique among a firm's current and potential competitors. Resources are *valuable* in the sense that they exploit opportunities in the business environment and / or neutralize threats in a firm's operating

environment. *Inimitable* resources are not perfectly imitable i.e. they are non-perfectly imitable. Resources are *non-substitutable* if it can't have strategically equivalent substitutes that are *valuable* but not *rare* or *imitable*.

Many researchers have contributed to development of RBV theory. This analysis of competitive advantages is based on the unique resources that a firm possesses. To the extent that a competitor can't create or substitute for those resources, they provide a unique competitive advantage to the firm that owns them. Over the past few decades, much of the strategic management literature has emphasized that resources are internal to the firm as the principal driver of firm profitability and long term strategic advantages.

This shift and transition from an IO economic view point towards a RBV strategy has occurred for several reasons. First, introduction of new products, development of new and emerging technology, shorter product life span and shifts in customer preferences has increased significantly. Secondly, traditional industry boundaries are blurring as many sectors of industries converge or overlap (Bettis & Hitt, 1995; Hamel & Prahalad, 1994). Finally the higher rate of change in an increasingly dynamic environment has put increasing pressure on firms to react more quickly as time to react is often seen as major source of competitive advantages (Stalk & Hout, 1990). All these reasons suggest that firms may look inwardly for strategic opportunities and competitive advantages. Traditional IO view point is based on stable industry structure while RBV concept is based on dynamic environment.

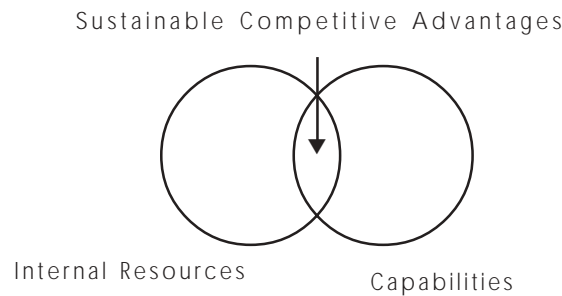
Each firm can be conceptualized as a unique bundle of tangible and intangible internal resources and capabilities (Wernerfelt, 1984). It includes financial, physical, human, commercial, technological and organizational assets used by firms to develop, manufacture and deliver products and services to customers (Barney, 1991). Intangible resources are employee's knowledge, experience and skills, firm's reputation, brand, organization procedure etc. Capabilities, in contrast, indicate capacity of a firm to deploy and manage different organizational resources while using organizational processes to get desired outcome (Amit & Shoemaker, 1993; Grant, 1996). These capabilities are created over a period of time through complex interactions

among the firm's resources and mainly they are information based and firm specific intangible processes (Amit & Shoemaker, 1993; Conner & Prahalad, 1996; Itami & Rohel, 1987; Kogut & Zander, 1992; Leodard-Barton, 1992; Winter, 1987).

According to Amit and Shoemaker (1993), there are two key attributes that distinguish a capability from a resource. First, a capability is embedded in the organization and its processes since it is firm specific, while an ordinary resource is not firm specific (Makadok, 2001). This firm specific attribute of a capability indicates that if a firm is

completely dissolved then its capabilities will also vanish while on the contrary resources of a firm could survive and transferred to a new owner. The second attribute that distinguishes a capability from a resources is that the primary function of capability is to enhance productivity and effectiveness of the resources possessed by a firm while accomplishing its desired outcome. The Resource based view of the firm emphasizes that internal resources and capabilities of a firm are the basis for generating sustainable competitive advantage (Barney, 1991, Mahoney and Pandian, 1992, Amit and Schoemaker, 1993). It's explained by Venn diagram in Fig. 1 below.

**Fig. 1: Resource Based View (RBV) of Competitive Advantages.**



Source: Developed by author)

Collection and deployment of resources and capabilities that generate unique, inimitable and non substitutable competencies provide basis for sustainable competitive advantages.

**What is Clinical and Contract Research?**

It's a comprehensive arrangement under which contractors provide specific research services to pharmaceutical companies or research organizations. The activities range from drug discovery to clinical research. Tasks and activities like designing a protocol, monitoring of investigations, evaluation of reports etc. are part of it. India's pharma industry is on the path of fast track growth. Global pharma majors are focusing on India for cost effective R&D and contract research services. There are many factors for such move viz. rising cost of production in US and European

market, shorter product life cycle, soaring drug discovery development time, complex review process coupled with cut-throat competition. At present many CROs have been set up in India and many trials have been carried out meeting FDA standards.

CRO offers monitoring, regulatory and compliance services for new drug development, medical devices and biologics and combination of products. CROs also provide clinical testing services to the pharmaceutical industry for prescription, consumer and over the counter medications. There are many key benefits of utilizing services of CRO viz. technical skills, sound experience, availability of resources, and information management expertise. Realizing these advantages of clinical and contract research outsourcing, major MNC pharma players have increased the budgets for CRO contracts.

## Indian Clinical and Contract Research Organizations (CROs)

In the complicated process of drug development, approximately 30 percent of the costs are incurred in actual drug development while the remaining 70 percent are incurred in clinical testing. Such cost could be reduced considerably when clinical research activities are outsourced to low cost destinations such as India. Other Asian countries like China, Malaysia, South Korea and Taiwan are also attracting a number of international pharma companies to outsource their R&D activities. There are at any point in time over 500 molecules undergoing clinical trials in various phases in a large number of centers around the world. In comparison to drug discovery process, the clinical development process is mainly dependent on human resources. Hence it becomes more attractive to conduct clinical trials in those areas of the world where human resources are cost competitive. India clearly falls into this category, with advantages of large pool of subjects and highly skilled clinical investigators.

Preclinical and early phase drug discovery and development is going to next service sector area to take off in India. According to Drug Controller General of India (DCGI), within next 10 to 15 years, 30 percent of world's clinical research will be conducted in India, from present level of 1.5 percent. The CRO segment in India has grown from US \$5 million in 1995 to US \$140 million in 2008 and India is now holding the lion's share of the world's clinical and contract research business. India is considered 'the king' of offshoring and outsourcing. According to Frost & Sullivan, clinical and contract research market in India is expected to expand at a rate of 25 -30 percent per year to US \$200 million by 2010. India is currently ranked numero uno in clinical and contract research.

Indian advantages apart from lower costs rest with availability of large and diverse patient populations, skilled clinicians, ability to meet global ICH (International Conference on Harmonization) guidelines etc. The changes in Schedule Y of the Drugs & Cosmetics Act also permits on the merit of each case the conduct of trials in a concurrent phase with those carried out in centers abroad. English being the language of science and medicine in India, excellent communication facilities and adequate documentation and analytical systems are the other

advantages that India provides. Pharmaceutical industry is undergoing massive change. In the past, pharma firms used to build all the products and services internally but this strategy is changing very fast as in-house resources getting exhausted or becoming unviable in this globalized era. With very thin product line and as many drugs going off patent in the year 2008, competitiveness of pharma firms is affected. US \$20 billion worth of branded drugs will go off patent every year till year 2012. To maintain global competitiveness global pharma majors are increasingly outsourcing R & D activities which in turn enhance business prospects for CROs.

A number of CROs have set up facilities in India to provide trial monitoring, project management, data management, safety reporting, drug distribution and central laboratory services. There are many CROs working in contract drug discovery such as Rubicon, Syngene, Origene, Shantha Biotech, and Strand Genomics. Market value of India contract research operations is US \$60-70 million and is growing at very fast rate. India is believed to inherently possess sources of competitive advantage for clinical trials and contract research. It is estimated that nearly 20 percent of all global clinical trials will be conducted in India by 2010.

India is in a position to attract more and more firms around the globe to conduct their clinical and contract research studies in India. Clinical and contract research is emerging as sunrise sector in India. One of the major reasons clinical trials are coming to India is that in the developed countries it is increasingly becoming difficult to get subjects (people willing to undergo trials). This ultimately leads to delay in the drug development process. In India, sponsors for clinical research have not much difficulty in recruiting subjects for clinical trials. People unable to afford their own medical treatment opt for such free clinical trials as they are assured on free medical treatment for the diseases which would have not been affordable otherwise. Hence India has one of the highest subject return rates in the world. At present, 5-10 percent of global trials is being held in India and by 2010 up to 50 percent of global clinical trials will take place outside the US and Western Europe and India would emerge a favourable destination.

Clinical and contract research is a knowledge industry driven by doctors, patients, pharmaceutical, biotech,



diagnostic and IT companies. More and more pharma companies / clinical research organizations / site management organizations are entering the clinical and contract research sector in India. According to Mc Kinsey report, the Indian clinical research sector will witness a business of US \$1.5 billion from current level of US \$600 million creating a demand of 50,000 professionals by 2010. They will be involved in the various aspects of clinical research starting from site-monitoring, site-management, clinical data management, data analysis, report writing, report submission, presentation and publication.

Drug discovery and development is very costly and time consuming process as only one third of drug tested in the clinical trials actually reach the market place. Hence the study of drug on human subjects needs to be effective, scientific and logical so as to maximize the benefits to mankind at minimal risk and costs. Clinical research sector has grown globally at a very high rate in the recent past. The global market size for clinical trials is worth over US \$45 billion. Clinical research sector has employed approximately 200000 people in US and over 70000 people in UK. These large numbers can be attributed to the fact that this industry is fast growing and dynamic hence offers lucrative job opportunities.

A number of positive factors contributed for the increased recognition of India as hub for clinical and contract research. Global pharma companies have identified India as their first choice and ideal destination for clinical and contract research services. Globally, there has been recognition of the Indian advantages which is attracting pharmaceutical companies to adopt collaborative outsourcing strategies for clinical trials and contract research.

### **Resource Based View (RBV) of Indian CROs**

'Resource based model' provides sound base to incorporate success factors that lead Indian clinical and contract research organizations to remarkable success. Ten major factors that lead to Indian clinical and contract research success are studied. This synthesis is captured into a Resource Based View Model for Indian CROs given at Annexure - I. The model is useful in order to look back and explain the success of Indian CROs.

The ten factors identified are:

- 1) Government policies
- 2) Population
- 3) Patients
- 4) Human resources
- 5) Cost advantages
- 6) Strong Quality Focus
- 7) Industry
- 8) Capital
- 9) Infrastructure
- 10) Linkages

### **Government Policy, Support and Vision**

Government can play a proactive or facilitating role in development of a national industry. The Indian regulatory system is being simplified and laws are being amended to facilitate the entry of global clinical trials.

### **Strong Support by Indian Government**

The 2003 union budget gave encouraging gestures for R&D in the pharma sector particularly in respect of clinical trials. Exemption of customs duty for materials & samples was a great boost to the clinical and contract research organizations in bringing samples for trials. Pressure on the industry was also reduced by abolishing the minimum export turnover concept. India is emerging as a major player for conducting clinical research from phase I to phase IV. Relaxation in customs rules regarding clearance of imported frozen biological samples and clinical trial materials has provided great impetus to clinical trial sector. The Drugs and Cosmetic Rules Act has also been amended, whereby no institution will be permitted to undertake clinical trials for a new drug without the permission of the Drug Control General India (DCGI). Further, post marketing surveillance studies (phase IV study) have been made mandatory in case of clinical trials for import and manufacture of new drugs. This will increase the demand for high quality clinical research services.

## **Favourable Regulatory Climate**

India has a commercial and legal environment, which is supportive and conducive to contract research and clinical trials. Like most other countries, India has both local Institutional Review Boards (IRBs) and a national regulatory body, the Drug Control General, India (DCGI). Studies must first be approved by the local IRB, called the Independent Ethics Committee (IEC) and then submitted to the DCGI for additional approval. Bioequivalence studies involving drugs that have been marketed in India for more than four years do not need to go to the DCGI, as these studies can be approved by the local ethics committee. The Indian government and the pharmaceutical services sector are working together to firmly position India as a major global player. For now, India enjoys a distinct advantage over China due to easier regulatory hurdles and, of course, the use of English as a major language. The Indian patent act amended on March 2005 i.e. TRIPS (Trade Related Aspects of Intellectual Property Rights) opens a new avenue for India into the global pharmaceutical market.

The DCGI has simplified the global clinical trial approval process by agreeing to accept clinical trials approved in recognized countries. The DCGI has implemented new guidelines for global clinical trials in India from December 1, 2006. All these initiatives are certain to improve the existing situation and are likely to boost the number of clinical trials in the country. Compared with Russia, Latin America, China or Africa, the speed of regulatory approval in India is relatively rapid. With proper documentation, clinical trial applications can be approved in as little as eight to ten weeks (for drugs marketed in India for more than four years), or may stretch to 12–14 weeks for drugs not approved in India. This compares with six to twelve months for similar studies in other countries, making India look quite attractive.

## **Meeting increased Demand of Trained Professionals**

In order to augment clinical research industry, department of bio-technology, Government of India plans to establish clinical research training centers across India. The centers would train clinical researchers, help in setup of functional ethics committees across the country, tackle issues related to clinical research and work as a single window clearing point.

## **Population, including Size and Composition**

The clinical and contract research sector's human strength encompasses the following characteristics of population: size, and composition. Here, I discuss each of these in turn.

### **Size**

India represents 15 percent of the world population. India has a huge population base of over one billion. This population is genetically, culturally and socio-economically diverse. This is very important as compared to their Caucasian counterparts as Asians react differently to some drugs.

### **Composition**

India provides rich pool of biodiversity. India has large population concentrations in major urban areas offering ready access to trial subjects and a population that offers vast genetic diversity. India's huge and diverse patient pool provides a great genetic diversity making it ideal destination for clinical trials. India has world's largest pool (20 million) of diabetics. Diabetes is also the most researched disease across the world. Tier-I and Tier-II cities are having high population density with relatively small number of hospitals in urban areas. Hence recruiting large number of subjects in a shorter time is not a difficult task.

## **Patients, including large pool, quicker availability and wide spectrum of diseases**

India has the largest and diverse pool of treatment naive patients. Recruitment of subjects accounts for nearly 70 percent of total clinical trial costs. India is having key advantages of speedier patient recruitment and offers cost effective and shorter time line for clinical trials.

## **Large Pool of Treatment-Naive Patients**

India provides a large pool of "treatment-naive patients" who hail from multi-ethnic and multi-racial backgrounds. Many of India's numerous poor patients are "treatment naive," meaning they have never received drugs for treatment. This makes patient enrolment and trial management much simpler.

## Quicker Availability

In India, subject recruitment is rapid thereby collapsing the time needed for the clinical development process. Recruitment of subjects is most rate controlling step in clinical trial research and drug development process. It is very difficult to curtail clinical research time lines as any such steps will sacrifice quality and increase cost. India offers big opportunities to clinical research organizations to recruit subjects quickly without compromising quality of clinical trial study. Short time line for subject recruitment and low cost of clinical trial study provides relative cost advantages to India.

Globally, more than 80 percent of clinical trials fail to enroll on time, and this subject recruitment problem is extremely costly for drug companies, contributing to 85–95 percent of the lost days in a clinical trial. Subjects recruited for clinical trials in India are mostly treatment naive. Clinical study also provides opportunities to subjects to access quality health care and prescribed medicines that may not be otherwise affordable. As a result subjects in India are very co-operative and compliant. In urban India, joint and nuclear families still live in proximity to one another, making them ideal recruits for genetic linkage studies.

## Wide Spectrum of Disease

India has wide spectrum of disease with diseases of both the tropical and industrialized world. Certain diseases such as hepatitis B, diabetes and some types of cancers are more prevalent in India compared to western countries. The highest number of cancer and diabetes patients is found in India. General lack of awareness suggests that actual number of cancer patients in India would be significantly higher than diagnosed cases. Compared to the US, the speed of subject recruitment in India for oncology clinical trials is up to seven times faster.

Following are major diseases of interest for clinical research.

1. Cardiovascular and respiratory disease
  1. 80 million individuals suffer from cardio vascular disease
  2. 15 percent of the population is hyper tensive
  3. 50 million asthmatics, many of whom are steroid naive with uncontrolled symptoms

2. The Metabolic Syndrome (insulin resistance, hyperlipidaemia and obesity)
  1. Type II Diabetes Mellitus - 60 million cases with a five fold greater prevalence in cities
  2. Largest number of individuals with metabolic syndrome in the world

3. Psychiatric and Neurological Diseases
  1. 1 percent of the population has schizophrenia, mania and / or bipolar disorders.
  2. 8 million individuals suffer from epileptics
  3. 1.5 million individuals are believed to have Alzheimer's disease
  4. Parkinson's disease and migraine are also widely prevalent

4. Large and growing no. of cancer patients - many seek to participate in global trials.
  1. Number of diagnosed cases is presently around 3 million
  2. Cancers of the oral cavity, lung, and cervix form over 50 percent of cases
  3. Other common cancers are those of the breast, head and neck and pancreas

## Human Resources Language Skills

India has the world's largest pool of English speakers (making communications significantly less of an operating issue than in other countries). All hospitals and private institutions store comprehensive source data in English. English language skills stem from either some historical connection to England or from national investments in language education beginning in early school years. India got advantages from both of these factors.

## Management and Technical Skills

High quality of research professionals – India has a strong reputation for graduating students in the management, medical and scientific fields. Technical and Management skills are needed in order to manage successful firms. The

strategic value of resources can be viewed as the extent to which these resources have an impact on the growth, prosperity and competitiveness of the firm. Such skills tend to be taught in business and applied science schools. So, it is the professionalization of science and management education that is necessary in order to build national clinical and contract research industries. India possesses good management and process skills and has a strong business school network. India has an excellent higher education system, which produces a large number of graduates with advanced degrees in the basic sciences, medicines, laboratory technology and in information science. India is also having a large pool of talented clinical research investigators. Many of them have been trained in the US and/or Europe and are exposed to ICH guidelines for GCP.

Basically, clinical and contract research is a human resource intensive enterprise. Each step in the process of planning and executing a clinical trial study requires highly qualified individuals. Some of the most knowledge intensive parts of the clinical research process relate to activities that require knowledge of the therapeutic area, clinical expertise, and research experience. The clinical and contract research organizations require services of diverse range of functional specialists like medical professionals with expertise in internal medicine and pharmacology, practising nurses, quality control and quality assurance people, data entry personnel, bio statisticians, laboratory technicians, analytical chemists etc. From a qualification perspective, clinical and contract research organizations employ medical professionals, post graduates in the fields of organic chemistry, analytical chemistry, molecular biology, micro biology, biotechnology, pathology, biochemistry, pharmacology etc. There are 350 universities and over 17,500 higher educational institutions producing 3 million graduates.

### **Time and Cost Advantages**

India provides significant time and cost savings for clinical and contract research services. The global drug giants are increasingly outsourcing clinical trials to India because of India's large population and low costs. The cost of conducting clinical trials in India is cheaper by 30-50 percent as compared to that in the West. Over 40 percent of drug discovery and development cost is incurred in

clinical trial stage and India provides tremendous cost savings in this aspect. In India, clinical trials are conducted in 30 percent less time. Trials can get done fast, which is also an important criterion.

According to Rabo India Finance study, clinical trial for a standard drug in US can cost about US \$150-170 million, while it can be tested in India at 60 percent of that price. In terms of the cost efficiency, India works out to be a cheaper option as the cost to conduct a trial here is lower by 50 to 75 percent than that in either United States or European Union. R&D costs in India are much less than those in the developed countries and it is possible to conduct both New Drug Discovery Research and Drug Delivery System (DDS) programmes at competitive rates. Additionally, while clinical trials cost approximately US \$300 to US \$350 million abroad, they cost about INR 100 crore in India.

### **Strong Quality Focus**

According to The Indian Good Clinical Practices (GCP) guidelines announced in December 2001, all pharmaceutical clinical research units must strictly follow such guidelines. These guidelines were formulated by subject expert committee set up by the CDSCO (Central Drugs Standard Control Organization). Consequently, the level of research quality and ethics in some pharmaceutical clinical research units are now on par with International Standards. With compliance of Good Clinical Practice (GCP), US Food and Drug Administration (FDA) and International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH), DCGI has accomplished conformity to ICH GCP and /Good Laboratory Practice (GLP) guidelines. FDA finds the standards of Indian clinical trials acceptable. Indian research/data generation capabilities are of international standards and Indian data is accepted by all major medical conferences and journals.

### **The Industry Presence of Established Players**

Almost all big players in the pharmaceutical world such as Eli Lilly, GlaxoSmithKline, Pfizer, Aventis, Novo Nordisk and

Novartis, are conducting clinical research study in India. A number of Indian and global clinical research organizations are conducting clinical trials in India on behalf of overseas pharmaceutical companies.

### **India's Strong Pharmaceutical Sector**

Indian pharmaceutical industry is recognized as one of the leading global players with 4<sup>th</sup> position in terms of volume and 13<sup>th</sup> position in terms of value. India is having largest number of US FDA approved pharmaceutical production units outside the US. More than 70 US FDA approved pharmaceutical production units and 200 manufacturing facilities certified as having GMP (Good Manufacturing Practices) are operating in India, more than any other foreign country. With presence of over 10,000 pharmaceutical companies, one fourth of it can provide contract manufacturing facilities to foreign pharmaceutical companies. India can emerge as a world leader in drug development as Indian pharmaceutical companies have the numerous strengths and capabilities. India's pharmaceutical market is the second largest in Asia, is estimated at US \$5.70 billion and projected to grow up at CAGR of 13.6 percent to US \$9.48 billion by 2010.

India is an established player in pharmaceutical manufacturing sector. According to Indian Pharmaceutical Alliance (IPA), India controls 22 percent of global supply of generic drugs. Indian companies are increasingly submitting more and more abbreviated new drug applications (ANDAs) to the FDA. Indian companies contributed about a third of the total ANDAs, according to a report by Credit Lyonnais Securities. Big global pharma is hoping to capitalize on the cost savings by shifting some clinical and contract research activities to India.

### **Capital**

Infrastructure costs in India are lower compared to western countries thus saving significantly on investment capital requirement for a project infrastructure.

### **Medical / Research Infrastructure**

India is having numerous private and public funded medical, pharmaceutical and research institutions having state-of-

the-art research facilities. India has sound medical infrastructure facilities, such as almost 14,000 hospitals, 700,000 specialty hospital beds and 5,00,000 medical professionals. 17,000 medical graduates pass out every year from over 221 medical colleges.

### **Linkages**

Linkages are essential to success of business. Managers choose business links that they view as minimizing their perceived costs of doing business (Kogut and Singh, 1988).

### **Linguistic Linkages**

Linguistic linkages are also very productive linkages. Since English has always been the main language of research and business worldwide, English skills tend to be a vital linkage. The achievement of India in clinical and contract research outsourcing front is in part attributed to English proficiency. India has a large pool of English speaking clinical research professionals and experienced scientists. However, the importance of English is somewhat diminishing in global map. In recent years, new regional linkages have begun emerging that reduces the traditional dominance of English. China has capitalized on its closer linguistic and cultural ties with the Japanese to become a destination for offshore work from east Asian countries.

### **Time- Zone Linkage**

India's unique geographical location provides zonal time difference of about 12 hrs between India and US. In short when US sleeps, India works hence outsourcing firms get 24 hours working environment. Most of back end processing functions are performed during the day time in India when it's night time in the developed countries. Such round the clock operation is possible because of zonal time difference and ultimately minimizes backlog in front end and processing tasks. Many clinical and contract research projects are having onsite and offsite teams of professionals and work closely with each other to reduce project turnaround time.

### **Conclusion**

India is emerging as a natural choice and ultimate destination for contract clinical research services. India's competitive

advantages in clinical trials and contract research are based on favorable regulatory climate, a huge population with a diversity of diseases, sound infrastructure facilities, lower infrastructure costs, English language proficiency of doctors, staff of hospital, clinical analysts and investigators, large pool of treatment naive patients, high speed of subject recruitment, good patient compliance and retention rate and low cost of clinical studies.

Although approximately US \$40 billion is spent annually on drug development, pharma companies have realized that periods of rapid growth and unprecedented profits are now far and few. Researchers are finding fewer and fewer unique molecules, ending the era of "blockbuster drugs" and increasing development timelines, sometimes to as long as 15 years.

The high costs of drug development, large number of drug patent expiration and shorter product line are forcing global pharma majors to outsource clinical and contract research activities to low cost destinations. Clinical and contract research is a rapidly growing industry in India. Many pharmaceutical organizations and contract research firms have started to extract the vast potential that India has, and are conducting clinical trials and contract research activities in India on a big scale. Paper discusses the resources that have contributed to the competitive position of the Indian CROs and analyze the case using the RBV of strategy.

**Keywords:** Clinical research, Contract research, CRO; Resource based view, Outsourcing.

**Annexure – I: Resource Based View Model for Indian clinical and contract research organizations (CROs).**

Resource Attribute	Rare	Valuable	Inimitable	Non-substitutable
Initial resources India's population including size and composition	Yes - only few nations in the world has such large population with bio-diversity	Yes	Yes - very difficult to get such genetic diversity	No - there are many other Asian countries mainly China offers large population and bio-diversity
Large patient population with wide spectrum of diseases	Yes - compared to developed countries	Yes - it facilitates faster subject recruitment	No - many developing countries have large pool of patient population	No
Additional resources Medical infrastructure	Yes - relatively for other developing countries	Yes	No, it's possible to develop infrastructure over a period of time	No, developed countries have sound medical infrastructure

Combined resources Skilled English speaking work force, technical & management skills and related cost advantages	Yes	Yes	Difficult	Difficult
Strong quality focus, IT strength, established pharma sector and global linkages	Yes	Yes	No - but not easy to develop	Difficult

(Model Developed by Author)

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# Wings Wider

## Above Global Economic Crisis

**Maruti Rao N. and Iftikhar M.Naikwadi**

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### Sustenance

*The 'Global Economic Crisis' (GEC) has sent shock waves across countries around the globe. Many major business giants came down crashing scumming to pressure of GEC. However some corporate have taken the bull by the horns. Some of the airline operators in the country have shown immense creativity and courage to face and mitigate the impact on their business by adopting effective management practices. The few of management practices adopted by Indian airline operators are route rationalisation, code sharing arrangement, joint fuel management, infrastructure sharing, etc. The management practices adopted by Indian airline operators have helped them in managing load factor efficiently, better utilisation of infrastructure and manpower which have resulted into bringing down ever mounting losses.*

The world economy is facing the heat of an economic disease known around the world today as Global Economic Crisis. GEC has resulted into collapse of financial and economic systems around the globe in general and USA in particular. Most of the Indian industries such as real estate, automobile, banking, IT, Airline etc., are melting under the unbearable heat of GEC. The impact of GEC on the airlines sector can be understood by the fact that the sector has suffered a loss of \$1.1 Bn in 2008 reversing profits of \$0.9 Bn in 2007. According to Sudheer Raghavan, Chief Commercial

Officer of Jet Airways, "the Indian airlines account for 30 percent losses of the global aviation sector." GEC has left its impact on Indian airlines sector as there is fall in corporate flyers as companies were in cost cutting mode on traveling of its employees. As tourism is not out side the purview of GEC leisure travel is also affected the business prospects of airline sector. The number of domestic air passengers has shrunk by 12.4 percent, 17.4 percent and 22 percent, respectively, from July to September 2008. The domestic airline market has witnessed a decline of around 10 percent in passenger traffic in 2008-09.



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The airline operators in the country are facing severe liquidity problem as they have hefty debt burden on their shoulders and they are incurring losses due to decline in passenger traffic on account of the global recession and rising competition. Jet Airways has incurred a net loss to the tune of \$44 million during the third-quarter of 2008-09. The estimated losses per day incurred by Jet Airways and Kingfisher Airlines are amounting to Rs.5-10 crore. Both the players are suffering from cash crunch as it was evident from the fact that Jet Airways had defaulted on payments amounting to Rs.259 crore and Kingfisher had defaulted on payments amounting to Rs.60 crore after the lapse of the credit time towards payment for jet fuel purchased by them from public sector oil companies such as Bharat Petroleum Corporation Ltd., and Hindustan Petroleum Corporation Ltd.

As gesture to ease the liquidity crunch due to GEC, CMD of Air India has requested all executives above the level of general manager to voluntarily forego salary and productivity linked incentive payable in the month of July. These sort of unhealthy practices were norm of the Indian air operators. Off late Jet Airways had laid-off large number of employees creating hue and cry among them. Going a step in the direction Jet Airways introduced VRS – Voluntary retirement scheme in order to off-load the size of its staff. The company has also laid off 300 employees. However some of the management practices adopted by selected airline companies worth appreciation as they are able to mitigate the impact of GEC effectively without causing any discomfort to stakeholders.

In order to throw a light on some of the better management practices adopted by airline companies during the time of crisis a study has been undertaken.

## Objectives

The present study was undertaken with the following objectives in mind:

1. To study management practices adopted by Indian airline companies to mitigate impact of GEC,
2. To draw conclusion about management practices do adopted by Indian airline companies,
3. To offer suggestions which enable Indian airline companies to manage GEC effectively.

## Abbreviation:

GEC	: Global Economic Crisis
GDS	: Global Distribution System
UB	: United Beverages
IPL	: Indian Premier League
SOTC	: Southern Ontario Trail riders Club
ICICI	: Industrial Credit and Investment Corporation
ATF	: Aviation Turbine Fuel

## Methodology

The information for the study has been collected from secondary sources and observations. The study is descriptive in nature.

## Period of the Study

The period of study has been confined to July 2008 to June 2009.

## Meaning of Key Words Used

**Global Economic Crisis:** Crisis in debt market, sub-prime mortgage market, currency market, banking industry, mutual fund industry and capital market crashes in USA, European and Asian countries is called as GEC.

**Global Distribution System Charges:** 'GDS charges' is a fee per segment of a flight schedule to the airlines that are listed in Global Distribution System. Most of the major airlines worldwide are subscribers of GDS. This system allow airlines to locate and reserve inventory, find and process fares applicable to their inventory, generate tickets and travel documents, and generate reports on the transactions for accounting and marketing purposes. It also includes travel agents as channels partners.

**Route Rationalisation:** Route rationalisation is a joint operational exercise of two players in the aviation sector which help them to cut flights on same sector/route close to each other and improve load factors.

**Code Sharing Arrangement:** Code Sharing Arrangement is an alliance between two airline operators, where one operator markets the air-service and places its designator code on another operator's flights.

**Joint Fuel Management:** corporate entities joining hands together to source fuel in order to save fuel and minimise fuel cost.

**Loyalty Programme:** It is a sales promotional programme wherein the corporate entities offer cash back facility, offer discount on related services.

### **Management Practices of Airline Players During Turbulent Time**

As we have seen from the above mentioned facts that airline industry is one of the badly bruised sectors of the Indian economy whose bottom line are continuously in negative zone. However the downfall has been arrested by adopting effective and innovative practices. To manage situation going out of control the various airline companies in India have adopted various innovative models and practices such as plain vanilla services, operational alliances, route rationalisation, special fare offers, cost trimming exercise, realignment of operations, etc.

#### **JET Airways Ltd.**

Jet Airways one of the leading players in the domestic and international routes has a market share of around 30 percent. The company operates a fleet of 87 aircraft, which includes 10 Boeing 777-300 ER aircraft, 12 Airbus A330-200 aircraft, 51 classic and next generation Boeing 737-400/700/800/900 aircraft and 14 modern ATR 72-500 turboprop aircraft. Jet Airways currently operates over 370 flights daily. Some of the major international destinations to which its flights fly include New York, Toronto, Brussels, London, Hong Kong, Singapore, Kuala Lumpur, Colombo, Bangkok, Kathmandu, Dhaka, Kuwait, Bahrain, Muscat, Doha, Abu Dhabi and Dubai. Jet Airways had acquired JetLite in April 2007 and positioned it as an all-economy airline with the objective to offer value for money fares. Due to economic slowdown, market share of Jet Airways fell to 17.9 percent during January-March 2009. During March this year, Jet Airways' average passengers per available seat kilometer fell by eight percent. Jet Airways has incurred a net loss more than doubled to 44 million dollars during the third-quarter of 2008-09. The company is facing a liquidity problem as it has hefty debt on its shoulder. To beat the GEC, the company has initiated various management practices which are highlighted in the following paragraphs.

### **Cost Restructuring Exercise**

#### **a) Temporary Salary Cut ...**

Scrumming to the heat of the global economic meltdown resulting into huge business losses, the Jet Airways has initiated a cost restructuring exercise. As a part of this measure the company has identified four different classes of employees who will go under salary cut. The categories of employees who are drawing salary of Rs.5 Lakhs and above will get face burnt of 20 percent salary cut. The next in firing-line are those employees who are drawing salary of Rs.2 to 5 lakhs will get 10 percent less, whereas those employees who are getting salary in the range of Rs.75000 to Rs.2 lakhs have to forego with five percent cut. The top management has to content with 25 percent less salary. May 2008 heralded other monetary cuts like car facilities and car maintenance allowances. There was move towards saving cost on employees' hotel bills and entertainment allowance. The Jet Airways believe that his move is only temporary in nature and once the market position improves they will compensate the loss.

#### **b) Plain Vanilla Services ...**

As most of the travellers in particularly the corporate travellers are in cost cutting mood on their travelling the Jet Airways has decided to discontinue offering free meals in economy class. It is charging for items such as snacks and checked luggage to cut its cost as this will help in reducing operational cost.

#### **c) E-Ticketing ...**

Jet Airways is encouraging e-ticketing in order to reduce its operating cost. The company is in the process of centralising its operations in Mumbai and is downsizing and closing some of the offices in metro cities to reduce cost.

### **Low Fare Segment Focus... To Drive Revenue**

Jet Airways is offering a unique low fare service to customers called as Konnect. Konnect is a no-frills economy class service offered by Jet Airways on key domestic routes exclusively designed to meet the needs of the low fare segment. In order to consolidate its existing Konnect domestic route network Jet Airways has enhanced

existing Konnect services and added thirty new flights to Konnect portfolio.

### **Offering Innovative Sales Promotions**

As a part of offering incentives for its flyers Jet Airways came out with various promotional schemes. It had sponsored Bangalore International Airport Shopping Festival at Bangalore International Airport from 15<sup>th</sup> May to 14<sup>th</sup> June 2009, it was the first airport shopping festival organised in the country. The air travellers who booked Jet air tickets were offered 10 percent discount on base fare. The Jet passengers were offered discount and lucky coupons on the purchases made by them from outlets such as Odyssey, Café Coffee Day, Cookie Man, Baskin Robbins, Subway, Disney Soft Toys, etc with whom Jet Airways had tied up. The lucky winners among the Jet Airways flyers were offered a package for four people on the Golden Chariot, the royal Southern Indian luxury train. The other promotional tools were weekly prizes which include Golden Chariot couple packages and Jet Airways international couple tickets. There were daily prizes such as Packages for couple from KSTDC (Karnataka State Tourism Development Corporation Ltd.). Jet Passengers were also offered discount on travel services by festival partner agencies – Easy Cab and Hertz.

### **Focus on New Market Segment**

As a part of measures taken to beat the downturn Jet Airways has redesigned its services called as 'EduJetter.' 'EduJetter' is a service targeted at the student travelers. As a part of this service the company celebrates the achievements of students who have secured admission in educational institutes abroad. To attract students towards its services the company is offering host of benefits to those students who are planning to fly out of India for higher education from June 2009 onwards. The benefits offered to student travellers include excess baggage allowance between 40-60 kgs, 1000, free talk-time upto Rs.3500, Rs.500 worth of free global internet roaming in over 160 countries by Tata Indicom WiFi, special forex rates on ICICI Bank Travel Cards, gift voucher of Rs.2000 on HP Pavilion notebooks, a 20 percent discount on Samsonite luggage, backpacks and travel accessories, 40 percent discount coupons from FedEx for international shipping

and gift vouchers worth Rs.1000 from Provogue. Total value of benefits offered to students travelers was more than Rs.11000.

### **Kingfisher Airlines**

Kingfisher Airlines is part of the UB Group has domestic presence. Recently it has started its international operations. It is considered as India's "5-Star" airline. Kingfisher Airlines is known for offering premium service to its flyers. It is the only airline which is offering in-flight entertainment on every seat in the domestic market. Today Kingfisher Airline covers all segments of air travel from low fares to premium fares. It operates between 64 cities of India and has more than 440 daily departures. Coming under sharp attack from Global Financial Crisis Kingfisher Airlines had defaulted on payments amounting to Rs.60 crore towards purchase of jet fuel from public sector oil companies in October 2008. It has incurred heavy loss on account of fall in passenger traffic. These developments have resulted into fall in its market capitalisation drastically. To manage downturn, Kingfisher Airlines has initiated unhealthy practices of cutting salaries and terminating its employees. However the Airline major has initiated better management practices to beat the GEC which are highlighted in the following paragraphs.

### **Cost Reduction Exercise... Mobile Ticketing solution**

Kingfisher Airlines has launched "King Mobile" – a mobile ticketing solution as well as value added service in order to reduce its operating cost. The Kingfisher travelers can book, pay and generate e-tickets through their mobile phones. Even they can also book Kingfisher Holidays. The E-tickets will be automatically e-mailed to the passengers through email which can be used by them to gain entry inside the airport as well as for check-in using valid photo identification.

### **Postponement of Launching International Routes**

Kingfisher Airlines in order to manage economic crisis well has decided to postpone launching of new international routes such as Singapore and Hong Kong as the company considered these routes require more resources to operate in the beginning. Kingfisher Airlines has also dropped its

ambitious international expansion plans including flying non-stop flights to the US and other European destinations.

### Operational Alliance...To beat Downturn

Kingfisher Airlines has entered into an operational alliance with arch rival Jet Airways to manage downturn effectively. The areas of operational alliance include route rationalisation, code-sharing arrangement, joint fuel management, cross selling infrastructure sharing and human resource sharing.

**a) Route Rationalisation:** As it was already noted that air passenger traffic is declining due to GEC. Jet Airways and Kingfisher Airlines are operating flights to several common destinations in the country. In other words they are operating flights on the same sector/route close to each other resulting in further fall in load factor at operators' level and pushing them in negative profit zones. Realising the fact both the players have entered into an operational alliance to go for route rationalisation. As per this alliance, both the players will not fly to the same destination. The two airlines decided not to compete on domestic sectors by having flights on a sector at close to each other's timings. In other words they are cutting flights on the same route to improve loading factor. It is an operational efficiency improvement exercise adopted by airline operators to manage downturn in better way. Network rationalisation will help in leveraging the joint network at domestic route.

**b) Code Sharing Arrangement:** Code sharing is a practice that allows airlines to extend their reach into cities or routes beyond those they actually serve. Code sharing arrangement also allows airlines to earn revenue by selling tickets on a partner's flight. This strategic tie-up will not only help the players to arrest their losses but also help to curtail cost.

**c) Joint Fuel Management:** The arch rivals in airline sector have join hands to source fuel in order to save fuel and minimize fuel cost. <sup>1</sup>

**d) Infrastructure Sharing:** The airline operators have agreed to collaborate in areas like back-office operations and ground-handling services (servicing of an aircraft while it is on the ground and usually parked at a terminal gate of an airport)<sup>5</sup>. Sharing of infrastructure will help to cut down the operating cost.

**e) Human Resource Sharing:** The airline operators have agreed to share human resource in particular sharing of crew. The sharing of human resource is done with basic objective of utilization of crew on similar aircraft types.

These Operational alliances are considered as the marriage of convenience which was the best strategy to beat adversity of meltdown and survive in falling market. Both the players have also decided to reduce capacity in line with the demand.

### Re-aligning International Operations and Fleet

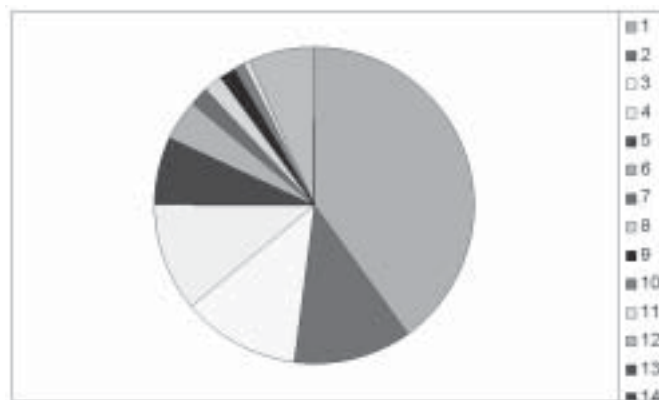
Bowing to the pressure of severe financial crisis and falling business the Kingfisher Airlines has expressed its inability to take delivery of five aircrafts which they had ordered in the past. At the same time they disposed of the two of the ordered aircrafts through its manufacturers and were able to sell remaining aircrafts themselves. Kingfisher Airlines has also diverted another aircraft-A321 ordered by it to Turkish THY. It has also planned to lease out five aircrafts which have been added to the aircraft portfolio in recent times. The company also deferred its plan of buying new aircrafts i.e. A-330. It has leased two of its A330 aircrafts (aircrafts and crew) to airlines like Gulf Air and Turkish Airlines in order to bring down losses.

### Promoters Personal Guarantee...

To rescue the cash dried company, the promoter of fund thirsty Airline company has come forward and offered personal guarantee to secure the loan (a personal guarantee is a promise made by an entrepreneur to personally repay the company's debts in the event of default). This has helped the airline operator to raise Rs.1000 crores loan from the lenders. The promoter of Kingfisher Airlines is also lobbying for increasing foreign direct investment in Indian aviation sector to 49 percent which may help aviation sector to infuse liquidity in the sector in general and Kingfisher Airlines in particular.

It is clear from the pie chart (as shown in figure 1) that the major cost component for the any airline operators is, cost of aviation turbine fuel as it account for 40 percent of the total operating cost followed by employees' bill and lease rent and repairs which accounts for 12 percent each and 11 percent respectively. Commission and distribution accounts for seven and four percent respectively of the total operating cost.

**Figure-1: Overhead Cost Pattern in Aviation Sector**



**Table 1: Overhead Cost Pattern in Aviation Sector**

Sl.No	Cost	Percentage
1	Fuel Cost	40
2	Employees Cost	12
3	Lease Rent/Hire Charges	12
4	Repairs	11
5	Commission	7
6	Distribution Cost	4
7	Stores	2
8	Advertisement	2
9	Travel Expenses	1.8
10	Insurance	1
11	Communication Cost	0.5
12	Miscellaneous Expenses	6.7

Source: Profit & Loss Accounts of Kingfisher Airlines and Jet Airways

**Conclusion**

The airline companies in India have faced the brunt of rising aviation fuel prices and fierce competition. Adding fuel to the fire, GEC has worsened the situation further by causing liquidity crunch and falling traffic. As panic set in due to falling demand for international travel, business travel, leisure journeys and some of the airline operators resorted to unhealthy practices such as lay-off, VRS etc. However

some airline operators stood firm to face the GEC and adopted better and effective management practices to mitigate impact of GEC and thereby making existence intact. The innovative management practices adopted by airline operators' aims at reducing operation cost, arresting the losses, improving the service quality, eliminating the unhealthy competition, improving customer base, optimum utilisation of resources, reducing debt burden, improving financial base, etc.

The study reveals that Kingfisher Airlines and Jet Airways have set aside their competitive aspirations and entered into operational alliance, a new business model for aviation sector. This alliance can be seen as a market response to an economic crisis. Operational alliance is excellent learning curve for the players in the aviation sector. This business model will help both the players in cost reduction through staff trimming; rationalise routes, sharing infrastructure and conduct joint negotiations for fuel and other components. Combined business volumes will enable them gain attractive discounts from vendors. Operational alliance model will provide revenue enhancement opportunities for the players. The model also ensures better bargaining power for the players and also provides best possible fares for the flyers. So, it is win-win situation for operators and travellers.

The biggest hurdle for airline operators in India is rising fuel cost. The fuel conservation is extremely essential for airline operators. The joint sourcing of fuel is good response to crisis as it ensures large amount of savings on fuel which is major chunk of cost component for airline operators.

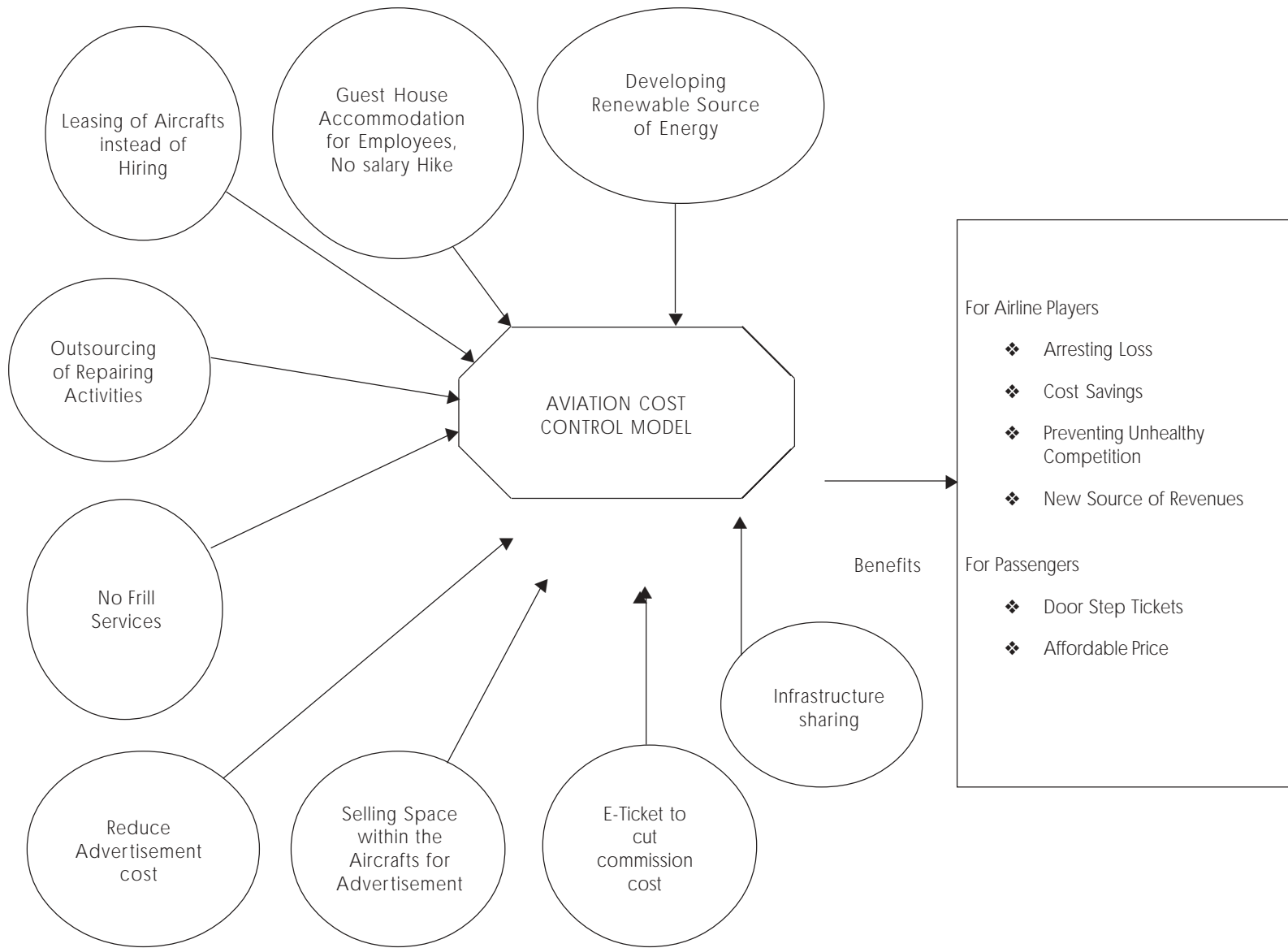
The re-alignment strategy adopted by Kingfisher Airlines to re-align its international operations and fleet may not sound to be a good strategy. It was found that in times of high demand for aircrafts, the lead time for delivery of aircrafts was very long period. Further, if the operator diverts its deliveries to another buyer he used to get premium for delivery. But during the adversity times when demand for aircrafts is falling down, which may force the operator (who is planning to divert its deliveries) to dispose of its aircrafts at losses. The study also reveals that major expenses of Airline Operators in the country are cost of aviation turbine fuel followed by employees' bill and lease rent and repairs. The cost of fuel is 70-80 percent higher than international prices.

### Suggestions

- ◆ The code sharing arrangement may be of great help to the Kingfisher Airlines in preventing its losses especially on foreign routes (as they don't have code sharing on international routes).
- ◆ The airline operators in the aviation sector should focus on identifying new market segments and newer markets

like developing pilgrimage-tourism which is still untapped.

- ◆ The airline operators should look into the option cash discount on hotel bills, car bills, etc on the lines of Malaysia Airlines. This strategy will not only help in retaining existing passengers but also improve passengers' base.
- ◆ Travel operators around the world are using the economic slowdown as an opportunity to grow business-to-business relationships in an effort to provide new value-added services to their customers. For instance, Southwest Airlines and Best Western Hotel have announced a partnership that provides flyers the opportunity to earn credit points for each qualifying hotel stay. The airline operators in India should explore this option to improve their business.
- ◆ The airline operators in the country should offer value added services to their customers such as rental car services, cash back for air-ticket purchases through mobile solution, etc., as they sound to be cost effective strategies to manage downturn in a better way.
- ◆ The route rationalisation strategy implemented by airline operators is worth appreciable. However, there is threat of losing their loyal passengers to competitors in long run. Hence, it is suggested that airline operators should continuously upgrade their service quality.
- ◆ Adding fuel to the fire, the HINI virus has affected the international air traffic. The air operators in order to ensure safety of their passengers should offer health insurance cover and provide safety kits.
- ◆ As aviation fuel prices are skyrocketing day by day (State-run oil firms have increased the cost of ATF by more than six percent on 30<sup>th</sup> June 2009) there is urgent need for developing renewable source of energy as an alternative fuel. To attain this objective the airline operators should encourage aviation research agencies by funding.
- ◆ It is suggested that the players in the aviation sector should adopt aviation cost model (developed by



Model-I: Representing Cost Control Model for Aviation Sector



authors, as depicted in Model-1) to arrest their losses and control cost. The Infrastructure sharing model of telecom sector is a live example to reduce cost and beat competition. As arresting losses have gained paramount importance in the present crisis time, the airline operators in the country should also go for network sharing (route rationalisation, common ground handling etc) on an aggressive way as it will help them to reduce their operating cost to greater extent. The employees' cost can be reduced by providing accommodation to pilots and other staff members at the company guest house rather than providing accommodation at 3 or 5 star hotels.

The Indian airline operators have worked out ways and means to deal with the Global Economic Crisis. Better management strategies and models adopted by them have helped Airline majors to prevent losses. The Global Economic Crisis offers both challenge and opportunity to aviation sector. The airline operators should look for serving passengers in new ways. The adversity situation has forced the air operators to implement cost-cutting practices, new business models, loss preventing strategies. The airline operators while designing their strategies should also keep in mind upcoming lean season which may further deteriorate the situation. If implemented above suggestion in true spirit, it may be of great help in managing Global Economic Crisis and will not only help in arresting the losses but also helps in preserving liquidity.

### Suggestion for Future Research

As we know the management practices do change across industries in general and among firms in particular. There is need for further research to know management practices adopted by similar sectors such as hotel, tourism etc. Hence the study suggest for further research to look into management practices adopted by hospitality industry to trace similarities and dissimilarities.

**Key Words:** Global Economic Crisis, Airline Operators, Operational Alliances, Route Rationalisation, Realignment of Services etc.

### Endnotes

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# Word of Expertise to solve SCM Issues

Satyendra Kumar Sharma and Anil Bhat

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## Magic Word

*Supply Chain Management is attracting the attention of academicians and practitioners. All three functions i.e. manufacturing support, procurement and physical distribution are taken as a single and unified function. Different companies are involved to perform all these functions at their premises around the world at different locations, but the ultimate objective of all supply chain entities is delivering customer delight. Globalization, outsourcing etc, are responsible for increased dependencies among firms. Firms are dependent on each other for their goal accomplishment. Two types of dependencies exist between firms: time dependencies and functional dependencies. This paper examines how the supply chain management solves the strategic issues mainly relying on literature and opinions of experts in the field.*

Now competition is shifting from firms to supply chains. Global sourcing affords many benefits in the form of lower prices and expanded market access. Senior executives have begun to recognize the increased risk attributed to the higher probability of product and service flow disruptions in global sourcing networks. A major disruption in the offshore supply chain can “shut down” a company, and have dire consequences on its profitability. This was felt most drastically in the last few years, when such catastrophic events as 9/11, the war

in Iraq, etc., happened. Even less serious events like natural disasters, fire and theft etc., can impact customer service through poor communication of customer requirements, part shortages and poor quality problems. These disruptions can be costly and have in many cases brought distribution and production to a screeching halt. Supply chain disruptions have been found to negatively impact shareholder value significantly. These disruptions are amplified in “time-sensitive” environments where early market introduction is critical to success. Risk management in



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supply chain requires the attention of top management at each entity.

### Literature Review

Supply chain management paradigm is becoming very popular across the world and it has stimulated many domains from material management to integrated logistics. The various approaches and initiatives related to SCM are: strategic purchasing, supply management, logistics integration, and supply network coordination. Increasing uncertainty in supply networks by changing customer demands, rapid technology advancement, threats created by global firms, terrorist attacks, have forced Indian firms to realize the importance of supply chain integration. There exist dependencies between firms in any market place. Dependencies demonstrate that any disruption affecting an entity in the supply chain network has a direct effect on corporations' ability to meet the customer requirements. In recent years the dependencies and drive to become more efficient supply chain (e.g. through outsourcing) has resulted in more vulnerability. Supply chain risks are now getting the attention of firms. Many companies have recognized the need to carry out formal risk audit as well as manage the risks across the supply chain.

At an academic level there is a growing body of research into risks from different perspectives e.g. finance, economics strategy and international business. From a decision theory perspective risk is "variation in distribution of possible outcomes, their likelihoods and their subjective values." It has been observed that managers adopt and apply only selected elements of total risks. They pay little attention to uncertainty surrounding the positive outcomes, viewing risks in terms of hazards and dangers with potentially negative outcomes. Royal society defined risk as "The probability that a particular adverse event occurs during a stated period of time." Social scientists argue that risk is not discrete or objective but an interactive. The essential problem is that people modify their behaviour and their likely exposure to risks in response to subjective perception to risk. Unquantifiable changes in risk exposures defeats all the attempts to measure the risk objectively. Even we can not produce the reliable quantification for various risk events.

Although there is much awareness about risks, risk management and disruption handling in a single organization, application of this knowledge (Enterprise risk management) to a supply chain context is still limited. All firms in supply chain network are time and functional dependent. So risk management in a supply chain is not only about identifying, accessing and mitigating risks in a single organization's operations, but it also includes risks related to linkages. Accessing risk exposure to supplier's supplier must also be examined. Supply chain risk management (SCRM) is not the responsibility of a single organization, but a coordinated and shared reasonability. In a supply chain network there are many variables that can not be predicted, or which and when disruptions will emerge.

For simplicity sake many authors have considered three entities viz. company, customer and supplier in the supply chain and suggested five overlapping categories of supply chain risk sources viz., environmental risk sources, demand risk sources, supply risk sources, process risk sources, and control risk sources. Environmental risk sources are related to external environment for example fuel crisis and natural disasters etc. Supply risk is associated with inbound logistics for example supplies delays, quality problems. Demand risk is associated with outbound logistics for example seasonality, new product developments, and shorter product life cycles. Environmental risks can also cause supply and demand risks. Process risks can either amplify or absorb the effects of risks in supply chain. Robust processes are built on thorough understanding of various processes. Similarly supply chain control mechanisms like decision rules and policies regarding batch size and safety stock can amplify or absorb the risk effect in supply chain.

In recent years such as widespread disruptions terrorist attacks, fuel prices protests, millennium bug Y2K, foot and mouth disease in UK have affected severely the modern supply chains. Despite the increasing awareness about supply chain vulnerability and their risk management is still in a state of infancy. Understanding of supply chain risk management is patchy, both in terms of key issues and implementation. In addition traditional risk management approaches are not suitable to context

of supply chain requirement. Some of the supply chain partners have now started to give consideration to supply chain risk issues.

Some of the authors have suggested frameworks and constructs to address the risk issues. Svensson developed a conceptual framework for the analysis of supply chain risk. The model constitutes three components: sources of disturbances, category of disturbance, types of logistics flow. He defined "vulnerability as a condition that affects a firm's goal accomplishment depending upon the occurrence of negative consequences of disturbances. The degree of vulnerability for a given disturbance may be interpreted as being proportional to the chances of disturbances and the expected negative consequences of the disturbances." He introduces the inbound and outbound vulnerabilities that can be categorized as qualitative and quantitative disturbances. Quantitative disturbance is shortage of material or components and qualitative disturbance is deficiencies in materials and components.

The basic reason for supply chain vulnerability is time and functional dependencies among firms. Time dependence refers to sequential and chronological dependence between firm's activities in supply chain. Functional dependence refers to the fact that firm's activities in supply chain are specialized and complementary to each other. The inbound and outbound logistical flows are related to each other. Inbound and outbound logistical flow vulnerability can be measured and evaluated on the basis of four dimensions: viz., Service level, Deviation, Consequence and Trend. The dimensions of service level and deviation contribute to the estimation of disturbance. The dimension consequence contributes to measurement of negative consequences. Trend dimension shows the change of direction. On the basis of these four dimensions four scenarios are suggested for inbound and outbound vulnerability: A sound vulnerability, troublesome vulnerability, a supplier based vulnerability and Customer based vulnerability. Survey of 17 leading companies showed that firms had a higher level of vulnerability in inbound logistics than outbound logistics.

Supply chain risk comprises many risks related to information and material flow from original supplier to end user, which normally consists of three stages namely-supply side, production and demand side. Supply chain risks can be considered on two levels: the supply chain level and the focal company level. It means that focal company needs both to observe the disturbance risks from its own narrow perspective i.e. a focal company perspective and from its whole supply chain perspective i.e. supply chain perspective. Supply chain perspective is needed because the competitiveness of the focal company depends on competitiveness of supply chain. Other environmental factors like product's complexity, processes, supply chain structure and management systems and rate of change in external environment posit problems in getting an accurate picture of the risks. Supply chain risks flow in both directions, which is explained by the supply chain risk flow model.

Information can flow across the supply chain, to meet the goal of reduction in inventory and in meeting the demand. The ability to meet the demand and supply more closely is called agility. Agility is not a single company concept rather it implies the synchronization from one end of the pipeline to the other end.

In defining supply chain risk management Utta Jttner and H. Peck have suggested four basic constructs: supply chain risk sources, risk consequences, risk drivers and risk mitigating strategies. They suggested four critical aspects for SCRM:

- ◆ Understanding the risk management processes in the network,
- ◆ Investigating the risk concepts in different supply chain/industries,
- ◆ Understanding the role of supply chain strategy development and implementation processes, and
- ◆ Investigating the risk performance tradeoffs.

Uta extended his views in SCRM in structure form with three layers of abstraction: Philosophy, Principles, and

Processes. Under layer of philosophy there are two viz., needs for openness to share risk and willingness to share risks. Supply chain risks should be taken as combined responsibility. Who takes the lead in this task is labelled as channel captain. Under principles supply chain strategy and supply chain risk are unrelated concepts. Author emphasized on the need of further research into risk implications for supply chain strategies. At process level tools like six sigma total quality management, risk assessment can also be applied to supply chain context.

Larry and Reham Aly suggested situational factors that may influence the level of investment in risks management systems. Source of risks and influential sources are not mutually exclusive. Author explores four situational factors. These include:

- ◆ Degree of product technology involved in the item purchased (high tech vs low tech products);
- ◆ Need for security in handling, packaging and transporting the product (high vs low);
- ◆ Importance of the supplier (regular vs. critical supplier).
- ◆ Purchasers' prior experience with the new situation (limited vs. significant).

When all these factors are combined, they can create a detrimental effect for all firms in supply chain and if degree of product technology is high tech, Need for security in handling, packaging and transporting the product is high, purchaser's limited experience then high level of investment is required to implement risk mitigating strategies.

Some companies adopt tools like maintaining buffers, multiple sources for strategic items. These measures restrict the operational performance and can negatively impact the competitive advantage. New approaches involve risk management, which is a formal process that involves identifying the potential losses and their likelihood. SCRM seeks to reduce these risks by integrating the internal functions to external operations of suppliers, channel members and final customer.

Risk management approaches of practitioners are purely contingency-based. From a contingency perspective, research attention lies in exploring which concepts are relevant in particular industries to particular supply chains. This approach advocates formation of a generalized picture of supply chain risk management which is more appropriate in particular supply chain.

There is no clear view about whether SCRM is the result of poor SCM. Supply chain management is a cross functional discipline, so SCRM should also be managerial in nature considering other functions like corporate risk management, business continuity management etc. Managers manage the risks in their own boundary and locus of control and no one manages the risks end to end. All people see the risks from their own goal perspective. As no one wants to share risks in supply chain, it is difficult to justify who is technically liable.

Different companies adopt different strategies to mitigate supply chain risks. Firms can adopt risk management strategies, which they use in single organization in supply chain context. Some of these are:

- ◆ Avoidance (dropping some of the product/markets),
- ◆ Control (vertical integration, maintain excess capacity, imposing and contractual obligation),
- ◆ Co-operation (joint efforts to improve the supply chain visibility, joint efforts to shared risk related information, and preparing supply continuity plan),
- ◆ Flexibility (postponement, multiple sourcing, and localized sourcing).

Business with a supply chain strategy requires integration cooperation, coordination, open communication, sharing information risks, and rewards. Collaboration is based on mutual trust and openness, which yield competitive advantage. More and more companies are collaborating to manage supply chain risks. Ten firms were surveyed and managers expressed that collaboration results in incremental innovation, more efficient operations, better quality and lower cost.

Literature review suggests that risk mitigating strategies have to be investigated in conjunction with risk drivers (Factors which compels firms to take risk and impact directly the network related risk sources, e.g. focused factories, focus on efficiency, globalization, and reduction of supplier base). Together they build several tradeoffs decisions i.e. trading the benefits of repeatable process against cost of lack of flexibility, lowest bidder versus unknown supplier, centralization against decentralization in decision making in production and procurement, collaboration against secrecy. Trade off decision is between managing risk and cost. Tradeoffs decisions are high concern to managers.

Information systems and technologies have the potential to coordinate and integrate the activities across the supply chain. Internet enables the companies to get real time data, which improves the performance of the whole supply chain. It has been demonstrated that the internet can have an important impact on the management of the supply chain risks and it can improve the competitiveness of firms. With the development of web-technologies, SCRM will focus on helping decision makers better manage customer relationships, efficiently integrate internal processes and collaborate in real time with trading partners Information technology infrastructure implementation has become the major concern for supply chain managers. For IT-enabled SCM, three pillars are required viz., e-commerce, e-procurement and e-collaboration. SCRM system implementation is more than technology adoption; it should take consideration of company's strategies as well as supply chain strategies.

Supply chain risk management (SCRM) system entails the specific ordering of activities, techniques and tools across time and place, with a beginning, an end, clearly identified inputs and outputs and structure for action. All the tools and techniques must be consistent with supply chain strategies.

Companies that can identify and develop contingency plans for the various risks that exist internally and externally to the organization will be successful. At the strategic level, supply chain risk management is relatively new and rapidly expanding discipline that is transforming the way that manufacturing and non-manufacturing

operations meet the needs of their customers. Formulation of appropriate and effective organizational strategy can, to a certain extent, mitigate supply chain risks. The optimization of the complete supply chain is accomplished through efficient planning decisions. Research shows that managers must do two things when they begin to construct a supply-chain risk management strategy. First, they must create a shared, organization-wide understanding of supply-chain risk and secondly, they must determine how to adapt general risk-mitigation approaches to the circumstances of their particular company.

### Discussion and Analysis

Based on literature review supply chain risk management is in very nascent stage in Indian industry. Many researchers have contributed on various risk sources, risk drivers, risk mitigation strategies.

Sevensson developed a supply chain risk management framework for inbound and outbound logistics, which explains the types of risks generated in inbound logistics and outbound logistics and says that inbound logistics is more vulnerable.

For effective risk mitigation strategies enablers need to be identified, which are:

- Information sharing,
- Agility in supply chain,
- Trust among supply chain partners,
- Collaborative relationships among supply chain partners,
- Information security,
- Corporate social responsibility,
- Aligning incentives and revenue sharing policies in a supply chain,
- Strategic risk planning,
- Risk sharing in supply chain,
- Knowledge about risk in supply chain,
- Continual risk analysis and assessment

M.Cristopher suggested that supply chain confidence reflects that perception of performance reliability at each step in the supply chain. How much faith and confidence each partner has on each player in chain determines the

willingness to share risk in supply chain. Total end to end supply chain visibility will enable supply chain to be transparent and right information would be available to the right member at the right time. Visibility and control are needed for supply chain risk management.

Authors emphasized on having information and knowledge about various risks in supply chain and then disseminating this information across the supply chain. Companies recognized the risk assessment, business continuity planning and crisis management in their own boundaries, supply chain wide risk management is not recognized as key element in business continuity planning.

Based on the interview of industry professionals in supply chain following facts come out:

Current awareness of supply chain risk management in industry is at very low level. I interviewed ten professional in different verticals, they expressed that we don't have any concepts like supply chain risk management. Whole industry sectors have quick fix solutions in a fire fighting mode. In Indian industries have a separate department to address inbound and outbound logistics known as purchase department and marketing department. Very little of integration is found between these departments, they always have contradictions and conflicts to each other. No supply chain manager or like designations exists in industries.

One associate manager in HZL udaipur expressed that we don't have measures to supply chain risk. For us more of the risk is created by suppliers. If any qualitative or quantitative risk incurs then at that time we address that issue. Even some times we don't have ready list of suppliers and fire fighting mode we put the orders to first time suppliers.

One executive at MICO Jaipur said that our suppliers are distant located and in the situation of crisis our company don't have any alternative arrangements. To meet the risks posed by different supply chain entities MICO a pool of suppliers, in the case of failing a particular supplier, another supplier in the same category are referred. On the question of loyalty of new supplier,

executive mentioned that price and quality issues are negotiated and further disruptions like time delays or quality lapses are considered before.

## Conclusion

Thus in Indian industry supply chain risk management is in nascent stage. Professionals across industry are not using these terms, but firms have some alternative measures to address these supply chain risk issues. With advent of globalization and new trend of outsourcing supply chain risk management is attracting the attentions of Indian industry. Indian managers also felt that in future risk in supply chain will increase and we should be ready to combat these risk issues jointly. To share risk and mitigating risk jointly, what will the mechanisms and processes, that should be identified and people should be trained in those methods.

**Key Words:** Supply Chain Management, Risk Management, Strategy.

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# Global Competitiveness: Iranian SME

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## Looking Forward

*One of the key factors in a stable economic growth is the development of exports. However, there has always been the question whether the size of an enterprise plays an important role in the exporting of goods or if there are other factors influencing the increase of exports?*

*Consequently nowadays even small or intermediate enterprises with considerable exports can play an important role in the economic development of the country. Iran is heavily dependent on the export of oil and gas, which account for up to 82.5 percent of the country's total exports. Iran needs to increase its non-oil exports in order to become an active partner in the WTO-led process of globalization. Industrial SMEs in Iran have not developed to their full potential. So, the share of industrial SMEs in export is the less than five percent of Iran's total non-oil exports; like a thin cut of a tiny cake. But, the study at hand makes clear that the industrial SMEs sector has tremendous scope for growth in Iran and by that token has a great potential for export promotion.*

Schumpeter argued in his 1942 book *Capitalism, Socialism and Democracy* that entrepreneurship did not survive in the face of the ever larger industrial firms that monopolized innovation through well funded and organized research and development laboratories. This belief continued to flourish after World War II (1939-1945), since simple observations of industrial activity in the 1940s through the 1970s showed industrial firms growing ever larger, even to such an extent that John Kenneth Galbraith proposed in 1967 that capitalist society would evolve into three groups, i.e. big business, big governments and big labour unions. Galbraith's "New Industrial State" was in fact

devoid of entrepreneurs. When in the early 1980s unemployment rose in many of the European economies, the interest in SMEs development and self-employment (through micro businesses) intensified. Many sectoral studies were undertaken during that period and a vision for SMEs based economic growth was developed. Small and medium-sized enterprises (SMEs) are defined as non-primary enterprises. They include industrial, trade, financial and tourist enterprises.

The SMEs sector is the backbone of the developed economies throughout the world. They form the backbone of the private sector, make up over 90 percent



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of enterprises in the world, and account for 50 to 60 percent of employment. These shares are even higher in the manufacturing sector, and in developing economies, where such enterprises typically account for 90-95 percent, or more, of all industrial enterprises, 70-75 percent of industrial employment, and 50-60 percent of industrial output.

**Objectives of the Study**

The proposed study intends to work with the following objectives:

1. To study the main reasons for the low share of small industries in Iran in export of industrial goods.
2. To examine the effects of domestic demand and exchange rate on competition of industries SEs in Iran.

3. Prioritizing Iran’s Industries Small Enterprises by their Global Competitiveness

**Definition of SMEs**

The definition of SMEs varies depending on nation and region. There is little unanimity regarding the definition of SMEs in Iran. In the present study, enterprises between 10 and 49 employees are regarded as small enterprises.

**Significance and status of SMEs in Iran**

For developing economies SMEs often offer the only realistic prospects for increases in employment and value added. Table 1 shows the SMEs contributed to the economies of the some countries. The figures show that SMEs performed impressively.

**Table 1: Status of Industrial SMEs in some Countries**

Country	Industrial SMEs (%)	Employment in Industrial SMEs (%)	Investment in Industrial SMEs (%)	Industrial SMEs productions (%)	Export in Industrial SMEs (%)	Allocation of loans to Industrial SMEs (%)
USA	92.2	50.4	38	38 to 41	36.2	42.7
Republic of Korea	90.4	51.2	35.7	47.9	50	48
India	91.5	80	30	56	40	15.3

Source: "Role of Small and Medium Enterprises in Industrial Development" (Keymaram F. 2005)

In Iran SMEs (10-99 Emp.) having only four percent of the total number of enterprises create almost 15.5 percent of national employment. But large enterprises constituting 13 percent of total enterprises contribute to 0.2 percent of national employment.

Growth in the context of employment by SMEs over the 10-year period from 1996 to 2006 has been approximately 0.60 percent across the board. SMEs contributed 0.06 percent per year, which with a workforce of more than 15 million means an increase of approximately 9,000 jobs annually; this again adds up to an approximate number

of 90,000 jobs over the 10-year reporting period. Indeed, SMEs have recorded unsatisfactory performance as regards the generation of employment. The share and growth of service SMEs (0.085 annually) was even stronger than industrial SMEs (0.021 annually).

The industrial SMEs’ share of total employment is about two percent (In EU is 23 percent), whereas the employment share of industrial SEs is about 1.5 percent and that of the industrial MEs 0.5 percent. So, industrial SMEs make a paltry contribution to Generating employment in Iran. Growth of employment in industrial SMEs over the 18-year

period from 1988 to 2006 has been approximately 0.51 percent across the board (0.03 percent annually).

The figures show a growth of employment in SEs averaging 0.00 percent annually. While industrial MEs made a less contribution to total employment, MEs nevertheless performed better with an average annual growth of 0.03 percent.

This can be explained by a suitable environment for balance between the country's industrial structure and the establishment of forward and backward linkages between SEs, MEs and LEs.

Unfortunately there is no data available on the export of industrial SMEs in Iran. The newly established Small Industry Organization (SIO) has not yet been in place long enough to collect any significant data on exports of industrial SMEs, while the three other organizations involved in export-related activities – the Ministry of Commerce, Chamber of Commerce, Industry and Mines, and the Export Promotion Centre of Iran – do not collect export data with reference to the size of exporters and importers. Nevertheless the share of industrial SMEs in Iran's non-oil exports amounts to approximately US \$180 m. This is less than five percent of Iran's total non-oil exports, a thin cut of a tiny cake. This low share and the negligible total amount of exports reflect a host of internal and external problems surrounding the globalization of industrial SMEs, some of which are not amenable to easy and short-term solution. But this share for industrial LEs is almost 90 percent. Micro enterprises have a small share.

### **Problem Statement and Purpose of the Study**

The economy of the Islamic Republic of Iran is to a very large extent determined by large public and quasi-public enterprises, controlling up to around 80 percent of the economy. This is especially true with regard to the businesses engaged in exploiting, processing and trading crude oil, petroleum products and natural gas, which provide some 80 percent of Iran's export earnings and around 40-50 percent of the government budget. This has created a heavy dependency on this sector of the economy, and its mainly (publicly-owned) large enterprises, in spite of the fact that the great majority of

businesses in Iran belong to the category of micro, small and medium sized enterprises.

Generating employment, is an overwhelmingly important issue in Iran. Each year some 800,000 job seekers enter the labour market, which offers only about 500,000 jobs. Consequently, unemployment is increasing each year by about 300,000 people – comprising women, youth and graduates alike. As has been proven in many developing economies, the SME sector can be instrumental in employment generation, and can help to absorb not only the natural growth of the labour force but also manpower shed from the state owned enterprises as a result of their rationalization or privatization.

In this context, increasing the competitiveness of the SME sector becomes a crucial issue. Without a competitive SME sector it will not be possible to accelerate job creation, which is badly needed to reverse the increasing trend of unemployment in the country. Obviously, competitiveness has direct linkages to productivity improvement, total quality management and a host of other issues. Competitiveness also leads to a higher rate of manpower utilization, and hence to lower costs of production and higher profits. In addition, it increases the scope for success in export markets, which is another issue of great importance for the Iranian economy.

Iran is heavily dependent on the export of oil and gas, which account for up to 82.5 percent of the country's total exports. Although non-oil exports are increasing, they are doing so at a very modest pace. Clearly, the Government of Iran sees the diversification and increase of non-oil exports as a major issue in strengthening the economy by making it less dependent on oil and gas export. Secondly, Iran needs to increase its non-oil exports in order to become an active partner in the WTO-led process of globalization. Finally, and equally importantly, the development of new and existing export markets is seen as a powerful tool to promote employment creation.

One of the key factors in a stable economic growth is the development of exports. Studies show that every one percent growth in the export growth will lead to 0.2 percent rise in the economic growth. However, there

has always been the question whether the size of an enterprise plays an important role in the exporting of goods or if there are other factors influencing the increase of exports? Research suggests that although the size of enterprises has a positive correlation with the possibility of export activities, there are other influential factors also, such as:

- ◆ The competitive advantages existing in those enterprises such as: technology, price, flexibility, innovation, product, etc.
- ◆ The selection of export strategies
- ◆ The possibility of cooperation with other companies or enterprises (vertical integration)
- ◆ The access to foreign resources
- ◆ The enterprise management view of export

All these factors, in addition to the size of the enterprise are influential in determining the exports of the enterprises. Consequently nowadays even small or intermediate enterprises with considerable exports can play an important role in the economic development of the country.

According to a recent study conducted by the Ministry of Industries on the role of industrial SMEs in Iran's exports, the country's total exports of goods and services could exceed US \$108 bn by the year 2020/21, with the share of the industrial sector in these exports of goods and services amounting to more than \$56 bn, or some 52 percent. For this projection to materialize, it will be necessary to implement a number of measures to open Iran's economy and promote exports. In the absence of such measures, the outcomes could be very different, as indicated in Table 2.

**Table 2: Alternative Scenarios for the Growth of Non-oil Exports (2010/11, 2020/21) US \$ million**

Type of Economy	2010/11	2020/21
Exports of Crude Oil	31,200	37,500
Non -Oil Exports – Closed Economy		
Industrial	6,911	19,962
Non-Industrial	8,447	19,692
Non-Oil Exports – Moderate Policy		
Industrial	11,718	38,611
Non-industrial	13,214	16,548
Non -Oil Exports – Open Policy		
Industrial	15,243	56,746
Non-Industrial	13,518	14,187

Source: Imanirad, Mortzea, The Role of Small and Medium Industries in Iran's Exports, Ministry of Industry, Department of SMI, 1997, p. 272.

The same study has also assessed the specific role of SMEs in Iran's export prospects. The assessment was based on a number of assumptions and also took into consideration the export experiences of industrial SMEs of a number of selected developing and emerging economies such as Taiwan Province of China, India, Republic of Korea, Malaysia, Indonesia and Bangladesh. The estimates of the

contribution of industrial SMEs to Iran's export growth derived from these calculations are presented in table 3.

The achievement of the high-growth projections will require the formulation and implementation of specific export policies, and the development of specific policy instruments, for industrial SMEs.

**Table 3: Alternative Scenarios for the Contribution of Industrial SMEs to the Growth of Iran’s Non-Oil Exports (2010/11-2020/21) US \$ Million**

Type of Economy	2010/11	2020/21
Exports of Crude Oil	31,200	37,500
Export of Industrial SMEs – Closed Economy		
Minimum	166.2	1,699
Maximum	278.1	2,831
Export of Industrial SMEs – Moderate Policy		
Minimum	1,028	5,691
Maximum	1,714	9,485
Export of Industrial SMEs – Open Policy		
Minimum	1,736	9,929
Maximum	2,894	16,549

Source: Ibid

By knowing the advantages of small industries in the case of added value, job creation and, especially, innovation in technology of production and trade, the policies should be consider in a way that can increase the competitiveness power of small and medium industries on the base of recognizing export capacities of small and medium industries. So that examines the competitiveness of small and medium industries with high technology for increasing the export potential are very crucial. This study, by looking at the potential of small industries in the country, attempts to examine the effects of domestic demand and exchange rate on competition, so that it can suggest some measures to increase the exports potential of small industries.

**Methodology and Research Design**

The research method was adopted from the combination of Model of export of Morris Goldstein and Mohsin S. Khan, 1978, 1985. Alberto Behar and Edwards Lawrence, 2004. L. Giorgianni and G. M. Milesi-Ferratei, 1997 and panel data method. This approach begins with explaining of model of export of Iranian Industrial SEs. After that, results of estimated models will be presented and analysed by using of panel data method.

In this equation 32 long run linkages (number of sub sectors of small industries which have exported during 1996 to

2006) for exports of small industries have been considered, as if variables have real value and in a logarithm format (all the calculations are based on 1995 that is the base year). Data related to small industries have been collected and been used from statistic of industrial workshops in Statistical Center of Iran, and data of exchange rate and price indexes from National Accounts of Iran (Central Bank of Iran) have been collected.

Model of export of Morris Goldstein and Mohsin S. Khan, are as follows:

$$x_{it} = \alpha_0 + \alpha_1 \tau_{it} + \alpha_2 k_{it} + \alpha_3 reer_t + \alpha_4 p_t + \alpha_5 wgdpt + \epsilon_{it}$$

- $x_{it}$  : sub-sectors exports
- $\tau_{it}$  : tariff rate of import weighted
- $k_{it}$  : capital / labour
- $reer_t$  : Real Effective Exchange Rates
- $p_t$  : exports price
- $wgdpt$  : Gross Demestic Product (GDP)
- $\epsilon_{it}$  : detail disorder

Real Effective Exchange Rates (REER) is as follow:

$$Px_{jt} = reer_{jt} = \sum_{ij} \alpha_{ij} \left[ \frac{(P_j r_{ij} / P_j)_t}{(P_j r_{ij} / P_j)_{1995}} \times 100 \right]$$

- $reer = P_x$  : Real Effective Exchange Rates (REER)
- $n$  : number of  $j_t$  country's commercial partners
- $P_j$  : price in  $j_t$  country
- $P_i$  : price in  $i_t$  country
- $r_{ij}$  :  $i_t$  country's exchange rate by  $j_t$  country's monetary unit
- $a_{ij}$  : share of  $j_t$  country in trade with  $i_t$  country ( $\sum_1^n \alpha_{ij} = 1$ )

The  $reer$ ,  $wgdp_t$  and  $P_t$  variables are common for all the sub sectors and all the variables have been defined by logarithm. This can be the most important advantage of this model in order to simplify explanation of related coefficients and variables. In this model each one of these coefficients considered as elasticity of that variable to export. The coefficient of tariff rate and per capita of capital assets for all the period of time has been estimated commonly ( $\alpha_1, \alpha_2$ ) and rest of the coefficients are considered separately ( $\alpha_3, \alpha_4, \alpha_5$ ).

Estimated export functions, in different countries in spite of common points, have different kind of function and forms. The difference in the form of export functions is due to the geographical location of the case study, goods or goods-group under study or other related reasons.

In many empirical studies regarding export demand function of non-oil products in Iran, only determined factors of external demand, such as relative prices and world income, has been introduced as effective factors on export demand of non oil products. While export demand, in addition to internal factors, is also influenced by external factors.

Therefore, in this study Iran's export demand function has single function and two variables namely: the level of production of small industries (domestic demand) and changes in estimated exchange rate. The variable of exchange rate has been included in this model according to this theory, which believes that the existence of marginal benefit arising from exchange rate, will lead to increase sale and profitability of exports goods. Same thing can be done regarding to the role of domestic demand in export. Then we can say that in Iran, excessive interfering of government and government control on allocation of resources causes imperfect market. Furthermore, domestic

demand and supply can not reflect their effects on prices completely. As a result, domestic demand must be considered as an independent variable in the export function. Since export of non oil products is considered as a margin hysteresis subject of domestic demand and export goods directly or indirectly consumed inside the country. Therefore, we can conclude that domestic demand has negative impact on exports of non oil products.

$$x_{it} = \beta_0 + \beta_1 erm_t + \beta_2 qs_{it} + \epsilon_{it}$$

$$Lx_{it} = \text{Log} \left( 100 + \frac{x_{it}}{px_t} \right)$$

$$Lqs_{it} = \text{Log} \left( 100 + \frac{qs_{it}}{wpi_t} \right)$$

$$Lerm_t = \text{Log} (erm_t)$$

$x_{it}$  : real exports in  $i_t$  section in  $t_t$  time ( $i= 1, \dots, 32$ ), ( $t= 1996-2006$ )

$erm_t$  : open market exchange rate in  $t_t$  time

$qs_{it}$  : real out put in  $i_t$  section in  $t_t$  time

$wpi_t$  : whole sale price index in Iran

Above equation indicates export function in the selected sub sectors in table 5.

### Model Estimation and Coefficients Analysis

In this study, data organized in a statistical panel for 32 sub sectors and by using Pooling Time Series Cross Section parameters will be estimated. Combining Time Series Data with Cross-section Data not even can give suitable information to estimate econometrics models but also based on the obtained results we can make appropriate economic policy and planning. A Review of Literature is observed about data panel in Maddala, (1993). Hsiao, (1986). Dielman, (1989), Matyas and Sevestre, (1986), Raj and Baltagi, (1992) Studies.

The importance of panel data compared to pure cross-section models is that in panel data researcher can be more flexible to explain the differences in the behaviour of variables taken at that period of time. Primary framework of panel data models has been explained in this model:

$$y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} + \mu_i$$

t= 1, 2, …, T

l= 1, 2, …, n

n: number of countries (cross-section observations)

T: number of time series observations per annum

Except intercept K number of explanatory variables exist in  $X_{it}$ .

It should be noticed that above panel data model is a kind of Balanced Panel Data model. It means annually, in each N countries T observations exist.

In this function  $\alpha$  is a intercept For  $i$ , country which we assume constant during the time. In practice the differences between different countries in this model can be assumed as follows:

- 1:  $\alpha_i$  for all countries (cross section) assumes to be fixed ( $\alpha_i = \alpha$ ).
- 2:  $\alpha_i$  is different for each country.
- 3: Differences between countries were randomly and they were entering random part into the above function like  $U_{it}$ . With this difference that this part enters to the regression function in a period of time.

In the theory literature of panel Data models these three methods are known as Common Effects, Fixed Effects and Random Effects respectively.

### Analysis and Major Findings

Estimated model of export for small industries based on imbalanced data are as follows:

$$x_{it} = 1.82 Lerm_{it} + 1.02 Lqs_{it}$$

(2.31)

(14.51)

$R^2 = 74$     D.W = 2.19    N = 64

Table 4 shows that the number of observations (Time Series and Cross-section) is 64. And according to F statistic estimation of common impacts which is equal to 320.21 (0.00) this model has ability to estimate panel data and according to the type of estimation (fixed effects) differences between different sectors is more logical. Then all the analyses are based on fixed effects.

Coefficient of  $R^2$  shows 74 percents of direct exports explained by independent variables. It also indicates that all the variables in the level of 95 percent confidence are significant.

The export elasticity of small industries compared to exchange rate of open market is positive. It means by increasing exchange rate or depreciation of Rial, exports of small industries will increase.

The export elasticity of small industries compared to product of SEs is positive. Therefore, it can be concluded that the more SMEs produce; to the same proportion or even more they can export their products. As a result only the extra products remaining from the demands of the internal market are exported.

Ranked results for small industries indicated that Tanning and dressing of leather; manufacture of luggage, handbags, saddlery harness and footwear and Product and protect of fish, meat, fruit, vegetables and oils, ... industries have the highest rank in the field of competitiveness power or influence ability in foreign markets, while Manufacture of furniture and Manufacture of dairy products, ... industries have the lowest rank in the field of competitiveness power or export.

### Conclusion

Positive and significant relationship between production and export indicates the way being prepared for development of exports of non oil production in Iran through increasing the potential and possibility of that industry.



**Table 4: Results of Model Estimation of Iranian Industrial SEs (1996-2006)**

Row	Explanatory Variable	Lerm	Lqs
1	ratio	1.82	1.02
2	t statistic	2.31	14.51
3	R <sup>2</sup>	74	
4	D.W.	2.19	
5	Number of Observation	64	
6	Number of Industry	32	
7	F statistic Estimation of Common Impacts	320.21 (0.00)	

Source: research calculation-based on secondary data

**Table 5: Competitiveness Ranked of Iranian Industrial SEs (1996-2006)**

Rank	Industry
1	Tanning and dressing of leather; manufacture of luggage, handbags, saddjery harness and footwear
2	Product and protect of fish, meat, fruit, vegetables and oils
3	Manufacture of refined petroleum products
4	Manufacture of shoes and other products for foot
5	Manufacture of chemicals and chemical products
6	Manufacture of textiles and knitwear
7	Manufacture of wearing apparel and dressing
8	Spinning and knitting
9	Manufacture of synthetic fibers
10	Manufacture of plastic products
11	Manufacture of beverages products
12	Manufacture of machinery with special usage
13	Manufacture of precious fabricated metals
14	Manufacture of motor vehicles chassis and trailers and semi-trailers
15	Manufacture of rubber products
16	Manufacture of machinery with public usage
17	Manufacture of medical precision and optical instruments
18	Manufacture of basic metals
19	Manufacture of electronic lamps and other apparatus
20	Press and publication
21	Manufacture of wire and cable
22	Maintenance of wood and of products of wood and cork
23	Manufacture of electrical lamps and other apparatus

24	Metals moulding
25	Manufacture of office, accounting and computing machinery
26	Manufacture of motor vehicles spare parts
27	Manufacture of electrical motors and generator
28	Manufacture of paper and paper products
29	Manufacture of machinery power distribution and control
30	Manufacture of building's metals products
31	Manufacture of dairy products
32	Manufacture of furniture

Source: research calculation- based on Statistical Center of Iran source

The major limitation in the growth of exports through SMEs is the result of supply that is to say the lack of production more than the internal demands. Hence when there are no goods or products to be exported, the exporters will not have any motivation for export. So, export restrictions must be removed and by giving subsidy to exporters and using export promotion policies, we can encourage them to export more and more.

Positive relationship between exchange rate and export indicates there is a considerable margin for the exporters. This caused many SMEs to think of short-term goals by exporting some bad quality goods and products.

Iranian government has practised a rising foreign exchange prices (reduction of Rial value) for the exporters. But, a very considerable point, here, is that in spite of practising such a policy, the growth of SMEs exports is not considerable and constant.

The major reasons for this are:

- 1) Very low SMEs exports have other reasons than the fluctuations in the exchange prices which can not be solved by changes in the price of foreign exchange.
- 2) The goods and products of Iran can not compete in the universal markets, and it is not only for their high prices but also for their low quality which is a major factor for their acceptability in the markets.
- 3) There is no guarantee for exporter to decrease the price of his product in order to get a larger share of

foreign market. In many cases, because the demand is not motivating for Iranian exporting products and goods, the increase in the price of exchange will not influence the amount and value of export and only increases the profit of the exporter.

- 4) The consumption market in Iran is very extensive and wide and most SMEs in Iran are not exposed to their foreign rivals, therefore they do not have to compete with foreign rivals.
- 5) Existing challenges in the process of production and required time to increase the capacity of producing export goods has led to difficulties in using the advantages of depreciation of Rial.

In conclusion, we can say that the main reason for the low share of small industries in Iran in export of industrial goods is:

*"the natural tendency of SMEs to the internal home markets and the attention to the home markets and lack of production more than the internal demands."*

The most important supportive policies to increase the potential of export and competitiveness of small industries in Iran can be listed as follows:

- 1 Strengthen the financial support of small industries by increasing the role of specialized banks such as: granting facilities with low rate of interest, reducing taxes and tariffs and so on.

- 2 Applying exchange policies (increasing exchange rate or devaluating Rials) and encouragement policies (granting export prizes).
- 3 Applying suitable policies in the potential and capacity of production in small industries, in order to increase the production in excess of the demands of the internal market.
- 4 Contribution to small industries for cheap and easy access to raw materials in order to reduce the final price of products.
- 5 Provide consulting service and improve the quality of produced goods.
- 6 Help to develop and support the formation of industries to take the advantages of co-increasing (such as: increase in efficiency, competition, advertisement and ...)
- 7 Help to set up the export's consortiums to decrease the marketing expenditures and easy access to foreign markets.
- 8 Strengthen cooperation between small, medium and large industries by developing subordinate contracts.
- 9 Encouraging small enterprises to become medium are by providing the required policy as well as institutional support.

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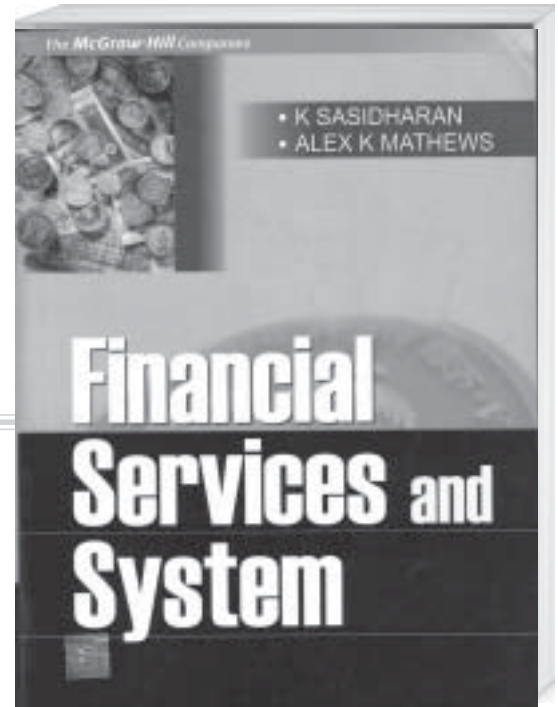
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# Skimming and Scanning



**Book Title** : *Financial Services and System*  
**Authors** : K.Sasidharan and Alex K.Mathews  
**Edition** : First  
**ISBN-13** : 978-0-07-066805-8  
**Pages** : 695  
**Publisher** : Tata McGraw-Hills Publg. Co. Ltd., New Delhi.

**F**inancial services industry all over the world has witnessed many changes in the last two decades. Deregulation involving demarking of boundaries in rendering financial services and opening the sector to the newcomers has changed the face of the industry. Financial services sector has become one of the major emerging sectors across the world. This changing landscape and the growing importance have given rise to mounting interest in the subject of financial system as a whole. However, most of the existing Indian books in this area contain only a partial treatment of the subject. The merit of this book titled *Financial Services and System* is that it gives the reader a fairly complete idea about the functioning of banking and non-banking financial institutions as well as the markets for short-

term and long-term financial instruments in a comprehensive way.

The book is divided into four parts. Part I gives an overview of financial services sector. It discusses financial system as a whole, and also the characteristics and distinctiveness of financial services, financial intermediation and credit creation process. The authors have also taken care to discuss the relevance of globalization of financial markets. Globalization is regarded as a process enabling countries to enjoy the financial products available in the international market.

Second part of the book exclusively discusses the types of financial services. Financial markets deliver financial products and these products are



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generally classified into corporate financial services and retail financial services based on their user profile. Financial services like leasing, hire purchase, asset securitization, mortgage loans working capital finance, structured notes like credit linked notes, etc., has been discussed giving due importance to each.

In the ever changing climate of financial services sector, the management of banking and non banking financial institutions occupies a crucial position. Part III covers the changing dimensions of management in banking institutions and the broad framework of management systems and process in banking institution. It also looks at the organizational structure and functioning of various banking and non banking departments.

In the concluding part of the book, the regulatory and the supervisory framework in financial sector

has been discussed. The need for proper regulatory frame work and supervisory system has been expressed as a means to detect frauds and financial misappropriations at the early stage itself. This in turn will prevent substantial losses.

Each chapter is introduced with learning objectives to provide necessary inputs to the reader. All chapters are supported by summary boxes, tables, charts, graphs, examples and live cases. In addition, the book provides a glossary of terms, the on-site and off-site surveillance system introduced by RBI, as well as the recommendations of various study groups on supervisory system starting from Pendharkar Committee to the latest Verma Committee. Not withstanding the complex nature of the subject, the authors' simple style of writing and real life examples make the book readable and easy to understand.



# Skimming and Scanning

**Book Title :** *Financial Institutions and Markets Structure, Growth and Innovations*

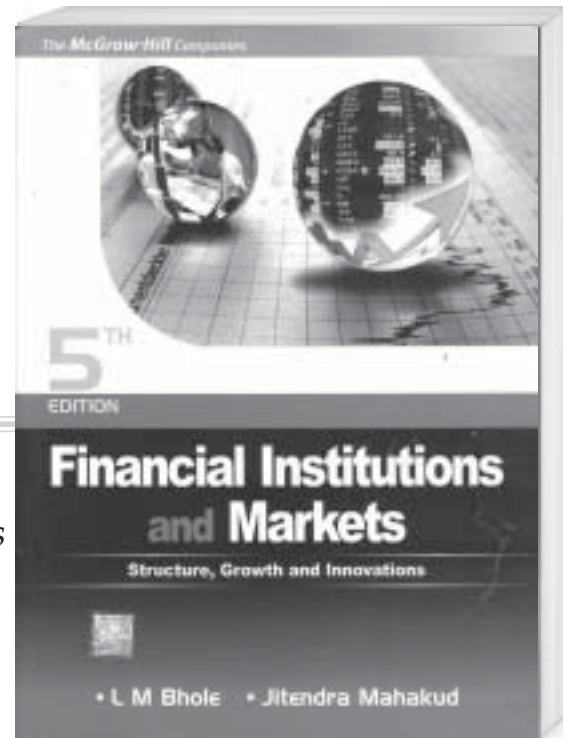
**Authors :** L.M.Bhole and Jitendra Mahakud

**Edition :** Fifth

**ISBN 13 :** 978-0-07-008048-5

**Pages :** 999

**Publisher :** Tata McGraw – Hill Education Pvt. Ltd., New Delhi.



Authors L. M. Bhole and Jitendra Mahakud were able to give a holistic view of the Indian Financial System in a very systematic and appealing manner. The content of the book has shown justice to the title. The book is an indispensable text for students and teachers of Banking and Finance, Management and Commerce. The book can be used as a source of reference by practising bankers and investors. L.M. Bhole has the expertise on Indian Economy and Money, Banking and Finance in particular.

The most striking feature of this book is the inclusion of the latest development and trends in Indian financial sector. Authors have taken special care to include the second generation policy reforms in the financial sector including

Raghuram Rajan Committee Report. Moreover, inclusion of topics like Market Stabilization Scheme of Reserve Bank of India, Risk Management in commercial banks (BASEL norms) and insurance companies gives more authenticity to the book. Relevant sections on risk management in forex market and commodity derivatives market will surely benefit the

students and teachers alike. Additional coverage on global markets and international financial system throws light on the relevance of the book in a globalized economy where financial markets are integrated by free flow of capital.

The Part 1 gives an overview of the Indian Financial System, Part 2 gives explains the Regulatory and Promotional Institutions in financial sector in India. Part 3



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discusses the role of Banking institutions and the Part 4 deals with NBFCs and Statutory Financial Organizations. Part 5 covers the Financial Markets in India in detail. Part 6 gives an overview of the International dimensions of Financial Markets and Part 7 covers Theories of the Level and Structure of Interest Rates.

Questions, keywords and further reading lists at the end of each chapter have been expanded in the 5<sup>th</sup> Edition of the book. The Glossary provided at the end of the book

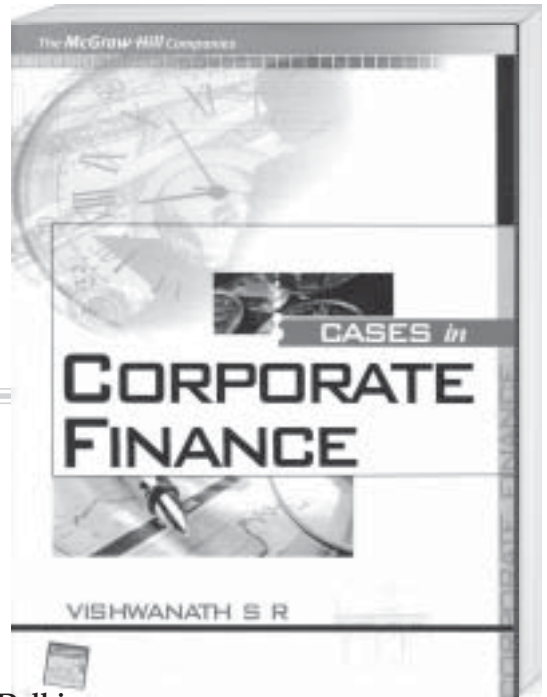
can be compared to a mini dictionary on Banking and Finance in India. A distinct feature of this book is the incorporation of latest data on financial sector in India which will be useful to researchers. The students and teachers also will be benefited from the relevant data.

The book will be an invaluable resource for students, teachers and practising managers who aim to reach the pinnacle success in the field of Banking and Finance in India.





# Skimming and Scanning



**Book Title** : *Cases in Corporate Finance*  
**Author** : Vishwanath S.R.  
**Edition** : First Indian Edition 2009  
**ISBN** : 978-0-07-009025-5  
**Pages** : 303  
**Publisher** : Tata McGraw-Hills Publg. Co. Ltd., New Delhi.

For a long time, academicians have been faced with the dearth of suitable cases to support learning of financial management and corporate finance in the Indian context. *Cases in Corporate Finance* is an attempt by Professor Vishwanath S.R. in building practical skill development needed for students to understand financial problems and techniques in the corporate context .

The book starts with an introduction to case method of teaching in the preface followed by the case description before moving on to the building blocks in the form of problem sets and then to the cases. One should not miss the preliminary pages which in fact give the guide map and the case description which act as valuable keys to the learning objectives of the various cases.

Eighteen case studies are presented in this book which is divided into four modules covering important topics like:

Building Blocks, Capital Budgeting and Discounted Cash Flow Valuation, Working Capital Management, Capital Structure Short Term and Long –Term Financing.

Each module starts with a brief description of the case, identifies the learning objectives and the subjects covered.



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The cases are drawn from different areas of corporate finance like capital budgeting, capital structure, and working capital management are strictly meant for class room discussions. The text abounds in financial data. The author has roped in data from different industry scenes like steel, FMCG,

banking, cement etc. to build the context of the case. Recent issues like mergers, valuation etc also finds their place in the form of problem set or cases. The case "Shree Cement Ltd." on working capital limit supported with adequate contextual narratives is quite palatable for learners of financial management. Similarly the case on "Cost of capital for utilities in India" in Module 1 and the one on *Working Capital Management at Excel Crop Care* in Module 3 provide valuable insights on the relevant industrial scenario and business environment which would help the students of management to carry out the analysis in a simulated business context.

However, the book suffers, at times, poor balance and uneven organization. For instance, more than one third of the space, ie about ninety pages, is devoted for easily available data types like stock prices and indices and they do not make much sense. Moreover one can better draw such data in excel-friendly

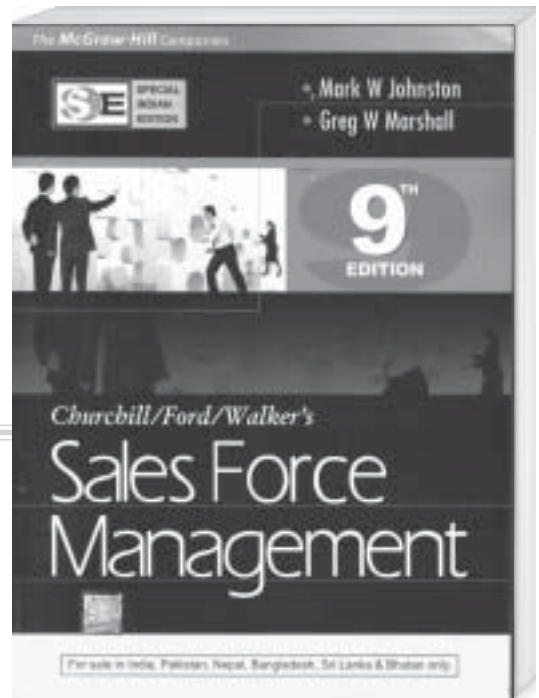
form from online sources and avoid typing them for the intended analysis.

The book is targeted at upper level undergraduates and MBA students with an intention of adding value to the quality of decision making. The pedagogical value of a case can be fully derived by the teaching faculty if, and only if, it is supported by teaching notes. Although it is said to be accessible at the companion website at [www.tatamcgrawhill.com](http://www.tatamcgrawhill.com), attempts failed to access the same for want of local sales representatives' support.

Vishwanath S.R. the author of the book, claims to have drawn inspiration from the writings of several Harvard Business School professors and corporate executives. Vishwanath is currently an Associate Professor at Institute of Management Technology, Nagpur. He has written several cases, edited several books and co-authored several books with renowned authors.



# Skimming and Scanning



**Book Title** : *Sales Force Management*  
**Author** : Mark W. Johnston and Greg W. Marshall  
**Edition** : 9<sup>th</sup>  
**ISBN-13** : 978-0-07-008055-3  
**Pages** : 536  
**Publisher** : Tata McGraw-Hills Publg. Co. Ltd., New Delhi.

Managing the sales force is the most formidable challenge that the organizations face today. Classroom sessions do impart the best possible theoretical knowledge to the students. But when it comes to the practical exposure – the gap does exist. The book by Mark W. Johnston and Greg W. Marshall by McGraw Hill publishing is an established step towards a practical exposure to sales force management.

central focus, it deals with issues like sales management in the new era, enhanced effectiveness through technology and the importance of leadership component. Apart from these, it does provide a sound framework on the basic sales management concepts incorporating issues like sales management process, environmental factors and their impact, research and development and the technological capabilities. Current issues have been discussed in detail

This book, tries to minimize this gap by its time-tested and insightful structure with its lucid and effective organization. This book is unique in its own. This uniqueness is well explained in the structure of the book and the supportive literature.



Reviewed by Ms. Deepa Pillai, Associate Professor and HOD-HR, SCMS-COCHIN, Prathap Nagar, Muttom, Aluva-683106, Cochin, Email: [deepanil98@gmail.com](mailto:deepanil98@gmail.com)

with explicit examples. The indigenous educative structure of the book is well explained in three parts.

The book opens up with an introduction in chapter one, wherein the main focus is on the change. With change as the

Part one is all about the formulation of the sales programme. This section addresses the issues relating to the formulation of a sales programme. It emphasizes on selling as a career and highlights the importance of leadership in sales management success. It also focuses on various aspects like

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process of selling and buying, customer relationship management, organizing the sales effort and the role of information in sales management. To sum up this is a proven effort to organize and plan the company's overall selling efforts that can perfectly blend with its integrated marketing strategies. The topics dealt in here are strongly laid with supportive examples.

Part two lays emphasis on the implementation of the sales programme. The main focus on this section is on improving the performance of the sales person. As such it provides a better understanding on the behaviour, role perceptions, motivation and satisfaction of sales persons. Chapter eight in this section focuses on the personal characteristics and sales aptitude of people. An understanding of the personal traits and sales aptitude required for a sales person would be of great help in identifying the right talent for the organization. It also provides an insight into the effective methods of training and evaluation. It further focuses on salesman compensation and varied incentives that serve as a motivating factor.

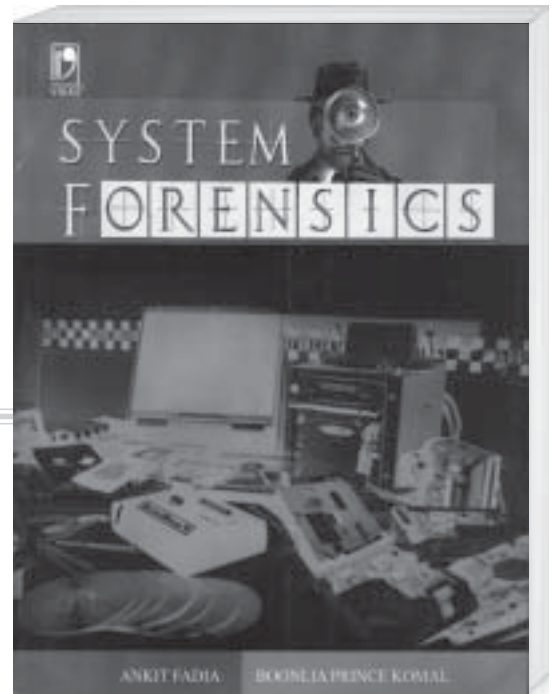
Part three is basically concerned about the evaluation and control of the sales programme with special emphasis on cost benefit analysis and evaluation of the sales person's performance. Cost analysis helps to determine whether the returns really justify the expenditure. It also has some comprehensive cases relevant to the topics covered in the text apart from the caselets provided at the end of each chapter.

The best feature of this text is the supportive literature. This feature is being explained in its boxed examples of leadership, technology and innovation. This series runs all through the text right from the first chapter to the last. Each topic is enriched by suitable examples from the global market. Apart from these, role plays, leadership challenge and breakout questions at the end of each chapter serve as pedagogical aids.

This book on *Sales Force Management* by M.W. Johnston and G.W. Marshall is a proven step to a practical exposure on Sales force management. Its explicit structure and supportive literature speaks all about itself. A must read for all those pursuing a career in sales and marketing.



# Skimming and Scanning



**Book Title :** *System Forensics*  
**Author :** Ankit Fadia, Boonlia Prince Komal  
**Edition :** 2008  
**ISBN-13 :** 978-81-259-3151-5  
**Price :** Rs.350/-  
**Pages :** 319  
**Publisher :** Vikas Publishing House Pvt. Ltd., New Delhi.

The scope of computer forensics has increased tremendously since its inception. What one could have expected in the days of the 386 and 486 machines that worked mostly on a stand-alone basis was examining the hard drive for certain activities. The computer then was not so much of a part of our daily life. The reasons which have resulted in the increasing scope of computer forensics are the internet, the increased reliance of computers, increase in malware, and lack of in-depth knowledge of the same.

The book enlightens us the challenges involved in the area of forensics. In general forensic science is the application of

science to the legal science. Forensics has great applications in various fields like science pertaining to the human body which is further subdivided into forensic pathology, forensic anthropology and so on. Similarly, digital forensics is subdivided into computer forensics, cyber forensics and so on.



Reviewed by Mr. Anand Sasikumar, Lecturer,  
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The book consists of 8 chapters, each of which highlights the history, aspects and concepts of forensics. Chapter 1 provides us with history, development and the increasing scoping of computer forensics. Chapter 2 provides the basics of the functioning of a computer system. This chapter also explains the concepts of Gates, Processors, Buses, the boot process, with the help of several examples.

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Chapter 3 covers the technical side of forensics. Here, author has dealt with data storage system and explains data storage and recovery on a hard drive as well as a compact disk. The chapter also discusses various packages which are used for recovery.

Chapter 4 discusses file system analysis. The concepts of RAID (Redundant Array of Independent Disks) are explained in detail. Various file systems like FAT, NTFS and their process are also discussed.

Chapter 5 deals with data hiding and data carving. This in fact is the crux and the very purpose of this book. The reader will be in a position to try and see how each technique of data hiding works.

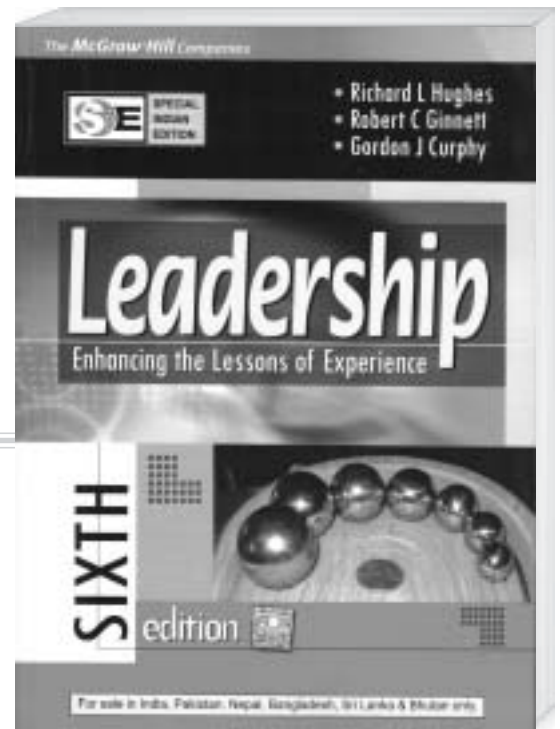
Chapter 6 explains the forensics issues related to Microsoft Windows OS. The various aspects like analyzing the registry, recycle bin forensic analysis, internet activity analysis are also mentioned.

Chapter 7 deals with the fundamentals of drive imaging. For this, reader can use the knowledge of the file system to check the actual process and functionality.

Chapter 8 deals with some of the common forensic packages used. The author has focused on the forensic package "helix." The author explains how this package can be incorporated in the windows environment as well as in Linux platform. The reader can easily access this package since it is free to use and can be downloaded.



# Skimming and Scanning



**Book Title :** *Leadership  
Enhancing the Lessons of Experience*

**Author :** Richard L.Hughes, Robert C. Ginnett, and  
Gordon J.Curphy

**Edition :** Sixth-2009

**ISBN-13 :** 978-0-07-008071-3

**Pages :** 591

**Publisher :** Tata McGraw-Hills Publ. Co. Ltd., New Delhi.

The book titled *Leadership-Enhancing the Lessons of Experience* is a completely different book. The one important factor that distinguishes this book from others in this lot is that the authors of this book are basically psychologists. Therefore the book has a distinctly psychological tone. It doesn't mean that this book contains lots of common psychological jargons and theories. The authors have kept in mind that the readers of this book will be common man. They have tried to demystify the entire concept of leadership in a very simple and understandable for common man. They have included a host of entertaining, stimulating snapshots on leadership, cartoons, quotes; and anecdotal highlights. Another

highlight of this book is the collection of cases. The authors have included cases on Indian personalities like Azim Premji, Dr. V. of Arvind Eye Hospital and on Kiran Mazumdar. The book also has a collection of small caselets related to the

chapter topics. The authors' unique quest for a careful balancing act of leadership materials helps students apply theory and research to their real-life experiences.

Another major highlight of the book is the boxes called profiles in leadership, which is given in each chapter. The profile in leadership features individuals whose leadership exemplifies some interesting aspect of the chapter content. This includes



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leaders such as Steve Jobs, Oprah Winfrey, Gandhi, Al Gore, Indira Nooyi, Michel Dell, Robert Mugabe, Denise Fleming etc. Leadership Quotes are interspersed throughout the chapters and provide interesting illustrations related to the textual material. Each chapter concludes with a section indicating which leadership skills are most relevant to the content of that chapter, which will help students retain and apply the material. Suggested classroom activities are found at the end of each chapter to enhance student interaction and application.

The entire concept of the book has been arranged in a very logical order. The entire book has been divided into 4 parts namely Part 1- Leadership is a process, not a position. Part 2, focus on the leader, Part 3- Focus on the follower. Part 4- focus on the situation. In Part one the author explains that just having a position will not help a person to become a good leader. Leadership involves something happening as a result of interaction between a leader and a follower. The studies of leadership also include two other areas: the followers and situation. The authors define leadership as the process of influencing an organized group towards accomplishing its goals.

The authors also prove wrong the popular myth that leadership comes only from experience. In part one, they state that leadership can be achieved through proper education and training. Formal education and training programmes can help one become a better leader. They have tried to substantiate with research findings that have conducted all over the world. Part one also describes some of the techniques organizations use to assess leadership potential and performance. The commonly used methods are case studies, co-relational studies, leadership experiments, maxims etc. The authors have broadly divided these methodologies into quantitative and qualitative.

Part 2 Focus on the Leader. The effectiveness of leadership, good or bad, is typically attributed to the leader much more than to the other elements of the framework. This part focuses on the characteristics of the leaders and what makes the leader effective. Part 2 starts with chapter on power and influence, because the power and influence tactics play such important role in the leadership process. This chapter gives ideas to help leaders improve their effectiveness by reflecting on their different bases of power. Leader may better

understand how they can affect followers and even expand their power. The authors have also explained the influence tactics the leaders and followers use to modify the attitude and behaviour of each other. Part 2 also focuses on the relationship between leadership and values. Values are constructs that represent general set of behaviours or states of affairs that individuals consider to be important, and they are a central part of leaders psychological make up. This part also examines the essential leadership traits that are important for the success of the leader. The last chapter of this part focuses on the leadership behaviour and process of behaviour change. The second part of the part 2 focus on leadership skills and strategies to develop leadership skills. The basic leadership skills that the authors explain are learning from experience, communication, listening, assertiveness, guidelines for effective stress management, building technical competence, building effective relationship with superiors, building effective relationship with peers, and building credibility.

Part 3 Focus on the Follower. This part of the book focuses on the role of followers in affecting the leadership process. The first chapter of this part focuses on motivation, satisfaction and performance. The authors have tried to elucidate the linkage between each factor. In a very simple way the authors have explained the major motivation theories like Maslow's hierarchy of need theory, ERG theory, Goal setting theory, expectancy theory etc. with lots of simple examples for the better understanding of the readers. The next chapter focuses on how group factors like size, stages of group development, roles, norms and cohesion can affect the follower's behaviour. To better explain this, the authors have explained an experiment called the Stanford prison experiment. Also the authors have explained the theories provided by Hackman, Ginnett or Hallam and Campbell to develop more effective teams. In part 3 also the authors have tried to explain additional leadership skills like providing constructive feedback, punishment, delegating, teambuilding for work teams, building high performance teams, development planning, coaching, empowerment.

Part 4 Focus on the Situation. This part starts with defining the characteristics of a situation. Situational factors can play such a pervasive role that they can effectively minimize the effects of personality traits, intelligence, values and preference on leaders and followers' behaviours attitudes and relationships.



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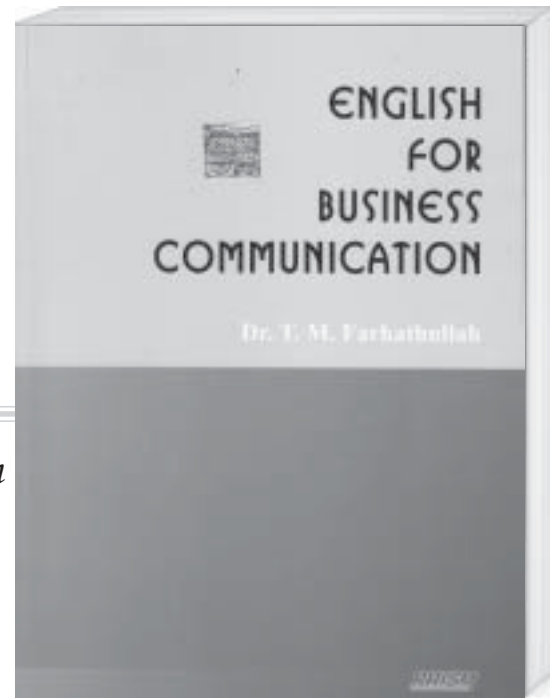
Here the authors have explained the congruence model as a way to consider many of the situational factors leaders should consider. In the next chapter the authors have explained the four of well known contingency theories of leadership which include the normative decision model, the situational leadership, the contingency model and the path goal theory. This part ends with saying that leadership skills are needed when changes need to be made to existing systems and processes; they are used to create new systems and drive organizational change. The chapter then reviews two major approaches to organizational change namely rational and emotional approach. The authors explain that either the rational or the emotional approach can result in organizational change but the effectiveness of the change may depend on which

approach leadership practitioners are most comfortable with and the skill with which they can carry it out. Like in all the other three parts, this part also ends with additional leadership skills required for the leader namely setting goals, conducting meetings, managing conflict, negotiation, problem solving, improving creativity, diagnosing, performance problems in individuals, groups and organizations, and team building at the top.

This book will help all leaders, no matter what their age and position, find some useful tips to improve the leadership skills. This book will also enable the readers in understanding the dynamics of leadership and can improve his/her personal performance.



# Skimming and Scanning



**Book Title** : *English for Business Communication*  
**Author** : Dr.T.M.Farhathullah  
**Edition** : First  
**ISBN-13** : 81-7286-596-1  
**Pages** : 220  
**Price** : Rs.150/-  
**Publisher** : Prism Books Pvt. Ltd., Bangalore.

Can one start swimming after reading a book *How to be a good Swimmer - A book for Starters?* If swimming can be mastered thus, can mastery over language be far behind?

Of all the do-it-yourself books flooding the market, the ones on effective communication may soon elbow the rest out. The reason being that all of a sudden everyone seems to be taken up by the effective communication fetish.

Talk and you get taken. This is the modern mantra the industry as well as b-schools swear by. So books on business communication, especially *English for Business Communication*, are a dime a dozen today.

Trying to make a foothold onto the pile is Dr.T.M. Farhathullah's book *English for Business Communication*, brought out by Prism Books Pvt. Ltd., Bangalore.

This piece of work too comes across as just another one of its kind. One finds chapters devoted to oft trodden paths of interpersonal skills, active listening, barriers to listening, seminars, conferences et al.

Dr.Farhathullah's endeavour seems to be aimed at beginners. Almost all aspects of communication have been touched upon. But it lacks depth and offers very little that's new. It's symmetrically tame and reads like a piece executed in a hurry.



Reviewed by Prof. Rebecca Thomas -  
 Business Communication, SCMS-COCHIN,  
 Prathap Nagar, Muttom, Aluva-683106,  
 Cochin, Email: rebecca@scms group.org

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Thus we have some listening tips which may come up for debate. The author says in the *Ten Commandments for Learning to Listen* (Chapter on Active Listening, page 31).

"Be a mirror: imitate the body language of the speaker. Smile when he or she smiles; frown when he or she frowns." This dictum is likely to take a beating going by the golden rule that an effective listener need not reflect the facial changes of a speaker.

The chapter on "Attending Interviews" should be good for those going in for interviews the first time. It's a structured blueprint to ace an interview effectively.

A book becomes a book only when its content carries original thought. And here's where the author falters in his intention. The chapter on "Guidelines for Effective Writing" has quite a lot of matter lifted from Lesikar and Flatley's tome - *Basic Business Communication: Skills for Empowering the Internet Generation* (Tata Mcgraw-Hill). The section on Preferring Plain Words has a quote from Mark 'Twine' which also comes from Lesikar and Flatley. And coming further down, the part on jargons too is a modified lift from the original work.

Dr.Farhathullah's efforts are sincere. *English for Business Communication* is truly a beginner's guide to mastering language skills which would otherwise be unfamiliar terrain to them.





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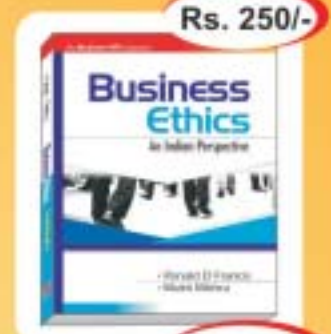
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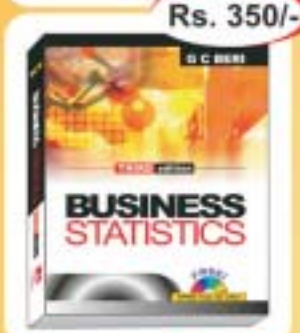
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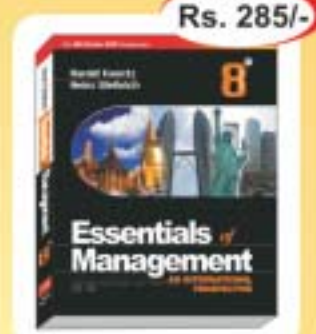
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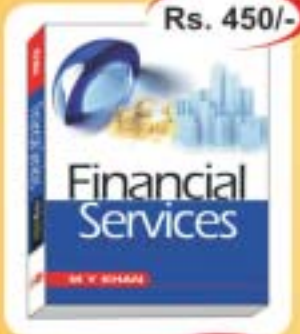
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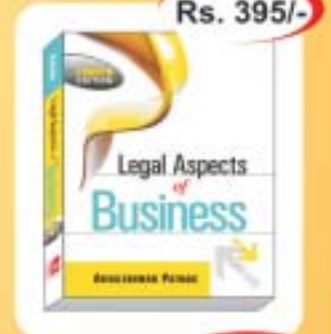
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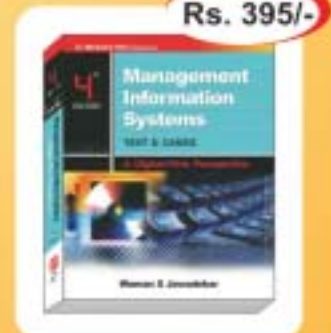
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Kishore G.Kulkarni, Brijesh P., and Arvind Kumar Jha



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**Businesses and Global Warming Interface: Carbon Credit**

Dharmesh S.Raval



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B - FEAT

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Satish R. and Rau S.S.



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**Students and Employers: Perceptual Chasm**

Rajasekaran B. and Rajasingh S.



RESEARCH SCENE

**Clinical and Contract Research: Potential**

Pankaj M.Madhani



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**Wings Wider above Global Economic Crisis**

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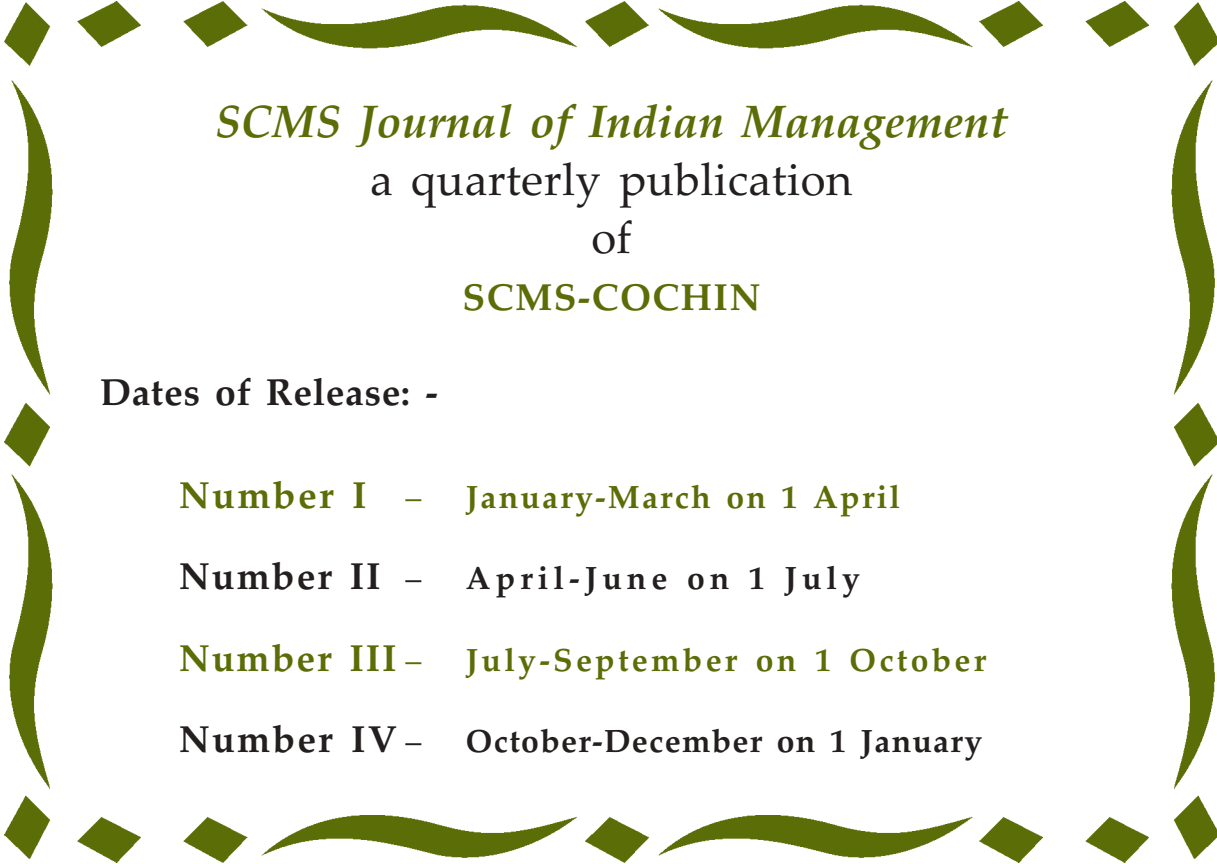


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# SCMS JOURNAL OF INDIAN MANAGEMENT

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## Aims and Scope

The *SCMS Journal of Indian Management* is a **blind peer-reviewed Journal**. The Journal deems it its mission to submit to the readers fresh fruit of management thoughts and rich cream of current innovative research. The format of the Journal is designed reader-friendly. The academia and the corporates have an easy access to the Journal.

The Journal looks for articles conceptually sound, at once methodologically rigorous. The Journal loves to deal knowledge in management theory and practice individually and in unison. We wish our effort would bear fruit. We hope the Journal will have a long life in the shelves catering to the needs of b-students and b-faculty.

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- § What is the central message of the article you propose to write? Moreover, what is new, useful, counterintuitive, or important about your idea?
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- § Who is the audience for your article? Why should a busy manager stop and read it?
- § What kind of research have you conducted to support the argument or logic in your article?
- § What academic, professional, or personal experience will you draw on to make the argument convincing? In other words, what is the source of your authority?
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