

CHAPTER TWO

REVIEW OF RELATED LITERATURE

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2.1 Introduction

The global economic environment has undergone profound changes under the backdrop of the knowledge economy with knowledge and intellectual achievements playing an increasingly pivotal role in economic development. The unique knowledge of enterprises become the foundation for their core competitiveness (Xu, J., & Li, J. s., 2019). The drivers of value creation in enterprises seem shifting from traditional material capital to intellectual capital. The notion that enterprise value creation originates from intellectual capital has gained widespread acceptance. In a competitive environment where only the fittest survive, enterprises must continually enhance their value creation ability to maintain long-term vitality. Effectively harnessing of intellectual capital, which represents knowledge achievements, serves as the source for enterprises to realize their value and sustain their competitive advantage. Grounded in this statement, research on the relationship between intellectual capital and corporate performance has emerged as a globally predominant research trajectory. However, owing to differences in the definition and measurement methods of concept and components of intellectual capital, consensus is yet to be reached, whether intellectual capital can influence enterprise performance and the underlying mechanisms (Xu, J., & Li, J. s., 2019).

The main objective of present research endeavor is to identify, study and analyse relationship of intellectual capital with firm's performance. The Literature review is carried out in four segments, beginning with identification, evolution and development in the field of Intellectual capital establishing its importance, further establishing the relationship of intellectual capital with firms' performance. The second segment focusses on the already prevalent methods to measure the value of intellectual capital as propounded by researchers, social scientists and analysts over a period. The third segment reviews the disclosure practices followed by listed companies and the relationship of intellectual capital on financial performance. The last segment identifies the research gap, the emergent research problem laying down the rationale and objective for the present study.

2.2 Theoretical Foundations of Intellectual Capital

In pursuit of the study's initial goal to "Expound the theoretical understanding of different approaches to the measurement of Intellectual capital", this section delves into the historical

progression of the term “intellect”, exploring perceptions and perspectives of economists since 17th century when intellect was considered as intangible asset, and examining how the significance of intangible assets, the emergence of Human Resource Accounting, contributed in formalizing the term “intellectual capital.”

The term Intellect has been considered as valuable possession by human beings since ancient times in India. The Bhagavad Gita, written in the Dwaparyuga around 3140 CE (More than 5163 years back), refers to intellect as *buddhi* in verse 42 of chapter 3, as a crucial asset.

इन्द्रियाणि पराण्याहुरिन्द्रियेभ्यः परं मनः ।

मनसस्तु परा बुद्धिर्यो बुद्धेः परतस्तु सः ॥ ३-४२ ॥

“*indriyaani paranyaahurindriyebhyaha param manaha* |

manasastu paraa buddhiryo buddheh paratastu saha || 42 ||”

(*Bhagavad Gita*)

Lord Krishna’s teachings in the Bhagavad Gita emphasize the importance of various aspects of human nature. The senses are superior to the body, the mind is superior to the senses, and the intellect is superior to the mind. The eternal essence is superior to the intellect (Bhagavad Gita). The intellect has the power to control the mind, senses, and body. (Bhagavad Gita) and thereby action, behaviour and performance of the human being are measured by Intellects (Kaul, 2023). Hence it can be said that “Intellect can analyze and understand the thoughts generated by the mind, and has the power to control the mind, the senses and the body” (Bhagavad Gita).

Kautilya, Indian economic and political philosopher as well as thinker hailing from the 4th century, espoused the belief that comprehending the intricate nature of humans is crucial for the proficient, resourceful, and ethical management of state apparatus. This principle holds relevance in contemporary business enterprises, as they too necessitate a profound comprehension of human nature to ensure long-term viability and expansion. Kautilya’s work, *Arthashastra*, places considerable emphasis on the significance of knowledge in the realm of effective statecraft. This term encompasses a comprehensive understanding of human tendencies, doctrines, policies, institutions, processes, and operations that are devised to guarantee the governance, security, and survival of a politically unified human collectively (Liebig, 2014). Kautilya further underscores the

intrinsic worth of intellect, “that one can earn money with it, but cannot buy it with money”. (Katoch, 2014). contending that while wealth can be acquired through intellect, it cannot be procured solely by monetary means. This notion underpins the primacy of intellectual capacity over financial resources and its indispensable contribution to the triumph of any organization. The recognition of the pivotal role played by human intelligence in attaining success extends back to ancient times. This awareness affirms the enduring acknowledgment of the significance of intellectual prowess in achieving organizational objectives.

2.3 Different Opinions of Economist -

From ancient times, it has been evident that human efforts and skills are vital for an organization to accomplish any task successfully. Today, the production of goods and services requires various resources, referred to as factors of production (Fernando, 2007). Economists, Adam Smith, David Ricardo, and Karl Marx identified three fundamental factors of production - land, labor, and capital, that are necessary for an organization to earn an economic profit (Fernando, 2007).

Adam Smith in 18th century, placed significant emphasis on the amalgamation of land, labor, and capital as the primary catalysts for economic growth propounding labor as the sole, indispensable factor of production, enabling farmers to acquire wages and generate profits (Debasish, 2015). Smith, however, made a distinction between productive and unproductive labor, defining the former as individuals contributing to the production of tangible goods. Contemporary understandings of the productive workforce have undergone transformations, encompassing not only those involved in manufacturing physical goods but also professionals in the realms of education, administration, and service provision (Adam Smith, 1904 as cited in Turunen, O., 2016, pp. 82). These vocations now play a pivotal role in the production of both goods and services, exerting a substantial influence on a nation’s Gross Domestic Product (GDP). For instance, in case of India, the service sector contributes a notable 54.3% to the country’s overall GDP.

These evolutions and establishments have equivocally laid down the importance of human resources for an organization to succeed as a constant over the centuries. While the factors of production have remained the same, the definition of a productive workforce has evolved to encompass broader range of professions that contribute significantly to a nation’s wealth.

Adam Smith's views on productive and unproductive labor were met with scepticism in the economic world (Marx. K.). However, **Charles Dunoyer** contradicted the notion of unproductive labor contending that though teachers, doctors, and administrators, do not directly produce goods, yet they are a part of the national capital and produce productive immaterial products (Charles Dunoyer as cited in Turunen, O. (2016). pp. 170) (Benkemoune, R, 2009). In his work "De la Liberte du Travail," **Dunoyer (1846)** divided social capital into two categories: capital in material objects and capital embodied in human know-how, practical skills, and moral qualities. He classified the latter as intellectual and moral capital of society (Dunoyer, 1846 as cited in Turunen, O. (2016). pp. 171).

In his book, 'An Inquiry into the Nature and Causes of the Wealth of Nations,' ("An Inquiry into the nature and causes of the wealth of nations", 2018). Adam Smith compared the knowledge of a skilled worker to a machine, stating that the improved dexterity of a worker is like an instrument that facilitates and abridges labor, emphasizing the importance of human intelligence and its contribution to productivity, despite being intangible.

While Smith considered educators as unproductive (Smith, as cited in Turunen, O. (2016). pp.89), Lord Lauderdale believed that they contributed to a nation's wealth by providing skills and knowledge to workers. Lauderdale argued that if educators were unproductive, then the capital invested in education would also be unproductive. However, he was unable to develop a theory of intangible capital (Lauderdale as cited in Turunen, O. 2016. pp. 91) that justifies the productivity of educators and their contribution to a nation's wealth.

The above contestations unfold that concept of productive and unproductive labor is complex, adding to the ongoing debate on the productivity of services and immaterial products. However, the importance of human intelligence, the skills and knowledge provided by educators is recognized as a vital component of a nation's capital and productivity.

The 19th century witnessed the prominence of economists, including Adam Smith, John Ramsay Mcclulloch, and Nassaw W. Senior, emphasizing the concept of investing in human capital through education (Senior N, as cited in Turunen, O. 2016, pp. 91). Mcclulloch emphasized the significance

of education and knowledge dissemination in fostering innovation and organizational growth, highlighting that the outcomes of mental labor are particularly attributed to the individuals themselves. He states that “of all the species of property a man can possess, the fruits of his mental labours seem to be most peculiarly his own” (McCulloch, 1825, as cited in Turunen, O. 2016. p.138, p. 91, Nayar, P. K., 2019). He further defined capital to support or aid individuals in the acquisition or production of commodities, (McCulloch, 1825, as cited in Turunen, O. 2016, p. 98 & p.95). and intangible capital as an accumulation of labour that could enhance labour efficiency. (McCulloch, 1825 as cited in Turunen, O. 2016, p. 65-66).

Nassaw W. Senior distinguished between immaterial and material goods, focusing on the distinction between actions and results (as cited by Turunen, O, 2016, p. 97). He considered the actions performed by labourers as intangible and potentially intellectual in nature. Similarly, Jean Baptiste Say, regarded service providers as knowledge-intensive professionals who indirectly contribute to the production process (Baptiste J., as cited by Turunen, O, 2016, p.145). He categorized human capital into wages and additional expenditures, such as training and development, which he classified as intangible capital.

Louis Say criticized his brother’s approach and argued that the production of wealth necessitates the creation of new and improved utility, thus emphasizing the significance of innovation within organisations (Say L, as cited by Turunen, O, 2016). For the first time innovation is recognized as necessary component for creation of wealth within the organisation that laid the foundation for the development of human capital theory acknowledging the critical role of human resources in achieving organizational objectives and generating profits.

Despite not employing the terms “human capital” or “intellectual capital”, these economists underscored the importance of human knowledge and organizational skills, as intangible resources of utmost importance to organizations. Eventually, human capital got recognized as a crucial resource for organizations, with investment in it being deemed essential for long-term success.

2.4. Evolution of Human Capital

Irving Fisher, a distinguished economist of the early 20th century, played a pivotal role in establishing the groundwork for modern human capital theory associating capital with the assets and possessions of a firm, implying that human capital represents the firm's valuable assets capable of generating wealth, albeit not being owned by the firm itself.

In Fisher's framework, wealth was intricately linked to the temporal dimension of human experience, comprehended in two distinct ways: as the monetary resources an individual possesses at a specific moment in time (stock), or as the monetary inflows and outflows realized over a specific period (income). Capital encompassed both the accumulated stock of wealth and the dynamic changes occurring over time, endorsing Fisher's definition, "A Stock of wealth existing at an instant of time is called capital. A flow of services through a period is called income" (Fisher, 1896). (Sison). This definition is equally applicable to human resources, being regarded as a valuable stock of wealth for the firm. With evolution and expansion in the knowledge corpus and its implication in the business world human resources got recognised as one of the predominant factors contributing to generating revenue and being nomenclated as human capital. The Organization for Economic Cooperation and Development (OECD) defines human capital as the attributes embodied in individuals that are utilized to produce goods, services, or ideas.

Initially human efforts i.e. labour was given importance in production being the only factor, with the development and expansion of business, its scale the concept of large-scale production evolved giving momentum to industrialization. With the rise of industrialization machines became crucial for competitive mass production. Human intellect, knowledge, skills (resource) is the force behind these machines. Though, machines may outperform humans in terms of speed, accuracy and efficiency, they cannot replace human resource in ideating, innovation and problem solving. Even in highly automated companies, human resources remain essential for the installation, management, and troubleshooting of machines. Consequently, human resources became indispensable asset to organizations, the effective management of which is pivotal to organizational success and hence they are termed as human assets. Dave Bookbinder, "People are an organization's most valuable asset and the key to its success", emphasizes the profound significance of human resources within

an organization (as cited in Abali, 2021, para. 5)(Urbanek, 2016). The next segment discusses the paradigm shift from human capital to human resource.

2.5 Changing Shift from Human Capital to Human Asset:

In the mid-20th century, the advent of mass production intensified international competition, compelling companies to train and motivate their workforce to effectively operate machinery and meet consumer demands, essentialising the retention of human assets as intangible assets capable of yielding future benefits. This aligns with Sir William Petty's (1661) valuation of human beings in monetary terms, where he acknowledged labour as the active driver of wealth. Labour theory of value gives impetus to all commodities that result from labour alone (Dooley P., 2002). However, traditional accounting practices fail to recognize human resources as assets, thereby contravening the cost concept in accounting (Chouzouris N., 2021,). The insurgence of behavioural scientists in accounting practices reshaped the conventional approach opening new vistas of evaluating human resources including Shultz, Flamholtz, Lav and Schwartz, and Kenneth Sinclair. (Kumar, S., & Avasthi, P. (2018)). Even Likert said "If human resource as an asset are not in the balance sheet, it will violate the accrual principles of disclosure, underrate the firms' net worth and current income and thereby not reflecting the true and fair view of the organization" (Likert, 1967)(Vohra, D. R. S. M., 2015, p.10-14) Similarly, Ken Robinson (2017) highlights the significance of creating circumstances that reveal the untapped potential of human resource, which often lie dormant and undiscovered, rather than being readily apparent on the surface. Creating circumstances are crucial for unlocking the full creative and innovative capabilities of individuals (Robinson, 2017). This review clearly marks the paradigm shift in accounting practices from human capital to human assets and the realisation that human intellect cannot only be recognised in terms of their financial and human aspects but in terms of all tangible and intangible inputs necessary for business operations and growth.

The recognition of human assets as intangible having immense value is crucial in the contemporary organizational landscape. Failure to account for their worth not only undermines the principles of disclosure but also diminishes the organization's true net worth and income. The absence of accounting standards and principles to measure the value of human assets results in exclusion of such an active, vital asset from the financial statements and thereby it's performance measurement,

in terms of return on human assets becomes difficult, despite their critical role in organizational success.

This necessitates the identification, measurement, and report information regarding the value of human assets. This would enable top management to make informed decisions pertaining to recruitment, retention, skill development, and promotion, recognizing that employees are the lifeblood of the organization. It cannot be denied that human assets should be accorded asset status and be given equal importance like physical assets within financial statements.

Narayan Murthy, co-founder of Infosys, eloquently articulates the significance of human capital in stating, “We, at Infosys, believe that the most critical resource of any corporation is the quality of the human mind because a human mind can innovate, invent, lead, and bring about huge transformations” (as cited in Chanda, 2017). This highlights the importance of human assets in organizations and the need to create an environment conducive to their effective contributions. It is decisive that financial resource, on one hand are essential for company’s operations, on the other it’s ‘human resources’ that are the drivers of its success. The future of a company lies not solely in tangible fixed assets but in the hands of human intellect. Recognizing human resources as valuable assets and investing in their development and management is crucial for the prosperity and longevity of organizations in the ever-evolving business landscape.

2.6 The Emergence of Human Resource Accounting

The emergence of Human Resource Accounting has been a significant development in recognizing the value of human resources in organizations. Likert’s research in 1960 laid the foundation for evaluating human resources in monetary terms, emphasizing their impact on job satisfaction, costs, productivity, and earnings (Likert, 1967). Hekimains and Jones further contributed to this idea by advocating for the inclusion of human assets in financial statements, leading to the rise of Human Resource Accounting (Hekimains & Jones, 1967).

One notable example of early implementation of Human Resource Accounting was seen in the RG Barry Corporation in 1967 where Historical Cost Approach was adopted for employee valuation based on the accumulated cost of recruitment, training, and development. The estimated working lives of individuals were also considered, with any unamortized costs being written off if an employee left before the expected time (Kolay, 1970).

However, this approach has limitations as it fails to capture the aggregate value of an employee's potential services. HRA has been criticized on the grounds that it advocates the depreciation in the value of human assets over a period whereas, Historical Cost Approach (HCA) asserts on the appreciation of the value of human assets over a time with experience. Alternative methods, such as the replacement cost concept and opportunity cost of employees, were proposed, but were problematising in terms of uncertainty about future years of service, pay and performance uncertainty, and lack of objectivity in predicting future performance (Chaturvedi, 2013) that is the reason they are not included in financial statements but, some of the aspects of their contribution are recognized as intangible assets-trademarks, patents, and research and development, to name a few. However, it is noteworthy that certain consequential intangible facets including market strategies, management policies, skills, knowledge, and relationship-building, prove difficult to quantify and, as a result, find no representation in financial statements. Scholars believe that these limitations hinder the accurate representation of human assets owing to their intangible nature which calls for a novel way to nomenclate and define these assets. In the second half of the 20th century intellectual capital emerged as a more appropriate term, Kenneth Gailbraith being the first to use it in 1969.

2.7. Evolution of the Term Intellectual Capital

The term intellectual capital, although not formally addressed in economic theory, has been in existence for a considerable period of time (Kenneth Galbraith as cited by Łataś R. & Walasek D, 2016). Its first usage can be attributed to the economist John Kenneth Galbraith who in his letter to Michal Kalecki, expressed his appreciation, stating, "I wonder if you realize how much those of us the world around have owed to the intellectual capital you have provided over these past decades" (as cited in Łataś & Walasek, 2016). Gailbraith recognized that these resources extend beyond physical equipment and materials, encompassing the skills, talents, intelligence, abilities, and brain power of employees. He believed that intellectual capital goes beyond mere intellect and involves converting intellect into action to generate value (Łataś & Walasek, 2016).

The formal establishment of intellectual capital management can be attributed on November 12, 1987, when K. E. Sveiby and a group of six Swedish individuals, actively engaged in economic activities came together to form the Konrad Group. The primary objective of this group was to

create a comprehensive and universally applicable method for assessing intellectual capital. A significant milestone occurred in 1989 with the publication of the 'Konrad Report,' which was a departure from conventional accounting and management principles. This report not only defined the concept of intellectual capital for the first time but also introduced the initial set of indicators for measuring intellectual resources (Latas R. & Walasek D, 2016). It was widely believed that traditional financial measures were inadequate in capturing the true value of companies. Eventually, there was a growing demand for non-financial metrics that could provide a more comprehensive economic analysis leading to a breakthrough in the field of intellectual capital management, spear headed by the Swedish company Skandia, operating in the financial services sector. In 1990, Skandia appointed Leif Edvinsson as the director of intellectual capital, marking a significant step forward (Gogan M., 2014). He developed a dynamic and holistic Intellectual Capital reporting model named Skandia Navigator (Gogan M., 2014) as a supplement to their annual report.

It entails leveraging these intangible assets to create valuable products and services that enhance a firm's reputation and increase its value among stakeholders (Edvinsson & Malone, 1997). The economists Leif Edvinsson (1997) further popularized the concept of intellectual capital in their book published in 1997, emphasizing its importance as a strategic asset for organizations (J. Roos, Edvinsson, & Dragonetti, 1997)

The term "intellectual capital" since gained widespread usage in fields such as knowledge management, organizational development, and economics. It encompasses intangible assets and resources, including knowledge, expertise, intellectual property, and innovation, which contribute to a company's value and competitive advantage (Edvinsson & Malone, 1997). In today's knowledge-based economy, a firm's value depends on the intellectual capital of its employees, surpassing the significance of tangible assets like machinery, building and furniture that includes collective knowledge, skills, capabilities that drive innovation, value creation and sustainable growth. (Edvinsson& Malone, 1997).

Intellectual capital represents the knowledge, skills, and experience possessed by an individual or groups within an organisation that create value for the firm and can be regarded as the firm's capital. However, it is essential to note that in the current information economy, knowledge plays a critical role in an organization's survival, serving as a fundamental resource in various operations and activities (Peter Ferdinand Drucker, 1993). Labor and capital have been displaced by knowledge as

the primary resource in production, with products, business processes, and services becoming more knowledge-based (Peter Ferdinand Drucker, 1993).

Intellectual capital encompasses a range of valuable assets within a company, including knowledge, experience, organizational technology, customer relationships, and professional skills (Li, Y., Song, Wang, J., & Li, C. 2019) that provide the organisation a competitive edge in the market, marking the impetus on the development of intellectual capital. The concept of intellectual capital is influenced by various factors: genetic inheritance, education, experience, and attitudes towards life and business.

It is important to recognize that not all knowledge and skills qualify as intellectual capital, only knowledge that represents resources, having an ability to innovate, solve problems and create value holds significance.

While defining intellectual capital the broader factors that characterize the organization to which individuals belong cannot be isolated and ignored. These factors encompass systems, culture, and research, all of which contribute to the overall intellectual capital of the organization. Besides, knowledge the most poignant factor in intellectual capital in lay man's term is defined as 'know-how', nomenclated formally as 'procedural knowledge', which is distinct from 'know-that', 'know-what', or 'declarative knowledge'. These distinctions emphasize the varying dimensions of knowledge within the intellectual capital framework (Bontis N., & Choo C. W. 2002).

There is a dire need of unified standards defining, characterising intellectual capital. The three perspectives that to some extent define intellectual capital: intangible assets, knowledge and ability, and enterprise value (Si, X. 2019; Bontis N., & Choo C. W. 2002, p. 676.) are prevalent. The following section critically analyses the existing definitions with the purpose of unfolding a new dimension.

2.7.1 Definitions of Intellectual Capital

One of the most lucid definition by Tom Stewart “ it is something you can't touch but which makes you rich”, highlights the abstract nature of intellectual capital (as cited in Edvinsson, L., & Sullivan, P., 1996), further, Larry Prusak institutionalised this abstractness, “intellectual material that has been formalized, captured and leveraged (to produce a higher valued assets)” (as cited in Edvinsson, L., & Sullivan, P., 1996). Hughes Space and Arian Ward for the first time related it to the knowledge workers asserting that “Intellectual Capital is fundamentally the sum of the

company's 'islands of knowledge' highlighting the challenges that link and coordinate knowledge workers with the benefit of the firm" (as cited in Edvinsson, L., & Sullivan, P., 1996). These initial definitions present intellectual capital as the stock of organised information synonymously knowledge possessed by an organisation which can be used for productive work consequently leveraging intellectual capital for increasing profitability. Later, Edvinsson (1996) described intellectual capital as 'sum of human capital, structural capital including customer capital' adding "knowledge that can be converted into value" (Edvinsson, L., & Sullivan, P., 1996). Human capital refers to such an asset that leave the organisation the moment employee leave the firm, organisational capital and the customer capital is created and retained in the organisation while customer capital is the relation created and maintained by the organisation

Stewart (1997) relating the intangible nature of intellectual capital with the tangible productivity, defined it as "intellectual material i.e. knowledge, information, intellectual property, and experience, that can put to use for creating wealth" (as cited by Lu et al., 2021, Stewart & Ruckdeschel, 1998, Nazim & Mukherjee, 2016). Brook (1997) defined it as "the combination of intangible assets which enables the company to function including market assets, intellectual property assets, human centred assets and infrastructure assets." (Brooking, 1997). He classified Intellectual capital into various intangible assets- human centred, market assets and infrastructure assets. Sveiby (1997) introduced a classification of intangibles from a non-accounting perspective, categorizing them as employee competence, internal structure, and external structure (Erik Sveiby, 1997) which is even called as Human capital, structural capital and relational capital or customer capital (Erik Sveiby, 1997, Mariz-Pérez, Teijeiro-Alvarez, & García-Alvarez, 2012) supported by Bukh (2001) as the combination of human capital, organisational capital, and customer capital or simply as competence commitment,(as cited in Manzari, Kazemi, Nazemi, & Pooya, 2012).

In the existing knowledge corpus, there prevail different frameworks for classifying the different components of intellectual capital primarily under three categories- human capital, structural or organisational capital and relational or customer capital (Kim, Yoo, & Lee, 2011; Rudež & Mihalič, 2007; Tai & Chen, 2009; Chu, Lin, Hsiung, & Liu, 2006).

Human capital as defined by Joia, 2007, refers to the skills and competencies of people in the organisation (as cited in Manzari, Kazemi, Nazemi, & Pooya, 2012), further, Baker 2008 added, 'it is owned by the knowledge workers(as cited in Manzari, Kazemi, Nazemi, & Pooya, 2012)', and

‘the individual tacit knowledge embedded in the minds of the employees(Ramezan, 2011)’, not owned by the firm but, follows the employee when employee leaves the firm.

Structural capital, on the other hand, is owned by the firm as it marks the knowledge that does go home at night therefore belonging to the organisation. (Manzari, Kazemi, Nazemi, & Pooya, 2012). It can be reproduced and shared in the form of technologies, inventions, data, publications, organisational routines, procedures (Manzari, Kazemi, Nazemi, & Pooya, 2012). Hsu & Fang include process and innovation capital in structural capital (as cited by Manzari, Kazemi, Nazemi, & Pooya, 2012). Being the backbone of an organization, strong structural capital will create favorable conditions to utilize human capital and allow human capital to realize its fullest potential boosting innovation and customer capital (Ramezan, 2011).

The third, Customer capital is the value embedded in the marketing channels and the relationships developed by an organisation with the external environment. It is the main determinant in the conversion of intellectual capital into market value (Manzari, Kazemi, Nazemi, & Pooya, 2012). Compared to above components, customer capital has the direct effect on the company’s value and organisation performance (Bontis,1998; Manzari, Kazemi, Nazemi, & Pooya, 2012) that contributes to current and future revenues, resulting from and organisation’s relationship with its customer’s(Chang & Tseng, 2005, as cited by Manzari, Kazemi, Nazemi, & Pooya, 2012), thereby, including customer relations, customer satisfaction, loyalty, image, brand, strategic partners, employees, direct distribution channels etc (Jurczak, 2008; Rudež & Mihalič, 2007).

Sullivan (2000) defined intellectual capital as, “knowledge that can be converted into profit”, emphasizing the importance of reputation-building, product customization, and customer satisfaction in increasing sales and profitability reiterating the conversion of intellectual profit into profit of the company by increasing the value of the company, further correlating the value of intellectual capital with the profit variables of the company, as it is the willingness of employees to contribute their knowledge and expertise, as well as the organization’s role in providing a supportive work system. That intellectual capital comprises of hidden factors underlying a company’s value in the form of human capital and structural capital (L. Edvinsson and M.S. Malone, 2001), innovative capital, human capital, organizational capital, and knowledgeable capital, focusing on their future earning potential (Lev, 2001) added a new dimension to the entire concept.

Kostagiolas P. (2012) definition of intellectual capital as ‘all the invisible, non-monetary assets held by an organisation that are amassed over time, not included in the balance sheet, can be identified and analysed separately’ (Kostagiolas, 2012) paved the way for Invisible Balance sheet.

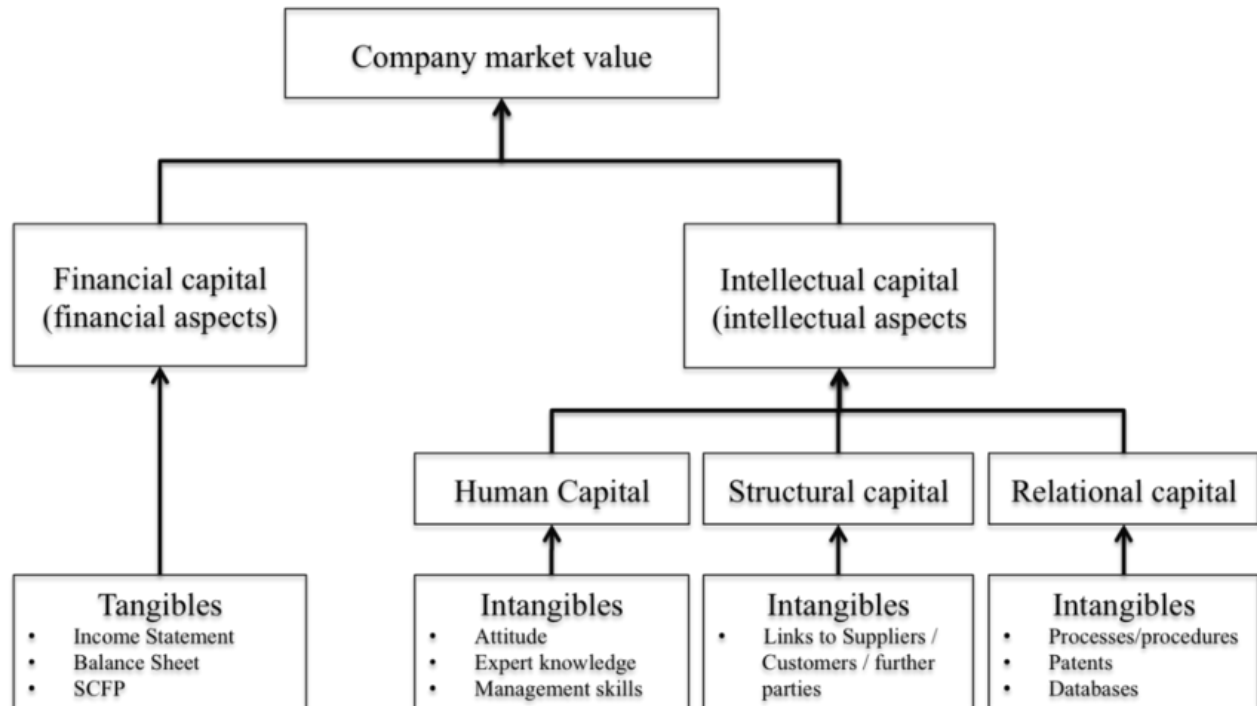


Figure 2.1 : Classification of Intellectual Capital

Source:

Based on the above definition and discussion intellectual capital can be defined as the collective sum of knowledge assets that a company owns or controls, which can provide competitive advantages to an organization and create significant value, recognising intellectual capital, not as a singular asset but rather a combination of various assets. This above figure shows the difference of book value and market value as intellectual capital, the combination of three components. For instance, a software development company, its intellectual capital includes the expertise and knowledge possessed by its software engineers, the company’s proprietary algorithms and software code, its intellectual property rights, and its organizational culture that promotes innovation and collaboration, contribute to the company’s competitive advantage, enabling it to develop high-quality software products, attract top talent, and maintain customer satisfaction. Effectively

leveraging its intellectual capital, the company can generate substantial value by outperforming competitors, expanding its market share, and increasing its profitability. A close analysis of the definitions above leads to the inference that authors have used interchangeable terms and words such as intangible assets, intangible capital, intellectual capital and intangible resources, to refer to the same concept. Still, drawing on the above definitions, intellectual capital can be characterised as:

- Intellectual capital is a relationship of employees with firms and of firms with customers and suppliers,
- Firm borrows it from employees and customers to generate economic value for firm.
- Intellectual capital has a claim to future benefits, but it has no physical or financial status,
- The scope of intellectual capital is not monetary, but it has competitive advantage.
- It is a collection of intangible resources which can together create value for the firm and so there is a difference between market value and book value of shares (Murphy, 2018).
- It is a knowledge for the firm which can be converted into profits but it has no physical existence, non-monetary in nature and so it finds no place in financial statements.

As the term became more and more significant in terms of enhancing organisation's worth, including intangible assets, future benefit claim, prospective profit conversion, and using intellectual capital to gain competitive advantage there emerged the ardent necessity to recognize, develop, and assess these intangible assets and communicate its value. This necessity laid impetus on the development of an effective tool for intellectual capital management for further maximizing resource allocation and making better informed strategic decisions in line with the predetermined objectives (Bontis, 1998). Additional performance parameters essential for evaluating the organisation's long-term sustainability and competitiveness are also provided by this quantification allowing cross-industry comparison enhancing the need to measure the value of intellectual capital.

Lev (1997), noticed that the market-to-book value ratio has dramatically increased, from 2:1 in the late 1970s to over 6:1 by 1997(as cited by Chen, Cheng, & Hwang, 2005) indicating the insufficiency of traditional accounting model to keep pace with contemporary business dynamics (Edvinsson and Malone, 1997). To suit the new paradigm, shift in business from manufacturing to knowledge intensive Intellectual Capital measurement method encompasses essential non-financial

elements such as human capital, customer satisfaction, and innovation, providing a more comprehensive assessment of a company's value and performance, more so, identifying strengths and weaknesses through benchmarking, and subsequently leveraging strengths while addressing weaknesses. Intellectual Capital measurement aids in assessing a company's ability to achieve its strategic objectives, planning research and development, providing background for project adjustments, and confirming the focus of a company's education and training programs. As a strategic tool for business and marketing management, Intellectual Capital measurement is more valuable for internal management than for external communication with shareholders or investors (Bontis, 2001). Consequently, regularly reporting the status of Intellectual Capital to the board of directors is essential for strategic decision-making.

It can be summated that effective Intellectual capital management depends on effective measurement. Although some companies have started to monitor, value, and develop means to protect their intangible Intellectual Capital (Harvey & Lusch, 1992), many managers are still not prepared to fully utilize this knowledge. A study by the Swiss think tank Gottlieb Duttweiler Foundation found that only 20 percent of the knowledge available to an organization is utilized due to the lack of proper IC measurement (Brooking, 1996). This paucity led to the development of measurement model of Intellectual Capital. Both researchers and practitioners make efforts in measuring and evaluating Intellectual capital value.

2.8. Methods for Measuring Intellectual Capital

This section gives an overview of various methods developed over the years by the different researchers in the tabular form:

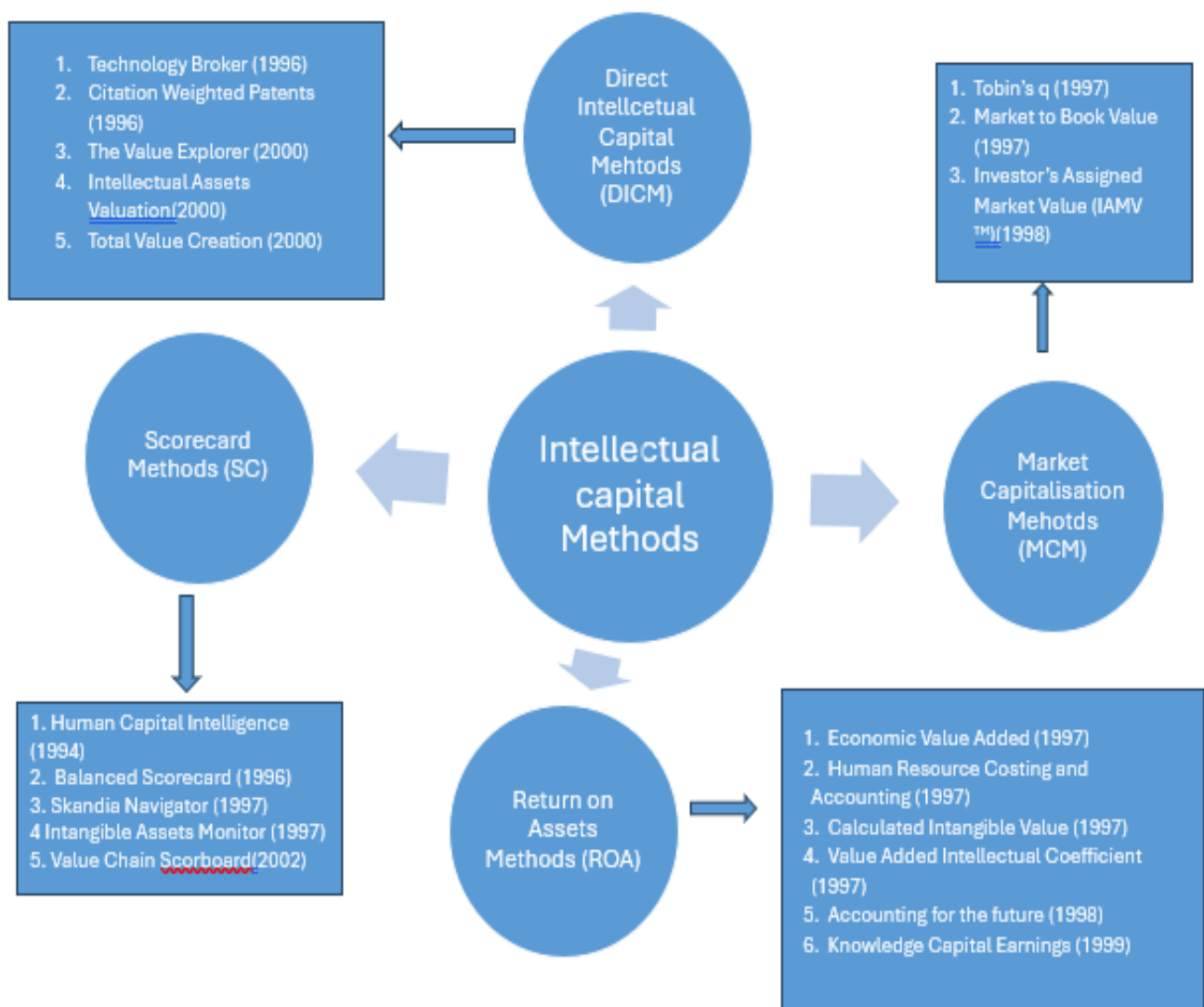


Figure 2.1 Intellectual Capital Methods: An Overview
(Created by the Researcher)

2.8.1 Direct Intellectual Capital Method

Table 2.1 : Table showing Direct Intellectual Capital Method

Sr. No.	Name of the Method	Contributor Name	Description	Overview of 1,2,3,4 and 5.
1.	Technology Broker	Brooking 1996	Value of Intellectual capital of a firm is measured based on the analysis of the response received from the firm on four different aspects of Intellectual capital:	Direct Intellectual Capital Method creates a more comprehensive picture of organization's health than financial

			Market Assets, Human centered assets, Intellectual Property Assets and Infrastructure Assets. The base to develop this method is $\text{Market Value} = \text{Book Value} + \text{Intellectual capital}$	metrics. The methods are more detailed and can easily be applied at any level of an organisation. These methods are based on the response, indices, projected figures, and qualitative figures. They need not to be measured in financial terms and are not connected easily to the financial results of the business.
2.	Citation Weighted Patents	Bontis 1998	Intellectual Capital value is measured based on the patents developed by the firm. A series of Indices are developed to describe the firm's patent and to analyse the firm's performance based on the indices.	
3.	The Value Explorer	Andriessen 2005	Collecting both qualitative and quantitative information for intangible assets-Assets and endowment, Skills and tacit knowledge, collective value and norms, Technology and explicit knowledge and primary and management processes	
4.	Intellectual Assets Valuation	Sullivan 2000	Methods to assess the value of Intellectual Property.	
5.	Total Value Creation	Anderson & McLean 2000	Uses discounted project cash flows to reexamine how the events affect planned activities	

2.8.2 Scorecard Method

Measure the value of Intellectual Capital considering different components and it can be quantitative and qualitative methods.

Table 2.2 : Table Showing Scorecard Method

Sr. No.	Name of the Method	Contributor Name	Description	Overview of 1, 2, 3, 4 and 5
1.	Human Capital Intelligence (1994)	Jac Fitz-Enz 1994	1. Collects human resources indicators, evaluates them, collect the information and doing detailed analysis in human capital context. 2. Concentrates only on one component.	Each method measures the value by drawing questionnaire and collecting it from the required respondents. The information that is collected from respondents are purely

2.	Balanced Scorecard (1996)	Kaplan and Norton 1996	1. Includes both, financial and non-financial elements. 2. The non-financial elements consider are customers, learning and growth and Internal processes. 3. Offers a holistic approach to generating value through tangible and intangible resources. 4. More a strategic tool rather than a measurement method. 5. Simply connects the company strategies with the indicators measuring its intangible assets.	subjective. Respondents express their own opinion. To convert the qualitative information into financial terms also possess difficulties. There is a need to measure the value in financial terms and should be objective.
3.	Skandia Navigator (1997)	Leif Edvinsson	1. Adds fifth indicator as renewal and development, in addition to customers, processes, human, and financial aspects. 2. Human focus is placed in the center as the active intelligence of an organisation. 3. Analysed 164 metric that cover all five components	
4.	Intangible Assets Monitor (1997)	Sveiby 1997	1. Based on estimating the capability of creating value form intangible assets in terms of growth, renewal, utilization and risk reduction. 2. Indicators are selected based on the objectives of the firm.	
5.	Value Chain Scorboard (2002)	Lev (2001, 2002 b)	1. Adopts non-financial indicators matrix arranged based on the cycle of development, named – Discovery/learning,	

			Implementation and Commercialization.	
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2.8.3 Market Capitalisation Method

Difference between market value and shareholders' equity is considered as the value of Intellectual Capital.

Table 2.3 : Table Showing Market Capitalisationa Method

Sr. No.	Name of the Method	Contributor Name	Description	Overview of 1, 2, 3, and 4
1.	Tobin's q 1997	Stewart 1997	1. 'q' is the ratio of market value to the replacement cost of its assets. 2. Provides a proxy for measuring effective performance or not of a company's intellectual capital.	The method that considers market value of the stock of a company has various limitations, such as i. the changes in the market value are not under the entire control of the management, ii. Unpredictable events, takeovers, or short business cycles often cause oscillation and can influence stock price which is not in the control of management, iii stock price are fluctuating and last if the stock price is less compare to book value – it means the company is not owing intellectual capital. secondly none of the method offers guidelines for improvement of business in future.
2.	Market to Book Value (1997)	Stewart 1997 and Luthy 1998	1. Gives the difference between market value and book value as it is difficult to find the replacement cost of the existing assets and it provides the value not the ratio. 2. Provides the ideas of contribution of company's intellectual capital.	
3.	Investor's Assigned Market Value (1998)	Standfield 1998	1. The difference of market value and tangible book value is further classified into realizable intellectual capital, intellectual capital erosion and sustainable competitive advantage, but difficult to get the information of intellectual capital erosion and value of	

			sustainable competitive advantage separately.	
4.	Market Value Added 1997	Stewart	1. Easiest and most common intellectual capital valuation. 2. The difference between current stock market value and its book value.	

2.8.4 Return on Assets Method

Calculating the value of intellectual capital based on the value addition or return generated by the intellectual capital.

Table 2.4: Table Showing Return On Assets Method

Sr. No.	Name of the Method	Contributor Name	Description	Overview of 1, 2, 3, 4, 5 and 6.
1.	Economic Value Added (1997)	Stewart 1997	1. Calculates by adjusting the disclosed profit with the charges related to intangibles. 2. The profit earned over the cost of capital is the contribution of intellectual capital. 3. Does not measure the actual value of intellectual capital. 4. Implies that the effective management of intellectual capital will increase EVA. 5. Gives an idea of performance of Intellectual Capital.	1. Considers the data from the financial statements so possess objectivity. 2. All the methods except VAIC is having detailed and complex calculations that results into non adoption of the methods. 3. Methods also considers discounted rate to capitalize the value of intellectual capital again raise the question of objectivity.
2.	Human Resource Costing and Accounting (1997)	Johannson 1996	1. Calculates the hidden impact of Human Resource related costs, which reduce a firm's profit. 2. Measures the cost by considering the contribution of human assets held by the company divided by	

			capitalized/realizable salary expenditures. 3. Considers only human capital. 4. Model tends to be subjective and uncertain, lacking reliability.	
3.	Calculated Intangible Value (1997)	Stewart 1997 & Luthy 1998	1. Calculates the excess return on assets above return of industry average. 2. Term Excess return as return of intellectual capital, capitalized by weighted average cost of capital. 3. Assumes enterprise generates Intellectual capital when its return on assets is higher than industry average. 4. Shows the presence of Intellectual capital and its ability to use its assets to outperform the industry average. 5. Data can be easily available but practically not used as it eliminates such companies whose return on assets is below industry return on assets. 6. Shows the company does not possess intellectual capital but, practically is not possible.	
4.	Value Added Intellectual Coefficient (1997)	Pulic (1997)	1. Value is measured based on the investment done by the company in tangible and intangible assets. 2. Shows the ability of employees to generate value through their intellectual ability.	

			3. Considers both tangible and intangible assets in the calculation. 4. Gives the holistic approach of efficiency of employees against the physical, human and structural capital. 5. Intellectual Capital Efficiency = Human Capital Efficiency + Structural Capital Efficiency. 6. Value Added Intellectual Coefficient = Intellectual Capital Efficiency + Capital Employed Efficiency. 7. Fails to consider the third component of intellectual capital-customer capital. 8. Loss making companies cannot be considered in the valuation process. 9. Does not present the value of intellectual capital, alternatively evaluates how efficiently this factor adds value to the organisation. 10. Shows the inverse relationship of structural capital and human capital. 11. Simply presents the value generating capacity of the three different factors i.e capital employed, human capital and structural capital.
5.	Accounting for the future (1998)	Nash. H. 1998	1. Requires the estimates of the projected discounted cash flows from the

			project considering different situations. 2. Value of intellectual capital is perceived as value added, is being estimated as a difference between Accounting for the Future at the end and at the beginning of the period. 3. Projected cash flow is discounted based on the returns expected from the assets to be considered in the projects.	
6.	Knowledge Capital Earnings (1999)	Lev 1999	1. Calculates the return generated from knowledge capital as the excess normalized return above the expected earnings of the financial assets and tangible assets separately. 2. The knowledge capital return is then capitalized by return on equity, the value of intellectual capital.	

Though the above methods contribute to measuring Intellectual Capital from diverse points of view, unfortunately all the methods have one or the other shortcomings that render these methods non-adoption worldwide laying emphasis on the pressing need of widely accepted measurement method of Intellectual Capital. therefore, valuing intellectual capital and to identify the relationship of intellectual capital with the financial performance of the select Indian companies are the objectives of the present study.

At the outset, the term ‘financial performance’ is elaborated to comprehend relationship of intellectual capital with financial performance.

2.9 Financial Performance

Finance is an area that deals with money, currency, and assets in the context of the modern economy. Its origin can be traced back to the inception of civilization, with the earliest historical evidence dating back to approximately 3000 BC. The Babylonian empire had a significant impact on the origination of banking by utilizing temples and palaces to securely store valuables (Michael, 2018). Consequently, around 1200 BC, cowrie shells were used as currency, and by 640 BC, the Lydians started using coined money (Davies, 2002). Coin became popular as a representation of money during Greek empire between 600 and 570 as noted by Seaford in 2009. Throughout history, finance has always played an important and crucial role in accelerating business and trade, functioning as a medium of exchange for goods and services. Its importance goes beyond mere currency and includes financial investments. Financial aspects are the foundation of all business dealings and economic actions. Finance in today's world is considered as a complex system that deals with generating, distributing and managing money.

From an organizational point of view, having enough funds is essential to start own business venture by an individual. As the venture is started with the limited available fund, it is important for an individual to keep detailed financial records and to keep a proper track of all the financial transactions. As a result, financial analysis is very important for evaluating the company's overall performance and position. Analysing the company's performance in terms of generating revenue and analysing its financial position by investigating the profit and loss statement and financial position of the firm is crucial for any organisation. This practice aids in evaluating the company's performance in terms of revenue generation and analyzing its financial position concerning assets and liabilities at the end of each fiscal year. Consequently, financial analysis plays a vital role in assessing a company's overall performance and position.

Financial performance refers to the evaluation and assessment of an organization's or company's overall financial health and efficiency over a specific period. It refers to the ability of a company to generate profits and manage its financial resources over a specific period. It is a comprehensive evaluation of the company's financial health and effectiveness in achieving its financial goals and objectives. It entails the analysis of various financial indicators, ratios, and metrics to measure the entity's ability to generate profits, manage resources, meet financial obligations, and create sustainable value for its stakeholders. Stakeholders of the company require the financial

information like to know how well the company is doing in generating revenue for the organization and subsequently transferred to the shareholders by way of dividend or by having an increase in the share price of the company. This shows the need for the stakeholders to refer the financial statement and analyse the financial performance based on different components named, profitability, liquidity, solvency, and efficiency to gain insights into the company's financial strength and operational effectiveness.

2.9.1 Components of Financial Performance

Components of financial performance are profitability, liquidity, Solvency, Efficiency and Growth. Profitability reflects the company's ability to generate profits from its operations. Key measures of profitability include gross profit margin, net profit margin, and return on equity (ROE) as this ratio gives an idea what percentage of Profit Company is earning and what return company has generated in comparison to the fund invested by the shareholders of the company.

Liquidity assesses the company's ability to meet its short-term financial obligations indicating company's ability to convert its current assets into cash quickly to pay off its current liabilities specifically, Current ratio and Liquidity ratio. But these ratios cannot be used in isolation, it should be considered with other ratios for proper analysis the performance of the company.

To analyse the ability of the company to meet their long-term obligations from their long-term assets Solvency should be examined. It measures the company's long-term financial stability and its capacity to meet long-term obligations. It focuses on the company's overall financial health by examining its long-term debt and the proportion of assets financed by debt. Solvency ratios are critical for creditors, investors, and other stakeholders to gauge the company's ability to survive in the long run. Solvency ratios provide valuable information about a company's long-term financial health and its capacity to manage long-term debt. These ratios help stakeholders assess the company's financial stability and risk, making them an essential tool in financial analysis and decision-making.

Efficiency ratio evaluates how efficiently the company utilizes its assets and resources to generate sales and profits. These ratios provide insights into a company's operational efficiency and its ability to manage inventory, collect receivables, and utilize assets effectively. Return on Assets, Assets turnover ratios are some of the ratios analyzed to evaluate the efficiency of the company in

utilizing the company's assets and resources. By analyzing efficiency ratios, stakeholders can evaluate how efficiently a company is utilizing its internal operations and asset management.

Growth ratios, also known as growth rates or percentage changes, are financial metrics that measure the rate at which a company's key financial figures are increasing or decreasing over a specific period. These ratios are used to assess the company's performance and track its growth trajectory over time. It helps in comparing the present performance with past performance and informs the stakeholder about the performance over the years in terms of performance and profit. Analyzing these financial performance indicators stakeholders, such as investors, lenders, and company management, are able to take informed decisions. It provides a clear picture of the company's financial standing and allows for comparisons with industry peers and historical data. Regular assessment of financial performance aids in identifying areas of strength and weakness, enabling the company to implement strategies for improvement and sustainable growth.

In knowledge driven economy where intellectual capital and intangible assets are the primary drivers of value creation and competitive advantage, financial performance takes on even greater importance as they are the source for competitive advantage and for value creations. The company is supposed to achieve the goals of shareholders by providing the tools named financial performance ratios. Now a days companies long term sustainability heavily depends on human expertise, innovation, and information-based assets. Analysing the vitality of these resources in success of the business performance measurement of these resources has emerged as an important area of study. Investors, including venture capitalists and other funding sources, carefully evaluate the financial performance of companies before deciding to invest. Positive financial indicators demonstrate the company's potential for growth and profitability, attracting more significant investments and fostering expansion. Sound financial performance is critical for managing risks in knowledge-intensive industries, as these industries often operate in dynamic and rapidly evolving markets where innovation and changes in technology are dynamic. Strong financials can provide a buffer during downturns or unexpected challenges, reducing vulnerability and ensuring business continuity. Strong intellectual help the companies to be stable even during the downturns. In highly competitive knowledge-intensive sectors, financial performance can be a differentiating factor. Companies with superior financial results may have a competitive advantage, as they can invest

more in research and development, attract top talent, and outpace their rivals. Companies with better results are differentiated due to intangibles and not due to tangibles.

Indeed, the evolving concept of assets, encompassing both tangible and intangible forms, has underscored the importance of understanding the relationship between financial performance and the intellectual capital of a company. Consequently, there is a growing need to explore how these two dimensions interact and contribute to overall organizational success.

This need for analysis raises pertinent questions regarding the impact of intellectual capital on financial performance and vice versa. For instance,

How does the effective management and utilization of intellectual capital influence financial outcomes?

Conversely, to what extent does financial performance serve as a reflection of the organization's intellectual capital?

Answering these questions requires a comprehensive examination that integrates financial metrics with measures of intellectual capital. Such an analysis can provide valuable insights into the dynamics of value creation within organizations and aid in strategic decision-making processes.

Before analyzing the relationship between intellectual capital and financial performance, it is necessary to examine the disclosure practices of listed companies in relation to intellectual capital. This review of disclosure practices will provide insight into the extent and quality of information provided by companies regarding their intellectual capital. Subsequently, the relationship between intellectual capital and financial performance can be analyzed. The next segment reviews the research conducted on disclosure practices and their implications for the relationship between intellectual capital and financial performance.

2.10 Intellectual capital Disclosure practices of listed companies of India

The research surrounding intellectual capital issues has gained importance, momentum and support to address the raised voice of considering the only important element to be considered as an asset as well as shift in global economies from production to service sector. Natarajan and Ganesh (2003), “Intellectual capital is a document knowledge which is available in the form of research papers,

reports, books, articles, manuscripts, patents and software (Ganesh, 2003)”, but still not in financial statements.

Edvinsson (1997), “Intellectual capital is the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provided a competitive edge in the market (Edvinsson, 1997)”, and it is to be disclosed to stakeholders. Importance of intellectual capital does not lie only in its creation or codification, but it lies in its usage and realization as creation only without any reward to organization is of no use. (as cited in Nonaka & Takeuchi, 1995). Sullivan (2000) argues that intellectual capital is the knowledge of the organization that can be used to earn profit (Sullivan, 2000) added by Lev (2001), Intellectual capital is the claim to future benefits that do not have physical or financial embodiment (Lev, 2001). Further, it has been already emphasized that the difference between a company’s market value and book value is the Intellectual capital (Strassmann, 1999, Bontis 2003) while the major portion of intellectual capital is supported by individual knowledge stock of an organization which deals with their employees. This all together creates value for the organisation which is hidden in the face of financial statements.

In the domain of value creation, the Boston Consulting Group (1999) initially emphasized factors such as margin, asset productivity, and investment relating to intellectual capital to be disclosed in the annual reports of the company. However, subsequent work by Bontis (2002) and Edvinsson (2002) argued for the inclusion of additional components of intellectual capital, such as the attraction and retention of human capital, technological innovations, and customer satisfaction (Bontis, 2002) and proposed a list of items related to intellectual capital that should be disclosed in companies’ annual reports.

Incidents when firms are held accountable for inadequate disclosure of information, especially during scandals, highlight the significance of disclosure practices in annual reports. Expert bodies often stress the importance of disclosure in meeting shareholders’ needs. However, it is acknowledged that companies cannot disclose all financial and non-financial information in their annual reports. This is further complicated by declining the relevance of earnings and financial data for financial information readers in recent decades resulting in the increasing gap between market value and book value.

Rylander, Jacobsen, and Roos (2000) argue that the goal of disclosure is to provide relevant, reliable, and timely information to decision-makers without compromising sensitive strategic

information. In today's knowledge-based firms, traditional accounting frameworks often fail to capture the intellectual resources on which these firms increasingly rely. Research shows that capital market actors actively seek intellectual information for business valuation (Rylander, Jacobsen, & Roos, 2000) but they are not successful in getting from the financial statements.

Given these complexities, researchers have sought to identify the extent of disclosure practices followed by the listed Indian companies in reference to Intellectual Capital. Several studies have aimed to assess the extent of disclosure carried out by sample companies. The table 2.5 presents a bird's eye view of the existent review of disclosure practices.

Table No. 2.5: Table showing literature review of Intellectual Capital Disclosure Practices

Name Of the Researcher	Year	Title Of the Paper	Sample Companies	Result
Cuozzo, B., Dumay, J., Palmaccio, M., & Lombardi, R. (2017)	2017	Intellectual Capital Disclosure: A Structured Literature Review	Research Articles from Ten Relevant Journals for the 17-Year Period Between 2000 And 2017	A lack of significant innovation in the evolution of Intellectual Capital disclosure indicates that this research stream may have been a victim of its own success
Purohit, H., & Tandon, K	2018	Intellectual Capital Disclosures Practices of Indian Firms	Nifty 50 Companies for Only 2015-16	24 items out of the list of 37 items have not been reported even once in the annual financial statements of these firms. Customer capital, relational capital and structural capital, which have been earlier discussed in the present study as important constituents of intellectual capital find no mention in the annual reports of the sample firms. Other knowledge related aspects like business knowledge, employee

				knowledge and customer knowledge are too missing from the reports.
Brüggen, A., Vergauwen, P., & Dao, M.	2009	Determinants Of Intellectual Capital Disclosure: Evidence from Australia	125 Publicly Listed Australian Firms	No relation between level of information and intellectual capital disclosure.
Mehrotra, V., & Malhotra, A. K.	2019	Extent And Gaps In Intellectual Capital Disclosure In The Indian Industry	Nifty 50, 2014-15	The disclosure level of Intellectual Capital in the annual reports of Indian firms is low and a gap exists between the actual practices and stakeholder's expectations as regards disclosure
Joshi, M., Ubha, D. S., & Sidhu, J.	2011	Intellectual Capital Disclosures In India: A Case Study Of Information Technology Sector	20 Information Technology Companies	The average number of items reported by the companies is deplorably low and only a small percentage of the total firms studied have actually reported intellectual capital in their annual reports
Razak, R. A., & Tobiagi, S. M.	2016	Intellectual Capital Disclosures Practices and Intellectual Capital Performance In	12 Commercial Banks Listed in Saudi Arabia Stock Exchange 2014	Intellectual capital items mostly were disclosed in discursive form and throughout the annual report.

		Saudi Arabia Financial Institution		
Bhasin, M., & Shaikh, D. J. M. H.	2015	Intellectual Capital Disclosures In The Annual Reports: A Comparative Study Of The Indian And Australian IT- Corporations	16 Indian and 20 Australian IT Companies	The results of this study confirmed that Intellectual Capital disclosure by the companies from these countries are found to be low, mostly reported in a narrative form, and Intellectual Capital disclosure had not received any preference from the mentors of these corporations.
Muttakin, Khan, & Belal	2015	Intellectual Capital Disclosures and Corporate Governance: An Empirical Examination	116 Non-Financial Companies Listed In Dhaka Stock Exchange	The disclosure score of intellectual capital is very poor in these companies.
Rahman, M. M., Sobhan, R., & Islam, M. S.	2020	The Impact of Intellectual Capital Disclosure on Firm Performance: Empirical Evidence from Pharmaceutical	21 listed pharmaceuticals and chemical companies selected 2016 and 2017	The companies selected for the study are disclosing about 49% of the total disclosure items selected for study.

		and Chemical Industry of Bangladesh		
ul Rehman, W., ur Rehman, H., & Mujaddad, H. G	2016	Level Of Intellectual Capital Disclosure Across Indian and Pakistani Companies	4 leading companies from automobile, banking and textile from India and Pakistan are selected. 2012-13	The disclosure practices suggested are very low.

The above review concludes that most of the research on disclosure practices is conducted only to identify the practices followed by listed companies of stock exchanges and the overall findings conclude that the listed companies are not reporting Intellectual capital to the extent what is needed. In India Nifty 50 companies were selected for identifying disclosure practices but, this disclosure is being limited to only one year of study. It was reported that during this transition period of economy from production to knowledge based, the indicator for sustainable performance depends on future performance and future performance is no longer depended on physical and financial capital but they are depended on intangible assets which will be the people and their knowledge and skill put into practice (Joshi. M. et al, 2011, Purohit H., 2016). Corporate sector now is in an exploration of new accounting practices in disclosing intellectual capital in annual reports with report of financial and physical capital. (U.L.Rehman, W., U.R. Rehman, H., & Mujaddad, H. G, 2016) but still it is in initial phase. It also supports that companies are moving towards disclosing intellectual capital, but the present study is only to find out to what extent the company is moving towards disclosing it in annual reports. Further, the suggestions will be collected from the respondents towards their opinion regarding the variables for intellectual capital to be considered for measuring Intellectual Capital. This study gives a way out to measure the value and relate the value with the financial performance of the companies.

The next segment reviews the existent literature on intellectual capital on the basis of different research methodology adopted by the researchers represented in the tabular form with the objective of identifying the research gap.

2.6 Relationship of Intellectual Capital with financial performance of the companies:

Table of Review :- Calculated Intangible Value Model of Intellectual Capital

Paper	Results	Method of Measuring Intellectual Capital	Statistical Tools
Aho, S., Ståhle, S., Ståhle, P. (2011).	1. CIV is connected to all types of capital assets so it does not measures firm's intangible value. 2. It should not be considered as the measure of intellectual capital.	Calculated Intangible Value (CIV) Method	Empirical analysis, Correlation analysis.
Małgorzata Adamska, Marzena Szewczuk- Stępień (2020).	1. Different methods present varying results into intellectual capital valuation. 2. Practical challenges and benefits of each method were highlighted.	Market value to book value, Tobin's q, Calculated Intangible Value Index, Value Added Intellectual Coefficient.	Data Analysis of models considered in study.
Garafieva, G., Khvorova, E., Lisina, O. (2019).	1. The results argue that the Quantitative Factor - the net asset value - does not affect the performance indicator of Intellectual Capital, since a change of this factor is completely offset by the change in quality factor.	Modified Calculated Intangible Value (CIV) Model	Descriptive Statistics, Factor Analysis

	2. Can be used as a way of assessing of companies' Intellectual Capital Efficiency use.		
Pazarceviren, Selim Yuksel & Kaya, H. Pinar (2018).	1. Intellectual Capital of the firm can be reported. 2. It is difficult to recognize Intellectual Capital as an intangible asset and to report it in financial tables since there is no direct definition towards intellectual capital in International Financial Reporting Standards.	Calculated Intangible Value (CIV) Method	Descriptive Statistics
Priya Parikh (2019)	1. With the usefulness both methods also have their limitations so there is a need to find universal model of measuring Intellectual capital.	Calculated Intangible Value- and Value-Added Intellectual Coefficient	Descriptive Statistics

The above studies are in relation to a model named Calculated Intangible Value (CIV) to measure Intellectual capital. The Value derived from this method is effective in quantifying the financial impact of intellectual capital. Comparative study is conducted in the relation to various methods of intellectual capital where CIV provides practical benefits with the challenges. All the methods are practically beneficial but with certain challenges which result in non-adoption universally.

Table No.2.7 : Table showing literature review of Knowledge Capital Earning (KCE™) model for measuring Intellectual Capital

Reference	Results	Dependent Variables	Statistical Tools Used
Anna Ujwary-Gil, 2006.	1. Positive correlation between knowledge capital and company earnings. 2. The value depicts the overall value of the intellectual capital which can pose problem in managing the intellectual capital. 3. Certain inseparability of Intellectual Capital elements hinders the process of its valuation.	Knowledge Capital Earnings and Market Value to Comprehensive Value and	Regression Analysis, Correlation Analysis
Anna Bagieńska, 2019.	4. KCE™ is feasible for depicting intellectual capital in Polish companies' annual reports.	Knowledge Capital Earnings, Market Value to Book Value and Return on Equity	Content Analysis, Comparative Analysis
HAMAD Mirjam, 2019.	5. Baruch Lev's method provides a robust framework for valuing intellectual capital.	Knowledge Capital Earnings, Market Variables	Valuation Methods, Comparative Analysis

Intellectual Capital is measured by calculating excess earning which is also considered as the knowledge capital earning capitalized by return on equity. This method is not being followed by many researchers due to its complex calculation which further intensifies the need to have a universally accepted method for Intellectual Capital.

Table No 2.8 : Table showing literature review of Economic Value Added (EVA) model for measuring Intellectual Capital

Paper	Objective	Variables	Statistical Tool
Persulesy, Junus, & DarmawatiDarmawati, 2022	1. Found that intellectual capital positively influences company performance, and the effect is moderated by firm size, with larger firms benefiting more.	VACI measures Intellectual Capital and EVA as a performance measure, Firm Size as a moderating variable	Moderate Regression Analysis
Afshin Mohammadi Cheshmeh Kaboudi et al. (2015)	1. Identified a positive relationship between intellectual capital and value-based performance metrics, supporting the importance of intellectual capital in enhancing firm performance but Structural Capital shows negative relation with performance-based measures.	VAIC as a measure of Intellectual Capital and EVA as performance measures.	Descriptive Statistics, Correlation Analysis and Multiple Regression
Mehdi Arabsalehi, Mahdi Beedel, and Abdollah Khosravani, 2013	The findings show a significant positive relationship between intellectual capital and economic performance, with physical and human capital notably enhancing financial performance.	VAIC, HCE, CEE, SCE and EVA	Correlation and Regression Analysis

Mahdi Salehi (2014)	1. Found a significant positive relationship between intellectual capital and both EVA and financial performance, indicating that intellectual capital enhances company value and performance.	Value Added Intellectual Coefficient (VAIC) and EVA for measuring Intellectual Capital while for performance variable Return on Assets is considered.	Descriptive Statistics and Multiple Regression
Gianpaolo Iazzolino (2014)	1. Demonstrated that both VAIC and EVA are effective in measuring value creation, but VAIC provides a more comprehensive view of intellectual capital. 2. Secondly there is no significant relationship between both the variable	Value Added Intellectual Coefficient (VAIC) and Economic Value Added (EVA)	Correlation Analysis
Payam Mojtahedi and Mohammad Ali Ashrafipour (2013)	1. Demonstrated a positive impact of intellectual capital on EVA, suggesting that intellectual capital is a key driver of economic value.	Intellectual Capital metrics including Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), EVA as performance variable and Debt to Equity Ratio as controlling variable	Multiple Regression

Trisnowati and Fadah (2014)	VAIC having positive and significant with both variables. CEE having negative and insignificant with ROA and positive and significant with ROE HCE having no significant impact on both variables while SCE having positive and significant with both variables	VAIC and its components HCE, SCE and CEE as independent variables and ROA and ROE are dependent variables.	Linear Regression Analysis
Venugopal, 2015	Intellectual capital is a key driver for sustainable competitive advantage in modern business	Market to Book Value (MV/BV), Return on Assets (ROA), Return on Equity (ROE), Earnings per share (EPS), Market capitalization (MCAP) as dependent variable and VAIC, HCE, SCE and CEE are independent variable	Descriptive Statistics, Correlation Analysis, One Way Anova, Partial Least Square Path Modelling
Jan Mouritsen (1998)	Found that both EVA and VAIC are crucial for driving growth, but VAIC provides a broader understanding of value creation compared to EVA.	EVA and VAIC	Comparative Analysis

Though Economic Value Added (EVA) method, is considered as the Intellectual Capital measuring method, but researchers consider it as performance variable. When compared with other models of intellectual capital, then VAIC provides better understanding and applicability as compared to EVA. Hence, the model VAIC is considered as a more popular and useful measuring method. The

following table presents the some reviews relating to the model Value Added Intellectual Coefficient (VAIC) with performance variables and its limitations.

Table No 2.9: Table showing literature review of Value-Added Intellectual Coefficient (VAIC) model for measuring Intellectual Capital

Author	Results	Variable of study	Statistical Tools Used
Jacob Ojobo, Lambe Isaac, Haruna (2023)	Significant impact of human and social capital on Financial Performance and Haruna (2023) only Capital employed Efficiency has significant impact with PE ratio while rest ratios are having negative impact.	VAIC method as independent and Return on Assets, Return on Equity and Price Earnings Ratio as dependent variable	Regression Analysis
LAMBE Isaac (2022)	A significant positive effects of both intellectual and natural capital on Financial Performance.	VAIC method as independent and Return on Assets and Return on Equity as dependent variable	Regression Analysis
Habtamu Getachew Tegegne (2022)	A significant positive impact of Intellectual Capital efficiency on Financial Performance.	VAIC method with Return on Assets	Descriptive statistics, F-test, Breusch and Pagan Lagrange Multiplier test and Hausman-test, fixed effect model, and random effect

			model, Wooldridge test were used to test normal distribution of error term, multicollinearity, heteroscedasticity, and autocorrelation respectively, Multiple regression
Anik et al. (2021)	Intellectual Capital and Corporate Governance positively impact Financial Performance	VAIC™ Model as independent and Return on Assets and Return on Equity as dependent variable	Descriptive statistics, Regression Analysis
Adesanmi Timothy Adegbayibi (2021)	Intellectual Capital positively influences Performance Measures.	VAIC method as independent and Return on Assets, Return on Equity and Earning Per Share as dependent variable	Regression Analysis
Sumathy Mohan (2021)	A positive correlation between Intellectual Capital and Firm Performance.	VAIC method as independent and Return on Assets, Return on Equity and Earning Per Share as dependent variable.	Regression Analysis

SHANEEB P et al. (2021)	intellectual Capital has significant and positive impact on Return on Assets. Human Capital Efficiency and Structural Capital Efficiency are significantly and positively related to Return on Assets whereas Capital Employed Efficiency does not show any significance relation to Return on Asset.	VAIC method, HCE, CEE, SCE, ROA, Sales growth	Descriptive statistics, correlation analysis, multiple regression (OLS)
Saeed Fathi, Dr. Shekoofeh Farahmand, Mahnaz Khorasani, 2013	Results demonstrate that there is significant positive relationship between intellectual capital and value added efficiency of structural capital component with the three financial performance measures (ROE, ROA, GR). There is a significant positive relationship between value added efficiency of capital employed and value added efficiency of human capital with two independent variables ((ROE, ROA) and there is no significant relationship between value added efficiency of capital employed and value added	Value Added Intellectual Co-efficient (VAIC TM), Value Added Human Capital (VAHU), Value Added Efficiency of Structural Capital(STVA) , Value Added Efficiency of Capital Employed (VACA) are independent variables. Return on Assets(ROA), Return on Equity(ROE) and Growth Revenue(GR) as dependent variables.	Linear Regression Models.

	efficiency of human capital with growth revenue (GR)		
Jian Xu, Jingsuo Li (2020)	A strong positive correlation between Intellectual Capital and Firm Performance.	VAIC method as independent and Return on Assets and Return on Equity as dependent variable	Correlation analysis, Regression Analysis
Harish Kumar Singla (2019)	Positive relationship between VAIC and Firm Profitability, with some variation across different sectors.	VAIC method as independent and Return on Assets and Net Profit Margin as dependent variable	Panel data analysis
Suherman (2017)	Intellectual Capital positively affects profitability and market value	VAIC model as independent and Return on Assets and Return on Equity as dependent variable	Regression Analysis
Skhvediani, Koklina, Kudryavtseva, & Maksimenko, 2023	Impact of Structural and Human capital efficiency on financial performance is lower compare to Capital Employed.	VAIC and its components are independent variables. Earning Before Interest and Tax(EBIT), Return on Assets(ROA), Assets Turnover (ATO) as dependent variable	Regression Analysis

Vishnu S. 2015	Among other components, human capital shows strong relation with the performance of firms across industries.	VAIC, HCE, SCE and CEE as independent variables. Return on Assets, Return on Equity and Return on Sales as dependent variables.	Regression Analysis
Vishnu, S., & Gupta, V. K. (2014)	Positive relationship between Intellectual Capital and Human Capital Efficiency with Firm Performance.	VAIC, Human Capital Efficiency (HCE) as independent and Return on Assets and Return on Equity as dependent variable	Regression Analysis, Correlation analysis
Rezaei (2014)	IC components predict future performance	VAIC model as independent and Future Earnings and Future Stock Return as dependent variable	Regression Analysis
Kim, S. H., & Taylor, D. (2014)	IC is more value-relevant compared to book-value of assets	VAIC as independent and Book value of assets as dependent variable	Regression Analysis
Mention & Bontis (2013)	Positive impact of IC on performance	VAIC model as independent and Return on Assets as dependent variable	Regression Analysis
Lazzolino et al. (2013)	Positive relationship between IC efficiency and market value	VAIC model and Market to Book value as dependent variable	Regression Analysis

Ming-Chin Chen et al. (2005), Shaban & Kavida (2013)	Positive link between Intellectual Capital and both market value and Financial Performance.	VAIC method and Return on Assets and Market to Book Ratio as dependent variable	Regression Analysis, correlation analysis
Sharabati et al. (2013)	Intellectual Capital significantly boosts business performance	VAIC model as independent and Return on Assets as dependent variable	Regression Analysis
Pucar (2012)	Intellectual Capital significantly boosts export performance	VAIC model as independent and Export Performance as dependent variable	Regression Analysis
Mehri et al. (2013), Rehman et al. (2012), Pal & Soriya (2012), Rahman & Ahmed (2012), Abdullah & Sofian (2012), Khan, F. A., Khan, R. A. G., & Khan, M. A. (2012), Komnenic, B., & Pokrajcic, D. (2012), Khanqah, V. T. et al. (2012), Alipour (2012),	Intellectual Capital components significantly affect Firm Performance. Negative impact of VAIC with firm performance in Pal & Soriya (2012), while having negative impact of market value with firm performance Khanqah, V. T. et al. (2012)	VAIC as independent and Return on Assets and Return on Equity as dependent variable	Multiple Regression Analysis

Guo, W. C., Hou, S. R. S., Chien, W. J. (2012), Nadeem et al. (2012), Mohammed-Sani et al. (2012), Mondal & Ghosh (2012), Salman et al. (2012)			
Latif et al. (2012)	Significant difference in Intellectual Capital Efficiency; Structural Capital Employed having negative relation with productivity, performance and market valuation.	VAIC model as independent and Return on Assets as dependent variable.	T-test, Regression Analysis
Mosavi et al. (2012)	Negative relation found between VAIC and Market Value Added.	VAIC model as independent and Market Value Added as dependent variable.	Regression Analysis
Mehralian et al. (2012)	Negative effect of Intellectual Capital on market value	VAIC model as independent and Market Value as dependent variable	Regression Analysis
Firer and Williams (2003)	Positive and significant relationship between of VAIC with physical capital assets but no strong relationship with VAIC and profitability,	VAIC model as independent and Return on Assets, Assets Turnover Ratio and Market Value to Book	Multiple Regression Analysis

	productivity and market valuation.	Value are dependent variable	
Mehralian et al. (2012)	There is no such significant relationship between human capital and structural capital with a firm's financial parameters due to lack of employee's trainings. Only Capital Employed Efficiency has a major impact on ROA.	VAIC model and its components are considered as an independent variable. Return on Assets, Assets Turnover Ratio and Market Value to Book Value are dependent variable	Correlation Analysis and Multiple Linear Regression. Artificial Neural Network has been applied to determine the strength of relationship between variables.

The studies together examine the impact of Intellectual Capital (IC) on various measures of firm performance termed as Return on Assets, Return on Equity, Price Earnings Ratio, Market Value to Book Value Ratio, Market Value and so on, across different countries and industries, predominantly using the Value-Added Intellectual Coefficient (VAIC) method as an independent variable. Many studies employ regression analysis to determine the relationship between IC components and financial performance metrics such as Return on Assets (ROA), Return on Equity (ROE), and Earnings Per Share. Consistency is seen in the findings of the above study demonstrating a significant positive impact of Intellectual Capital on Firm Performance, highlighting the importance of efficient human and structural capital. Studies like Mehalian et al. (2012), Mosavi (2012), Haruna (2021) highlight the negative relation of components of Intellectual Capital mainly Structural Capital Efficiency with the financial performance, that presents the limitation of this method. It is inversely related to human capital efficiency. Methods such as panel data analysis, correlation analysis, and multiple regression are also implemented to validate the strength of these relationships, emphasizing the critical role of Intellectual Capital in enhancing profitability, market value, and overall business performance. Authors further tried to extend and modify the same model

to overcome the limitations based on the critics presented by the researcher. The review of papers considering the modified and extended VAIC is carried as follows:

Table No 2.10 : Table showing literature review of Modified Value-Added Intellectual Coefficient (M-VAIC) model for measuring Intellectual Capital

Study	Results	Independent Variables	Statistical Tools Used
Martin Kucera, 2022	Both models provide valuable insights, but M-VAIC offers more detailed measurement	Independent variables are Value - Added Intellectual Coefficient and Modified Value - Added Intellectual Coefficient and Dependent variables are Return on Assets and Return on Equity	Regression Analysis
Xu, J., & Liu, F., 2020	Extended VAIC model shows significant impact on firm performance	Independent variables Value Added Intellectual Coefficient and Extended Value - Added Intellectual Coefficient and Dependent variables are Return on Assets and Return on Equity	Regression analysis
Risa Restu Septania, Harmono, Parawiyati, 2023, Siti Zaitun Saddam, 2021, Sriranga Vishnu, 2018, Dr.	MVAIC provides a more comprehensive measure of intangible assets and shows positive relationship between modified Intellectual Capital and Financial Performance	Independent variables Modified Value Added Intellectual Coefficient and Dependent variables are Return on Assets and Return On Equity	Regression analysis, validation study

Amitava Mondal, 2016			
Ullum, et al., 2016	Added relational capital in the VAIC model. Intellectual capital performance of non-financial industry is higher than financial industry.	Modified Value-Added Intellectual Coefficient - Human Capital Efficiency + Structural Capital Efficiency + Relational Capital Efficiency + Capital Employed Efficiency	Descriptive Statistics, Mann-Whitney Test, Wilcoxon test, z-test
Nadeem, M. 2016.	VAIC was negatively related with firms performance but when Innovative capital added, it shows the positive and significant relation with financial performance variables.	Adjusted Value Added Intellectual coefficient (A-VAIC) as independent variable, where Structural capital is replaced by Innovative Capital. Return on Equity, Return on Assets and Assets Turnover are dependent variables.	Panel data regression applied.
Pirjo Ståhle et al., 2011	Found limitations and suggested improvements for the VAIC method	VAIC components	Critical analysis, literature review

The studies focus on the measurement of intellectual capital on firm performance, utilizing various models like VAIC and M-VAIC. The method of VAIC is modified by reversing the method of structural capital component of VAIC.

Pirjo Ståhle et al. (2011) critically analyzed the VAIC method, identifying its limitations and suggesting improvements by reversing the method and gave the term Modified Value Added Intellectual Coefficient.

Siti Zaitun Saddam (2021) proposed and validated the M-VAIC model by adding another component named Relational Capital Efficiency, finding it a more comprehensive measure of intangible assets using regression analysis.

Risa Restu Septania et al. (2023) and Sriranga Vishnu (2018) both demonstrated a positive relationship between modified intellectual capital components and financial performance in Indonesia and India, respectively, using regression analysis.

Marzo (2022) provided a theoretical critique of VAIC, suggesting enhancements in the said method.

Dr. Amitava Mondal (2016) and Martin Kucera (2022) validated the effectiveness of M-VAIC of intellectual capital performance in different contexts, employing regression analysis.

Xu and Liu (2020) extended the VAIC model by adding another two components, customer capital and research and development capital, showing significant impact on firm performance through empirical analysis. Modified and Extended studies also show the significant impact on the firms' performance.

Studies show mixed result of impact of intellectual capital value on the selected financial performance variables considering various models, where majority has adopted VAIC model due to the availability of data and simplicity in calculation. Still none of the methods are universally accepted. Based on the review the need for the present study is discussed with its rationale.

2.10 Research Gap

The above discussion reflects that right from emergence of the idea of intellectual capital in 1965 by Keneth Galbraith, huge number of research output in the form of articles, research work, thesis, have been produced by researchers and social scientists but, all the research endeavors completed till date have addressed issues related to valuation and disclosure of this important element as an asset considering its economic impact. Most of the research output addressing the issue of valuation of Intellectual capital has considered Value Added Intellectual Coefficient(VAICTM) that measures efficiency using the ratios, but efforts are lacking in the field of proper valuation of intellectual capital and / or refinement of valuation process on the basis of merits and demerits of the present process in practice. On the other hand, research efforts made in the field of disclosure practices have addressed disclosure of intellectual capital in literature term and not in financial term by measuring its monetary value.

Above discussion establishes that research in the field of intellectual capital has been carried out in last sixty plus years with limited focus and eliminating important issues like:

- Limited used of different models of valuing Intellectual Capital,
- Each model of intellectual capital carry limitations
- Impact of intellectual capital on financial performance reveals mix result by scholars. Some studies found the positive relationship with financial performance and some studies found negative or weak relationships with financial performance. The similar results are reported in India also.
- The review revealed that quantitative methods such as questionnaire survey were comparatively less reported by scholars.
- Limited studies conducted to analyse disclosure practices followed by the company listed in India as well as outside India.
- Majority of the studies measure the value of Intellectual Capital by VAICTM and study the impact on financial performance named Return on Assets and Return on Equity. While less study consider different dependent variable other than Return on Assets, Return on Equity, Assets Turnover Ratio, Market Capitalisation and Market Value to book value ratio.

Proposed Contribution of the Thesis to Literature:

Hence the present research endeavor entitled “Impact of Intellectual capital on the financial performance of select listed Indian Companies” with intention to :

1. do detailed content analysis of disclosure of Intellectual capital
2. analyse the disclosure practices adopted by listed Indian Companies
3. develop a model to measure the value of Intellectual capital
4. study the impact of Intellectual capital on financial performance.
5. do comparative analysis of developed model with the new model of Intellectual Capital

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