Chapter 3:

REVIEW OF CONTEMPORARY LITERATURE
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“If you have an idea, and I have an idea, and we exchange these ideas, then each of us will have two ideas.”

--George Bernard Shaw

3.1 Introduction

By providing an overview of KM concepts, processes, strategies, implementation guide and key managerial challenges, the last chapter had set the foundation for the extensive literature survey undertaken for the present research. That in itself, was based on review of recent literature on KM. In particular the published works of Tiwana (2000), MacDonald (1999), Hansen et al. (1999) and Davenport & Prusak (1998) acted as the ‘anchors’ for settling on the fundamental concepts of KM and clearing the lingering doubts on the subject.

Taking off from that stage, the present chapter first surveys in-depth additional literature relating to some supplementary concepts of KM relevant to the topic of present research. It is then followed by review of two distinct streams of literature – pertaining to KM in consulting companies and KM performance measurement. The implications of the literature reviewed for each of these three streams for the present study are also brought out. While attempting to bridge three separate streams of KM literature, this chapter thus provides a confluence of the different areas of KM research, paving the way for building the research framework for the present study.

3.2 Knowledge Management – Supplementary Concepts

The concept of KM as a set of processes as given by the Gartner Group was explained in last chapter. This process concept has been extended now to ‘map’ the KM space over type, level and context. The KM-IT relationship is also further reviewed critically in this section, followed by a look at building of learning organisations and evaluation of their effectiveness.
Mapping KM

Despres and Chauvel (2001) have reported on the research programme undertaken by them to explore various aspects of applied KM by analysing various reports, cases, analyses and projections in the KM field. They have developed a classification scheme for KM work based on four dimensions: process, type, level and context.

Process

Somewhat similar to the process classification given by the Gartner group, the knowledge processes suggested by Despres and Chauvel are:

- Scanning/ mapping: the world of business intelligence, perception
- Acquiring/ capture/ creation: the world of research, development and creation
- Bundling/ packaging/ storing: the world of codification, representation, databases, info-bases, knowledge bases, memory
- Sharing/ applying/ transfer: the world of competencies, teamwork, intranets and sharing across borders.
- Transforming/ innovating/ reuse- evolving: the world of leverage, intellectual assets and innovation

Type

Knowledge is not a simple, stable quantity. Different schools of philosophy and sociology give different accounts. Currently, the importance of tacit and explicit knowledge is recognised by managers and is the subject of considerable research within KM. The difference between these two types has already been studied.

Level

The significance of the three levels of social aggregations – individuals, groups and organizations – which are important particularly in knowledge intensive organizations – is already familiar in management studies. This is because most individuals in knowledge intensive organizations work in groups, using resources provided by the
organizations. Hence this interplay of the three levels becomes crucial for evaluating the performance.

**Context**

The importance of an organisation's context – which influences its systems, structures and expectations – is increasingly cited in KM literature. Whether a piece of information is meaningful or not depends on its context. KM efforts should begin by specifying their context(s) and build from there.

The above four dimensions create a map that positions most of the KM practices being applied by various firms. Figure 3.1 below illustrates the manner of positioning of KM activities of different firms with examples of Dow Chemicals, Buckman Laboratories and Hughes. Each cell is partitioned to include both tacit and explicit knowledge, and the overall framework is embedded in a context, which varies according to the analysis being carried out.

![Figure 3.1: Illustrative KM Positioning of Different Firms](image)

By plotting various KM activities on the map it becomes possible to define regions in which the different practices and processes cluster, as shown in Figure 3.2. Since few

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1 Source: Despres & Chauvel, How to map knowledge management, *Business Standard*, January 5, 2001
companies restrict themselves to a single cell, these regions correspond to the ways companies actually use KM.

Figure 3.2: Positioning of KM Activities: Process vs. Context

The point made by Despres and Chauvel is that KM covers the range of activities depicted in the map. KM comprises more than GroupWare or an Intranet (group level/package-store and share-apply), more than business intelligence (organisation level/scan-map) and more than a database of employee CVs (individual level/package-store). The KM map is a chart of the feasible range of KM application options, a navigation tool for implementation of KM in stages.

For most of its existence, KM has been rooted in the individual and his or her behaviour. With the formalisation of this field, attention is now shifting towards the systems and structures that encourage knowledge-intensive behaviour in a company – the generation, transfer, application and reinvention of knowledge – occasioned mostly by new information technologies. This KM mapping facilitates managers of various companies to visualise the ground their KM programmes are covering.

\footnote{Source: Despres & Chauvel, \textit{ibid.}}
KM & IT

While explaining the KM concepts in previous chapter, need for deeper understanding of the KM-IT relationship emerged. In particular, differences between a KM system and the enabling IT infrastructure components like Intranet, GroupWare or Data Warehouse were illustrated. This issue however needs elucidation, based on further literature study.

Krishna (2000) has noted that KM has to be enabled by Information Technology rather than driven by it. An IT-oriented approach to knowledge management merely offers a combination of algorithms, structures, tools and techniques. This approach "misses the woods for trees". This is because relevant knowledge often rests with the creative and intellectual individuals of an organisation, rather than only in documents and databases. Hence Krishna opines that approach towards KM should be more holistic and people-focused, and the behavioural aspects should not be lost sight of.

On the similar note, Arora (1998) states that in IT function, the “T” representing “technology” is no longer the critical factor for success. The “T” matters more now if it represents “transformation”, for which the limiting factor is the people’s ability to change, not technology. Arora further notes that handling resistance to change and making the organizational culture more conducive to change has emerged as the most critical human-centered challenge. For the knowledge-based organizations like consulting firms, this aspect assumes importance while evaluating and measuring the business performance.

McCampbell et al. (1999) have written about the fundamental differences between KM and IT and quoted from Sveiby (1997) that the confusion between knowledge and information has caused companies to sink billions of dollars in IT ventures that have yielded marginal results. They contend that business managers need to realise that unlike information, knowledge is embedded in people, and knowledge creation occurs in the process of social interaction. It is further noted that technology is a key enabler for the implementation of KM. IT’s role is emerging as an integrator of communication technology, rather than solely a keeper of information. The critical
role of IT lies in its ability to support communication, collaboration, and search for knowledge and information, not static repositories of “best practices”.

Most KM applications have evolved from managing documents, databases workgroups and customers to managing contexts. KM systems do more than track or store information. With collaborative group support provided by IT infrastructure, employees in a firm take part in virtual teams; brainstorm, develop, present and deliver knowledge; share documents or applications; discuss and manage projects; and coordinate activities. IT tools and solutions facilitate this.

**IT Tools & Solutions for KM**

The seven-layer KM system architecture explained earlier in last chapter provided a guideline for the choice of technology components that enable effective sharing of knowledge across a distributed enterprise. Putting in place architecture like this just ensures that the technology building blocks (including the hardware equipment) are available for further building the KM applications required for the enterprise. The specific capabilities of the KM system being developed for an enterprise in turn are dependent on specific IT tools and solutions.

Intel (2001) in a ‘white paper’ on *Knowledge Management in the Internet Economy* has given an overview of IT tools and solutions being adopted for new and emerging KM applications. Table 3.1 below depicts a KM technology roadmap – summarising some of the KM capabilities and corresponding technologies – existing today as well as emerging.

**Table 3.1: KM Technology Roadmap**

<table>
<thead>
<tr>
<th>Today and Near Term</th>
<th>Emerging</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM Capabilities: Organises information</td>
<td>KM Capabilities: Manages information and adaptively discovers knowledge</td>
</tr>
<tr>
<td>• Abstract and interact with static documents to provide active personal information</td>
<td>• Adaptive information access and analysis from disparate information sources</td>
</tr>
<tr>
<td>• Uncover relationships and patterns</td>
<td></td>
</tr>
<tr>
<td>• Organise and tag information</td>
<td></td>
</tr>
<tr>
<td>• Collaborate</td>
<td></td>
</tr>
<tr>
<td>• Data mining and analysis</td>
<td></td>
</tr>
</tbody>
</table>
Technologies: Intelligent interfaces and XML
- Visualisation, natural language processing
- Rule-based analysis
- Pattern matching
- Automatic tagging
- Intelligent agents for greater ease of use

Technologies: Profiles to configure workspace
- Monitors users, clusters data by user preference
- Software agents simulate business processes
- Context-sensitive searches
- Multi-language searches
- Platform security

The implications of the new KM technologies for a company's IT infrastructure are also described by Intel in its white paper. Implementation of KM implies a new role for the personal computer. In a company deploying KM system, the PC is transformed from a personal productivity and communications tool into a platform for Internet productivity, knowledge assimilation and e-Business success. Figure 3.3 below depicts such an environment where the PC functions to help businesses manage information overload and capture the value of the unstructured data and structured information that are the wellspring of e-Business success.

Figure 3.3: PC as the Knowledge Assimilation Platform in e-Business³

³Source: Intel (2001), Knowledge Management in the Internet Economy Leveraging Knowledge for e-Business Success, Intel Corporation
As a client device, it has sufficient performance to support the rich personalisation capabilities that enable users to customise the way information is collected and presented to them. These must also provide the performance to keep track of personal information and enable users to deploy integrated applications that focus on the individual user and “private user actions” – including performing micro-analysis of data.

The ‘rich’ client PCs in a balanced information infrastructure should have features and capabilities to support advanced KM applications as a complementary functioning of powerful, scalable servers gathering information and providing consolidated computing. The servers are the logical place to deploy applications such as business intelligence and enterprise information portals that focus on enterprise-wide intelligence, “public” user actions and data that must be accessed widely throughout the organisation. They are also well suited for performing macro-level filtering of Web and enterprise content. Intel has provided examples of KM capabilities that are effectively executed at either the client or server in Table 3.2.

Table 3.2: KM capabilities executed at client or server end

<table>
<thead>
<tr>
<th>KM Capability</th>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Server-side Computing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Enterprise/ Web Content</td>
<td>Content-based relevancy analysis of enterprise information</td>
<td>Intelligent categorisation; Faster information access; Broader access to information</td>
</tr>
<tr>
<td>Categorisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Experts/ Communities</td>
<td>Information on knowledge sources</td>
<td>Leverage existing knowledge and the experience of others</td>
</tr>
<tr>
<td>Database</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Server User Profiling</td>
<td>Basic tracking of interests and behaviour of user visiting a particular site</td>
<td>Some personalisation, but limited to a particular site or data source</td>
</tr>
<tr>
<td></td>
<td>or information source</td>
<td></td>
</tr>
</tbody>
</table>
In a nutshell, the point made in the Intel literature is that KM applications of today and near future require a balanced technology infrastructure consisting of rich client PCs, powerful scalable server platforms and allied IT tools and software solutions. KM rides on IT infrastructure; one is not to be confused with another.

**Learning Organisations**

Like Knowledge Management, the term "Learning Organisation" too has not been able to get a single definition acceptable to all researchers. Though most scholars view organisational learning as a process that unfolds over time and link it with knowledge acquisition and improved performance, they differ on important matters.
Some, for example, believe that behavioural change is required for learning; others insist that new ways of thinking are enough. Some cite information processing as the mechanism through which learning takes place; others propose shared insights, organisational routines, and even memory. For most scholars, however, learning organisations have often acquired a mystical, reverential or utopian status. Two of these scholars deserve particular mention here.

Peter Senge\(^4\), who popularised learning organisations in his book The Fifth Discipline, described them as places “where people continually expand their capacity to create the results they truly deserve, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.” To achieve these ends, Senge suggested the use of five “component technologies”: systems thinking, personal mastery, mental models, shared vision, and team learning. Similarly, Ikujiro Nonaka (1991) has characterised knowledge-creating companies as places where “inventing new knowledge is not a specialized activity...it is a way of behaving, indeed, a way of being, in which everyone is a knowledge worker.” Nonaka suggested that companies use organisational redundancy to focus thinking, encourage dialogue, and make tacit, instinctively understood ideas explicit.

Though sounding idyllic, the recommendations made by both are far too abstract and leave too many questions as unanswered. How, for example, will managers know when their companies have become learning organisations? What concrete changes in behaviour are required? What policies and programmes must be in place? How does one get from here to there? These critical issues - essential for effective implementation of KM programmes at the practical level - are mostly left unanswered in contemporary literature.

Garvin (1993) has attempted to tackle the issue of defining, building and nurturing a learning organisation at a somewhat more practical level. He has identified the three critical issues which must be addressed before a company can truly become a learning

\(^4\) Quoted in Garvin (1993)
organisation. First is the question of meaning: a well-grounded, easy-to-apply definition of learning organisation. The definition given by Garvin is as follows:

"A learning organization is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights."

The second issue is management: clearer operational guidelines for practice. He mentions that learning organisations are skilled at five main activities:

1. Systematic problem solving
2. Experimentation with new approaches
3. Learning from their own experience and past history
4. Learning from the experiences and “best practices” of others, and
5. Transferring knowledge quickly and efficiently throughout the organisation.

A distinctive mind-set, tool kit, and pattern of behaviour accompany each of above organisational skills. By creating and managing systems and processes that support these activities and integrate them into the fabric of daily operations, companies can manage their learning more effectively.

The final critical issue mentioned by Garvin is a framework of better measurement tools to assess an organisation’s rate and level of learning. As is said often, you can’t manage something if you can’t measure it; so a complete learning audit measuring behavioural and cognitive changes as well as tangible improvement in results, is suggested by him. The framework using “three Ms” proposed by Garvin is potentially interesting for present research.
Wick (1993) has given an interesting “Formula” for a learning organisation – with each element of the formula as “absolutely mandatory”. He states that:

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“Learning Organization =
    Leader with Vision X (Plan/ Metrics) X
    Information X Inventiveness X
    Implementation”
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The second element of above formula is of current research interest. Learning organisations should rigorously measure their progress with a framework of detailed metrics and hold themselves accountable. The breadth of the vision, the details of planning, and the feedback from the metrics drive the inventiveness and implementation in the final factor of the formula.

### 3.3 KM in Consulting Companies

The next stream of literature reviewed pertains to the application of KM in consulting organizations. There is a high level of interest in KM amongst consulting firms as they see the capacity to compete on the basis of accumulated knowledge as being a defining feature of their business. Consulting firms cite KM as a core capability for achieving competitive advantage and consistent with this claim has been their increasing investment in KM systems enabling the firms to leverage the knowledge held by them. The literature study supports this seriousness of purpose of KM in consulting firms.

Dunford (2000) has listed key challenges in the search for the effective KM in management consulting firms. While reviewing the applications of KM in some leading consulting companies he has commented on the rather high investment already being undertaken on KM work. For example he reports that McKinsey and Company spends about 10% of its revenue on KM and Ernst & Young spends about 6%. He has observed a large variation in the level of use of, and contribution to, KM systems. There are a
number of reasons listed in his paper why developing a smooth and effective KM system represents a considerable challenge. The performance evaluation has been one of the key challenges because of the inherent conflict of interest between maximising the employee’s own perceived competencies and maximising the organisational level knowledge base of the firm and the critical role of knowledge sharing from an individual employee to another.

He has concluded that despite the wide pervasiveness of the view that KM is a core component of competitiveness, its specific contribution to revenue is very difficult to determine.

McC Campbell and others (1999) have very briefly outlined the KM efforts in four top consulting organisations – Teltech, Microsoft, Ernst & Young and Hewlett Packard - and have recommended steps for implementing KM strategy in consulting organisations. Though measuring performance of KM practices has been given as one among the final ‘on-going’ steps for KM implementation, nothing has been said on how to go about it. The following extract from the paper reminds about the existing gap in research in the subject of present study – particularly focussed on consulting firms:

" ... Performance measurement will be a key issue in knowledge management initiatives since there is little precedent upon which to establish ROI. As an emerging and dynamic discipline, the creation of a standard measurement of knowledge reflected on the balance sheets, is still in the formation stage. Once achieved, the result will be a rapid response from global business leaders to implement knowledge management “best practices” in order to remain competitive."

Faizal (2001) has also mentioned about ROI measurement effort - particularly in Teltech - through a technique called “Infonomics” which helps an organisation to find a quantifiable return on KM. However the details of this technique are not given.

The work of Hansen et. al. (1999) published in *Harvard Business Review* titled “What’s your strategy for managing knowledge?” is a sort of milestone towards the subject of current research. The two alternative approaches for KM application in consulting organizations – *codification vs personalisation* – depending on the
economic model and knowledge intensity in their operations, have already been explained in previous chapter. But the strategic impact of this paper for consulting firms deserves a special mention here because this has been one of the most-cited pieces of literature on KM applications in consulting firms. The authors have identified Anderson Consulting and Ernst & Young as the consulting firms following codification strategy; while McKinsey and Bain & Company represent personalisation approach for KM. Despite giving a very clear direction for the KM strategic approach for consulting firms, the authors however, haven’t touched upon the area of KM performance measurement in the two different cases of KM strategic approaches.

Though not directed specifically to consulting organisations, Botkin (1999) has offered a 3x3 matrix approach (he calls this the "nine questions approach") for effectively “making, measuring, and managing knowledge communities”- which is of touching relevance for consulting companies too. One side of the 3x3 matrix comprises of “3Ks” (knowledge business, knowledge communities, and knowledge management), and the other is the “3Ms” (making, measuring, and managing). One of the nine questions formulated by Botkin relates to measuring KM and is reproduced below:

"Who "owns" the KM system and to whom does he, she, or they report? Who takes action when the knowledge management system goes down?"

As a passing reference to consulting firms, the author just states that “Consulting companies in the knowledge business can measure the impact of their KM on their business: the number of new projects gained as a result of KM, the amount of time saved in creating new proposals for potential clients by using captured and catalogued former proposals.” No concrete guidelines - excepting this - are offered by the author for KM application in consulting firms.

Funes and Johnson (1998) have mentioned different software packages, technologies and approaches to support KM with some “company examples of knowledge technology”. As the only example of consulting company, the “Knowledge View”
implementation in Lotus Notes finds a mention in just half a page in the Appendix of their book.

A more informative and definitely more detailed description of KM application in a consulting organisation is given as a “Case Study” by Rana (2002). The KM strategy adopted by Ernst & Young India, based on the codification of knowledge resources has been outlined by Rana. But here too, the answer to how Ernst & Young measures its KM performance, is missing.

As the chairman of another revered consulting company, Murthy (2001) has spoken about the relevance of the company’s value system, apart from the speed, imagination and excellence in execution, as the attributes of a successful firm like Infosys. But he doesn’t comment on the KM performance evaluation process in his company.

Finally a documentation of KM case studies covering company-specific as well as industry-specific available at ICASIT’s website (2001) provides a reference point for getting awareness about the extent of application and evaluation of KM in consulting companies. Unfortunately however, no Indian consulting company finds a mention here and so this was not of much help for present research.

3.4 KM Performance Measurement

This stream of literature formed the core of the literature study activity for this dissertation. The research framework and the design of primary data collection schedules got inspired from some of the sub-areas as follows:

**Drawbacks of the Present KM Measures**

On the measurement and evaluation of KM’s business impact, Tiwana (2000) reports that despite his research on several companies that have been successful in implementing KM, he has “yet to come across one that has a strong measurement program in place.” Some companies like Buckman Laboratories, Canon, Skandia and Dow Chemical have begun to measure their Intellectual Capital (IC), with the belief that growth on this front is often a good indicator of future financial health. Though measuring IC is a growing
area of interest in KM field and metrics are being developed and applied by some of these firms, more representative KM performance measures are needed which do not have the “drawbacks” of the existing traditional metrics like financial ROI, Tobin’s q or total cost of ownership (TCO).

No metric is better than the one that is absolutely wrong. A choice of wrong metric can have more ill effects than positive ones. Metrics, when applied to knowledge work are vulnerable to the following common pitfalls, as also mentioned earlier in Chapter 2:

- Using too many metrics
- Delayed and risky rewards tied to metrics
- Choosing metrics hard to control
- Choosing metrics hard to focus on
- Choosing metrics that neglect the “soft results” or intangible outcomes
- Choosing metrics that are too rear-view oriented
- Measuring the wrong things.

The last one needs further elucidation. A manager or employee will tend to maximise the metrics that are actually measured. If a manager is told that a high market share for a product indicates brand value, he will try to maximise the market share of that product, even though quality (not measured) might be equally important. Figure 3.4 given below illustrates this concept.

If, in the figure below, of all five important metrics A, B, C, Y, and Z, only three (A, B, and C) are actually measured, employees will focus only on those and simply ignore Y and Z, however important they might be. Managers and employees who maximise A, B, and C will be rewarded for their performance even if Y and Z go to dogs. Soon, the entire company or department is focussed on improving the metrics that are actually measured, as they alone provide an indication of the value of their work. If A, B, and C lead to productive results, then the metrics are considered effective. If they fail to produce good results, they are considered ineffective. The problem begins when the employees fear to
change course from the existing chosen metrics - because of tremendous individual and organisational inertia.

Knowledge sharing and creation often tend to be akin to metric Y - ignored and little rewarded. Some leading knowledge-intensive companies, on the other hand, have included knowledge sharing and creation in their repertoire of critical metrics. Every employee’s compensation is, in part, determined by the amount of knowledge that the employee adds and the frequency with which other employees refer back to that
contribution. Choosing the right metrics is therefore critical both to evaluate the performance of your KM strategy and to make it work in the first place.

**Intellectual Capital (IC) & its Measurement**

Petty & Gutherie (2000) have done extensive review of research on measurement, reporting and management of IC. They have first attempted to clarify the delineation between the terms KM and IC by a simple statement that “Knowledge management is about the management of intellectual capital controlled by a company. Knowledge management as a function, describes the act of managing the object, intellectual capital.” However this simplistic view of KM as just managing the IC assets of a company has some flaws (for example, is knowledge a “stock” or “flow”?) pointed out by other researchers as reviewed later.

They have mentioned that the question, “What is intellectual capital?” itself has been seldom adequately addressed. Even the most workable definition of IC offered by the Organisation for Economic Co-operation and Development (OECD) as “the economic value of two categories of individual assets of a company – organisational capital and human capital” does not include some intangible items like a firm’s reputation. Reputation may be a by-product or result of the judicious use of a firm’s IC, but it is not part of IC per se. However, the distinction between intangible assets and IC has still been vague at best. “Goodwill”, for example, is an intangible asset, as well as a component of IC.

Traditional accounting practice does not provide for identification and measurement of “new” intangibles in organisations. These “new” intangibles such as staff competencies, customer relationships, models, and computer and administrative systems receive no recognition in the traditional financial and management-reporting model. Even traditional intangibles like brand equity, patents, and goodwill are reported in financial statements only when they meet stringent recognition criteria. These limitations of existing reporting have led to new attempts to measure and report by synthesising the financial and non-financial value-generating aspects of the company.
Liebowitz and Suen (2000) have discussed on the current metrics for measuring intellectual capital and the need for additional metrics. They have indicated the need for more research to better define the new performance measures for knowledge work, for producing the most value-added benefits for the organization. In their review of existing metrics, “creativity” was cited as lacking for determining the size and growth of organizational knowledge base. As an example they have mentioned that rather than ROI, metrics like ‘ROV’ (Return on Vision) are being developed by consulting companies such as Andersen Consulting. This demonstrates a different mindset for performance measures rather than accounting-based measures like ROI.

Bontis (1999) has also evaluated the state of the IC field. He has brought out the limitations of the present literature stemming primarily from an accounting and financial perspective. The limitations of intellectual capital research not catering to the changes in cognition and behaviour of individuals - necessary for learning and improvement - have been emphasised. The view of treating knowledge as a static asset in an organisation provides a hindrance for evaluating and measuring the organisational learning processes which characterises knowledge as a “flow” process rather than a “stock” asset. He has given a conceptualisation of IC as a “second-order multidimensional construct” in which the role of trust and culture as the drivers for intellectual capital are necessary for innovation and competitive advantage of the firms. The three sub-domains of his conceptualisation of IC include human capital, structural capital and relational capital, as shown in Figure 3.5 below. He further notes that what the field needs at this point is a more concentrated focus on rigorous, metric development and quantitative evaluation.

At an international symposium on measuring and reporting intellectual capital organised by OECD in June 1999, a team of Swedish researchers presented an extensive overview of IC measurement models and some Swedish qualitative exploratory case studies. In their presentation, Johanson, et al. (1999) cited a classification scheme of IC and measurement of different intangibles developed by Roos & Roos (1997), which is similar to the conceptualisation given by Bontis above. As per them, broadly, IC classification comprises of Human Capital, Organisational Capital and Customer & Relationship.
Capital. They have also cited Sveiby (1997) for his “intangible asset monitor” where the financial capital, customer capital, the organisation, and the people are measured by means of growth/renewal, efficiency, and stability. The Swedish Public Relation Association (1996) proposes measurement of intangibles in five different segments: leadership, market, finance, employees, and community. Kleinwort Benson from The Conference Board (1997) used 20 measures grouped into four major categories: growth measures, client satisfaction measures, marketing and sales measures and business management.

While referring to all these IC classification and measurement schemes, Johanson’s research team has concluded, “although there is no shortage of proposals dealing with measurement of intangibles, the extent with which these models are actually practised remains obscure.”
Performance Measurement Challenges

Neely (2002) in his interview to Emerald Now talks about the practical challenges in design and implementation of performance measurement systems. Different challenges are associated with four fundamental processes of performance measurement: measurement system design, implementation, managing through measurement, and 'refreshing' the measurement system. In design, the challenge lies in choosing the right and vital measures and avoiding excessive measurement. At implementation stage, the challenges are two fold. There is the data access issue, i.e. the need to get access to the right data, and the political and cultural issues, notably people's fear of measurement and the games they consequently play to try to manipulate target setting. To combat this, people inside organisations need to be educated to understand the purpose and use of the measurement system.

The challenge in managing through measures requires a cultural shift in many organisations. Education is required in how to present data focussed firmly on targets, rather than in a way where individuals can interpret to suit their own interests. The last challenge is for providing continuity of the new measurement systems.

While reviewing literature on performance measurement, an interesting measurement framework “The Performance Prism” developed by the Centre of Business Performance at Cranfield School of Management in cooperation with Anderson Consulting deserves special mention. Neely & Adams (2001) have proposed a broader stakeholder view for performance measurement in “The performance Prism” framework. An important distinction is made between contribution of different stakeholders from their expected satisfaction. Table 3.3 illustrates this difference.
Table 3.3: Stakeholder Views: Contribution vs. Satisfaction

<table>
<thead>
<tr>
<th>Stakeholder Satisfaction (Stakeholder Wants &amp; Needs)</th>
<th>Stakeholders</th>
<th>Stakeholder Contribution (Organisation Wants &amp; Needs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Fast, Right, Cheap &amp; Easy&quot;</td>
<td>Customers &amp; Intermediaries</td>
<td>Trust, Unity, Profit &amp; Growth</td>
</tr>
<tr>
<td>Purpose, Care, Skills &amp; Pay</td>
<td>Employees</td>
<td>Hands, Hearts, Minds &amp; Voices</td>
</tr>
<tr>
<td>Trust, Unity, Profit &amp; Growth</td>
<td>Suppliers</td>
<td>Fast, Right, Cheap &amp; Easy</td>
</tr>
<tr>
<td>Legal, Fair, safe &amp; True</td>
<td>Regulators &amp; Communities</td>
<td>Rules, Reason, Clarity &amp; Advice</td>
</tr>
<tr>
<td>Return, Reward, Figures &amp; Faith</td>
<td>Investors</td>
<td>Capital, Credit, Risk &amp; Support</td>
</tr>
</tbody>
</table>

While bringing in the different stakeholders' viewpoint in the performance measurement and distinguishing between the wants and needs of stakeholders from the organisation, the concept of this framework can be usefully exploited for newer KM performance measures.

**Emerging IC/ KM Measures**

Macdonald (1999) has not proposed any new performance measures for KM. However his emphasis on a thorough assessment of the organisation for the prevailing culture and knowledge base is quite relevant. He has in fact, stressed on going in for a rigorous cultural and knowledge assessment before implementing the KM programme in the organisation. The steps for this assessment preparatory to KM implementation cover:

- A detailed assessment of where the organisation stands in relation to knowledge
- An assessment of the current culture or environment for change
- As assessment of the current IT position
- Defining a purpose or strategic statements on knowledge and competence requirements
• A holistic measure of the delta or the difference between where we are and where we want to be.

Though the effectiveness of KM performance measures is normally a subject of post-implementation stage, the above nevertheless give useful insights to what should be the contributory factors for creating a framework of effective KM metrics. On a similar plane Koulopoulos and Frappaolo (1999) have also advocated for a 'knowledge audit as a good first step' to get an overview of the strengths and weaknesses of the company, before attempting full scale KM implementation. An effective KM audit provides the benchmarks of successful KM implementation within the organisation. Of course, these benchmarks would always be in a constant state of flux. The KM audit is to be used on an ongoing basis to continuously profile the changing competencies and re-mapping these to the entire enterprise, for continuous knowledge improvement. They have suggested the following dimensions for an effective KM audit:

- Structure
- Culture
- Process
- Technology
- Innovation
- Communication
- Team Strategy
- KM practices

Foote et al. (2001) have referred to Saba, a company specialising in learning and performance management software. This company has started to employ measures such as customer retention, employee retention, revenue per account executive, speed to market, time to competence and time to meet customers’ needs for measuring the influence of intangible KM assets in the company. Though correlating these
outcomes solely to KM would not be accurate (and fair), Saba's chief learning officer Brook Manville adds, "if you are tracking them, you ought to see a positive impact". On KM measures, the authors cite, "when hard metrics are not available, knowledge managers can use anecdotes to convey the commercial value of their discipline." This is because "stories do a better job of showing people what knowledge management can accomplish than do metrics, which remain crude."

Amidon (1997) has stressed on "Knowledge Innovation Assessment" of internal capabilities of the firm through a set of introspective questions as follows:

1. Is the business strategy known and is it clear? Who is responsible for performing the assessment?
2. Are the performance measures designed to gauge the qualitative as well as the quantitative indices of the enterprise?
3. Are the measurement systems created as an end or a means to promote value in the eyes of the customers and stakeholders?
4. Is the instrumentation in place (e.g., metrics, reports, technologies) to ensure proper, consistent calibration over time?
5. Is the measurement process perceived as a punitive (i.e., command-and-control) or learning activity?
6. Are there incentive/reward mechanisms to promote idea creation, responsible risk-taking, and application into products/services?
7. Have you a means to define and measure the intangible assets (i.e., intellectual capital, value of collaboration/interaction, degree of contribution) of the enterprise?

Wijnhoven (2001) has proposed a framework for stakeholder-based knowledge valuation in organisations, somewhat similar to the concepts given by Neely, mentioned earlier. He has summarised, as shown in Table 3.4 below, the relevant knowledge valuation methods for various shareholders and their contribution to the organisation. The knowledge value measures proposed by him give certain concrete ideas for an effective framework of KM performance measures.
Table 3.4: Knowledge Valuation for Different Stakeholders

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Contribution</th>
<th>Knowledge value measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>Labour</td>
<td>• Income gaining value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Income guarantee value; Employement security value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Friendship</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prestige; Power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Achievement; Growth</td>
</tr>
<tr>
<td>Customers</td>
<td>Turnover</td>
<td>• Product component excess; Knowledge features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Value of marketing; Learning curve price discounts</td>
</tr>
<tr>
<td>Suppliers of goods and services</td>
<td>Raw materials, other products, services</td>
<td>• Payment processing efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Product adoption capability</td>
</tr>
<tr>
<td>Suppliers of capital</td>
<td>Capital</td>
<td>• Market-to-book value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Calculated intangible value; Sales value of knowledge</td>
</tr>
<tr>
<td>Top management</td>
<td>Generating Return on Management (ROM) to sustain the co-operative system</td>
<td>• Cultural capital, Client perceived skills need</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Process benchmarking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• NPV of knowledge investments; Value chain needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ROM; Exploitation ratios, Replacement value</td>
</tr>
</tbody>
</table>

Wijnhoven has further cross-classified the knowledge valuation methods proposed by him with different categories of knowledge, as shown in Table 3.5 below.
### Table 3.5: Knowledge Valuation for Different Categories of Knowledge

<table>
<thead>
<tr>
<th>High integration of values</th>
<th>Norms and values; paradigms Qualitative and shared non-accounting measures</th>
<th>Patents, licenses and information products Quantitative, accounting-based valuation; exchange values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low integration of values</td>
<td>Skills Individual employee measures</td>
<td>Patents, licenses and information products Exchange values Norms and values paradigms to detect and correct cultural misfits</td>
</tr>
<tr>
<td>Tacit knowledge</td>
<td>Explicit knowledge</td>
<td></td>
</tr>
</tbody>
</table>

In a report sponsored by the Centre for Business Performance of the Institute of the Chartered Accountants in England and Wales, Leadbeater (1999) has given an overview of the possible “new measures for the new economy”, presented at the International Symposium on Measuring and Reporting Intellectual Capital held in Amsterdam in June 1999. Besides the Cash Flow Measures, other new performance measures mentioned by them include Economic Value Added (EVA), the Balanced Score Card (BSC), Ethical and Social Auditing, Environmental Auditing and certain new IC measures including Human Capital, Customers as assets, Brands, R&D, Intellectual Property, Patents etc. Though no specific framework has been given for bringing all these new measures together, he has cited evidence of such industry specific, non-financial measures to put more reliable value on intangibles. He has concluded that patent citations, some aspects of R&D, customer satisfaction and loyalty, human capital and brand values, can all be systematically linked to stock market valuations given to companies, making such non-financial information as highly “value relevant”.

Talking of EVA, Pettit (2001) has illustrated the EVA approach for business performance evaluation as a move beyond the traditional focus of margins and earnings. EVA approach essentially accommodates capital utilisation and the intangible capital for...
performance measurement. However other researchers like McConville (1994) and Ochsner (1995) have warned about some implementation drawbacks of EVA measure. Even though EVA makes useful adjustments for decision making, no clear instructions for working level implementation for individual level contribution are satisfactorily available. Leadbeater (1999) has mentioned about the critics of EVA, who argue that it is still too historic a measure and does not provide any sense of linkages between a company’s investment in intangibles and its financial performance. It is criticised for being biased against investments in intangibles. Regarding EVA’s deployment in India, even for limited application initiated by a few consulting firms - including the top IT consulting company Tata Consultancy Services - this issue of implementation is still being grappled with.

Allee (2000) has mentioned “five intangible assets that people are now managing” in new balanced score cards, intellectual capital measures and bottom line reporting:

1. External relationship capital
2. Structural capital
3. Human capital
4. Social capital
5. Environmental capital

She maintains that bringing an intangibles focus to knowledge initiatives helps the managers to find the big value that is too often overlooked. For this one needs to calculate ROI in terms of both hard assets and financial gains as well as intangible gains. But no methodology for procedure bringing together the five intangibles specified by her are given.

Some other researchers have attempted either “frameworks” or “new” performance measures or “new metrics”. Skyrme (2001) has suggested new metrics for managers in knowledge intensive businesses, abbreviated to the acronym ABBA.

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5 Source: Discussions with case study respondents from the firm
- Asset – focus on important, often intangible, assets; this focus also includes valuation of a company or parts of a company for mergers and acquisition, management buy-outs, and so on
- Baseline – benchmarking core activities against those of “best in class”, not necessary in the same industry
- Benefits – understanding the casual relationships between activities and their outcomes
- Action – performance measurement with a view to prioritizing activities and driving management behaviour.

The baseline focus is exemplified by benchmarking, in which an organisation evaluates the level and quality of its practices against other organisations. For knowledge intensive organisations, KM should also be one of the activities that organisations benchmark. Skyrme has given the following ten categories for benchmarking to diagnose and to direct attention to areas where better KM practice will make a difference.

1. Leadership
2. Measures
3. Processes
4. Explicit
5. Tacit
6. Culture/structure
7. Role/skills
8. Technology
9. Services
10. Image

He has further listed balanced scorecard also as one of the new baseline assessment measures. However Tiwana (2000) has excellently summarised the evolving metrics for knowledge work using these two techniques of benchmarking and balanced scorecard.
He has explained the benchmarking process in detail and shown it in a flow diagram format, as applied to knowledge work. Figure 3.6 shows the benchmarking process.

**Figure 3.6: Benchmarking Process**

- **Determine what to benchmark**
  - Which knowledge processes?
  - What products/services?
  - Scope of the benchmarks?
  - Why benchmark?

- **Form a benchmarking team**
  - Who will be involved?
  - Will customers be involved?
  - What is the allocated budget?

- **Decide your benchmarking targets & partners**
  - Explore all possibilities as benchmarking targets
  - Are they accessible within budget?

- **Collect and analyse data**
  - Metrics of relevance
  - Is a trusted third party involved?

- **Feedback**
  - What changes will be made to the benchmarking processes?
  - Will certain metrics be added or removed?

Repeat the steps after changes are made.
Table 3.6 given below summarises possible targets against which a company should benchmark its KM initiatives. Other relevant targets can also be identified from the same company, from rival firms, from non-rival firms, or from averages representing the particular industry or sector. Each has its own benefits and downsides, and the choice, finally, is one of subjective judgement and weighted costs.

**Table 3.6: Possible Benchmarking Targets**

<table>
<thead>
<tr>
<th>Benchmark Target</th>
<th>Upsides</th>
<th>Downsides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other units within the company</td>
<td>This breaks down internal barriers to communication and conversation between various division and offices of the company; targets are easily accessible.</td>
<td>Internal policies might come into play; the measures are not indicative of what is considered superior performance by the company.</td>
</tr>
<tr>
<td>Competing firms</td>
<td>The company is measured against its direct competition; the knowledge assets of the competitors as an aggregate are understood to a fair extent; partners can easily be identified.</td>
<td>Legalities can make this very difficult; if a trusted third party is brought in, additional costs are imposed.</td>
</tr>
<tr>
<td>Industry</td>
<td>All of the above; one also gets an idea of the company's standing in the overall market.</td>
<td>Can be very expensive; privacy issues begin to surface</td>
</tr>
<tr>
<td>Cross-industry</td>
<td>Valuable insights from non-competing firms can be gained for application to the company</td>
<td>All of the above; this doesn't help to gauge the company's competitive standing; the sample population doesn't represent the firm's own industry or sector; it's often difficult to get participation; the cost of such an effort is rarely worth it.</td>
</tr>
</tbody>
</table>

To enable the benchmarking process, a ‘process classification framework’ has been developed by American Productivity and Quality Centre (APQC) benchmarking clearinghouse. This framework represents only major business processes and subprocesses, not functions, through its structure and vocabulary. The framework does not list all processes found within any specific company. Likewise not every process listed in the framework is present in every organisation.
APQC model for benchmarking processes has been referred by Pancucci (2002) for measuring KM. Pancucci mentions the following five stages for development of KM measures based on APQC model:

1. Enter and advocate
2. Explore and experiment
3. Discover and conduct pilots
4. Expand and support, and
5. Institutionalise

Regarding the balanced score card technique (BSC), Figure 3.7 shows the basic scorecard for translating a firm's vision and strategy into actual goals and targets.

Figure 3.7: Balanced Score Card (BSC) Framework
The balanced score card (BSC) can also be used to evaluate the impact of KM system on four complementary criteria. The four processes involved in using the BSC approach for managing knowledge are described in Figure 3.8 below by Tiwana, showing the processes in the context of knowledge management.

Figure 3.8: BSC Approach for Managing Knowledge

While illustrating the advantages of BSC, limitations have also been expressed. A well designed BSC model is very difficult to develop and it is rarely possible to adopt another firm's scorecard because subtle differences exist between even very similar firms. Neely (2002) has criticised BSC technique as covering inadequate dimensions and had proposed his stakeholder-based approach of performance measurement in his model "the performance prism" – as reviewed already.
An interesting "knowledge management performance framework" has been given by Gooijer (2001). He has presented two models for measuring KM performance and KM behaviours: a performance framework based on BSC approach, and a behaviour framework that identifies levels of practice demonstrated by individuals. While the KM performance scorecard maps the objectives for KM across BSC's key result areas, the KM behaviour framework identifies seven levels of KM skills for demonstrating collaborative behaviour. The seven levels of KM skills in adopting knowledge management in the organisation, as given by Gooijer, are of relevance, as given below.

0. Awareness but non-use of knowledge management tools or practices
1. Seeks information about knowledge management
2. Personal experimentation with knowledge management tools and practices
3. Personal implementation of knowledge management practices
4. Engaged with impact and consequences of knowledge management behaviour
5. Actively collaborates in all aspects of work
6. Refocussing knowledge management skills on new business opportunities

Finally, a publication titled 'closest' to the subject of the present dissertation has been reviewed. Moore (1999) has enumerated knowledge work metrics in his "Knowledge Management Handbook" in Chapter 6 titled "Performance Measures for Knowledge Management". He has however disappointed by restricting his application of knowledge work metrics to only software programme writing and thus treating the subject of KM measures at a rather micro-level software development firms only. For example, he has cited as knowledge work metrics, three key performance measures as productivity, delivery and defect density. Though for programme writing activity, he has explained in detail various measurement models like PNR, COCOMO, FPA, etc., obviously these measures cannot be generalised to any other knowledge-based activity other than programme writing and hence this literature though appearing to be promising by title, was not found to be of much relevance to the present research. However Moore has rightly identified two main areas for future research in
developing his approach to measuring knowledge work. The first area is improved metrics collection. This includes the definition itself of what metrics to collect and also the quantification of factors so identified.

The second area for further research identified by Moore is in defining formulae and/or quantification algorithms. As stated rightly by him, a great deal of statistical research is required to evolve a means of calculating accurate, meaningful values for each of the metrics so identified.

3.5 Implications of the Reviewed Literature for the Present Study

The first stream of literature examined helped in demystifying the buzz around KM and clarifying its basic concepts. The clear distinction between IT Management and KM brought out in the literature focuses on KM as the set of business processes - rather than on the tools and technologies of IT domain. The implementation methodology for KM and associated managerial challenges brought out in the literature has set the context for KM assessment and performance measurement as an ongoing activity. Finally, the review of literature on learning organisations – including the framework of “3 Ms” (Meaning, Managing and Measurement) - has been useful for bringing home the intrinsic characteristics of consulting firms (for ensuring survival and growth, consulting firms have to have the characteristics of learning organisations) and the importance of performance measurement and associated metrics.

Regarding the second stream of reviewed literature, it was observed that there is glaring inadequacy of published literature on KM applications in consulting companies – and more severely so for KM performance measurement in consulting firms. (The publications of trade associations and apex bodies like Consultancy Development Centre (CDC) and NASSCOM also were not of direct help in this specific stream of literature). Since the KM field itself is of recent origin, not much of research literature is available on KM applications. Within the innovative companies who have adopted KM as a systematic and formal business process, consulting
companies are of course, the leaders. But perhaps the initial apprehensions about the long term KM effectiveness and the competitive trade pressures, have been the strong inhibitors for these companies for making public their approaches and practices about KM. Nevertheless, the conceptual classification of KM strategies for consulting companies given by Hansen, et. al. and some other “guidelines” provided by other authors like Botkin and Dunford have a useful relevance to the present study. Other literature just reemphasises the seriousness and the need for more research in the area of KM performance evaluation.

Finally, the last portion of literature study provided the “state-of-the-art” on the subject of KM performance evaluation. An appreciation of the drawbacks of the existing traditional measures of IC/ KM has strengthened the need for more research into the subject. Outlining of some current research works has brought home the fact that despite some scattered, but appreciable efforts in that direction, as yet no effective framework of KM performance measures has been developed which can be used as a guide by the consulting organisations.

The literature reviewed in this section helped in showing the ‘broad direction’ for proceeding further. The benchmarking and balanced scorecard techniques have been useful at a conceptual level for providing an understanding of the need for an integrative mechanism for various possible disparate measures of KM. The stakeholder viewpoint for performance measures is another useful insight given by the literature. However, broadly speaking, other than getting an understanding of some useful KM concepts, identification of research gap in KM performance assessment, and picking up some constituent elements of performance measures suggested by some scholars for further examination, the present collection of available published literature has not been of substantive help for the present study. This rather inadequate ‘state-of-the-art’ on KM performance evaluation is understandable because the KM field itself is of recent origin and very few researchers have reached that level of depth to appreciate the importance of measures for KM effectiveness.
3.6 Summary

Three streams of KM literature – KM concepts, KM application in consulting organisations, and KM performance measurement – have been reviewed and the corresponding implications for the present study have been analysed. The literature on KM concepts clarified the prevalent notions and understanding (and misunderstanding) about the subject field. Inadequacy of published work in second stream of literature proved to be a challenge for the present dissertation work, though some idea about initial KM applications in some leading consulting companies was definitely of help. Similar inadequacy of literature on KM performance evaluation comprising the third stream was also noticed. However, review of this stream of literature – comprising of some disparate and scattered research, but still appreciable for the focus and consistency - helped in showing the ‘broad direction’ for proceeding further.

In the next chapter, the research aims/ objectives and scope are given along with the research framework that guided this research. The research design and methodology used for various stages of field research and data analysis is presented in detail. The presentation format for the KM performance framework is also explained.