CHAPTER 1

INTRODUCTION

Today’s ‘knowledge based’ economy recognizes two important hidden dynamic factors in an organization. They include knowledge and information. Rise of the ‘new economy’ principally driven by knowledge and information has created a huge interest in intellectual capital (Stewart, 1997; Thurow, 1999; Petty and Guthrie, 2000). Academic glitterati, business gurus and practitioners recognize intellectual capital as a strategic tool which helps organizations in creating and sustaining competitive advantage. Research in Intellectual capital involves the quest in understanding the utility of Intellectual capital and its role in impacting the corporate performance.

Intellectual capital can be defined as intellectual resources that have been “formalized, captured and leveraged” to create assets of higher value (Prusak, 1998). While getting tuned to the new economic reality of transformation into knowledge economy, it is logical to treat intellectual capital as a resource than as a cost (Pulic, 2004). In the era of knowledge economy, companies not only produce products and services, but are finding ways to create value addition and wealth from their own resources to build sustainable business organizations.

Today, companies visualize themselves as learning organizations and understand that knowledge assets enhance innovation and play a vital role in improving business performance. The developers of Resource – Based View of the firm, Birger Wernerfelt (1984) and Richard P. Rumelt (1984) maintains that both tangible and intangible assets are potential strategic assets. Resource based view of the firm encompasses the advantages of both tangible
and intangible assets. This theory has gained wide acceptance in accounting, economic and management literature as it has been able to provide positive result linkages between resources of firms and measures of performance (Canibano et al., 2000). Even though many intangible assets do not find a place in the list of vital strategic assets, intellectual capital is generally considered as pivotal since it comprises of specific and valuable knowledge solely belonging to an organization. There has been an explosion of interesting studies on intellectual capital since Stewart published an article on “Brainpower” (Stewart, 1991) in FORTUNE magazine in 1991.

Identifying, valueing, reporting and managing intellectual capital has become crucial for companies to maintain competitive advantage and sustainable performance (Botnis, 1996; Edvinsson and Sullivan, 1996; Prusak, 1998; Stewart, 1991 and 1995). Intellectual capital contains non-financial measures and other information which could give important leads in understanding value drivers of an enterprise (Amir and Lev, 1996; Edvinsson and Malone, 1997; Ittner et al., 1997; Stewart, 1997; Bontis, 1999, 2001). Looking through the theoretical lens of Resource – Based View, the stakeholders of the firm include employees, shareholders, customers, government, suppliers and investors. In this context, the firms competing in the knowledge based economy need to be valued differently since traditional measures of accounting may not suffice. (Botnis, 2001; Svieby, 2000, 2001; Pulic 1998, 2001; Edvinsson, 1997; Pablos, 2002) are of the view that traditional measures of financial performance are not enough to value knowledge firms. Many researchers fully agree to the view that present accounting system needs complete overhauling to meet the needs of today’s dynamic business organizations. Knowledge – based companies acquire, develop and leverage intellectual capital to remain successful. The old TQM dictum “what gets measured improves” is highly relevant here. Companies must manage by numbers. Market-value of new generation knowledge based companies
reflects the value placed on intellectual capital. But the irony is that matrices for the knowledge economy are not fully developed. As of now accounting standards and financial accounts are inherently unsuitable for recognizing IC. Companies need to improve their disclosure and reporting of intellectual capital and value creation strategies. This step can go a long way in understanding the true value of an organization.

The biggest challenge faced by academicians and management practitioners is in developing a framework using existing theories to crystallize the concept of intellectual capital. Till date there has not been much of consensus arrived at measuring and reporting intellectual capital (IC). In consequence, it is difficult to fully understand the impact of intellectual capital on organizations performance because of its intangibility and multidimensional nature. [From here onwards Intellectual capital would also be represented by acronym IC and corporate performance by CP]

This dissertation is an empirical study on the nature of intellectual capital, its efficiency and relationship with corporate performance and its ability to impact corporate performance by employing multivariate analysis. This study takes a broad analytical perspective on intellectual capital valuation by using Ante Pulic’s VAICTM index. This tool has been employed to measure the intellectual capital value creation efficiency of selected Indian Industries like Banking industry, Pharmaceutical industry, Information technology industry and Electronics industry which are highly intellectual capital intensive. Pulic’s approach uses human capital (VAHU), Physical Capital (VACA) and structural capital (STVA) to measure the Intellectual ability of a company. This helps in understanding the relative importance of each component while measuring intellectual capital.
This dissertation attempts to contribute to literature in the following ways.

- Most of the recent researches in IC have a focus on the western economy. But the implications of IC would be more prominent in emerging economies since there is an abundant pool of human capital resources which are highly qualified and skilled. Therefore it is important to understand how these resources are utilized by specific sectors. This dissertation contributes to the literature by focusing on India which is one of the fastest growing economies in the list of emerging nations, second only to China. Moreover archival evidence provides proof that the concept of IC, its understanding and measurement is still in its infancy in emerging countries.

- This study uses intellectual capital efficiency index called VAIC™ to measure intellectual capital of selected Indian industries. This has been helpful in understanding the ability of Indian industries to create value from intellectual capital. Moreover, this research evaluates the corporate performance of selected Indian industries over a period of eleven years using VAIC™

- The result presents evidence on the relationship between intellectual capital and corporate performance by adopting PLS – Path Modeling technique.

- Finally this study presents evidence on the impact of intellectual capital on corporate performance and its predictive ability with respect to four different industries studied. Also, the findings aid unsophisticated investors to better understand the changing face of Indian business and suitability of using intellectual capital for evaluating business performance.
The study is organized as follows. Chapter 1 is Introduction to the study. Chapter 2 is on review of Literature followed by Research Framework and methodology. Chapter 4 is on empirical analysis and discussion. The last and final chapter is Findings and conclusion.

1.1 OVERVIEW OF INDIAN ECONOMY AND INDUSTRY

After independence in 1947, India followed social democratic policies till 1991. There have been two major attempts by government to bring in liberalization, but they suffered serious setbacks during 1966 and 1985. The economy during those days were characterized by extensive regulation, import substitution, public ownership, central planning, pervasive corruption, red-tapism and slow growth rate of economy. In 1991 India faced acute economic crisis. Its Balance of Payment position deteriorated drastically and in the end International Monetary Fund came for a bailout. Indian rupee was devalued and it pledged around 20 tons of gold to Union Bank of Switzerland and 47 tones to Bank of England as a part of deal. This crisis was converted into an opportunity by policy makers to bring about some fundamental changes in the economic policy of India. The neo-liberal policy consisted of stabilization-cum-structural adjustment measures. Main trust was on improving productivity, efficiency and competency of economic system. The Union Budget presented by Manmohan Singh, finance minister (1991-1996), on July 24 1991 changed the course of India’s history. In a single stroke it did away with myriad restrictions that were crippling the economy. Controls were dismantled, tariff, duties and taxes were cut, state monopolies were removed, private sector enterprises started blossoming and Indian economy was opened for international trade. The fall of Soviet Union taught India that mere socialism would not bring in economic growth and during the same time success story of China which produced a miracle economy by
embracing Market economy gave India the courage needed to accept liberalization as a pragmatic way for achieving economic growth and stability.

**Economic reforms:** Opening up of economy ushered Foreign Direct investment in India. FDI was allowed in Financial services, Coal, Defense, Mining, Media, Telecom, Power and Special Economic Zones were set up to enable promotion of exports of goods and services. Rupee became partially convertible and further measures are in pipe line to increase capital account convertibility. More proposals are on to increase the FDI limit in many major areas. Reforms started by P.V.Narasimha Rao government were carried forward by successive governments. India showed to the world that it is a resilient economy by effectively battling and surviving the Asian financial crisis. Different governments were in office from 1990 till date and all of them have equivocally stood for liberalization and the basic direction of reforms has remained the same.

In early 2000 India started reaping the benefits of liberalization and since has risen to the status of an economic superpower. GDP growth rate was at 9% when liberalization peaked in 2007. One of the major effects of globalization was the emergence of strong and buoyant middle class with high purchasing power. Reservations for small scale industries were phased out slowly and banks started lending in a big way by providing cheap loans for housing, retail sector, consumer durables which helped these industries to flourish. Exports grew and its pattern shifted from exports of traditional items to automobile, steel, software etc. There have been huge reforms in the education sector which helped India in producing qualified, talented and skilled human capital to the world. Indian growth story is like a fairy tale and has been very fascinating and intriguing. Reforms have helped India to achieve a CAGR of around 8% in the last five years compared to 3.5% CAGR
from 1950 – 1990. Today India is the second fastest growing economy in the world and the tenth largest in terms of GDP.

India will continue to grow as one of the fastest growing economies in the world. Now India requires a set of economic reforms with a social face. India needs growth with equity and sustainability. There is high level of socio economic disparity which needs to be addressed. It is high time to start a second set of policy reforms which should be capable of reducing corruption, providing good governance, improving infrastructure and healthcare, creating sustainable livelihood opportunities for economically weaker sections, fool-proof reforms in judiciary and better security management to safeguard the life and property of common man. Economic growth would be fruitful only when its benefits percolate down to the lowest strata of society. This would help India to become an economic superpower with its hands and mind full.

**Current Economic outlook:** India’s near – term economic outlook will not be as robust as 2010 -2011. Inflation remains a major problem and it is well above the comfort range of the central bank. Managing budget deficit is one of the biggest challenges for policy makers. The combined central and state government deficits stand well in excess of 10% of GDP. Industrial production would show a dip due to tight credit conditions and high cost. India’s service sector which is the biggest contributor to GDP will remain a key driver of economy in the coming years. India’s real GDP is expected to expand 7.5% on a factor – cost basis during FY 2010-2011 and it would remain at 7.7 % during FY2012-2013.

1.2 **INDIAN BANKING INDUSTRY – A SNAPSHOT**

India, one of the world’s largest democracies is all set to be a global growth outperformer in the coming years. It has a large rising domestic market which is the driver of growth. Banking Sector has always been a great
contributor to India’s economic growth. High savings rate and the efficacy of regulation by Reserve Bank of India has been the backbone of success of banking sector. After liberalization in 1991 Indian banking industry has opened up and now competing efficiently with the foreign banks. Major opportunity for banking sector lies in the fact that India is still under banked and per-capita deposits are very low. Savings of people often lie outside the formal banking system. Survival from Asian Financial crisis and beating economic depression during the recent slowdown of the world economy suggest that Indian banking system is fairly immune to the volatility in global markets.

According to Indian Banks association, the Indian Banking sector consist of 84 organizations. This includes 27 public sector banks, 27 private sector banks, and 33 foreign banks. Reserve bank also identifies 30 state cooperative banks, 95 regional rural banks and 55 urban cooperative banks. Public sector bank includes 19 nationalized banks, State Bank of India and its 7 associates and Industrial Development Bank of India (IDBI).

**Current outlook on banking sector and economy:** Despite India being high on Purchasing Managers Index data, trends show that GDP growth rate will be at 3 years low, around 6.8 %. There is a chance for recovery since RBI has gone for a policy rate cut during the current financial year. These policy cuts would give the much needed monetary policy boost.
Table 1.1 India’s Economic Activity

<table>
<thead>
<tr>
<th></th>
<th>2012f</th>
<th>2013f</th>
<th>2014f</th>
<th>2015f</th>
<th>2016f</th>
<th>2017f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal GDP, INRbn  (^{1,4})</td>
<td>10241.3</td>
<td>118401.2</td>
<td>133486.1</td>
<td>150232.6</td>
<td>168954.7</td>
<td>189900.4</td>
</tr>
<tr>
<td>Nominal GDP, US$bn  (^{2,4})</td>
<td>2287.6</td>
<td>2620.2</td>
<td>3108.8</td>
<td>3669.8</td>
<td>4223.6</td>
<td>4747.5</td>
</tr>
<tr>
<td>Real GDP growth, % change Y-o-Y  (^{2,4})</td>
<td>7.3</td>
<td>7.8</td>
<td>7.7</td>
<td>7.5</td>
<td>7.5</td>
<td>7.4</td>
</tr>
<tr>
<td>GDP per capita, US$  (^{4})</td>
<td>1818</td>
<td>2055</td>
<td>2407</td>
<td>2805</td>
<td>3189</td>
<td>3542</td>
</tr>
<tr>
<td>Population  (^{1}) mn</td>
<td>1258.4</td>
<td>1275.1</td>
<td>1291.8</td>
<td>1308.2</td>
<td>1324.4</td>
<td>1340.4</td>
</tr>
<tr>
<td>Industrial Production index, % Y-O-Y, ave  (^{3,4})</td>
<td>0.0</td>
<td>7.5</td>
<td>7.9</td>
<td>7.6</td>
<td>7.5</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Source: Business Monitor International

Notes:  \(^{1}\) BMI forecasts, \(^{1}\) GDP at market prices, Fiscal years ending March 31(1990 = 1990/91), \(^{2}\) 2011 =FY 2011/12, Factor Cost=BMI Forecast Sources: \(^{4}\) Central Statistical Organization/BMI, \(^{5}\) World Bank/UN/BMI.

1.3 **INDIAN PHARMACEUTICAL INDUSTRY: A SNAP SHOT**

India is the fourth largest pharmaceutical market in Asia Pacific region behind Japan, China and South Korea. It is currently valued at US$13.4 billion and employs around 0.5 million people. The domestic market rank high in quality, technology, and diversity of products. It is important to note that pharmaceutical market is highly fragmented with around 20,000 registered sites for production. Around 250 firms hold more than 70% of the
market. Pharmaceutical spending is about 0.8% of GDP which is well below the global average of 1.4. Generic and OTC market drives market growth. In the recent years generic drugs have been exported in large amounts and it has been proved to be highly lucrative. India accounts for almost 10% of global drug production by volume and is focusing on R&D. There are around 3000 pharmaceutical manufacturers and majority of them focuses on generic drugs. Anyhow there is an underproduction of essential drugs, which has led to an increase in import of these drugs despite strict price controls.

The Intellectual Property law has been strengthened to a great extend ever since India signed WTO’s Trade Related Intellectual Property Rights (TRIPS) agreement. Origin of IP regime could be traced back to early 20th century prior to the outbreak of Second World War. The passing of Indian Patent Act -1970 in the year 1972 strengthened domestic medicine firms. At that time IP protection was given for pharmaceutical production process. The time period for this was given seven years. Any how the end product was not allowed to be patented. When international pressure mounted India signed the TRIPS agreement. Clause 3d was introduced in 2005 to Indian patents Act which is compatible with Article 27 of the TRIPS agreement. As a result of introduction of clause 3d patent cover was extended to all kinds of inventions including Product or processes including chemical and pharmaceutical products.

Current outlook on Pharmaceutical sector: A booming economy with a greater emphasis and involvement in health care ensures that growth will continue in the long term. Sale of medicines is likely to expand by 14% in 2011. Through to 2015 and 2020 India’s Pharmaceutical market will post CAGR of 14.6% and 13.5% respectively. Prescription drug market is expected to grow by 14% in 2011-2012. Sale of prescription drugs will post a CAGR of 15.6% in the years 2011 – 2015. The prescription drug market
would have reached a value of INR 906 billion by 2020 and it would have accounted for 80.1% of market share of overall market. The patented drug market would remain as a marginal player. Its sales would have reached INR 114.8 billion by 2015.

Generic drug market which is one of the major constituent of the pharmaceutical market in India is likely to see robust growth. The reason may be the low pack prices. Current valuation of generic drug market is about INR 456 and it would reach INR 1,685 by 2020. The forecast for this market is CAGR of 16.1 % through to 2020. Another important constituent of pharmaceutical market is OTC market. 80% of OTCs are sold through chemist and drug stores. Leading OTC categories include vitamins and minerals, cough and cold medicine, gastro intestinal remedies, dermatological, herbal medicine and analgesics. The major threat to the OTC market is from traditional medicines which include ayurveda, unani and siddha. Around 70% of people in India use traditional medicines for primary health care and they are not recorded in industry statistics. Current valuation of OTC market is around INR 122.9 billion and is likely to reach INR 237.8 billion by 2015 representing a CAGR of 14%. (Source: BMI) Positive political and economic outlook for India in the long run is likely to enhance India’s image in local and international pharmaceutical market as a potential supplier for quality pharmaceutical products.

1.4 INDIAN INFORMATION TECHNOLOGY INDUSTRY – A SNAPSHOT

The Indian IT industry is one of the key drivers and a major contributor to the ever growing Indian economy. IT software and Services industry was estimated to account for 7% of India’s GDP and 35% of exports in 2008. Indian market for IT products and services is now projected to increase from US$ 18.6 billion in 2011 to US$ 40.5 billion by 2015.
According to data from Indian IT association and NASSCOM, India’s technology and business services revenue accounted for 6.1% of GDP a drastic increase from 1.2% in 1998.

**Current Outlook for Indian IT industry:** The market is likely to grow at a CAGR of 21% between 2011 and 2015. Annual PC sales are expected to rise to above 20mn by 2015. It is estimated that 45% of India’s population which is under 25 will become a major driver for PC sales. The government’s ultimate aim is 1 billion internet – connected computers in India. There is enough potential for India to outdo China over the next couple of years in growth of PC adoption usage. India’s IT services market is estimated at around US$17.2 billion by 2015. The speed and determination with which the government implements the e-governance plan would be a determining factor and biggest growth driver in the IT segment. Overall hardware market is expected to grow to US$15.4 billion by 2014. Combined software and services’ spending is likely to increase to US$18.7 billion by 2014. (Source: BMI). The table given below shows the valuation of different segments of IT sector and their forecast.
Table 1.2 India’s IT sector – (valuation in US$)

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<tbody>
<tr>
<td>IT market</td>
<td>13253.5</td>
<td>16301.8</td>
<td>18584.1</td>
<td>22486.7</td>
<td>27883.6</td>
<td>34296.8</td>
<td>40470.2</td>
</tr>
<tr>
<td>IT market as a % GDP</td>
<td>1.01</td>
<td>1.04</td>
<td>1.07</td>
<td>1.08</td>
<td>1.06</td>
<td>1.08</td>
<td>1.09</td>
</tr>
<tr>
<td>Hardware</td>
<td>6679.8</td>
<td>8020.5</td>
<td>8948.2</td>
<td>10591.3</td>
<td>12840.4</td>
<td>15433.6</td>
<td>17786.7</td>
</tr>
<tr>
<td>(computer market sales)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>5009.8</td>
<td>6276.2</td>
<td>7303.6</td>
<td>9017.2</td>
<td>11404.4</td>
<td>14301.8</td>
<td>17199.8</td>
</tr>
<tr>
<td>Software</td>
<td>1563.9</td>
<td>2005.1</td>
<td>2332.3</td>
<td>2878.3</td>
<td>3638.8</td>
<td>4561.5</td>
<td>5483.7</td>
</tr>
<tr>
<td>PCs (including notebooks)</td>
<td>5343.8</td>
<td>6496.6</td>
<td>7266</td>
<td>8684.8</td>
<td>10631.8</td>
<td>12779</td>
<td>14727.4</td>
</tr>
<tr>
<td>Servers</td>
<td>601.2</td>
<td>721.9</td>
<td>805.3</td>
<td>953.2</td>
<td>1155.6</td>
<td>1389</td>
<td>1600.8</td>
</tr>
</tbody>
</table>

Source: Business Monitor International

1.5 INDIAN ELECTRONIC INDUSTRY – A SNAPSHOT

During 2005, India was ranked 2nd in terms of electronic industry attractiveness. To appeal to investors 100% FDI was allowed in electronic industry which has been established for exports. Indian electronic industry could be divided into consumer electronics, computer and strategic electronics, Communication and Broadcasting equipment and electronic components. Liberalization of economy has changed the lifestyle of people and aspiration levels of youth have reached new highs. Moreover easy bank credit facility by banks has provided a big impetus for the growth of this industry. The sale of computers, PCB, connectors etc is expected to grow beyond 28 %. The production of communication and broadcasting equipments was stagnant during 2007, 2008, but has picked up during the recent years. The production in strategic electronics is expected to grow beyond 35.5%. The
1.6 IMPORTANCE OF THE SELECTED INDUSTRIES FOR THIS STUDY

The reasons for selecting Information technology, Pharmaceutical, Banking and Electronic industry in this study has been due to its innate relevance and dependence on intellectual capital. Moreover these sectors have contributed heavily towards Indian growth story.

Indian Pharmaceutical industry is one of the largest in the world characterized by multitude of manufacturers contributing to more than 10% volume of the global sales. India has a highly regulated pharmaceutical market and the prices of bulk drugs and formulations are controlled by government. With the advent of WTO, big reorientation has been happening in the pharmaceutical industry. Indian pharmaceutical companies have been doing everything possible to withstand the global competition. Earlier R&D spend was lower, but things have changed. Major pharmaceutical companies have been spending anything close to 10% of their turnover in R&D. Indian Pharmaceutical companies also enjoy the availability of highly talented human resource with technical and managerial competence. The use of skilled manpower for major R&D activities, their improvement and training, heavy investment in R&D infrastructure and continuous efforts by organizations to develop new patents and retain their ownership have all made this industry an excellent choice for the study on IC.

Indian banking industry has been on the high growth trajectory since the liberalization. There have been lot of changes in banking policies and regulations since then and this has helped in improving the performance. Basel II norms have made banks to gear up for challenges of the market.
Performance efficiency has become more compelling. Banking industry being in the services sector employs physical and human capital in a big way since the industry has opened up for external participation. From the research perspective banking industry employs highly efficient human resources, structural resources and physical resources, hence an apt choice for this study.

The Indian information technology industry has been exhibiting signs of growth and transition even before the liberalization era. Once the country embraced liberalization things totally changed and Indian IT industry at present command huge respect from their international counterparts. All this has been possible because of the adoption of benchmark practices of IT companies and contributions made by talented pool of highly qualified human resources. Indian IT sector contributes heavily towards the Indian GDP. IT sector is considered to be one of the biggest foreign exchange earner’s for India. Huge investment made by IT companies in development of R&D, patents and Integrated circuits which constitutes intellectual capital along with the interest shown by the companies for development of human capital and structural capital identified with outsourcing process all make Information technology industry hot favorite for this study.

Indian electronic industry has become highly competitive and agile with the advancement of wireless technology and changes in the lifestyle of people. Electronic sector has contributed heavily towards the growth of many sectors including the telecommunication industry. Nanotechnology has given a boost to this industry and this involves great spending in improving and recognizing intellectual capital basically in the form of intellectual property, hence a right choice for this study.

All the four major industries chosen for this study have excellent intellectual capital orientation. Companies from these industries provide an
interesting sample set due to the right mix of different intellectual capital elements and excellent corporate performance.

1.7 INTELLECTUAL CAPITAL – AN INTRODUCTION

In general parlance IC means more than just ‘pure intellect’; it incorporates in itself action by intellect (Botnis, 1998; Feiwal 1975). It is not a static asset but an ideological process and creation of mind. Intellectual capital could be considered as the ability of an organization to transform knowledge or in other words the ability to navigate from ‘having knowledge to ‘using knowledge’. According to Thomas Stewart “intellectual capital is something that cannot be touched, although it slowly makes you rich”.

In 1980’s Peter Drucker – the renowned Management Guru had predicted that information is going to rule economy in a big way in the coming decades. Proving Ducker’s insight correct, in today’s competitive business world, the ability to learn, apply, collaborate and innovate faster is the key to sustainable competitive advantage. To stay ahead in business, companies need to capitalize on their Intellectual capital rather than physical capital.

The evolution of intellectual capital has three distinct origins of what has become intellectual capital movement. They could be identified as follows.

- Path breaking work of Hiroyuki Itami who studied the effects of “invisible assets” in Japanese corporations.

- Contributions by economist’s Penrose, Rumelt and Wemerfel who were proponents of resource based view of firm along with David Teece of UC Berkley who came out with the concept of technology commercialization.
- Work of Karl –Eric Sveiby who studied the human capital dimension of intellectual capital.

Earlier research works on intellectual capital have tried to explain value creation. Recent developments in this field are about value extraction form intellectual capital. Intellectual capital and assets are becoming an important source of value creation. The ability to mobilize and control intellectual capital and its resources are very critical for survival of the organization. Intellectual capital is that concept which helps managers in an organization to identify and classify the knowledge components. Recent research on IC has to a great extent helped to refine the concept of IC and its dynamic nature. Figure – 1 shows the diversity of contributors in this field and their influence on each other and Table 3 shows the work of these contributors.

![Figure 1.1 Important contributors to the development of Intellectual Capital](image)

(Source: Patrick Sullivan)
Table 1.3 Major contributions in IC development and their timeline

<table>
<thead>
<tr>
<th>Time line</th>
<th>Name of contributors</th>
</tr>
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<tbody>
<tr>
<td>1980</td>
<td>Hiroyuki Itami publishes “Mobilizing Invisible Assets” in Japanese</td>
</tr>
<tr>
<td>1981</td>
<td>Brian Hall establishes a company ‘Omega Research” later named as Values Technology to commercialize research in Human values.</td>
</tr>
<tr>
<td>1986</td>
<td>David Teece publishes an article called “profiting from technological innovation” which has been instrumental in promoting resource-based view of firm in strategic management.</td>
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</table>
| 1988      | Karl Eric – Sveiby is the founding father of Swedish movement in knowledge management and intellectual capital.  
- First to recognize the need of valuation of human capital.  
- Pioneering works of Sveiby include developing accounting practices for measuring intangible assets.  
- Publishes the book -“The invisible Balance Sheet” which has proposed the theoretical background for measuring knowledge capital and identifies customer capital, individual capital and structural capital as components of intellectual capital. |
<p>| 1990’s    | Leif Edvinsson the corporate director of intellectual capital at Skandia built on the concepts of Sveiby and published first Skandia annual report with intellectual capital statement. This could be regarded as one of the foremost steps in intellectual capital reporting |</p>
<table>
<thead>
<tr>
<th>Time line</th>
<th>Name of contributors</th>
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</table>
| 1992      | The term *intellectual capital* was coined in the presence of Thomas Stewart.  
  - Later in 1992 Stewart published an article called Brain power in Fortune Magazine and later wrote “intellectual capital”.  
  - He has become one of the visible spokesperson for intellectual capital and he continues to write about intellectual capital and has written a book *Intellectual Capital: The new wealth of organization*. |
| 1994      | Partick Sullivan, Gordon Pettrash and Leif Edvinsson are considered as founding members of ICM gathering. |
| 1995      | Hubert St. Onge established the concept of Customer capital and is considered as one of the most creative thinkers in the field of learning and knowledge management. |
| 1996      | Focus of Patrick Sullivan’s work has been into value extraction from Intellectual capital |
| 1996      | Baruch Lev’s interest is on quantifying the value of intangibles. His work also includes finding the correlation between financial performance measures and those of indicators of intellectual capital performance. |
| 1998      | Gordon Pettrash, originally trained as an architect joined DOW Chemicals in 1986. He was asked to make an intellectual asset management function to find out whether management has overlooked any innovations or ideas and its possibility of commercialization. Pettrash developed an intellectual asset vision and implementation model. Following success of his work he was elevated as Dow’s Director of Intellectual capital/Knowledge Management. |
Above given are path breaking works by academicians and management practitioners who have made the field of Intellectual capital management vibrant and interesting. More discussions on definition, constituents and measurement of intellectual capital have been reflected upon in the literature review section.

1.8 RESEARCH MOTIVATION

Intellectual capital can be understood as knowledge – base equity of a company (International Federation of Accountants, 1998). Modern organizations recognize IC as an important tool for value creation. Despite the increasing recognition of intellectual capital as a strategic weapon to sustain competitive advantage, an appropriate method to measure intellectual capital is still in its rudimentary stage since IC is intangible and non-physical in nature. Conventional methods have been a failure in measuring and monitoring multiple dimensions of performance especially intangibles which are considered as difficult to quantify. Intellectual capital is one of the intangibles that has acquired star status during the recent years.

This research is motivated by the fact that investors of new economic age are astute and very critical in their outlook when it comes to investing their hard earned money. They understand that there are a multitude of factors that affects the performance of companies and it is not simply profit that matters.

Traditional methods of accounting practices do not provide for identification and measurement of intangibles including intellectual capital and this has resulted in widening of gap between market value and book value of companies. By excluding intellectual capital, conventional accounting measures have failed to provide true information about company’s performance and this may result in investors taking inappropriate decisions.
Investigating the relationship between intellectual capital and corporate financial performance will throw better insights into the capabilities of modern learning organizations. Studies on intellectual capital, its efficiency and relationship with other corporate performance measures have been intriguing. The valuation of intellectual capital represents a fundamental change in the way stakeholders look at performance measurement. It has more predictive value to the management and will better link a firm’s long term strategy with the short-term outcomes. It is interesting to note that there have been very few studies which have used emerging economies as a case for evaluating the implications of IC on specific industries. Indian economy is passing through a transition phase and is one of the fastest growing economies in the world after China. The growing significance of India in the global economy makes it interesting and important to study this evolving area of IC. This would benefit both the research community and policy makers as such studies would focus on (a) the relationship between intellectual capital and corporate performance (b) assessing the IC value creation capacities of different nations (c) the need for adoption of novel methods of measurement and reporting tools for IC (d) helps in understanding the impact of intellectual capital on corporate performance.

1.9 RESEARCH AIM

Shift from an input – driven (relying on land, labor, and capita for creating value to the economy) to knowledge – driven economy has been pivotal in creating a new competitive landscape. It has created new generation of employees namely “knowledge- worker” (Drucker, 1993) and knowledge creating company (Nonaka, 1991). The aim of this research is to look at value creation efficiency of Indian corporate from the perspective of intellectual capital valuation. This would help in understanding the capability of Indian companies to identify, use and derive value out of intellectual capital. The
research also seeks to measure intellectual capital by analyzing those critical components of IC that have a bearing on corporate performance. It is indeed important to understand the nuances of Intellectual capital since its measurement and reporting is still in its infancy, especially in emerging economies like India.

1.10 RESEARCH OBJECTIVES

Intellectual capital plays a pivotal role in the success of all kinds of organizations, that is to say that it is not confined to knowledge – enterprises alone. Several studies have highlighted the need for valuing organizations from intellectual capital perspective so that it overcomes the inadequacies of conventional financial measures. (Botnis, 1998, 1999, 2001, 2002, 2003; Pulic 1998, 2000; Stewart, 1997). Traditional measures may be unsuitable in the new economic age where value creation is driven by intellectual capital. Studying the relationship between intellectual capital and traditional counterparts in financial performance evaluation makes an interesting research proposition. Apart from this many researchers (Lev and Zarowin, 1999; Lev, 2002; Lev and Radhakrishnan, 2003) have provided evidence for the ever increasing gap between market value and book value. The invisible value omitted from financial statements has drawn wide research attention. Emphasis on the importance of IC measurement for twenty-first century companies is highlighted in the work of Marr and Adams (2004) where they say that the capabilities and core competencies of the firm could be enhanced using IC. Instead of directly measuring intellectual capital Pulic (2000a, b) has proposed a measure to find out the efficiency of value added by the intellectual capital - named as Value Added Intellectual Coefficient – VAIC™. The major components of VAIC™ could be traced to a firm’s resource base viz. Physical Capital, Human Capital and Structural Capital. VAIC™ is increasingly used in business and academics. (Pulic 1998, 2000a,
b, 2004; Firer and Williams, 2003). In the above context, the objectives of the research could be defined as follows:

- To estimate, evaluate and rank the Intellectual capital efficiency measured by VAIC™ with regard to four Indian industries namely Banking, Pharmaceutical, Information Technology and Electronic sectors for a period of eleven years (2000 – 2010).

- To study the significant relationship between IC variables and CP variables.

- To explore the differences among various industries with regard to intellectual capital and corporate performance

- To study the multivariate relationship and impact among observed variables that measure intellectual capital and corporate performance and study their predictive relevance.