

Financial Capital to Knowledge Capital: The Search for a New Paradigm in Accounting

Knowledge is a primary determinant of competitive advantage, not only of an enterprise but of nations as well. It has always remained—and will always remain—the single most important factor contributing to every type of development in human society, as it is this capital that enables man to use every other type of capital and resources for his benefit. The growing focus on Knowledge Capital and its productivity is of paramount importance in emerging knowledge-intensive economies like India. It is the lifeline of an organisation. This article attempts to identify the meaning and significance of Knowledge Capital, along with the study of prevalent models, in the Indian perspective.

The raft of knowledge ferries the worst sinners to safety, says Lord Krishna in the Bhagavad Gita, to highlight the value of knowledge in human life. The adage can be used with equal relevance in the economic sphere, and with a minor alteration we can say that the raft of knowledge can ferry even the poorest to prosperity.

It is in the quest for knowledge that Gautam Buddha left all material comforts. Guru Nanak quoted knowledge as the only means that can take us from darkness to light. Socrates became the thought leader of knowledge management about 2,400 years ago when he said that the wisest are those who realise their ignorance. And Peter F. Drucker has said that the source of wealth is human knowledge.

If we apply knowledge to tasks that we obviously know how to do, we call it productivity. If we apply knowledge to tasks that are new and different, we call it innovation. Only knowledge allows us to achieve these two goals. Thus, the importance of Knowledge Capital can hardly be overemphasised, and the growing focus on Knowledge Capital and its productivity is of

paramount importance in emerging knowledge-intensive economies like India.

Concept of Knowledge Capital

Knowledge Capital became popular in the early and mid-1990s with the rapid emergence of information and communication technologies. It is considered to be of great significance to the success of a modern organisation, more than physical capital, and is one of the most widely debated topics in global enterprises today. Both public and private sector organisations attribute most of their business value to intangible, knowledge-based assets.

At the same time, traditional measurement systems are limited in their capability to account for intangible values. Thus, the past decade has seen a rapidly growing realisation of the importance of intangible assets in the operation of organisations and in the valuation of companies. This realisation has given rise to the need to manage companies in a new way, and to measure their performance in a new way.

An illustration of the sharp differences in the managerial altitude of the industrial and post-industrial ages (Sveiby, 1997) has been in the appreciation that people can no longer be considered to be costs on the profit-and-loss statement but are, in fact, assets to be invested in, developed, and deployed carefully.

Knowledge Capital represents the awareness that information is a factor of production with

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land, labour, capital and energy (Eduardo Talero and Philip Gaudette). Knowledge is an important organisational resource that needed to be nurtured, sustained, and if possible accounted for (Michael E.D. Koenig). Human capital comprises individual talents and knowledge that is acquired through education, training and experience. Knowledge Capital is the documented knowledge that is available in such forms as research papers, reports, books, articles, manuscripts, patents and software. It consists of artefacts of the human mind that are stored outside the minds of their authors and are therefore available to whosoever seeks them (Ganesh Natarajan).

The essence of Knowledge Capital is not in its creation or codification; it is in its use and realisation of goals and aspirations. Knowledge created and codified is worthless until after it is put to use and people benefit from its use. Developing a new process is useless until it leads to a realisation of cost containment or improved quality. Intellectual property is of no value if it remains in the vaults of the intellectual property office. Knowledge Capital, for it to be of some value and worth, must lead to realisation. The full cycle of Knowledge Capital must commence from inception or creation to realisation. Realisation is important if we are to focus on wealth creation. Knowledge Capital that does not contribute to wealth creation is good for nothing, or is simply the epitome of gross inefficiency (Victor L. Magdaraog). Some descriptions of Knowledge Capital developed by different authors are worth noting:

- Intellectual material that has been formalised, captured and leveraged to produce a higher valued asset (Klein and Prusak, 1994);
- Accumulated value of investments in employee training, competence and the future (Skandia, 1996);
- Combined intangible assets of market, intellectual property, human-centred and infrastructure, which enable the company to function (Brooking, 1996, in Bontis, et al. 2000);
- Information and knowledge applied to create value (Edvinsson and Malone, 1997);

- Knowledge, information, intellectual property, and experience that can be put to use to create wealth (Stewart, 1997);
- The holistic meta-level capability of an organisation to generate creative and effective responses to extant and emerging, present and potential challenges facing it, in an ongoing manner (Rastogi, 2000a,b);
- Individual knowledge stock of an organisation as represented by its employees (Bontis 2002); and
- Difference between a company's market value and its book value, or the resources created from internal learning and development of valuable relationships (Pablos, 2003).

To conclude, it can be said that an organisation's collective Knowledge Capital is embedded in the skills and experience of its employees, as well as in its processes and corporate information repositories. It is a better indicator of future earnings capabilities or net worth of a company than any of the measures of traditional assets currently used.

Significance of Knowledge Capital

We are living in a time in which established rules of financial viability—such as making profits—should be discarded, according to prophets of the knowledge-based economy (Paul A. Strassmann). Knowledge Capital as a concept was created for updating the understanding of the competitive edge of business in knowledge-intensive, rapidly changing and turbulent business environments. Older forms of capital such as real estate, labour or financial capital, no longer seem to explain and predict the success of enterprises or nations (Stewart, 1997; Romer, 2000).

It is now understood that the source of success is the intelligence, flexibility and innovativeness of people, enterprises and nations. Says Michael Fairbanks, an internationally renowned consultant: "Human capital is the only investment with the possibility of infinite return. It is Knowledge Capital with legs—skills and capabilities. But Knowledge Capital has international patents.

How good a country is at accruing international patents is a clear sign of its ability to innovate and thus grow economically."

It was an innovation that gave Venice and trading cities in Europe an advantage in measuring tangible economies of manufacturing. But it is a wrong way of dealing with the modern world. We cannot afford to rely on a methodology that is not created for the world we live in (Fritz). Seventy per cent of the employment in advanced economies and seventy per cent of GDP created in those economies is attributable to the services sector. Yet, models used to manage and govern knowledge- and services-based economy are not tracking the investment in those assets. The crux of the problem of valuing this difference, according to Liell-Cock and Standfield, lies not only in the discrepancy of the outdated accounting tools used in operational management and investment, but in the general misunderstanding of the term 'intangible'.

There are two types of intangibles: hard intangibles (information protected by law, such as trademarks or non-accounting value evidenced by financial transactions such as goodwill); and soft intangibles (knowledge assets – 'what people know', relationship assets – 'who people know', emotional assets – 'motivation levels', and time assets – 'effectiveness levels'). Currently, people are aware of hard intangibles and often fail to understand soft intangibles. But 90 per cent of intangibles are soft intangibles (Chris Liell-Cock and Dr Ken Standfield). Says Robert Kaplan, Professor in Accounting at Harvard University: "Today, the long-term success of organisations comes from their knowledge-based assets—customer relationships; innovative products and services; operationally excellent processes; the skills, capabilities, and motivation of their people; and their databases and information systems."

Components of Knowledge Capital

Knowledge Capital comprises two interactive components: human capital and information. Human capital is the totality of human competence determined by imagination, intuition, education, skills, and experience, as influenced by emotional and volitional attributes

(e.g., motivation). This kind of knowledge can be difficult to document, communicate, and transfer. Information, on the other hand, comprises the documented experiences and achievements of humankind. The contents of books, papers, studies, reports, software, databases, CDs, and patents are all examples of information

Once documented and communicated, information becomes independent of its creators; it survives them and can be tested objectively for reliability and validity. It can be improved, readily transferred, and used, simultaneously if need be, by any number of people and in many applications. For example, a new engineering design can be copied and used time and again in many places and by many people. Because the value of information is collectively appropriable, capturing, documenting, and transferring individual knowledge within an organisation and tapping external sources of information and are critical to effective knowledge management.

Thus, Knowledge Capital exists in two ways. Firstly, within the minds of the people who know something useful that will make the organisation more productive. Secondly, Knowledge Capital exists as content. In this sense, content is the formal 'written-down' expression of Knowledge Capital.

Principles for Creation of Knowledge-Enabled Organisation

The following fundamental principles of design should be kept in mind while creating a "knowledge-enabled" organisation:

Build Knowledge Capital: Invest in knowledge efforts that create long-term competitive advantage, rather than short-term return on investment (ROI).

Link Knowledge Areas: Develop conceptual and transactional areas of knowledge within organisations by connecting planning, research, marketing, e-business, and customer relationship.

Drive Knowledge Solutions to Higher Grounds: It is not enough to simply collect information and make it available. The knowledge must trigger business decisions.

Exponents of Knowledge Capital

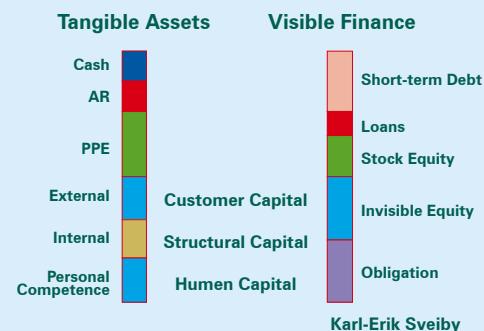
The evolution of Knowledge Capital management as a discipline followed a pattern that is detectable in hindsight, although to the people involved at the beginning there was no pattern discernible at the time. There were three distinctly different origins of what has become the Knowledge Capital Management Movement. The first was in Japan with the groundbreaking work of Hiroyuki Itarni, who studied the effect of invisible assets on the management of Japanese corporations. The second was the work of a disparate set of economists seeking a different view or theory of the firm. The views of these economists (Penrose, Rumelt, Wemerfelt et. al.) were coalesced by David Teece of UC Berkeley in 1986 in a seminal article on technology commercialisation. Finally, the work of Karl-Erik Sveiby in Sweden, published originally in Swedish, addressed the human capital dimension of Knowledge Capital—and, in doing so, provided a rich and tantalising view of the potential for valuing the enterprise based upon the competences and knowledge of its employees. Brief descriptions of some of the important contributions of the early exponents of the subject are given below:

Karl-Erik Sveiby's Model: Sveiby, Professor at Macquarie Graduate School of Management in Sydney, is the founding father of the very early “Swedish Movement” in knowledge management and intellectual capital. In 1986, he published his first book (in Swedish), in which he explored how to manage the rapidly growing field of knowledge companies—organisations that have no traditional production, only the knowledge and creativity of their employees.

Sveiby was the first to recognise the need to measure human capital, and he pioneered accounting practices for these intangible assets, testing them in his own company. In 1989, he published the results of the Konrad Working Group in the book *The Invisible Balance Sheet*, proposing a theory for measuring Knowledge Capital by dividing it into three

categories: customer capital, individual capital, and structural capital. The approach was adopted by a large number of Swedish-listed companies and, in 1993, the Swedish Council of Service Industries adopted it as their standard recommendation for annual reports, the first ever standard in this field. He discussed the key elements of Knowledge Capital and gave his model as under:

Key Elements of Knowledge Capital



Skandia's Model for Measuring Intellectual Capital

In Skandia's view, intellectual capital denotes intangible assets, including customer/market capital; process capital; human capital; and renewal and development capital. The value of intellectual capital is represented by the potential financial returns that are attributable to these intangible or non-financial assets.

The Skandia model attempts to provide an integrated and comprehensive picture of both financial capital and intellectual capital. Generally, the national economic indicators supported by hard quantitative data are used for examining the internal and external processes occurring in a country. However, the model questioned if such indicators provided a full and accurate assessment of the country's assets, and if they provide an indication of its potential for future growth. In doing so, it developed the framework of intellectual capital as a complement of financial capital.

In this model, there are four components of intellectual capital: market capital (also denoted as customer capital); process capital; human capital; and renewal and development capital. While financial capital reflects the nation's history and achievements of the past; intellectual capital represents the hidden national potential for future growth.

Paul A. Strassmann's Model: Paul A. Strassmann laid emphasis on the value of corporate knowledge. The creation of management value-added is something that defies the law of conservation of energy, which states that the output of any system in the universe can never be greater than its input. Delivering a positive management value-added must therefore be an act of creativity that springs forth from something that is intangible, as if it were an artistic conception. The source of this creative energy is Knowledge Capital. This ephemeral element can be quantified only indirectly by observing how much management value-added it yields.

To question why a company's market value is different (and higher) than its book value (as calculated by GAAP), he simply stated that it is because of "management value-added." A company's management value-added drives corporate success by making its financial capital assets exceed their book value. What drives "management value-added?" To a large degree, management value-added depends on the level of "Knowledge Capital", a term Strassmann trademarked to denote the value of accumulated knowledge held by employees. Ultimately, this accumulated knowledge, and the increase in working efficiency that comes with it, increases the total value of products or services a company is able to produce

Another way of looking at the same phenomenon is to infer the value of Knowledge Capital from its periodic yield. If management value-added is the interest earned from an accumulation of knowledge residing with the firm, then the value of this principal can be calculated by dividing the management value-

added by the price one pays for such capital.

Edvinsson and Malone's Model:

Edvinsson was responsible for creating ways to describe what Skandia called "hidden values" and developing an intellectual capital management model for the firm. As one of the best-known spokespersons for intellectual capital management, Edvinsson built upon the concept pioneered by Sveiby of reporting on external capital. The value chain, according to Edvinsson and Malone, expresses the various components of market value on the basis of the following model:

$$\text{MarketValue} = \text{Financial Capital} + \text{Intellectual Capital}$$

The key determinants of hidden national value, or national intellectual capital, are human and structural capital, defined thus:

$$\text{Intellectual Capital} = \text{Human Capital} + \text{Structural Capital}$$

Human Capital: The combined knowledge, skill, innovativeness, and ability of the nation's individuals to meet the tasks at hand, including values, culture and philosophy. This includes knowledge, wisdom, expertise, intuition, and the ability of individuals to realise national tasks and goals. Human capital is the property of individuals, it cannot be owned by the [organisation or] nation.

Structural Capital: Structural capital signifies the knowledge assets that remain in the company when it doesn't take into consideration human capital that is the property of individual members. It includes organisational capital and customer capital (also known as market capital). Unlike human capital, structural capital can be owned by the nation and can be traded.

$$\text{Structural Capital} = \text{Market Capital} + \text{Organisational Capital}$$

Market Capital: In the context of the original model applied to market enterprises, this component of intellectual capital was referred to as customer capital to represent

the value embedded in the relationship of the firm with its customers. In the context of national intellectual assets, it is referred to as market capital to signify the market and trade relationships the nation holds within the global markets with its customers and its suppliers.

Organisational Capital: National capabilities in the form of hardware, software, databases, organisational structures, patents, trademarks, and everything else of a nation's capabilities that support those individuals' productivity through sharing and transmission of knowledge. Organisational capital consists of two components: (a) process capital and (b) renewal and development capital.

$$\text{Organisational Capital} = \text{Process Capital} + \text{Renewal \& Development Capital}$$

Process Capital: National processes, activities, and related infrastructure for creation, sharing, transmission and dissemination of knowledge for contributing to individual knowledge workers productivity.

Renewal and Development Capital: This component of intellectual capital reflects the nation's capabilities and actual investments for future growth such as research and development, patents, trademarks, and start-up companies that may be considered as determinants of national competence in future markets.

Kaplan and Norton's Model: They suggested that traditional financial reporting was too narrow in its outlook, and that in particular it focused only in the present and in the past, with no thought to the future. It was argued that there should be instead a "balanced score card" that included the traditional financial measures, but that also measured other things such as comparative product quality, and customers satisfaction and turnover, things that were more indicative of current performance and better indicators of likely future performance. By traditional financial indicators, if the current balance sheet looks good, but customers have begun to

defect to the competition, there is nothing to reveal that the situation is in fact not healthy. The idea of the balanced score card is intended to resolve that anomaly. Intellectual Capital is of course one of the obvious items that should be included in the balanced scorecard.

Baruch Lev's Model: Lev first began his research into valuing intangibles in the early 1990s as a colleague of David Teece at UC Berkeley's Haas School of Business. Lev's work focuses on quantifying the value of intangibles and correlating those values with financial measures observable in capital markets. He says that the traditional accounting model, recognising primarily tangibles as assets, dealing asymmetrically with uncertainty (recognising expected losses but ignoring expected gains), and focusing on legally-based transactions (sales, purchases, capital expenditures) while abstracting from many value-changing events (e.g., a failure of a drug to pass clinical tests), was not designed to deal with the new economic environment, and therefore no longer serves essential managers' and investors' needs. He gave the new accounting paradigm for the business model of successful, knowledge-intensive enterprise as under:



In the above model, there are three major building blocks to the proposed new paradigm: Improved GAAP; Financial-Economic Capital—a double-entry system based on the economic definition of an asset; and Non financial-Path Matrices, an information system aimed at capturing the links between resources and outcomes. The three orbital systems are integrated through control links into a coherent information structure.

Andrew P. Sage's Model: A major determinant of organisational capabilities is the extent to which an organisation possesses Knowledge Capital, such that it can create and use innovative ideas to produce productive results and the ability to manage in a time of great change. Knowledge Capital may thus be defined as:

$$\text{Knowledge Capital} = \text{Competence} \times \\ \text{Commitment} \times \text{Communications} \times \text{Collaboration} \\ \times \text{Courage}$$

India and Knowledge Capital

The world has changed from an industrial to a knowledge economy. The engine of economic growth in Britain was textiles, in USA the industrial revolution was led by the railways, Sweden's take-off was occasioned by timber and timber products, and the same was done in Denmark by milk and dairy products. Over the last fifty years, India had struggled to find its leading sector, and now it has found it in the knowledge sector of the economy. The fact that a large number of Indians work successfully in Silicon Valley today is clear evidence. Many Indians, however, are sceptical about India's ability to succeed in the knowledge economy when it has failed in the industrial economy. The answer is that knowledge industries operate in the service economy, and are typically employment-intensive compared to manufacturing. Further, Indian knowledge workers also have a clear cost advantage. Companies such as NIIT, Zee and Bharti Telecom are creating masses of new jobs in services.

In recent years, India is being seen as the emerging laboratory for the world, a country

where high-tech companies from Intel to Microsoft and Nokia have set up R&D labs. In the past five years, more than 100 IT and science-based companies have set up research centres in India. Their recruits are young graduates straight out of universities and technology institutes or experts who are streaming back because they see India as the place to be. India has become a global hub for the back-office operations of several multinational companies because of its cost-effective English-speaking workforce, foreign banks, airlines, and telecom companies that have set up call centres and offices for processing information. If cost is what brought companies to India, quality is what is making them stay and expand. It is not an exaggeration to say that India is on the threshold of becoming a knowledge superpower because one of its strongest assets as a nation, in communities and in business, is the inventiveness and creativity of its people.

Now the question arises as to what kind of valuation system we have for this most important resource of the country. The answer is simply NONE. Seeing the growing importance of the concept, the Government of India has constituted a National Knowledge Commission. It is estimated that the commission will come out with recommendations by the year-end, which will ultimately facilitate far-reaching changes in the field of governance, education and research. To quote the chairman of the commission, "we are planting the seeds that will produce results within 20 years." It is an indication of the long-term planning that is required for such ventures to yield tangible results. As far as the measurement and valuation system are concerned, nothing concrete has been done so far.

Knowledge Capital apart, we could not develop any accepted and recognised model to implement human resource accounting which is the first step in the direction of measurement of Knowledge Capital. It is also to be noted that the efforts at the global level are more theoretical and conceptual, which are not sufficient to replace or amend the old

established system of double entry system of accounting. We must remember that people empowered through knowledge are the critical factors of the future. It is not land, capital and equipment any longer. It is people and knowledge/information. It is all the soft stuff that's the driver. If we get that in place, people will pick the right kind of hard assets they need to manage. It is by now understood that the source of success is the intelligence, flexibility and innovativeness of people, enterprises and nations.

We are in search of a new paradigm in accounting, which would enable us to record our new journey from Financial Capital to Knowledge Capital. The following suggestions may be of some relevance in this direction:

- Companies must create a culture that emphasises the importance of Knowledge Capital in achieving business advantage.
- The only—or at least the main—producers of wealth are information and knowledge... How knowledge behaves as an economic resource we do not yet fully understand... We need an economic theory that puts knowledge into the centre of the wealth-producing process (Drucker)
- Accounting bodies at the global level should join heads to develop an internationally accepted valuation system of Knowledge Capital, in order to give it concrete shape and meaning.
- The Institute of Chartered Accountants of India should concern itself with the knowledge-intensive economy of the country, and suggest ways and means of showing Knowledge Capital as an asset in the balance sheet instead of cost in Profit and Loss Account.
- We always blame overpopulation for the ills of the nation and term it as a liability. Can't we turn it into an asset, since these human resources are repositories of knowledge? It is possible only if we develop a precise and concise method of measuring this hitherto ignored asset of Knowledge Capital.
- Last but not least, India has been a centre of knowledge for centuries. The need of the hour is that we should recognise its potential for the development of economy by providing it a concrete valuation system. This is the only capital which we can boast of, and which can transform our developing economy into a developed economy. □