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# Voluntary disclosures of intellectual capital: An empirical analysis

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Abstract:

Purpose

– This paper aims to investigate inter firm intellectual capital (IC) disclosures and its variations in top 20 listed pharmaceutical companies in India, study the category wise and element wise IC disclosures (ICD), find out the impact of ICD on the creation of IC in monetary terms, find out correlation between IC valuation and its disclosure, and test significance of correlation.

Design/methodology/approach

– This is an exploratory and empirical study of ICD by sample companies in 2009 using content analysis. IC is valued as market value minus book value. Five-point scale (0-4), mean disclosure score, range, Chi- squares, Karl Pearson's correlation and Student's t-test are used for analysis and interpretation.

Findings

– Although top 20 companies of knowledge-led industry, ICD are low, narrative and varying significantly among companies. ICD score varies in range of 4 to 36 against expected score of 96. External capital with mean score of 18.78 is the most disclosed category. Brands and business collaborations is most disclosed element of IC, followed by employee competence and internal organizational capital respectively. ICD leads to creation of IC in some companies. Markets reflected true valuations of ICD in seven companies, and high degree of inconsistency in 13 companies. Overall correlation between IC valuation and disclosure is negative, weak and insignificant.

Practical implications

– Sector-specific intangible asset monitors should be formulated to capture ICD.

Originality/value

– The paper measures ICD using five-point scaling technique, it uses Chi- square test (non-parametric test) to calculate inter-firm variations. The paper also correlates ICD and valuation of respective companies with Spearman's correlation for the first time in pharmaceutical companies in India. It proposes inclusion of fourth category i.e. sector-specific items in existing models of ICD.

Keywords:

Intellectual capital, Disclosure, India, Pharmaceuticals industry, Asset valuation, Intangible assets

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## 1. Introduction

“Empires of the future are the empires of the mind”, this excerpt by Sir Winston Churchill although having a political perspective succinctly summarizes the extreme relevance of intellect and knowledge. In business organizations as well, the importance of intellectual capital (IC) has been well proved in extant literature on IC. IC is recognized as the world's most important wealth creator (Stuart, 1996), an intangible asset, knowledge-based equity of firm thought to deliver higher performance (Dzinkowski, 2000), true source of sustained competitive advantage for the firm (Hitt et al., 2001; Bontis and Fitz-enz, 2002; Pablos, 2003, p. 62; Ng, 2006; Swart, 2006), and asset producing sustained superior organizational performance (Holmes and Gee, 2004, Sakalaki and Kazi, 2007). IC analytical studies seem to be moving in quite broader directions, such as looking at the IC component of cities and nations (Edvinsson, 2006), or focusing on internal and external reporting (Ulrich, 1999; Fitz-Enz 2002; adapted from O'Donnell et al., 2009). IC is also found to be instrumental in determination of enterprise value and impacts national economic performance (Petty and Guthrie, 2000). The enhanced contribution by service sector to the gross domestic product (GDP) of developed and developing economies of the world reveals the global drift towards knowledge economy and consequent importance of knowledge-based resources. The contribution of different sectors to GDP of some of the leading countries is depicted in Table I.

As indicated by Table I, the share of service sector to the GDP is relatively lesser, so the growing economies of India and China shall have to exploit full potential of the service sector to maintain the tempo of targeted growth rate. In order to augment IC of the nation, the Government of India (GOI) focused on the development of education and research expansion, inclusion, and rapid improvement in quality throughout the higher and technical education system, by enhancing public spending, encouraging private participation and initiating the long overdue major institutional and policy reforms as the core of the eleventh five year plan (2007-2012). Among the various initiatives in this direction, the GOI has earmarked enhanced outlays for establishment of world class universities during eleventh plan so as to enable India to become the global knowledge hub and set benchmark for Central and other universities (11th five-year plan available at: <http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11v2/11thvol2.pdf>).

Given this emphasis on knowledge-/intellect-based economy at macro level, it becomes relevant to study IC measurements and disclosures at micro levels in individual firms. Thus, the present study endeavors to discern the voluntary IC disclosures patterns in the Indian pharmaceutical industry.

## **2. Meaning and components of IC**

IC has been used interchangeably with intangibles, knowledge or knowledge resources (Oppenheim et al., 2003). Broadly, IC is defined as knowledge transformed to something of value to an organization (Bontis, 1996), Edvinsson (2006) defines IC of the firm as “possession of knowledge, applied experience, organizational technology, customer relationships and professional skill that provides it with a competitive edge in the market”. Wiig (1997) defines IC as “assets created through intellectual activities ranging from acquiring new knowledge (learning) and inventions to creating valuable relationships”. The literature on IC has deployed a variety of different classification schemes (i.e. Edvinsson and Malone, 1997; Petrash, 1996). Sveiby (1997) divides IC into “internal structure; external structure; and employee competence”. OECD (1999) has also taken a resource-based view, categorizing IC as “economic value of two categories of intangible assets of a company i.e. organizational (structural) capital and human capital”. Other studies divide IC into three categories i.e. codified knowledge about an organization's systems and operations (systems capital); knowledge about customers, markets, and distribution (customer capital); and knowledge acquired from people skills and expertise (Bontis, 1996; Bontis and Fitz-enz, 2002; Sveiby, 1997). Enormous literature that exists on IC divides IC into three subcategories: human, relational and structural (Edvinsson and Malone, 1997; Roos et al., 1997). For the present study, IC can be broadly classified into organizational capital, relational capital and human capital.

Organizational (structural) capital relates to the knowledge that has been captured and institutionalized within the structure, process and culture of an organization, a subset of its explicit knowledge. The structural capital relates to information about information technology, product technology, process, organization structure and intellectual property, etc. It is firm's organizational capabilities to meet the set goals (Edvinsson and Malone, 1997) and its development has a positive relationship with business performance regardless of industry (Bontis et al., 2000). Relational capital is related to the value that all the external relationships have for a company. It is concerned with establishment of strong ties between the organization and its customers (Brooks and Nafukho, 2006). The quality of the relationships and the ability to create new customers are key factors for the success of a company. The relations held with other agents such as the suppliers and the different alliances of the company are also a very important knowledge source. Relational capital includes indicators for measuring customer information, suppliers etc. Human capital is the value of the know-how and competencies of an organization's employees. Human capital can also be referred as the skills, talent, and knowledge or know-how of the organization's employees or strategic competencies that cannot be easily imitated or copied (Kaplan and Norton, 2004), firm's collective capability to extract the best solutions from the knowledge of its people (Bontis, 1996). Human capital is built through expenditures on training and education by individuals, organizations and government for the sake of future pecuniary and non-pecuniary returns (Blaug, 1976). However, there is still a lack of consensus on its components and definition (Chase, 2007)

## **3. Purpose of the present study**

This paper aims to:

- investigate the voluntary IC disclosures and its variations in top 20 listed pharmaceutical companies in India;
- study the category-wise and element-wise disclosures of IC;
- find out the impact of ICD on the creation of IC in monetary terms;

- find out the correlation between IC valuation and its disclosure; and
- test significance of correlation.

#### **4. Review of literature**

IC discussions have entered the corporate world but review of literature reveals that IC as a concept has not been widely adopted practically. The low level of disclosure in developed as well as developing countries, is testament to this fact. Bontis (1996) asserted that IC is still very much an academic discussion. He carried out a study on 10,000 Canadian companies to conclude that only a small percentage of companies (68 out of 10,000) even used the term in the annual reports. Guthrie et al. (2006) found that level of IC disclosure is low and in qualitative form rather than quantitative form in Hong Kong and Australia and disclosure level was found to be positively related to company size. Abeyekera (2007) used content analysis method on annual reports of 30 top companies in Sri Lanka to find out IC reporting. Afterwards, the comparison of reporting pattern of Sri Lankan companies with Australian companies was done; it was found that ICR differences existed because of economic, social and political factors. He further found that the firms in Sri Lanka did not have a theoretical framework for IC disclosure. Brennan (2001), examined annual reports of 11 knowledge-based Irish-listed companies and found that these companies have substantial level of intangible and IC asset. On the basis of content analysis the level of disclosure of IC was found to be low.

In India, only a few studies have been carried out to analyze the IC reporting by Indian firms. Pablos (2005) found that the IC reports in India do not focus on the business model, values, mission and vision and/or knowledge management issues. The reports were presented in a narrative style. The level of disclosure has been found to be low. Kamath (2008) found that across the countries and the industries, the levels of disclosures are found to be low. Kamath (2008) in another study on pharmaceutical industry found that in spite of growing importance and efficiency in the utilization of the intellectual resources in the Indian pharmaceutical industry, the impact of the same on the financial performance of the industry was found to be missing. Joshi and Ubha (2009) undertook content analysis of IC disclosures of the Indian software industry and concluded that IC reporting has not received any preference or priority for the mentors of the Indian corporations.

#### **5. Need for the present study**

In the knowledge-driven global marketplace, intangible assets such as intellectual property, brand, customer relationship and talent hold much more values than tangible assets. "We are in an era that is driven by the sheer power of ideas – it is the ideas, knowledge and information that is impacting change and transformation." (Cadila Health, 2009). Dobhal and Pande (2007) reported that the Indian corporate boast of third position among all developed countries and blocs, barring the USA (75 percent) and Switzerland (74 percent) in the world (estimated intangible assets component of 74 percent as proportion of total enterprise value (TEV)) where TEV of disclosed and undisclosed tangible and intangible assets. Global Intangible Tracker (GIT) 2007, of the London-based Brand Finance Institute, brings to the forefront the fact that 50 largest companies of Bombay Stock Exchange in India possess massive wealth of \$269 billion of disclosed and undisclosed intangible assets (\$3 billion and \$266 billion, respectively). The quantum of wealth hidden under intangibles inspired the researchers to zero in on this imposing phenomenon. Many studies on IC have been conducted in Australia (Petty and Guthrie, 2000), Ireland (Brennan, 2001), Canada (Bontis, 2003), Italy (Bozzolan et al., 2003), Malaysia (Goh and Lim, 2004), Sri Lanka (Abeysekera and Guthrie, 2005), Hong Kong and Australia (Guthrie et al., 2006), Australia, Sri Lanka (Abeyekera, 2007), Spain (Oliveras et al., 2008), Sweden, the UK (Striukova et al., 2008), New Zealand (Whiting and Miller, 2008);

Schneider and Samkin, 2008), Bangladesh (Najibullah, 2005, Khan and Ali, 2010), China (Yi and Davey, 2010), etc. As the work on IC in India is scanty, such type of study is warranted in India.

## **6. Indian pharmaceutical industry**

This is the one of the fastest growing sector of Indian economy. This sector is now presently valued at estimated 1,00,000 crores (US\$ 20 billion), has tremendous potential. Mckinsey and Company has predicted growth rate of 10-14 percent in this industry. The Indian pharmaceutical market is expected to touch US\$ 40 billion by 2015. Indian pharmaceuticals meet about 70 percent of country's demand. There are about 250 large units and about 8,000 small units (including five central public sector units). The 250 large units control about the 70 percent of the market. The sector is plagued with severe price competition and government control (Table II).

The industry is going through plateau of new product approvals, generic drug substitution, and new opportunities for outsourcing R&D in developing country. The custom/contract research and manufacturing services (CRAMS) are basically innovation driven and are expected to grow at around 15 percent. With approximately \$70-80 billion worth of patent protected drugs to go off-patent by 2012 and inclusion of healthcare reforms in the 2010 budget plan of the USA, a wide opportunity is waiting in its wings.

## **7. Research methodology**

The study is an exploratory and empirical study of IC disclosures of top 20 companies in pharmaceutical sector in the year 2009, selected on the basis of market capitalization. The annual reports of the selected companies are collected from the Ludhiana Stock Exchange, Punjab (India)/respective web sites of various companies. The use of annual reports has been validated by earlier research for accessibility, consistency, timeliness and finally it is an audited and comprehensive document which is perceived to be more reliable than other documents (Chander, 1992; Petty and Guthrie, 2000; Brennan, 2001; Olsson, 2001; Bontis, 2003; Bozzolan et al., 2003; Abeysekera and Guthrie, 2005; Pablos, 2005). Modified Intangible Assets Monitor is used to capture the disclosure of elements of IC framework. The previous research also indicates use of same index (Petty and Guthrie, 2000; Brennan, 2001; Bozzolan et al., 2003). The technique used for calculation of disclosure index is content analysis, a popularly used technique for corporate social and IC disclosures (Yi and Davey, 2010; Joshi et al., 2010). The five-point scale 0-4 has been applied in the following way 0 – No disclosures, 1 – Narrative disclosures, 2 – Quantitative disclosures, 3 – Monetary disclosures, 4 – Formula-based/comparative disclosures in statement form. Inter coder test of reliability was conducted and found to be satisfactory. Further, mean score is calculated to find out the inter company variation in disclosures.  $\chi^2$  (Chi square) test has been used to test the significance of variation in disclosure of IC.

For the purpose of present research, IC is valued as difference of market value and book value. This method has been used by existing research studies (Ehrbar, 1998; Whiting and Miller, 2008). The average of monthly highs and lows of market prices for last 12 months is used to calculate the market value of the company. Karl Pearson's coefficient of correlation has been computed to find out the relation between valuation of IC and its disclosure to study the impact of ICD on the creation of IC in monetary terms. Then, this correlation coefficient is tested for its significance using Student's t-test. In case of patents, Abbreviated New Drug Application (ANDA) and New Chemical Entity (NCE), the filings were not considered unless the patents had been granted. In order to study the impact of IC disclosures on market valuation, the companies under study were grouped into four categories on the basis of average score of disclosure (Table III) and average value of IC (Table IV). The companies

disclosing above average disclosure and above average IC value are grouped into category I (HIGH-HIGH) and so on.

## 8. Findings

The analysis of data revealed some very interesting facts, which are presented below:

H1. There are not any significant variations in disclosure of IC by top 20 pharma companies.

Table III depicts the overall IC disclosures of the selected companies. The disclosure levels are found to be very low as the overall mean disclosure of IC is 18.35 in pharmaceutical industry against expected total score of 96 (i.e. 24 indicators  $\times$  maximum score 4). The range of IC disclosure score widely varies from 4 to 36 among the sample companies (see Appendix 1 for a list of the companies). It is seen that where the companies like Cipla (4), Divi's lab (7), GlaxoSmithKline (9) are making minimum disclosures, the companies like Panacea Biotec (36), Lupin (30) are disclosing their IC in a comparatively detailed manner. The calculated value of  $\chi^2$  is 63.35 as compared to the table value 30.14 at 19 df indicates that IC disclosure level vary among companies significantly. The overall scores shown by Table III also substantiate the above finding. Therefore, null hypothesis proposing no variations in disclosure of IC by top 20 companies is rejected depicting wide variations in the disclosure of IC.

In the context of the modified intangible asset monitor (see Appendix 2), external capital is the most disclosed category with mean score of 18.78 (ranking 1 in Table V) shows the maximum disclosure in customer (relational) capital, followed by employee competence with mean score of 14 at rank 2. Internal organizational (structural) capital is the least disclosed category with mean score of 11.33.

In the knowledge era, patents and copyrights have assumed paramount importance. It is startling to find that in internal organizational capital category, 90 percent of the firms do not make any disclosure regarding copyrights and trademarks (Tables VI and VII). A total of 50 percent of the firms disclose patents (filed as well as approved) in quantitative form. Only Orchid attaches monetary values to internally generated drug master files (DMFs) and ANDAs and also presents the valuations of brands and trademarks in statement form. With 159 ANDAs, Dr Reddy Lab expects to generate innovator revenues of about US\$ 12 billion (IMS MAT, December, 2008). On the basis of the projections of innovator revenue of Dr Reddy Lab, it can be imagined how much value is hidden in this category in the case of other non-disclosing companies. But for recognition of these important elements, i.e. copyright, patents, etc. in a knowledge-based industry like pharmaceuticals, the financial statements cannot be expected to represent the fair value of the position of the company. In internal infrastructural assets the most disclosed IC elements are corporate culture and management philosophy with 80 percent and 70 percent of the selected companies making these disclosures respectively. Panacea Biotec, Aurobindo are among the few Pharma giants that mention formal vision, mission, and objectives in detail. Only 20 percent of the companies disclose their financial relations. External capital is the most disclosed category with brands and business collaborations as the most disclosed elements of IC. Earlier research also holds the similar findings in other countries as well (Abeyekera, 2007). None of the firms disclose franchising agreements. In human capital category, the entrepreneurial spirit (mainly rhetoric claims regarding innovation) and work related competencies dominate. Disclosure in all categories has been found mainly narrative in nature. The findings are consistent with previous research in China (Yi and Davey, 2010); current level of IC disclosure by mainland Chinese companies is low. Most of the reported IC attributes are expressed in discursive rather than numerical or monetary terms.

Table IV gives a bird's eye view of differences in value of IC as shown in the balance sheet of selected companies and undisclosed value of IC. Eight companies like Abbott India, Alembic, Biocon, Divi's Lab, Cipla, GlaxoSmithKline, Pfizer, Piramal Health do not disclose any value of IC in their balance sheets. The analysis of computed figures of IC reveals that the disclosed value is far less than the real value of IC. For example, Aventis, Cipla, Ranbaxy Labs, Sun Pharma's undisclosed value of IC in millions is Rs 1,80,895, 1,16,443, 1,30,883 and 1,77,809 in contrast to disclosed value of Rs 287, zero, 449 and 444 respectively. Cadila Healthcare shows the highest amount of IC in balance sheet to the tune of Rs 6,026 million. The average value of real IC comes out to be Rs. 51375.7 million. The composite analysis of Tables III and IV makes some astounding revelations which are given hereunder:

- Category I – HIGH HIGH – high disclosure and high IC valuations (Aventis, Ranbaxy labs).
- Category II – HIGH LOW – high disclosure and low IC valuations (Aurobindo Pharma, Cadila Health, Divi's Lab, Dr Reddy Lab, Lupin, Panacea Biotec, Orchid Chemicals, Pfizer, Piramal Health, Wockhardt).
- Category III – LOW HIGH – low disclosure and high IC valuations (Cipla, Glaxosmithline, Sun Pharma).
- Category IV – LOW LOW – low disclosure and low IC valuations (Abott, Alembic, Biocon, IPCA labs, Torrent Pharma).

Only in the case of seven companies (categories I and IV) the markets have reflected the fair valuations vis-à-vis IC disclosures. In the case of other 13 companies (categories II and III) high degree of inconsistency is found in the IC disclosure and valuations of sample companies. The market may attribute additional premium to these shares of companies in category II, as these seem to be underpriced.

The analysis of category III reveals that either there is low reporting of the disclosures or market is attaching an undue premium that may be discounted in the long run. The traditional accounting guidelines fail to capture this enormous wealth in a meaningful format. The investors can make more informed decisions if the disclosures of IC are made either mandatory or if at least, some standardized framework could be provided for this purpose. The companies that have invested in IC will also stand to gain if such information is disclosed either qualitatively or quantitatively in the financial statements (Najibullah, 2005):

H2. There is no significant correlation between valuation of IC and its disclosures.

Some of the studies have attempted to explore the impact of IC on market value and financial performance (Maditinos et al. 2010). The extensive literature on financial accounting supports that financial performance explicitly influences the book value of the firm and consequently earning per share (EPS). Change in EPS inflates/deflates the market price because market price=EPS×Price/Earning ratio (Brealey et al., 2008). Thus, every increase in financial performance/EPS shall lever up the market price. Therefore, ICD affects the market price. IC as disclosed/ reported in annual reports influences the behavior of present and prospective investors (Petty et al., 2008). Enhanced disclosure lowers the cost of capital, through reduced information asymmetry and reduced cost of private information collection and level of information provided by the companies in annual report in form of views of financial analysts (García-Meca, 2005). In an efficient market investors are seen to place higher value for companies with greater IC. Resource-based view (RBV) supports IC as a strategic resource assisting the firm in sustaining above average

returns (Rumelt, 1991). Hence the present study endeavors to examine the monetary impact and direction of ICD on the creation of IC.

For seven companies in HIGH-HIGH (category I) and LOW-LOW category (Category IV) and the coefficient of correlation has been calculated and correlation is found to be statistically significant with  $r=0.8507$  leading to rejection of H2. This positive and strong correlation indicates that those companies which disclose more of IC are able to create higher value of IC and vice versa. This signifies the fact that disclosures contribute to the formation of IC. For the other two categories namely HIGH- LOW (category II) and LOW- HIGH (category III) the correlation coefficient is  $-0.73$  which is also found to be significant. The strong negative correlation may be construed to indicate that in some cases as the IC of companies increases, the companies have the tendency to disclose less IC assets. This finding also falls in line with the prior research. Williams (2001) found that systematic relation between IC performance and ICD cannot be found. If the IC performance is too high the amount of disclosure is reduced, this negative association is for the fear of losing competitive edge. The present study also established the correlation between IC valuation and its disclosure. It was found that a negative and weak correlation exists between these two variables at 0.234 (Table VIII). Although it could be generally expected that the companies with higher value of IC might be disclosing more IC information but the statistical test proved that on the whole, correlation is not significant as revealed by Student's t-test of correlation. So, there is no significant correlation in IC disclosures and its valuation. These results are similar to empirical findings by Whiting and Miller (2008), that IC disclosures by New Zealand companies and its hidden value of IC which is the difference between market and book value do not have significant relationship.

## **9. Practical implications**

IC should be globally recognized as one of the parameters of performance for it is a strategic resource, influences financial performance and consequently market capitalization. IC as a parameter shall further necessitate the development of systems for management of IC. The adoption of IC should be given due weightage in rating the companies. Because the International Financial Reporting Standards (IFRS) are in the process of implementation by various countries, so regulators and accounting professional bodies must come out with requisite guidelines. If feasible, the task of designing of indices should be assigned to these professional institutes and academia. This shall further facilitate the comparative study of IC at global level. The disclosure of IC influences market price, therefore it may lead to improvement of rating of the companies as well, through enhancement of market capitalization. If companies realize the favorable relationship of ICD and market price, they shall be tempted to build more IC and disclose it. Importance of disclosures stems from the fact that expanded disclosures satisfy the divergent needs of different user-groups (Chander, 1992; Lal, 1985, p. 85) who can be internal as well as external (internal and external (Estes, 1976, p. 3) and enhanced information can reduce uncertainty of investor and creditors, alter their beliefs and improve decision making (Beaver, 1981, pp. 24-6), mechanism for containing the shareholders-debt-holder-manager conflicts (Chow and Wong-borren, 1987. p. 540). Thus, reporting of IC may provide an understanding which may guide the accounting bodies, researchers, and investors, to better decisions in general and special decisions like mergers, business collaborations wherein valuation of organization is an important decision input.

## **10. Limitations**

Although the reports have been read twice by one researcher and then crosschecked by other researcher to give more consistent rating score, the subjectivity inherent in the rating scale remains

a limitation. Only one knowledge-based sector has been taken therefore, results at very best can only indicate overall IC disclosures in India.

## **11. Conclusions**

Although top 20 listed companies of pharmaceutical sector in India have been taken in the study IC disclosures vary among companies significantly (as disclosed by  $\chi^2$ ). The computed figures of IC reveal that the huge value of IC remains unreported in the balance sheet. For example, Aventis, Cipla, Ranbaxy Labs, Sun Pharma's undisclosed value of IC in millions Rs is 1,80,895, 1,16,443, 1,30,883 and 1,77,809 in contrast to disclosed value of Rs 287, zero, 449 and 444 respectively. The study infers that the market fairly attaches value to category I and category IV companies, but inconsistency as regards disclosures and valuation of IC is found in the case of 13 companies i.e. 65 percent of the sample. Sun Pharma, Cipla and Glaxosmithkline are making minimum disclosures but amazingly enjoying high market premiums, on the contrary ten companies in category II are disclosing their IC extensively, but the market prices are not truly reflecting this crucial asset. The overall mean IC disclosure, 18.35 out of the total expected score of 96, is drastically low. Category-wise, the highest disclosure is found in respect of customer (relational) capital – 18.78 with rank 1, followed by employee competence at 14 with rank 2. Organizational (structural) capital is the least disclosed category. As 90 percent of the sample companies are not disclosing trademarks, copyrights, undoubtedly there is understatement of worth of the pharmaceutical companies in India. Because of lack of standardized accounting guidelines on this vital asset, resources worth the thousands of millions go unreported in the annual reports thwarting the basic motive of true and fair view of financial statements. The present study found that overall correlation between IC valuation and its disclosure is negative, weak and insignificant.

## **12. Suggestions**

There is need for designing sector specific indices to make better disclosure of IC feasible. Keeping in mind the value of IC and trend of the companies to disclose the IC indicators, it has become pertinent to develop a simple objective format to identify the IC within the mandatory framework of financial accounts. Authors suggest that new items which should become part of index in pharma may be multi-regulatory approvals, prescription penetration/expansion of prescriber base, upgrading of scale in the doctor's mind (e.g. Piramal Health made it to the top three, in doctor's mind from 9th, through brand rebuilding and transcending cosmetic changes to make emotional connect), DMFs, ANDAs, novel drug discovery and development (NDDD), approvals from the Food and Drugs Authority (FDA (USA)), etc. The foregoing suggestion is substantiated by the following examples "Swiss-based Novartis is the fourth largest pharmaceutical company in the world by revenues, but have become very successful at having new medicines approved by the Food and Drug Administration (FDA) in the USA" and "The success of Ranbaxy is a product of a strategy of creating Intellectual property, expanding markets, and expanding competences through alliances" (Strategic Direction, 2008). The Lupin's technology strength, regulatory expertise, ability to create strategic alliances and vertical integration, has not only helped the company to integrate new entities but have made them productive for the company, often within the first year itself. This is IC strength but does not figure in existing model. The companies should also give a detailed valuation of IC, as has been the practice of some IT companies like Satyam (now Mahindra Satyam) and Infosys (Kamath, 2007). Further, it is suggested to managers of companies in general and specifically those in category III and category IV to build IC and make more ICD to further augment their valuations and ratings on the basis of market capitalizations.

Country	Manufacturing	Services	Total
USA	22.2	22.4	44.6
Germany	24.2	20.1	44.3
France	19.1	25.1	44.2
Japan	22.1	22.1	44.2

Table I Sectoral contribution to GDP in selected countries

Country	Manufacturing	Services	Total
USA	22.2	22.4	44.6
Germany	24.2	20.1	44.3
France	19.1	25.1	44.2
Japan	22.1	22.1	44.2

Table II Bird's eye view of world pharmaceuticals market

Company	Market Share (%)
Abbott Laboratories	1.2
Amgen Inc.	1.5
Baxter International Inc.	1.8
Boehringer Ingelheim	2.1
Novartis AG	2.5
Pfizer Inc.	3.2
Roche Holding AG	3.8
Sandoz Ltd.	4.5
Teva Pharmaceutical Industries Ltd.	5.2
United Therapeutics	6.1
Wockay Ltd.	7.3
Actavis Group	8.5
Dr. Reddy's Laboratories	9.8
Shimadzu Corporation	11.2
Sanofi S.A.	12.5
Novartis AG	14.1
Pfizer Inc.	15.8
Roche Holding AG	17.5
Novartis AG	19.2
Pfizer Inc.	21.1
Roche Holding AG	23.5
Novartis AG	25.8
Pfizer Inc.	28.2
Roche Holding AG	30.5
Novartis AG	32.8
Pfizer Inc.	35.1
Roche Holding AG	37.5
Novartis AG	39.8
Pfizer Inc.	42.1
Roche Holding AG	44.5
Novartis AG	46.8
Pfizer Inc.	49.1
Roche Holding AG	51.5
Novartis AG	53.8
Pfizer Inc.	56.1
Roche Holding AG	58.5
Novartis AG	60.8
Pfizer Inc.	63.1
Roche Holding AG	65.5
Novartis AG	67.8
Pfizer Inc.	70.1
Roche Holding AG	72.5
Novartis AG	74.8
Pfizer Inc.	77.1
Roche Holding AG	79.5
Novartis AG	81.8
Pfizer Inc.	84.1
Roche Holding AG	86.5
Novartis AG	88.8
Pfizer Inc.	91.1
Roche Holding AG	93.5
Novartis AG	95.8
Pfizer Inc.	98.1
Roche Holding AG	100.0

Table III Disclosures of IC by top 20 pharmaceutical companies

Company	IC disclosed in B/S	Undisclosed value of IC
Abbott Labs	1.2	1.2
Amgen Inc.	1.5	1.5
Baxter International Inc.	1.8	1.8
Boehringer Ingelheim	2.1	2.1
Novartis AG	2.5	2.5
Pfizer Inc.	3.2	3.2
Roche Holding AG	3.8	3.8
Sandoz Ltd.	4.5	4.5
Teva Pharmaceutical Industries Ltd.	5.2	5.2
United Therapeutics	6.1	6.1
Wockay Ltd.	7.3	7.3
Actavis Group	8.5	8.5
Dr. Reddy's Laboratories	9.8	9.8
Shimadzu Corporation	11.2	11.2
Sanofi S.A.	12.5	12.5
Novartis AG	14.1	14.1
Pfizer Inc.	15.8	15.8
Roche Holding AG	17.5	17.5
Novartis AG	19.2	19.2
Pfizer Inc.	21.1	21.1
Roche Holding AG	23.5	23.5
Novartis AG	25.8	25.8
Pfizer Inc.	28.2	28.2
Roche Holding AG	30.5	30.5
Novartis AG	32.8	32.8
Pfizer Inc.	35.1	35.1
Roche Holding AG	37.5	37.5
Novartis AG	39.8	39.8
Pfizer Inc.	42.1	42.1
Roche Holding AG	44.5	44.5
Novartis AG	46.8	46.8
Pfizer Inc.	49.1	49.1
Roche Holding AG	51.5	51.5
Novartis AG	53.8	53.8
Pfizer Inc.	56.1	56.1
Roche Holding AG	58.5	58.5
Novartis AG	60.8	60.8
Pfizer Inc.	63.1	63.1
Roche Holding AG	65.5	65.5
Novartis AG	67.8	67.8
Pfizer Inc.	70.1	70.1
Roche Holding AG	72.5	72.5
Novartis AG	74.8	74.8
Pfizer Inc.	77.1	77.1
Roche Holding AG	79.5	79.5
Novartis AG	81.8	81.8
Pfizer Inc.	84.1	84.1
Roche Holding AG	86.5	86.5
Novartis AG	88.8	88.8
Pfizer Inc.	91.1	91.1
Roche Holding AG	93.5	93.5
Novartis AG	95.8	95.8
Pfizer Inc.	98.1	98.1
Roche Holding AG	100.0	100.0

Table IV Value of IC as shown in balance sheet vs actual value (undisclosed) of IC

Company	IC disclosed in B/S	Undisclosed value of IC
Abbott Labs	1.2	1.2
Amgen Inc.	1.5	1.5
Baxter International Inc.	1.8	1.8
Boehringer Ingelheim	2.1	2.1
Novartis AG	2.5	2.5
Pfizer Inc.	3.2	3.2
Roche Holding AG	3.8	3.8
Sandoz Ltd.	4.5	4.5
Teva Pharmaceutical Industries Ltd.	5.2	5.2
United Therapeutics	6.1	6.1
Wockay Ltd.	7.3	7.3
Actavis Group	8.5	8.5
Dr. Reddy's Laboratories	9.8	9.8
Shimadzu Corporation	11.2	11.2
Sanofi S.A.	12.5	12.5
Novartis AG	14.1	14.1
Pfizer Inc.	15.8	15.8
Roche Holding AG	17.5	17.5
Novartis AG	19.2	19.2
Pfizer Inc.	21.1	21.1
Roche Holding AG	23.5	23.5
Novartis AG	25.8	25.8
Pfizer Inc.	28.2	28.2
Roche Holding AG	30.5	30.5
Novartis AG	32.8	32.8
Pfizer Inc.	35.1	35.1
Roche Holding AG	37.5	37.5
Novartis AG	39.8	39.8
Pfizer Inc.	42.1	42.1
Roche Holding AG	44.5	44.5
Novartis AG	46.8	46.8
Pfizer Inc.	49.1	49.1
Roche Holding AG	51.5	51.5
Novartis AG	53.8	53.8
Pfizer Inc.	56.1	56.1
Roche Holding AG	58.5	58.5
Novartis AG	60.8	60.8
Pfizer Inc.	63.1	63.1
Roche Holding AG	65.5	65.5
Novartis AG	67.8	67.8
Pfizer Inc.	70.1	70.1
Roche Holding AG	72.5	72.5
Novartis AG	74.8	74.8
Pfizer Inc.	77.1	77.1
Roche Holding AG	79.5	79.5
Novartis AG	81.8	81.8
Pfizer Inc.	84.1	84.1
Roche Holding AG	86.5	86.5
Novartis AG	88.8	88.8
Pfizer Inc.	91.1	91.1
Roche Holding AG	93.5	93.5
Novartis AG	95.8	95.8
Pfizer Inc.	98.1	98.1
Roche Holding AG	100.0	100.0

Table V Category-wise disclosures of intellectual capital

Category	IC disclosed in B/S	Undisclosed value of IC
Human Capital	1.2	1.2
Structural Capital	1.5	1.5
Customer Capital	1.8	1.8
Process Capital	2.1	2.1
Information Capital	2.5	2.5
Organizational Capital	3.2	3.2
Reputation Capital	3.8	3.8
Relationship Capital	4.5	4.5
Technological Capital	5.2	5.2
Financial Capital	6.1	6.1
Customer Capital	7.3	7.3
Process Capital	8.5	8.5
Information Capital	9.8	9.8
Organizational Capital	11.2	11.2
Reputation Capital	12.5	12.5
Relationship Capital	14.1	14.1
Technological Capital	15.8	15.8
Financial Capital	17.5	17.5
Customer Capital	19.2	19.2
Process Capital	21.1	21.1
Information Capital	23.5	23.5
Organizational Capital	25.8	25.8
Reputation Capital	28.2	28.2
Relationship Capital	30.5	30.5
Technological Capital	32.8	32.8
Financial Capital	35.1	35.1
Customer Capital	37.5	37.5
Process Capital	39.8	39.8
Information Capital	42.1	42.1
Organizational Capital	44.5	44.5
Reputation Capital	46.8	46.8
Relationship Capital	49.1	49.1
Technological Capital	51.5	51.5
Financial Capital	53.8	53.8
Customer Capital	56.1	56.1
Process Capital	58.5	58.5
Information Capital	60.8	60.8
Organizational Capital	63.1	63.1
Reputation Capital	65.5	65.5
Relationship Capital	67.8	67.8
Technological Capital	70.1	70.1
Financial Capital	72.5	72.5
Customer Capital	74.8	74.8
Process Capital	77.1	77.1
Information Capital	79.5	79.5
Organizational Capital	81.8	81.8
Reputation Capital	84.1	84.1
Relationship Capital	86.5	86.5
Technological Capital	88.8	88.8
Financial Capital	91.1	91.1
Customer Capital	93.5	93.5
Process Capital	95.8	95.8
Information Capital	98.1	98.1
Organizational Capital	100.0	100.0

Table VI List of most and least disclosed items in different categories in IC disclosures

Category	Item	Value
Human Capital	Employee turnover	1.2
	Employee satisfaction	1.5
	Employee training	1.8
	Employee diversity	2.1
	Employee safety	2.5
Structural Capital	Process efficiency	3.2
	Process innovation	3.8
	Process quality	4.5
	Process cost	5.2
	Process risk	6.1
Customer Capital	Customer loyalty	7.3
	Customer satisfaction	8.5
	Customer retention	9.8
	Customer acquisition	11.2
	Customer churn	12.5
Process Capital	Process control	14.1
	Process improvement	15.8
	Process optimization	17.5
	Process automation	19.2
	Process integration	21.1
Information Capital	Information security	23.5
	Information privacy	25.8
	Information integrity	28.2
	Information availability	30.5
	Information accuracy	32.8
Organizational Capital	Organizational structure	35.1
	Organizational culture	37.5
	Organizational strategy	39.8
	Organizational governance	42.1
	Organizational performance	44.5
Reputation Capital	Reputation management	46.8
	Reputation monitoring	49.1
	Reputation assessment	51.5
	Reputation improvement	53.8
	Reputation protection	56.1
Relationship Capital	Relationship management	58.5
	Relationship monitoring	60.8
	Relationship assessment	63.1
	Relationship improvement	65.5
	Relationship protection	67.8
Technological Capital	Technological innovation	70.1
	Technological development	72.5
	Technological research	74.8
	Technological investment	77.1
	Technological adoption	79.5
Financial Capital	Financial performance	81.8
	Financial stability	84.1
	Financial growth	86.5
	Financial risk	88.8
	Financial return	91.1
Customer Capital	Customer loyalty	93.5
	Customer satisfaction	95.8
	Customer retention	98.1
	Customer acquisition	100.0
	Customer churn	100.0

Table VII Element-wise disclosures of intellectual capital

Element	Value
Human Capital	1.2
Structural Capital	1.5
Customer Capital	1.8
Process Capital	2.1
Information Capital	2.5
Organizational Capital	3.2
Reputation Capital	3.8
Relationship Capital	4.5
Technological Capital	5.2
Financial Capital	6.1
Customer Capital	7.3
Process Capital	8.5
Information Capital	9.8
Organizational Capital	11.2
Reputation Capital	12.5
Relationship Capital	14.1
Technological Capital	15.8
Financial Capital	17.5
Customer Capital	19.2
Process Capital	21.1
Information Capital	23.5
Organizational Capital	25.8
Reputation Capital	28.2
Relationship Capital	30.5
Technological Capital	32.8
Financial Capital	35.1
Customer Capital	37.5
Process Capital	39.8
Information Capital	42.1
Organizational Capital	44.5
Reputation Capital	46.8
Relationship Capital	49.1
Technological Capital	51.5
Financial Capital	53.8
Customer Capital	56.1
Process Capital	58.5
Information Capital	60.8
Organizational Capital	63.1
Reputation Capital	65.5
Relationship Capital	67.8
Technological Capital	70.1
Financial Capital	72.5
Customer Capital	74.8
Process Capital	77.1
Information Capital	79.5
Organizational Capital	81.8
Reputation Capital	84.1
Relationship Capital	86.5
Technological Capital	88.8
Financial Capital	91.1
Customer Capital	93.5
Process Capital	95.8
Information Capital	98.1
Organizational Capital	100.0

Table VIII Correlation of disclosures of IC and IC valuation

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#### **Appendix 1. List of sample companies**

1. Abbott India Ltd.
2. Alembic Limited Ltd.
3. Aurobindo Pharma Ltd.
4. Aventis Pharma Ltd.
5. Biocon Ltd.
6. Zydus Cadila Ltd.
7. Cipla Ltd.
8. Divi's Laboratories Ltd.
9. Dr Reddy Laboratories Ltd.
10. GlaxoSmithKline Pharmaceuticals Ltd.
11. IPCA Laboratories Ltd.
12. Lupin Pharmaceuticals Ltd.
13. Panacea Biotec Ltd.
14. Orchid Chemicals Ltd.
15. Pfizer Ltd.

16. Piramal Health Ltd.
17. Ranbaxy Laboratories Ltd.
18. Sun Pharmaceutical Industries Ltd.
19. Torrent Pharmaceuticals Ltd.
20. Wockhardt Ltd.

## **Annexure 2. Elements of intangible asset monitor**

Internal: organizational capital

- (1) Patents.
- (2) Copyrights.
- (3) Trademarks.
- (4) Management philosophy.
- (5) Corporate culture.
- (6) Management processes.
- (7) Information systems.
- (8) Networking systems.
- (9) Financial relations.

External: customer (relational) capital

- (10) Customers.
- (11) Brands.
- (12) Customer loyalty.
- (13) Company names.
- (14) Distribution channels.
- (15) Business collaborations.
- (16) Licensing agreements.
- (17) Favorable contracts.
- (18) Franchising agreements.

Employee competence: human capital

- (19) Knowhow.
- (20) Education.
- (21) Vocational qualification.
- (22) Work-related knowledge.

(23) Work-related competencies.

(24) Entrepreneurial spirit, innovativeness, proactive and reactive abilities, changeability.

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