Chapter 3

Literature Review
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Chapter Overview
This chapter deals with literature review and has six sections. The first section provides contextual clarity and examines the research undergone on Knowledge Management. The next section deals with Intellectual capital or Knowledge Capital; which is followed by a section on Knowledge Management, Knowledge Capital and Company Performance and their relation. Value Added Intellectual Coefficient (VAIC) is then dealt with which is followed by Knowledge Management and Intellectual Capital in Indian Companies. At the end of the chapter Gap of study has been identified.

3.1 Knowledge Management
The following literature presents studies undertaken in KM, it's processes, how it influences company's competitiveness, what are resource based view and knowledge based view.

Goldoni and Oliveira (2010) analyzed knowledge management (KM) evaluation metrics in software development companies in Brazil through the perception of managers and users. The method applied was a multiple case studies in two information technology companies. The study revealed that each company selects an implementation approach that results in specific challenges and the results showed that the differences in two companies can be related to the KM process adopted. The major conclusion of the study were that the relevance of a metric depends on the organization's context and the existence of a structured KM process and the set of process metrics can be linked to the KM process phases and the organizations should contemplate both quantitative and qualitative metrics.

Use of tacit knowledge within innovative organizations has been examined by Alwis and Hartmann (2008). It addresses what organizations can do to promote knowledge sharing in order to improve successful innovation. The study concluded that tacit knowledge has a crucial influence on the success of innovation processes in companies and plays a vital role as a company resource and success factor.

A survey of 136 organisations from a broad regional and industry base done by Nelson and McCann (2008) revealed that four Knowledge Management (KM)
dimensions were significantly related to their innovativeness. These dimensions – organisational, sharing support, Human Resources (HR) and relational capital – were composed of items derived from previous research and the growing body of literature examined KM contributions to organisation performance. Their relationships to each other are complex but explainable and help establish the case for thoughtfully designed and integrated interventions and initiatives designed to promote KM.

The authors undertook a study with the objective of exploring and describing the utilization of tacit knowledge in executing construction projects. The study done by Teerajetgul and Chareongam (2008) was qualitative in nature and carried out through a case study approach. The main findings particularly arise from the following four factors that were observed from on-site observations of work practice and interviews: flexible and adaptable thinking due to dynamic products and processes in the construction project; problem-solving and heuristics that facilitate a novelistic, recombination of knowledge; knowledge networks amongst individuals that support and transfer non-codified knowledge; and management conditions conducive to knowledge creation. The study concluded that four factors are inherently embedded in Thai construction management practices for creativity and competitiveness.

Almarabh et al. (2009) have the view that knowledge is a complex and fluid concept to people, so knowledge management focuses on knowledge arrival; also it is considered as strategic activity that help organizations to achieve sustainable competitive advantage. Value chain analysis is one of the analysis tools which is used and it satisfies continuous competitive advantage of organizations. This research study summarized the value chain analysis in strategic management field to be applied on the knowledge organizations in knowledge management field which is called Knowledge Value Chain.

It has been shown that new theories of strategic management such as the resource-based view depicted that organisations can gain sustainable competitive advantage if they focus on the development of their value drivers. Intangible assets such as knowhow, brands, copyrights, patents and relationships with customers or suppliers, are
key value drivers in today's business world. It is therefore critical for organisations to identify, understand, and manage these organisational value drivers. This research study sheds light on the process of how organisations can identify their key resources – tangible and intangible – as well as their interdependence and causal dynamics to deliver value. An improved understanding of the strategic resource architecture helps to overcome causal ambiguity of how value is created and helps to direct resource allocation and competence acquisition. The study has been done by Marr (2004).

This research study undertaken by Edenius and Styhre (2006) sought to examine how two managerial tools, the Balanced Score Card (BSC) and an e-mail system, are used to represent and classify various knowledge-based resources in two organizations. The research study shows what Foucault calls sensible knowledge is useful for understanding BSC and the e-mail system. Sensible knowledge integrates a number of human faculties such as ocular, representational, and communicative skills in many cases taken for granted and poorly considered in organization theory. Two case studies served as the primary empirical domain. The study concluded that knowledge should never be taken for granted, but must always be examined at the level of its constitution and reproduction, i.e. within the regimes of representation and classification in which practitioners operate. Such regimes of representation and classification are imminent in a variety of managerial tools and technological systems and must therefore be examined in greater details.

Curado and Bontis (2007) examined that the knowledge-based view of the firm is a recent extension of the Resource-Based View (RBV) and provides a strong theoretical underpinning for the organisation learning and intellectual capital researchers. It concluded that knowledge is considered to be a special strategic resource that does not depreciate in the way traditional economic productive factors do. It laid down that the nature of most knowledge-based resources is mainly intangible and dynamic, allowing for idiosyncratic development through path dependency and causal ambiguity, which are the basis of the mechanism for economic rent creation in the Knowledge-Based View (KBV) of the firm. Future implications that emerge from
these characteristics as they relate to learning organisations are presented at the end of
the research study.

Curado (2008) has captured the perceptions of knowledge management and
intellectual capital in the banking industry. The reason for developing such a study
was to identify the relevance and perceived value of such organizational variables in
the banks. This research study followed a qualitative approach and considered two
different knowledge management strategies: exploitation and exploration and three
different intellectual capital components: human capital, internal structures and
external structures. The research study developed and analysed several interviews in
the banking industry at top management level across different banks. This study led to
some interesting findings, allowing verification of most of the theoretical knowledge
management and intellectual capital literatures, as well as gathering some examples of
its routines and elements, and also identifying the value given to knowledge
management and intellectual capital by the banks that took part in the study.

The impact of basic knowledge elements on building company's international
competitiveness was undertaken by Karaszewski, (2008). The methodology adopted
was survey and interview. The findings of the research carried out among the world's
business leaders clearly indicate that knowledge management does influence
companies' international competitiveness. However, according to the research
outcome, not all knowledge resources are necessary for reaching the purpose. It
appeared that the key to success is not primarily skillful management of endless
knowledge, but the ability of directing activity to those knowledge resources which
are critical for the organization's economic operations.

It has been observed by Fong and Choi, (2009) that quantity surveying firms are
characterized by their professional identity and knowledge-driven nature and
therefore knowledge is crucial to their success in the competitive and dynamic
business environment. This research sought to focus on the implicit knowledge
management processes being undertaken in professional quantity surveying firms in
Hong Kong. The applicability and validity of the framework were verified by
quantitative research methods. Based on the proposed process model, a questionnaire
survey was conducted to study the opinion of professional quantity surveyors on the details of these processes. The findings of the survey, explored that there are six knowledge management processes in quantity surveying firms, namely acquisition, creation, storage, distribution, use, and maintenance.

Saenz (2009) empirically tested the degree of influence of different knowledge-sharing mechanisms on the innovation capability of firms, and also analysed the degree of relevance of each innovation capability dimension to value creation. Additionally, the role of technology intensity as a moderator variable of the aforementioned relationships was examined. One questionnaire was designed and addressed to the CEOs of the companies making up the target population of the research (Spanish manufacturing firms with more than 50 employees and R&D activities). Structural equation modelling (SEM) based on partial least squares (PLS) was then applied in order to test the main hypotheses of the research. It was found that knowledge sharing is a key issue in order to enhance the innovation capability of firms. Nevertheless, depending on the innovation capability dimension being considered and on the technology intensity of the firm, the type of knowledge sharing which appears to be more fruitful varies. On the other hand, technology intensity also moderates the degree of relevance of each innovation capability in value creation.

The operationalisation of knowledge creation, aimed to review current measurement methods and to construct taxonomy of knowledge creation measures has been done by Mitchell and Boyle (2010). They adopted a four-step classification method to generate information on the essential properties of measurement methods. The main contribution of the study was the development of a hierarchical taxonomy of knowledge creation measures. This taxonomy, advances knowledge creation research by categorizing measures in a way that facilitates assessment against existing comparable definitions.

3.2 Knowledge Capital (KC)/Intellectual Capital (IC)

The following literature presents studies undertaken in IC or KC in respect to its various angle and studies done in various countries in different sectors of industries.
Thaker K (2001) has attempted to identify and compare various methods like Economic Value Added, Market Value Added, Knowledge Capital and Knowledge Capital Earnings, Tobin’s ‘q’ and capture knowledge wealth and income of select companies. A sample of 114 companies was selected from a group of BSE. Financial statements of last 5 years data were taken. It concluded that knowledge capital and earnings for select companies correlates well with the market value parameters. All the correlations were statistically significant.

Hermans and Kulvik (2004) undertook a study to create a theoretically derived basis for measuring intellectual capital within the Finnish biopharmaceutical industry, and to relate these measures to ownership structures. The empirical model employed survey data from small and medium-sized Finnish biopharmaceutical companies. The sources of equity financing are identified and the means of measuring Intellectual Capital (IC) in the value platform framework is created. Various sources of financing are related to the intellectual capital and other characteristic features of these companies. The biotechnology company owned by another firm is distinctive, corresponding to different strategic functions designated to the company by the owner firm. The largest investor group, venture capital companies, seems to prefer a well-balanced combination of intellectual capital. The other owner groups showed among themselves a rather similar pattern of investment preferences.

Kayakutlu and Iseri (2006) have done a research in which value added by industries and industrial companies are globally accepted to be the drivers of economic health of a country. According to the the paradigm shift in the business world, the value of a company is not restricted to financial ratios but has to include the intangible assets. This research study discussed different value concepts considering both tangible and intangible assets in search of an indicator which will give confidence in the continuity of industrial companies in Turkey. The survey is enriched by the Application of both Economic Value Added (EVA) and Calculated Intangible Asset (CIV) on production companies that take place in the Istanbul stock market. The outcome of the case study created the need for Sustainability Indicator, which is discussed in detail as the major achievement of the analysis performed.
In spite of the significance of research on measurement of Intellectual Capital (IC) for contemporary business management, a predicament prevents the advance of research on IC measurement and management, mainly stemming from the expectation of traditional accounting practices and financial reports. This has been observed by Changchien and Tsai (2005). Instead of pursuing methods for direct valuation of IC, this research developed an IC measurement method, Return on investment of IC (ROIC) which views IC measurement as a mechanism to bring disclosure of value and provides IC measurement statement as a managerial tool. By combining the advantages of ROA (Return on Assets) and SC (Scorecard) methods, the method measures the return on investment of IC from product/service, process and IC perspectives. In the empirical case study at an ERP software company, a survey was conducted to identify the important IC indicators for software industry, and the ROIC method along with the found important IC indicators were applied to investigate the ROIC of three projects. The managerial implications in the context of executive management were then drawn from the measurements and discussed.

Radu (2005) in his study focused on the relation between the internal publics' motivation and the organisational image projected towards external publics through a supplement of the annual report: the Intellectual Capital (IC) Statement. Group-related theories from sociology, communication studies, and management are used as a frame of reference in understanding the Danish experience in intellectual capital statement development, as this experience is presented by the Danish researchers. The IC Statement presented, in its ideal form, the organisation's knowledge management, as the way an organisation creates value for its publics.

It has been observed that in the last few centuries, companies have been obliged to report their operations and success, or lack of it, to their stakeholders. Traditionally, this function has been performed by conventional accounting methods. Roos, Pike et al. (2005) have the view that the recent corporate collapses have shown that traditional financial accounting methods do not always work. Indeed, there has been a growing demand in the last decade for organisations to report on the intangible resources they deploy in their operations to give a more balanced view of their output.
The objective of this research study is to look at how intangible resources maybe measured, valued, and disclosed meaningfully to organisational stakeholders in an effort to secure sustainable advantage over competitors or levels of performance that exceed social and economic budgetary expectation.

This research study was intended to verify the effects of implementing the Balance Scorecard (BSC) on the organization performance of Taiwan-listed photovoltaic companies with the accumulation of Intellectual Capital being the dual mediator. The author interviewed sections chiefs and managers at the aforementioned companies, selected by way of simple random sampling. The Structural Equation Modeling (SEM) was used to verify the goodness-of-fit effects of the overall model, structural model, measurement model, with the dual mediation effect. The result suggest that at Taiwan-listed photovoltaic companies IC accumulation affects the organization performance in a significantly positive way. The research study was done by Chen and Lee(2012).

There has been a strong interest in a more in-depth understanding of knowledge-based value creation was observed by Bygdas (2004). In the business world this interest gained impetus by the introduction of intellectual capital in the early 1990s. The study concluded that companies have tried to measure and manage their intellectual capital to improve performance and internal and external communication. In this research study, is presented experiences and lessons gained in the last few years from the use of value, a methodology of an activity-based view of intellectual capital. Through three in-depth case study examples illustrating the phases of modeling, measuring, and actions for improvements, the study discussed and evaluated the methodology and its outcome in terms of the concepts resolution, elevation, and conveyance.

Sharabat, Jawad et al. (2010) have empirically tested the relationship between intellectual capital (i.e. human capital, structural capital, relational capital) and business performance within the pharmaceutical sector of Jordan. A research instrument was utilized to conduct a survey of 132 top- and middle-level managers from all 15 members of the Jordanian Association of Pharmaceutical Manufacturers. A correlation and path analysis were conducted to ascertain the validity of the
measures and models. It concluded that there existed a relationship between intellectual capital and business performance. The findings show valuable insights on the generalizability of intellectual capital in a novel research setting. This research report is among a few to investigate the issue of intellectual capital in Jordan and the first to study pharmaceutical firms.

Kuo and Wu (2008) found that interest on Intellectual Capital (IC) have been increasing in recent years. But they observed that, there are no research studies addressing how knowledge-intensive institutions create value, how knowledge-based business models work and how the value creation can be reported. This study was made to illustrate how the reporting of IC is formatted by an IC research institute in Taiwan. The case study provided a basis for developing and managing organisational strategy, introduces a framework for constructing IC reporting through the Balanced Scorecard (BSC), and traced the development of IC for identifying changes in IC reports over time.

Human capital indicators in the management practices of Taiwanese enterprises have been studied by Han, Lin et al. (2008). The research design encompassed three stages. First, 56 human capital indicators were drawn from the literature and a questionnaire was implemented regarding the applicability of these indicators. Second, a ground approach asked executives to provide five key human capital indicators that are valuable and important to his or her company. Third, the empirical human capital indicators that are adopted in relevant top-tier journal research studies were compared to the results of the previous two stages. The comparison results in the selection of ten human capital indicators, including employee competence, job accountability, professional tenure, employee commitment, employee cooperativeness, employee skills, employee creativity, employee professional knowledge, organisational tenure and employee education level.

It has been observed by Dammak, Triki et al. (2008) that the difference between the book value of the company and the market value, which is constantly increasing, motivates many researchers to identify the missing information from financial statements. The objective of this research study was to identify what motivates
European companies to communicate on intellectual capital components which exceed or complete accounting disclosure. A multivariate regression analysis tested the link between the intellectual capital disclosure and firm's characteristics. The study's results showed that size, intangible contributions in the balance sheet, indebtedness, performance, multi-nationality, sector and the auditor type appear to influence the intellectual capital disclosure in a significant manner. This research sets up indicators used in formulating the communication norms.

Vaisanen, Kujansivu et al. (2007) undertook a study with the objective in determining how investments in Intellectual Capital (IC) affect a company's productivity and profitability. The examination was based on a large set of financial statement information covering last three-year period. Time-lagged correlation and regression analyses were used to study the relationships within the whole data set, in different industries as well as in SMEs and large companies. The findings suggested that the short-term impact of IC investments on productivity and profitability is negative. However, the findings also provided support for the earlier research evidence suggesting that investments in IC do yield benefits, but they may come with a delay.

The current models of Intellectual Capital (IC) have been examined by O'Sullivan and Schulte (2007) in the context of Human Resource Management (HRM) both in the public and private sectors with a special emphasis on the association of the management of IC with competitive advantage. The study presented the current view of IC management as well as discussed the evolving nature of HRM in the 21st century where there is a necessity for organisations to be dynamic both in the context of the management of individual capabilities and the management of organisational structure.

Mitchell (2003) observed that while corporate scandals in the East and West have generated practical interest in the development of an effective enterprise risk management system to safeguard interests among stakeholders, organisations in the public sector with a wide spectrum of stakeholders are requested to present prudent accountability. The weighted regulatory focus on internal control and compliance, however, might create an imbalance in the emphasis away from an integrated
performance measurement system that nurtures the development of knowledge capital to enhance sustainable growth. This research study explores a framework to apply the taxonomy of Intellectual Capital (IC) embedded in an integrated enterprise risk management system that institutes a cycle of knowledge capital development in order to balance the management of performance and risk. Through structured gap analysis of a case in the public sector, this study reveals the opportunities and challenges to develop such an integrated system.

Kujansivu and Lonqvist (2007) determined how investments in intellectual capital (IC) are transformed through various stages into profits. A theoretical framework containing different aspects of IC (investments in IC, value of IC and efficiency of IC) and productivity and profitability, as well as their relationships is constructed based on a literature review. Also, relationships between measures of different components are examined using correlation analysis. The data used in the empirical analysis comprises of information from financial statements of Finnish companies during the time between 2001 and 2003. It included overall 60,304 cases which represent eleven largest industries in Finland. The results shown that no linear relationship existed between the investments in IC and profitability. However investments in IC improve the value of IC, which lead to higher productivity.

A research study was done to describe the extent and type of voluntary disclosure of intellectual capital (IC) in New Zealand, and to test for a relationship between “hidden value” (difference between firm's market and book value), and its relationship to voluntary IC disclosure in the annual reports of New Zealand companies. This study done by Whiting and Miller (2008) aimed to incorporate the effect of revaluations and growth expectations. It included content analysis of 70 publicly listed New Zealand firms, and database retrieval of independent variable data. Correlation and regression analysis was undertaken. Only revaluing firms show a significant positive relationship between their levels of hidden value and their voluntary disclosure of IC and its components of external and internal structure. Explanatory power was increased when an interaction term involving hidden value and growth expectations was introduced.
Further developments in the growth expectation and market value measures were suggested.

Banks and financial institutions, which are rich in IC (human, customer, and social capital), were in danger of becoming subject to ‘IC walkouts’ if they resist accounting for the hidden value that exists in IC and its constituent elements. This research study done by Sahrawat(2008) discussed how New Zealand banks incurred the cost of acquiring IC and realized the need to recognize related cost drivers. For banks in New Zealand, one of the most important sources of revenue or interest income was from mortgage business. This investigation looked at the value added by mobile mortgage managers (MMMs) and a possible model for measuring the IC vested in MMMs. A number of potential problems that are identified suggested the need for more diversified research to develop an effective model for IC valuation that includes social networking and political underpinnings, in this age of globalization and value creation.

A causal model in intellectual capital research studies is used by Bontis and Serenko (2006) to better understand the various outcomes of antecedent configurations of intangible asset components. These studies have been conducted in various industry sectors including insurance, healthcare, banks, and others. The purpose of this study was to replicate and extend prior research results within a new financial services sub-sector. A survey instrument based on prior research was administered to 396 employees from ten credit unions across Canada. It is found that the pattern and value of causal paths changed slightly from one context to another. Six research implications were offered which summarize the key academic findings of the study which were related to the interdependencies of the constructs alter from one context to another. The empirical results presented would lead to recognize that measuring and strategically managing intellectual capital will become the most important managerial activity for driving organizational performance.

Nazari ,Issac et al(2009) has set out to examine how organizational characteristics are related to intellectual capital and how these variables are different between Canadian and Middle East contexts. A questionnaire was developed to measure the four major
study constructs, i.e. intellectual capital, culture, climate, and organizational traits. Each of these constructs was represented by a number of subscales that were subjected to ANOVA and correlations to test the hypotheses. The analysis showed that all three categories of characteristics (culture, climate, and other traits) were significantly correlated with IC management. The results also indicated significant differences in all organizational characteristics and IC management between Canada and the Middle East. It also provided insight as to why effective IC management were more successful in certain countries.

As service companies are occupying an increasingly significant place as drivers of economic growth, there is a pressing need to understand their peculiarities in order to facilitate their effective management and governance specially in respect to intellectual capital (IC) and knowledge management. Kianto (2010) attempted to bridge this gap by this research study aimed to examine the main differences in IC stocks, creation, management and protection mechanisms between service-oriented and product-oriented companies. The analysis is based on empirical evidence collected from 418 respondents representing HR and R&D functions in 335 Finnish companies. The results demonstrated that service-oriented companies possess more human capital and renewal capital, and focus more on IC creation than product-oriented companies. In addition, IC protection is stronger in product-oriented companies. As companies move towards a service orientation they need to change their approach to IC stocks and management and in this acknowledging the differences between a service and a product orientation is the first step. The results presented in this study shed new light on the differences between service-oriented and product-oriented companies in terms of the possession, management, creation and protection of intellectual capital.

Diez, Ochoa et al. (2010) explored to explain the influence of representative variables of human capital and structural capital on the creation of business value. An exploratory analysis was performed on the degree to which firms actually used human and structural capital indicators, through a survey sent out to Spanish firms with a staff of 25 employees or more. The information on value creation was taken from the
"Sistema de Analisis de Balances Ibericos (Sabi-Amadeus)" database. The explanatory analysis of multiple lineal correlations and regressions allows confirming the positive relation that exists between the use of human and structural capital indicators, and value creation measured by sales growth. Despite having identified a relation between intellectual capital and value creation, the study finds no evidence of a significant relationship between the use of human capital and structural capital indicators and dependent variables other than sales growth, such as return on assets (ROA) or productivity. This analysis has a dual perspective based on observations taken from a survey and economic-financial analysis. It is a novel study in the Spanish context given that the analysis of aspects related to intellectual capital have on numerous occasions centred on large and/or quoted firms in that country.

The relationship between intangible assets and corporate market value of Malaysian firms and whether they are consistent with findings in other advanced markets were examined by Norhana, Ridzwan et al. (2010). The development of intangible assets of Malaysian companies over 2000 to 2006 was measured statistically using Landsman’s balance sheet identity model. Then, cross-sectional multi-regression procedure was used to ascertain the relationship between intangible assets and financial performance. It was found that the Malaysian market developed intangible assets at a rather slow pace, with significant development from year 2004 onwards. It also revealed that the book value of net assets (BVNA) are still dominant in Malaysian corporate valuation but this trend is declining as greater interest has now been developed in employing intangible assets and earnings as important variables. Furthermore, the results indicated that there is a positive trend in intangible assets development in Malaysia, consistent with those of advanced markets such as the US, Europe and Australia.

Pike, Boldt-Christmas, et al (2006) presented a research study traces the origins of intellectual capital to the economists of the 1930s and shows how the concept of resources as the critical element in companies developed. The research study charts the development of resource-based accounting in the two key periods of the 1950s and 1980–1990s. In parallel it shows how intellectual capital as a practically oriented
concept grew in two areas in the late 1980s into a perspective on management that dominated within a span of ten years. Finally, the research study assesses the current positions and highlights issues which need to be

It was observed that the intellectual capital (IC) can be divided into three categories, i.e. human, structural, and relationship capitals. The purpose of this research study done by Halim (2010) to investigate the correlation among those capitals to their indicators, particularly for intellectual capital statement made in Germany and intellectual capital statement made in Europe models. In these two models, each capital has four, six, and five indicators, respectively. So totally, there are 15 indicators. Structural equation modeling and its sensitivity analysis are utilized for measuring the correlation among those capitals to their indicators. Among those 15 indicators, 14 indicators have strong correlation with their respective capitals. Moreover, there exist strong correlation in a similar weight among those capitals, i.e. the correlations between human (HC) and structural capital (SC) is 0.88, SC and relationship capital (RC) is 0.87 and HC to RC is 0.81. The data collected from the IC projects are presented and analyzed through descriptive statistics and statistics summaries, e.g. mean and standard deviation. This research study offered other statistical tools for exposing valuable information such as the correlation among each capital to its indicators in IC model.

Shih (2010) examined the empirical studies on knowledge creation and intellectual capital (IC) to generalize the important factors concerning knowledge creation and IC of banks. The major purpose was to explore the relationship between knowledge creation and IC through the construction of the correlation patterns between these two elements. This research study adopts the knowledge management (KM) measurement to examine the formats of knowledge creation on evaluation of relationship between different elements in the IC of banks by structural equation modelling. The performance of human capital exhibits significant influence on structural capital and customer capital. The performance of customer capital reports significant influence on the formation of structural capital. The ability to create knowledge is highly relevant to IC in the banking industry.
It was observed that Intellectual capital can be defined as the ‘economic value’ of three categories of intangible assets of a company—that includes human capital, organisational capital and social capital collectively. Sustained advantage can occur only in the situations in which physical, human, and organisational capital varies across the firms and where some firms may be unable to obtain necessary resources that are benefiting other firms. Intellectual capital was viewed as a sub-set of intangible capital, where the term intangible relates to assets without physical existence and capital refers to assets retained by the organisation to contribute to future profits. It was concluded that intangible resources are more likely to produce a competitive advantage because they often are rare and socially complex there by making them difficult to imitate. It was concluded by Choudhury (2010) that a company’s intangible assets are increasingly crucial and positively related to organisational performance in today’s knowledge economy.

T-student tests and hierarchical cluster analysis were applied to scrutinise the data relating to companies in the Brazilian transformation industry (firms that transform raw materials into intermediary and final goods) involved in alliances over the course of a ten-year period (1996-2005) in an explanatory-exploratory manner. Here, Joia and Malheiros (2009) addressed the impact of strategic alliances in the formation of the intangible assets of firms, namely their intellectual capital. The research study found that strategic alliances of different types have a positive impact on the intellectual capital of the organisations involved in them.

Ting and Lean (2009) examined the intellectual capital performance and its relationship with financial performance of financial institutions in Malaysia for the period 1999 to 2007. The value added intellectual coefficient (VAIC) by Pulic is used. The research study revealed that VAIC and ROA are positively related among Malaysia’s finance sector. The results also showed that the three components of VAIC are associated with profitability with the explanatory power of 71.6 per cent.

It was observed that there are different models to measure the effect of intellectual capital on firm performance. This research study aimed by Carlos M F and Martos M S (2009) to test diverse models to verify the previously mentioned relations applied to
wood manufacturer SMEs of Obera (Argentina). A global model including the variables used in the previous literature was used. The research study established hypotheses for testing this model and used PLS technique to estimate the parameters of the model in a sample of 113 wood manufacturer SMEs in Obera (Argentina). It was concluded that the only dimension of intellectual capital directly affecting performance is structural capital. The other dimensions exert an indirect effect through structural capital.

Axtle (2009) analyzed and group the intellectual capital components of worldwide organizations through a humanistic model called CONICCVAL (contextual intellectual capital components valuation). The research done by a Mexico based Consulting and Research firm in topics related to intellectual capital and corporate strategy (Instituto de Capital Intelectual) is described, to valuate these intangible assets. The sample population in eight geographic regions, 16 types of industries, two types of operations, and three sizes of organizations was analyzed. The research results were analysed using 41 variables and four factors through the Multiple Analysis of Variance (MANOVA) methodology. The analysis of the principal components analysis (PCA) is also described, and a new model to valuate intellectual capital considering the context is proposed. It was demonstrated that: the geographic region, the segment of the industry, and the size of the organization, are statistically significant factors that determine the weighing of intellectual capital. It was found that there are ten principal components that shape intellectual capital, and their profiles were identified to measure it according to the context.

The research study provided an integrated approach to understand and monitor those intangible assets (IAs) that are the key value drivers of an organization. With the help of three different examples, Jhunjunwala (2009) attempted to examine the cause-and-effect relationship among different intangibles and map them to organizational success. System thinking approach was made using examples from three different industries. The research study found that the success of any organization depends on a network of interrelated IAs that affects each other and the crux is to ensure that each of these is performing as desired. The use of a causal model clearly demonstrates the
cause-and-effect relationships between key variables and ultimate objectives, and helps companies identify which intangibles need to be constantly monitored using suitable indicators to achieve the desired goals.

3.3 Knowledge Management, Knowledge Capital and Company Performance
The following literature presents studies undertaken in KM and KC with focus on its influence on company's performance.

Moeller (2009) analysed the effect between intangible and tangible (i.e. financial) organizational performance. The intangible factors were “trust”, “strategic relevance” and “participation”. Structural equation modelling is used to test a large-scale empirical study of more than 100 German business networks. The results show an interrelation between intangible and tangible/financial performance that is mainly influenced by strategic relevance and participation. In contrast to other studies, trust is not found to have significant effects on tangible or intangible performance. As the study focused on German business networks, country-specific effects could be the reason. Furthermore, no time-lagging effects have been revealed, as the data are only representative of a point in time.

The study focussed one how to utilize intellectual capital more efficiently, in order to strengthen the competitiveness of enterprises. This research study collected data from the 12 major companies of Taiwan's pharmaceutical industry who are listed in Taiwan Stock exchange or department of health of government for the period from 2005 to 2008. This study used a novel model to measure the performance of intellectual capital management in two aspects, by using Grey Relational Analysis (GRA) to measure operational performance and Malmquist Productivity Index(MPI) to judge productivity evaluation. The result found that one of the companies was best both in operational performance and productivity improvement.

In this research study the dimensions of a company's performance undertaken were profitability, productivity and market valuation. Firer and Stainbank (2003) undertook a study to investigate whether the performance of a company's intellectual capital could explain organisational performance. Data were obtained from a sample of 65
companies that are listed on the JSE Securities Exchange (high knowledge-base sectors). The empirical findings suggest that the performance of a company's intellectual capital can explain profitability and productivity, but not market valuation.

It has been observed that organizational culture can significantly promote or hinder the success of knowledge management initiatives. A study was undertaken by Tseng (2010) with the objective to develop and test empirically a conceptual framework to investigate the correlation between organizational culture and knowledge conversion on corporate performance. Questionnaire and statistical analytical techniques were applied. The results indicate that an adhocracy culture enables knowledge conversion and enhances corporate performance more than clan and hierarchy cultures under a Chinese-centric set of societal, cultural and linguistic attitudes and behaviors. As, different countries have different cultures, future research could extend this study to other regions of the world with a different set of attitudes and behaviors. The study analyses that if the organization can nurture an adhocracy culture, it will be easy to create an environment where knowledge workers can learn, feel comfortable, and have the opportunity to be creative and innovative, improve corporate performance and increase the organization's value.

Tacit knowledge index (TKI) has been used by Harlow (2008) to assess the level of tacit knowledge within firms and its effect on firm performance. The survey covered 108 numbers of US and Canadian firms that were using knowledge management. Regression and correlation were used to statistically analyze the innovation and financial outcomes. Significant relationships were found between a firm's level of TKI and the firm's innovation performance. The relationship between TKI and financial measures were not clear. This research gives managers a way to structure their use of knowledge management methodology and use of resources in a way that may maximize performance, either as standalone systems or as part of the Balanced Scorecard. This pioneering research develops tacit knowledge as a measurable quantity and links this metric to firm performance.

The study done by Wang and Chang(2008) used the partial least squares method to establish a causal model depicting the relationship between the disclosure of
intellectual capital, accounting performance and market valuation with data from Taiwan's semiconductor industry. The study concluded that accounting performance, mandatory disclosure of intellectual capital performance and voluntary disclosure of intellectual capital have direct effects on market valuation. They further concluded that these factors also indirectly affect market valuation through the cause-effect interrelationship with one another and among the indirect relations; the mandatory disclosure of intellectual capital performance is the most fundamental factor which positively affects accounting performance and voluntary disclosure of intellectual capital and then further affects market valuation.

Nejadirani et al. (2012) investigated the strategic role of intellectual capitals on performance of the organizations. The basic objective was to study the effects of intellectual capital on the organizational performance of taxation offices in North Khorasan Province. In this research they used theoretical framework of Kaba & Sira to measure the independent variable (intellectual capital management) and theoretical framework of Heresy & Goldsmith to measure the dependent variable (organizational performance). To analyze, summarize, and categorize the collected data they used Kolmogorov-Smirnov test, as well as parametric statistical simple linear regression analysis tests. The results indicated that significant relationship exists between intellectual capital and organizational performance.

It was classified industry by growth rate in industry for reference to define the life cycle stage of listed companies. This analysis was done by Cao Chen et al (2010) through the combination of enterprise life cycle and knowledge capital, using the combining methods of panel data model and the average model. The data of 2002–2007 panel data of the listed companies were used. Research result showed that the role of intellectual capital on enterprise performance are different in the different stages of enterprise life cycle, in which physical capital, human capital have a significant positive impact on enterprise performance at all stages of enterprise performance while the structural capital only has a significant positive impact on enterprise performance at the growth phase and has a negative impact on enterprise performance at the mature stage and decline phase but not significant. The results also
show that on the use of resources China's listed companies mainly rely on the use of physical capital but the use of human capital is inadequate.

3.4 Value Added Intellectual Coefficient (VAIC)

The following literature elaborate studies undertaken on Value Added Intellectual Coefficient (VAIC) and relationship among its components in different companies in various countries.

The value added intellectual coefficient (VAIC) model is used to determine the relevant elements of intellectual capital because it employs existing financial data. Laing, Dunn et al. (2010) have examined the extent to which intellectual capital (IC) adds value to a service provider and presents an approach for interpreting the results. The number of subjects was restricted to two companies operating in the Australian hotel industry over a four-year period (2004-2007). The two companies are the major players in the Australian hotel industry. The study provides management with a guide to employing the VAIC model and, more importantly, a method for interpreting the results.

The research study aimed to test the VAIC model in order to explore and recognize the relationship between Intellectual Capital (IC) components and the financial performance of companies. Javornik, Tekavcic et al. (2012) used a data set of more than 12,000 Slovenian companies within a 14-year period (from 1995 to 2008). OLS regression and panel regression method were used as tools. The test conducted on the ranked data indicates a high degree of correspondence between the improvement in rank of a company's IC investment efficiency and the improvement in rank of its financial performance in the peer group. As IC value is a result of above-average financial performance, the IC investment efficiency can serve as a leading indicators of future financial performance.

Pal and Soriya (2011) described in this study two measures of intellectual capital – VAIC and EVA developed by Pulic (1998) and Stern Steward, respectively. Relationship of VAIC and EVA with MVA of the Indian banks were established for a time period 1999-00 to 2008-09. Empirical results indicated that VAIC of the banks is increasing over the sample study, thus intellectual capital is efficiently utilized by the
Indian banks. The multiple regressions analysis shows that there is no significant relationship between VAIC and MVA but significant association is found between EVA and MVA.

The value added intellectual coefficient (VAIC) method is used on 300 UK companies divided into three groups of industries: high-tech, traditional and services. Zeghal and Maaloul (2010) analysed the role of value added (VA) as an indicator of intellectual capital (IC), and its impact on the firm’s economic, financial and stock market performance. Data require to calculate VAIC method are obtained from the “Value Added Scoreboard” provided by the UK Department of Trade and Industry (DTI). Empirical analysis is conducted using correlation and linear multiple regression analysis. The results show that companies’ IC has a positive impact on economic and financial performance. However, the association between IC and stock market performance is only significant for high-tech industries. The results also indicate that capital employed remains a major determinant of financial and stock market performance although it has a negative impact on economic performance. They concluded that VAIC method could be an important tool for many decision makers to integrate IC in their decision process.

The purpose of this research study is to provide intangible assets growth by using Pulic’s model of Value Added Intellectual Capital VAIC, for manufacturing industries operating in Brazil, in the period of 2000 to 2006. The sample is comprised of Brazilian non listed and listed companies with more than 100 employees belonging to the Annual Industrial Research annually undertaken by the Brazilian Institute of Geography and Statistics (IBGE). Static and dynamic regression models were applied to a data panel. In general, the results indicate that the VAIC model is relevant to explain value creation by the Brazilian companies. Basso, Aguilar et al. (2010) have concluded that the intangible assets growth exceeded expectations in these years.

Gigante (2010) investigated in his research study the relationship between the value creation efficiency and firms’ market valuation and financial performances. He took measures of Intellectual Capital (IC) performance for quoted banks on the Milan Stock Exchange during the period 2003-2007. In order to have a wider prospective of
analysis and for a better interpretation of the results obtained at 60 local level (Italian Banking Market), a cross analysis investigation has been conducted on the 300 listed banks operating in the United States and in the rest of Europe. The study used Value Added Intellectual Coefficient (VAIC) and regression models to examine the above relationship. The effects of IC performance on profitability were tested using Data Envelopment Analysis (DEA). The correlation analysis showed that the market to book value ratios (MV/BV) is positively correlated to VAIC and regression models support the hypothesis that investors place higher value on firms with greater intellectual capital ability. Considering a descriptive analysis, the Italian Banks are generally less efficient in the use of IC when compared to Spanish competitors and to the North European Banks. Considering the DEA analysis, the intellectual capital effect on profitability is calculated as 0.236 on average.

Can ownership structure (whether it is management, foreign, government or family ownership) explain the variation in a company’s IC performance asked by Saleh, Rahman et al. (2009). Their study provided additional insight into the role and incentives of firm owners and could affect the company’s ability to increase value (value creation activities). This research relied on an empirical model using VAIC to measure IC performance. The data consists of all companies listed on the Malaysian Exchange of Securities Dealing and Automated Quotation Market (MESDAQ) market in between year 2005 and 2007. Family ownership appears to have a negative effect on IC performance. A high degree of family ownership implies a high probability of opportunistic behaviour among families pursuing their objectives at the expense of value creation activities. The results are valuable for capital market regulators in monitoring the efficiency of value creation investments.

This research study applied Value Added Intellectual Coefficient (VAIC) using the 2003 annual report from 80 Taiwan listed technological firms; it investigated the correlation to the resource and focuses on differences between firms in different quantiles of corporate performance. Heui-Jen (2006) used conditional quantile regressions showed that while variables were significant throughout the distribution, there were considerable differences, in their impact on firms with different degrees of performance. The empirical applications indicated that the nature of technological
industry in Taiwan is transforming intangible assets such as intellectual capital to the high value added products or services identical to claims of Pulic (2004).

Muhammad, Ismail et al. (2008) has studied to examine the efficiency level and the trend of intellectual capital among Malaysian financial sectors and its impact on their company’s value added. Using the model introduced by Pulic (1998) to measure value added intellectual Capital (VAIC) and panel data analysis to measure the trend of intellectual capital; it was found that out of 18 companies evaluated from year 2002-2006, banking sectors owning more on intellectual capital followed by insurance company and brokerage firm. Company’s value added was very much related to the amount of capital employed as compared to other variables. The trend of intellectual capital shows positive relationship for almost all sectors.

In this research VA efficiency of the firm’s total resources is calculated using the Value Added Intellectual Coefficient (VAIC) methodology. Also, Abidin(2009) examined the association between board structure and corporate performance, where performance is defined as the value added (VA) efficiency of the firm’s physical and intellectual resources. The four board characteristics that were of interest in this study were board composition, directors’ ownership, CEO duality and board size. Based on a randomly selected sample of 75 companies listed on Bursa Malaysia, it was found that board composition and board size have a positive impact on firm performance, while the effects of directors’ ownership and CEO duality on the VA efficiency of firm’s total resources are not clear. The outcome of the study shows that the emphasis on the importance of outside directors on the board by The Malaysian Code on Corporate Governance and by the requirements of Bursa Malaysia is pertinent to the long-term corporate performance.

Chang, Ageno (2008) has done a research adding two additional components, R&D expenditure and intellectual property in Value Added Intellectual Coefficient (VAIC) method that measuring the “value creation efficiency” of a company. It examined the correlation between firms’ intellectual capital (including human capital, structural capital, and social capital), R&D expenditure, intellectual property, and market performance, based on 2001~2005 annual reports from listed Taiwan IT companies.
In the VAIC model, the results show the indexes of VAIC have significantly positive or negative correlations with firms’ market value (M/B and P/E ratio) and profitability (PM, BEP, ROA, and ROE) in different IT fields. The findings suggest that IT firms in Taiwan are capable of transforming “intangibles” to high value added products or services, as the ideas of about value creation efficiency described by Pulic (2004). Furthermore, the modified VAIC suggests that companies should put different proportions in different IC subcomponents rather than simply aggregating all. Conclusively, tests of modified VAIC and measures of corporate performance suggest that R&D expenditure and intellectual property may capture additional information that is omitted from the Pulic’s VAIC approach and underline the importance of R&D expenditure and intellectual property in enhancing firms’ market performance.

The research used data from Taiwanese listed companies and utilised Value Added Intellectual coefficient (VAIC) model. Chen, Cheng et al. (2010) investigated empirically the relation between the value creation efficiency and firm’s market valuation and financial performance. The author constructed regression models to examine the relationship between corporate value creation efficiency and firm’s market-to-book value ratios. The results support the hypothesis that firm’s intellectual capital has a positive impact on market value and financial performance. In addition the author found investor has placed different value on the three components of value creation efficiency (Physical capital, human capital and structural capital). It is concluded that R&D expenditure capture additional information on structural capital and has a positive effect on firm value and profitability. The result is useful in understanding the role of intellectual capital in creating corporate value and binding sustainable advantages for companies in emerging economies.

This research study used Value Added Intellectual Coefficient (VAIC) and reviewed the relation between intellectual capital and enterprise’s performance. Ji-jian, Naiping et al. (2006) has done a research using the data auto industrial listed firms in the China’s Securities Market. It is found that intelligence capital, as enterprise’s another important capital, is having more influence on enterprise’s achievement compared to physical capital. Further analysis indicates that it can further study the relationship of
enterprise's intellectual capital and enterprise's performance in microcosmic intellectual capital.

Bykova and Molodchik (2011) investigated empirically dynamics and structure of VAIC, and explored the relation between the organizational value creation efficiency and indicators of organizational performance such as total productivity, revenue growth and profitability (ROE). This research study outlines a study conducted on 401 numbers of the Russian organizations and data taken from account reports from 2005 to 2007 years. The findings support the hypothesis that firm's intellectual capital indicators have a positive impact on organizational and financial performance and are an indicator for future competitiveness. In addition, it was concluded that organizational intellectual ability measured by VAIC, positively correlates with inter-firm relationship indicators, innovation activity and structural capital components. It was further concluded that the innovative firms the drivers of organizational intellectual ability are investments in fixed capital, export, external knowledge.

Data were collected from constituent companies of the Hang Seng Index listed on the Hong Kong Stock Exchange (2005 -2008). Chu, Chan et al. (2011) has empirically studied the intellectual capital (IC) performance of Hong Kong companies and its association with business performance. Value Added Intellectual Coefficient (VAIC), was utilized to evaluate the IC investment of the companies. Four accounting ratios: market-to-book value (MB), return on assets (ROA), asset turnover (ATO) and return on equity (ROE) were used as the indicators of business performance. Regression analyses were conducted to test the ability of IC and its components to explain the variance in business performance measures. Capital Employed Efficiency (CEE) was found to be a key factor in predicting business financial performance. Structural Capital Efficiency (SCE) was found to have a significant effect on businesses’ market valuation, as measured by MB, and on profitability, as measured by ROE. Negative correlations were found between Human Capital Efficiency (HCE) and the financial indicators. The findings indicate a gap between the traditional accounting perspective and the value creation perspective, which is central to the VAIC methodology in measuring IC. The findings indicated the significant effect of SCE on ROE, physical
and financial assets which considered as the key resources in delivering business success.

Viollete (2009) has done measurements of intellectual capital focusing on the human capital efficiency (HCE), the structural capital efficiency (SCE), the intellectual capital efficiency (ICE) and the value added intellectual coefficient (VAIC) developed by Pulic (2000; 2004) for non-financial companies listed at Bulgarian Stock Exchange (BSE) using accounting data for the period 2003-2009. The research focused on companies in the manufacturing industry in order to derive any particularities in the measurements. One extended the formula of intellectual capital valuation arrived at and the it was concluded that intellectual capital is playing an important role in the value creation process in some companies listed at BSE.

A total of 286 firms from three nations, South Africa, Sweden and the United Kingdom were surveyed in this study. Four variables for board independence are examined - level of outside director representation on the board, percentage of share ownership amongst inside directors, leadership structure and extent of cash based remuneration of directors. Ho and Williams (2009) provided an international comparative investigation of the relationship between the level of independence of a firm’s board of directors and its knowledge capital (KC) performance. KC performance was measured using the Value Added Intellectual Coefficient (VAIC). Empirical findings suggested only a marginal association between board independence and IC performance. The most significant proxy for board independence was the separation of individuals working in the roles of chief executive officer and chairperson. Further, results suggested the significance of the effect of board independence on IC performance varied across national boundaries. Overall, the results of this study are consistent with governance requirements varying across firms, thereby, contrasting with the notion that uniform board structures should be mandated.

Dimitrios (2009) has empirically examined the four elements of intellectual capital (human capital, customer capital, structural capital and innovation capital) and their relationship with business performance in the Athens Stock Exchange (ASE). This
study was conducted based on a psychometrically validated questionnaire developed by Bontis (1997) and Bontis et al. (2000). Confirmatory Factor Analysis and Structural Equation Model have been used as statistical methods to analyse the five hypotheses developed. It was found that human capital is important and positively associated to customer capital in both service and non-service industries, customer capital has an influence in structural capital rather than in non-service industries, innovation capital seems to have an important and positive relationship to structural capital, regardless of the industry type and structural capital has a positive relationship to business performance in both industry types, and especially in non service industries.

The study used data from consumer goods firms listed on the Jakarta Stock Exchange using Pulic’s Value Added Intellectual Coefficient (VAIC) model. Razafindrambinina and Anggreni (2010) investigated the relationship between Intellectual Capital and Corporate Financial Performance of Indonesian listed companies. The regression models explored the relationship between intellectual capital and its contribution to the financial performance of firms. The research revealed that Intellectual Capital contribute to the financial performance, with the exception of revenue growth. Also, it was concluded that physical/financial capital and structural capital are the most significant underlying drivers of corporate performance. Although insignificant, human capital has a positive and consistent role in revenue growth.

It was concluded that unlike financial and physical assets, intangible assets are difficult to emulate, which makes them a powerful source of competitive advantage.

Puntillo(2007) has done a study to investigate empirically the relation between the value creation efficiency and firms’ market valuation and financial performance, by using data drawn from 21 banks enlisted in the Milan Stock Exchange, Italy. More specifically, by using Pulic’s (1998, 2000, 2001, and 2002) Value Added Intellectual Coefficient (VAIC) as the efficiency measure of capital employed and intellectual capital, the study examines the relationship between intellectual capital and firms’ financial performance, and explores the relation between corporate value creation efficiency and firms’ market-to-book value ratios. Multiple regression analysis has
been conducted on the collected data. Surprisingly, the results do not show any strong association between the studied variable, except for the relation between a component of VAIC, the CEE, and the different measures of the firm’s performance.

Majid (2006) has analysed the relationship of the Board of Directors (BOD) composition directors’ shareholding (DS), board chairman duality position, board size (BS) and outside directors (OD) with company performance. Company performances tested are in terms of financial returns and company resources (physical and intellectual capital) value added efficiency (RVAE). Financial returns tested are return on assets (ROA), average turnover (ATO) and market capitalization over assets book value (MB). The RVAE is measured using the value added intellectual coefficient (VAIC) method. The sample covered 107 companies from the Main Board of Bursa Malaysia. The empirical regression analyses failed to find a significant relationship between BOD composition and company performance, except for DS and profitability. A statistically non-significant positive and negative relationship was noted for DS and duality position with company performance respectively. BS is non-significant positively associated with company performance except for MB’s non-significant negative result. OD was noted as non-significant positively related to the stakeholders’ interest performance indicators (i.e. M/B and IC value added efficiency) but non-significant negatively related to the shareholders’ interest performance indicators (i.e. ROA, ATO and physical capital value added efficiency). Pearson correlation results of significant correlation between company resources and financial performances suggest that IC enhances a company’s financial performance.

To investigate the impact of corporate value creation efficiency on investors’ capital gains, the author used the data collected from listed companies in Thailand’s stock market and Pulic’s (1998) Value Added Intellectual Coefficient (VAIC) as the measure of intellectual capital and a developed multiple regression model. Appuhami and Zhang (2007) investigated the impact of the value creation efficiency on investors’ capital gains on shares. The empirical research found that firms’ intellectual capital has a significant positive relationship with its investors’ capital gains on shares.
Merhebi (2006) explored that International studies document strong evidence that chief executive officer (CEO) remuneration is positively correlated with corporate performance. In the present research study it was re-examined that CEO pay-performance association as positive and statistically significant which is consistent with international findings for firms of the USA, UK and Canada.

A total of 84 South African publicly listed firms were included in this study. Marimuthu (2008) addressed the deficiencies in the corporate governance and intellectual capital literature by examining the association between the level of gender and ethnic diversity on the boards of directors of South African publicly listed firms and their degree of intellectual capital performance. Empirical results indicated a positive association between the percentage of female and non-white directors and firm’s intellectual capital performance. Additional analysis showed female directors as an insider had a negative effect of intellectual capital performance. Female and non-white directors as outsiders had a positive influence on a firm’s intellectual capital performance. Finally, there was no association between the percentage of non-white inside directors and intellectual capital performance. Based on the results of this study, it is concluded South African publicly listed firms may be able to enhance their intellectual capital performance by utilizing a well balanced and structured board of directors in terms of gender and ethnic representation.

Seng and Rosalind (2011) examined the effect intellectual capital (IC) has on firm performance using a sample of Australian companies listed between 2004 and 2008. IC is measured using Pulic’s Value Added Intellectual Coefficient (VAIC) and its components and both a direct and additional relationship between VAIC and performance are analysed. The results suggest that there is a direct relationship between IC and performance of Australian publicly listed firms, particularly with capital employed efficiency and to a lesser extent with human capital efficiency. A positive relationship between IC (human and structural capital) in the prior year and performance in the current year is also found. Evidence also suggested the possibility of a moderating relationship between IC and physical and financial capital which impacts on firm performance.
Seven-year data of Lahore Stock Exchange index companies (LSE-25) were obtained from audited financial reports to calculate human capital, structural capital and capital employed efficiency of companies related to different industrial sectors. Makki (2009) studied the impact of IC efficiency on shareholders earning using VAIC. Regression models were used to explore the impact of IC efficiency on Earning Per Share (EPS). In this study, results through multiple regression techniques supported the argument that IC efficiency contributes significantly towards Earning Per Share using cross sectional time series data.

This study Kehelwalatenna and Premaratne (2013) examined the value relevance of intellectual capital (IC) to investors. Pulic's VAIC method is selected to measure IC and fixed effects panel regressions are used to analyse data of 191 NYSE listed banking sector firms over 2000-2011. The mean values for VAIC were higher than its median values until 2008, indicating that the sample firms consist of a small number of very large IC values. It was concluded that parallel to increasing the magnitude of the average IC value decline in 2009, effects of the subprime mortgage crisis in the US economy may have created a discrepancy in the IC level among firms since 2009. In this respect, an alteration in the pattern of previously identified less number of firms with very large IC values is revealed in higher medians for IC in 2009 and 2010.

The aim of the study done by Lea (2013) was to examine the relationship between the intellectual capital namely human capital efficiency (HCE), capital employed efficiency (CEE) and structural capital efficient (SCE) on banks' profitability ratio, specifically return on asset (ROA) and return on equity (ROE). This study used a model value added intellectual Capital (VAIC). The data covered 9 local commercial banks in Malaysia over 6 years from year 2005 to year 2010. Static panel fixed-effect model was used to analyze the data. The empirical results suggested that SCE and CEE has a positive significant relationship on ROA and ROE. On the other hand, the HCE has negative significant relationship with ROA and ROE. Overall, the intellectual capital has a positive relationship with ROA and ROE for local commercial banks in Malaysia.
The objective of study was to measure the intellectual capital performance of both life and non-life insurance sector for the period 2006-2010 of Pakistan using both Value Added (VA) and Value Added Intellectual Coefficient (VAIC) model and to observe intellectual capital performance's impact on financial returns. Here panel data model was used. It has been observed that a positive and significant relationship of Human Capital Efficiency with EPS whereas a negative and significant relationship is examined between Structural Capital Efficiency and EPS. But Capital Employed Efficiency has insignificant relationship with EPS. This study has been done by Wasim-ul-Rehman (2013).

The importance of conducting this research by Mahboobeh, Mohamadreza et al. (2013) was to find the effective elements on bankruptcy of companies index based on the Fulmer model. With this research, the influence of communicational, structural and human components are measured and explained and their meaningful relation with bankruptcy was examined. In this study the analysis-descriptive method is applied and the information of vehicle manufacturing companies accepted by the stock exchange of Tehran during years 2009 to 2011 were examined and it investigated the correlation between intellectual capital and bankruptcy of companies in an application manner. And eventually the statistical tests showed that there is a meaningful relation between structural capital and bankruptcy rank. The time and place zone of the information of companies accepted in the stock exchange of Tehran is in during years 2009-2011 which were under examination.

This research investigated by Tze, Lay et al. (2011) that the intellectual capital efficiency and the trends from 2008 to 2010 among Public Listed food and beverage companies under consumer product in Malaysia. VAIC was used to compute VAIC, ICE, HCE, SCE and CEE using data from companies' annual reports. The findings indicated that the VAIC for food category is 3.47 and 4.12 for beverage category while ICE is 3.22 for food category and 2.82 for beverage category respectively. The outcome revealed the beverage companies have greater VAIC and ICE compared to food companies over the 3 years period. The trend for VAIC and ICE of food category increased over the years whereas the trend of beverage category plummeted
in 2009 from 2008 but rise again in 2010. It can be concluded that food companies are improving in the efficiency of utilizing their resources and intellectual capital to create value. The outcome of this research will be able to identify the efficiency of IC in food and beverage industry in Malaysia where the information is limited. Furthermore, this can aid the food and beverage companies to benchmark themselves to enhance value creation.

Emad Rezaei (2013) investigated relationship between Value added intellectual coefficient (VAIC) and Tobin’s Q Ratio and Revenue Growth (GR) of the listed companies on Tehran Stock Exchange. The (VAIC) model is used to measure intellectual capital and their components. The time period and place of research is relevant to the companies listed in Tehran Stock Exchange during the years 2007-2012; and 111 companies have been selected from this community as the research sample. The results of this study confirmed that there is a positive and significant relationship between intellectual capital and (GR) but there is not any relationship between intellectual capital and Tobin Q index.

3.5 Knowledge Management and Knowledge Capital in Indian Companies

The following literature discussed different study done on Knowledge Management and Intellectual Capital in Indian

Deol (2009) studied how different banks responded to deregulation and industry reforms in terms of developing and exploiting their IC. Government, private and foreign owned banks used and developed different elements of IC (structural, human and relational capital) in response to the change in their strategic environment due to the reforms. The research study complemented Kamath’s cross-sectional estimation of VAIC in the Indian banking industry, and seeks to introduce consideration of the strategic environment of firms. The research study is one of the first systematic studies on the post-liberalization strategies of banks in India, an important emerging economy.

Knowledge is one of the key determinants of growth not only of an organization but of nations as well, felt by Singh and Joshi (2011). Described as wealth in the Vedas
and as power in the common parlance, knowledge has always remained and will always remain the single most important factor contributing to every type of development in the human society as it is this capital which enables man to use every other type of capital and resources for his benefit. The focus on knowledge capital and its productivity is of perfectly understandable and of paramount importance in the emerging knowledge-intensive economy of India. In spite of the importance of knowledge capital, the country is still in the search for a new paradigm in accounting for knowledge capital. Most of the efforts done even at the global level so far are of theoretical and conceptual in nature and in India it is yet to make an impact, although the country has a strength in terms of knowledge capital. An attempt has been made in this study to identify the meaning and significance of knowledge capital along with the study of prevalent models. The importance of measurement of knowledge capital in Indian scenario is also highlighted.

Mondal and Ghosh (2009) have analyzed the relationship between intellectual capital and corporate conventional financial performance measures of 80 Indian software and pharmaceutical companies for a period of five years from 2002 to 2006. Annual reports of the selected companies for the relevant years have been used to obtain the data. Value Added Intellectual Coefficient (VAIC) method is applied for measuring the value based performance of the companies. Corporate conventional performance financial measures used in this analysis are: profitability; productivity; and market valuation. The intellectual capital (human capital and structural capital) and physical capital of the randomly selected companies have been analyzed and their impact on corporate performance has been measured using multiple regression technique. The findings are that the performance of a company’s intellectual capital has relationship with profitability but not productivity and market valuation in India.

The research study used sample comprising 16 private and public sector organizations. A convenient sampling scheme was used. Chawla and Joshi (2010) have studied to understand the various dimensions of KM and how they differ in public and private sector organizations in India. It also attempted to identify the dimensions where one sector is better than the other and areas needing improvement.
The extent of KM practices was evaluated with respect to dimensions, namely process, leadership, technology, culture and measurement. The research study empirically showed that private sector organizations fare better statistically on all dimensions compared to public sector organizations. Although the private sector is ahead of the public sector on the raw mean scores of various dimensions, it has still a long way to go. The research study can serve as a best practice document for public and private sector organizations interested in adopting KM for improving performance.

A study report published by DIT(GOI)(2007) to assess Knowledge Management (KM) implementation in Indian manufacturing, IT and IT Enabled Services (ITES) and power generation and distribution companies. Various dimensions of KM, namely: process, leadership, culture, technology, and measurement are compared across the three industries to understand the differences in KM practices. Samples comprised 17 responses from ITES, 32 from manufacturing and eight from power generation and distribution organizations. Convenient sampling scheme was used. The research study reported the findings of the difference in KM practices with respect to the organizations' use of the above mentioned dimensions across the three industries. The raw mean score of various dimensions for ITES is the highest followed by manufacturing, and power generation and distribution on all except the leadership dimension. However, one way ANOVA results indicate that no significant difference is found for KM process, culture and technology. Statistical difference is found on the remaining two dimensions, namely, leadership and measurement, which were further analysed.

Kamath (2006) attempted to understand and evaluate the intellectual capital asset score sheet in general, and in specific the one that is reported at Infosys Technologies Ltd., India. The period of study is 1996–2005. The data for the study is collected from the published annual report of the company for various years. The IC report structure used at Infosys is found to be useful in several respects in enabling the shareholder to get a comprehensive view of the firm's true value; however, several more components
can be included to make the report more inclusive, interesting and simple to understand.

The research study examines whether selected companies are able to create value for their shareholders or not. Sharma and Kumar (2010) tried to find out the effectiveness of EVA in selected Indian companies because of shifting corporate objective from profit maximization to value or wealth maximization. For this, performance of selected companies has been analyzed using traditional performance measures such as ROCE, ROE and EPS along-with value added measures called EVA. With the help of various statistical techniques like Regression, Trend analysis, Chi square and ANOVA, the study tested the various hypotheses and revealed that majorities of the sample companies are able to continuously create value for their shareholders during the study period. Study provided that EVA is an important measure of firm performance and it was concluded that more companies should disclose EVA figures in their financial report so as to reveal correct financial position to the various stakeholders.

This study done by Deep and Pal Narwal (2013) analysed the relationship of intellectual capital with financial performance measures of Indian textile sector for a period of 10 years ranging from 2002 to 2012. For the study, corporate annual reports, especially the profit and loss accounts and balance sheets of the selected companies for the relevant years have been used from CMIE prowess database. Value Added Intellectual Coefficient (VAIC) method is applied for measuring the intellectual capital of the companies. For analyzing any existing relationship between variables, correlation and OLS regression is used in this study. It has been observed that intellectual capital in textile sector has significant positive relationship only with profitability of the companies. The empirical analysis found that physical capital (VACA) was the one which was seen to have major impact on the profitability of the firms over the period of study.
The main objective of this study is to analyse the intellectual capital efficiency of the listed Public and Private sector banks in India for the period from 2005 to 2011 using VAIC model.

The results indicate that VAIC of most of the banks is increasing over the sample study and intellectual capital is efficiently utilised by the Indian banks. On comparison Chadha (2013) observed that Private banks are way ahead from Public sector banks in terms of Intellectual capital Efficiency.

3.6 Gap Identification

The following section discussed about the Gap identified after the literature review.

The literature survey carried out covers study on various aspects of Knowledge Management (KM), Knowledge Capital and Value Added Intellectual Coefficient (VAIC) across the world across various sector like banks, insurance, pharmaceutical, software development firms, construction, healthcare. It is evident from the above literature survey that an extensive research has been carried out on Intellectual capital. However, since the financial accounting does not explain the increasing gap between a firm’s market value and its book value. Simply, a firm’s market value exceeding its book value has been defined as intellectual capital. The intellectual capital of a firm plays a significant role in the modern approach of value creation. Specially, firms in technology and service industries recognize intellectual capital as the major knowledge base that contributes to the creation of competitive advantage for the firm. The components of intellectual capital, such as human capital and structural capital created in customers, process, databases, brands, and systems, have been recognized as the factors that determine corporate well being.

Even though intellectual capital is recognized as a major corporate asset capable of generating sustainable competitive advantages and superior financial performance, it is still difficult to find an appropriate measure of intellectual capital. Pulic (2000) proposed Value Added Intellectual Coefficient (VAIC) as an indirect measure of efficiency of value added by corporate Intellectual Capital. The VAIC method provides the information about the efficiency of tangible and intangible assets that can be used to generate value to a firm (Pulic, 2004). Financial capital (monetary and
physical), human capital, and structural capital have been recognized as major components of VAIC. A higher value for VAIC shows a greater efficiency in the use of firm capital, since VAIC is calculated as the sum of capital employed efficiency, human capital efficiency, and structural capital efficiency. The compositions of these three components of capital, which are similar to the concept of Skandia Navigator, vary from industry to industry and from firm to firm, depending on their nature of business and strategy. These three components of capital determine the degree of value added by each product and/or service. The dividend policy of most of the companies in these industries is to pay no dividend or a very small amount.

From the literature survey it is found that no study explicitly tests relationship between Human capital, Structural Capital, Capital employed and earnings per share. Further no study has been done for any public sector organization. It has been observed that no study has been done on intellectual capital and earning per share (which is contributing to shareholders wealth) so far for Indian public sector and private sector companies. This is the gap identified.

This research study aims to examine the earning per share (instead of market return, which includes both capital gain and dividend yield) in relation to VAIC and its components. Capital gain refers to the profit earned by investors by selling shares in the secondary market. In addition to dividends, capital gain is one of objectives of investors. Investors sell shares when the market price is higher than the purchase price in order to earn capital gain. Thus, investors are motivated to buy shares of firms which have increasing market price. Likewise, firms with higher performance have increasing market price. Earnings per share are one of the indicators of company performance which is not dependent on the market factors like capital gain. So, Earning Per Share is immune to any market speculation and it depends on the real value added by any firm.