

Synopsis for the thesis entitled-

Impact of Intellectual Capital on Financial Performance of Select Listed Indian Companies

INTRODUCTION

From the inception of civilization, socio-economic development has occurred in response to the increasing wants and needs of human beings. Organizations play a crucial role in satisfying these needs by transforming available resources into finished goods demanded by consumers. Historically, during the industrial age, tangible assets such as capital, machinery, and plant were the primary drivers of productivity and value creation. However, as we transition into a knowledge economy, the primary source of value generation has shifted to knowledge workers who are both professionally qualified and technically adept (Bose & Thomas, 2007). This shift has heightened the importance of intangible assets—such as human capital, customer relations, brand reputation, intellectual property, organizational processes, and innovation—within organizations.

It is commonly observed that the market value of many companies exceeds the replacement cost of their tangible assets (Dumay, 2009; Guthrie, 2001; Sveiby, 1997b). This discrepancy can be attributed to the presence of intangible resources, collectively referred to as Intellectual Capital (IC) (Brennan & Connell, 2000). In the literature, terms like intellectual capital, intangible assets, and invisible resources are often used interchangeably. Over the past two decades, IC has emerged as a critical component in the economic wealth generation of firms, underscoring the need for organizations to recognize, measure, and manage their intellectual capital to gain competitive advantage (Bhartesh & Bandyopadhyay, 2005).

Research on IC is still in its nascent stages, with ongoing efforts to establish a widely accepted definition, classification, and measurement methods (Choong, 2008; Kaufmann & Schneider, 2004; Marr & Moustaghfir, 2005). The intangible nature of IC complicates its comprehensive assessment, often leading to the undervaluation of firms (Coakes & Bradburn, 2005). Various models for valuing IC have been proposed, including performance based – Economic Value Added (EVA) and return based – Knowledge Capital Earning Model (KCE™), alongside practitioner-developed models such as the Skandia Navigator (Edvinsson & Malone, 1997).

Practitioners have categorized IC measurement methods into indirect methods (e.g., Market Capitalization Methods and Return on Asset Methods) and direct methods (e.g., Direct Intellectual Capital Methods and Scorecard Methods). While return on assets methods are simpler to implement, they are often criticized for their oversimplification. This study aims to measure IC efficiency at both aggregate and component levels using a newly developed model- Intellectual Capital Value (ICValue) and widely accepted model- Value Added Intellectual Coefficient (VAIC™) model, linking it to the performance of listed Indian firms.

The VAIC™ model, developed by Ante Pulic in 1993, assesses the efficiency of Human and Structural Capital, but it does not account for Relational Capital, a crucial component in contemporary literature (Hsu and Fang, 2009; Martín-de-Castro et al., 2011). The present study addresses these limitations by developing new model ICValue considering all the components together under human cost and refining the calculation methods, resulting in the proposed newly developed model- Intellectual Capital Value (ICValue) model.

Rationale of the Study

Since the 1960s, the growth of the service sector has heightened the significance of intellectual capital, particularly regarding its impact on a company's financial performance. Researchers have endeavored to define intellectual capital, encompassing dimensions such as knowledge, skills, and innovation that contribute to value creation within an organization. Additionally, efforts have been made to develop methodologies for measuring the value of intellectual capital.

Despite these advancements, intellectual capital has not been adequately integrated into the disclosures found in annual reports, primarily due to the lack of a universally accepted measurement framework. A review of the literature reveals a substantial number of studies examining the relationship between intellectual capital and various financial indicators of firms, alongside a few distinct methodologies for evaluation. However, there remains a scarcity of universally reliable and accepted methods for assessing the impact of intellectual capital on companies' financial performance, which serves as the main objective for this study.

Objectives of the Study

The main objective of this research endeavour is to check the efficiency of various Intellectual capital valuation models. With this main objective, other objectives are as under:

1. Expound the theoretical understanding of different approaches to the measurement of Intellectual Capital.
2. Identify and study different models of Intellectual capital.
3. Document the practices followed for measuring Intellectual Capital of selected Indian corporate.
4. Gauge the relationship of Intellectual capital with the financial performance of selected companies.
5. To develop a reliable model for measuring value of Intellectual capital.
6. Ascertain the views of practising accountants, company directors, stockbrokers, investors, auditors, members of the professional bodies, academicians, Researchers and managers about the method of Intellectual capital and opinion relating to the different variables to be considered in measurement method of Intellectual capital.

Considering the above identified objectives mixed research methodology, a combination of investigative, descriptive and exploratory study has been adopted.

Research Methodology

This part of the study discusses the research methodology adopted with a detailed road map followed to achieve determined research objectives spelling out research design used, methods of research, research instruments, population size, sample size, sampling method, sample unit, data source and data analysis tools. Content analysis, survey method and case study method have been used to conduct this research as highlighted in three sections below. The same has been discussed in detail in chapter 3 and chapter 4 respectively.

Part One- Content Analysis

This part of the study discusses the detailed content analysis undertaken to comprehend the practices followed by the listed Indian companies with the objective of documenting the practices followed for measuring Intellectual Capital of selected Indian corporates which disclose intellectual capital. A two

phased content analysis has been carried, first of companies disclosing intellectual capital in annual reports for the year 2020-21 and in the second, analysis of the companies disclosing different components, their respective items and their dimensions under Intellectual capital focussing on disclosure practices for the period of five years from 2016-17 to 2020-21. The content analysis identifies the companies not disclosing the term intellectual capital. For disclosure practices analysis, a disclosure index is developed allocating one point if that component is disclosed, and zero, if not disclosed so that a separate score of each component is calculated as discussed in Chapter 3.

For content analysis and detailed disclosure index analysis, Nifty 50 companies are selected as a sample, as these represent all major companies listed under Stock Exchange of India. The result of content analysis revealed that none of the Nifty 50 companies have disclosed all items for all five years, showing poor disclosure practices followed, giving a ground to survey the awareness of this term and methods of measurement amongst respondents, opinion about the need to disclose in annual reports and weightage given to different variables of Intellectual Capital for developing a new model.

Part Two- Survey Study

The opinions of the Chartered Accountants, Cost Accountants, Researchers, Financial Analysts and Academicians on intellectual capital were collected by applying survey study techniques.

Structured Questionnaire

In order to ascertain the views of practising accountants, company directors, stockbrokers, investors, auditors, members of the professional bodies, academicians, researchers and managers from all over India, a questionnaire was developed as a research instrument. The instrument has three segments, first focusses on awareness of the term Intellectual capital, the second segment deals with methods of measuring Intellectual Capital, and the third segment focusses on the importance given to different variables to measure the value of Intellectual Capital. A random selection of respondents was undertaken in this quantitative analysis. The non-probability sampling approach is put to use based on purposive sampling method. Representatives from various industries and academicians of different city of India are included in the research.

Primary data has been collected using Structured Questionnaire as a research instrument using a Likert Scale with equal intervals between response categories, to collect opinion on close ended questions. The questionnaire is canvassed to 340 people willingly consented to participate in the research fetching responses out of which 170 have constructively responded showing 50% respondents. Efforts have been made towards developing measurement methods based on the collected responses and the outcomes are detailed and discussed in Chapter Four. Multi item measures are used in the questionnaire to provide stronger construct validity as single item measure may not address all the aspects of the multidimensional constructs. This study uses a Likert scale with equal intervals between response categories, like opinionnaire in different items of Intellectual capital comprising close ended questions. Respondents are requested to indicate their degree of importance, they are asked to give rank or preferences in the nature of:

Table 1.1
Table showing Likert scale

1	2	3	4	5
Not at all important	Slightly important	Moderately important	Important	Extremely important

For some questions the preferences were asked by: **Yes** **No**

Table 1.2
Table showing Likert scale

And for some questions the preferences were asked

1	2	3	4	5
Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree

The questionnaire in this study contained 4 parts, 17 questions with sub questions make total 58 questions. Part – I elicit the Personal Profile (demographic details) of the respondents, Part – II elicits their level of knowledge and understanding about intellectual capital, intangible assets and different terms under Intellectual capital. Part – III elicits the awareness of respondents about the various method of measuring intellectual capital and their perception about considering the basis for measuring the value of intellectual capital and disclosing this capital in annual reports. Part – IV elicits the perceptions of

respondents regarding the importance to be given to various components of Intellectual capital for considering it in valuation of Intellectual Capital.

The respondents were approached in person to circulate questionnaires while questionnaires are sent to the respondents by e-mail and social media (whatsapp). In response a hundred seventy questionnaires were received which are considered for further analysis. The answers given by the respondents for each question as well as sub questions are quantified in categories and then computed in tabular form to illustrate the responses. Based on the responses and information collected through the survey, data have been analysed to develop a model for measuring Intellectual Capital of a company.

The questionnaires completed in all respects were only considered for the analysis. The raw data collected was further converted into numerical data, coded, and fed into a computer for analysis and storage. It was stored as a data file using MS Excel, and the data from google form is extracted from the respective source in MS Excel. The data collected was coded and subjected to statistical analysis. Consultation with the expert and available statistical package for social sciences (SPSS version 15) software was used for data analysis. The statistical analysis of the variable in the study has been performed using the following tests:

- Descriptive Statistics
- Cronbach Alpha
- Validity Analysis
- Factorial Analysis and
- Pearson's Chi-square

Descriptive Statistics

Descriptive statistics elucidate fundamental data characteristics, conveying their essence and quantifying attributes in a concise manner. In the quantitative analysis, the average score of respondents for different variables are conducted and arrived at a specific result.

Reliability of the Structured Questionnaire

Cronbach alpha coefficient measures the reliability or internal consistency, of a set of survey items. The reliability of a scale as measured by coefficient alpha reflects the degree of cohesiveness among the scale items ((Nunnally, 1981) as cited by Vala (2016);Valand 2019).

The opinions received in the questionnaire are quantified, the data collected is uploaded to the SPSS software to conduct the Cronbach's Alpha Reliability test. Cronbach Alpha Reliability test results more than 0.9, showing greater internal consistency hence, considered reliable for further data processing.

Validity of the structured questionnaire

Convergent validity has been measured by comparing mean scores of scales with other measures of the same construct. It becomes clear from analysis that the means of same construct are measured, and less variation has been observed in the given question categories and the preference among respondents are human capital followed by relational capital and then structural capital in the context of intellectual capital. Majority of the Respondents have been found as placed between slightly important to extremely important. According to the mean score, employee competence, manager's aptitude, advertising and sales promotion are the most crucial factors in intellectual capital. This adds in assessing and enhancing intellectual capital within organisations. Convergent validity has revealed that less variations has been observed in different variables

Factor Analysis

Factor Analysis condenses extensive variables into subsets known as factors. It is intended for interval data yet applies to ordinal data. Excessive independent variables in predicting responses yield challenges, like prolonged data collection, costs, inference complexity, and redundancy. Factor Analysis addresses this, grouping input variables into underlying factors. Theoretical factors count matches input variables, but insignificant factors can be discarded based on criteria, reducing total factors. It is frequently employed for data reduction and structural insights.

This study uses Principal component analysis which provides 'unique solution,' considering 'total' variance from the variables, in order that the derived method will include factors as many in number as the variables. Although, the criteria for retention will not be met. This method is used to investigate the reasons for considering specific items in deriving new method.

Factors loading is used to measure correlation between criteria and the factors. A factor loading close to 1 indicates a strong correlation between a criteria and factors, while a loading closer to zero indicates weak correlation. The factors are rotated with the use of Varimax with Kaiser Normalisation rotation method. Factors were extracted using Principal Component Analysis (PCA) method and only those factors are considered for interpretation, the values of which are greater than 0.6. Principal Component Analysis is carried out with the help of SPSS software.

On the basis of extracting factors using principal component analysis, researcher has examined factors related to employee competence and Manager's Aptitude in factor one component, research and development as factor two component followed by organisational capital as factor three and customer capital as factor four.

Pearson's Chi-square

The Chi-square test is vital among significance tests, especially for categorical variables. It assesses the relationship between such variables, testing the null hypothesis of independence. This statistic aids in comparing a sample variance to a theoretical one, often in non-parametric contexts, determining dependency in categorical data or comparing theoretical and actual data. It is not a measure of relationship degree but gauges association significance. The test of independence through Chi-square examines attribute associations. Statistical significance, indicated by p values less than 0.05, evaluates disparities between observed and expected frequencies.

In this study chi-square test is used to determine relationship among various demographic qualities of respondents and variables like the concept of intellectual capital, items under intangible assets and need to develop model to measure and disclose in the annual reports.

Part Three – Case study

This part of the study deals with in dept case study analysis as discussed in Chapter Four.

Empirical Analysis

The third part of the research endeavor deals with in-dept case study analysis of selected companies from the manufacturing and service sector in order to verify the cause-and-effect relationship of already developed model and new model of measuring Intellectual capital with financial performance of the companies. This part of the study incorporates case study to investigate the validity, objectivity and efficiency of Intellectual Capital model to ascertain its relationship with financial performance of the companies.

The main purpose of this research is to explore Value of Intellectual Capital and its impact on the financial performance of listed companies in India. This study collects data from the annual reports of listed companies on National Stock Exchange (NSE).

The fourth chapter includes the calculation of the value of Intellectual Capital by two different methods and calculation of four different financial performance indicators for the selected 4 companies for the period of 10 years to measure the impact of Intellectual Capital with the financial performance indicators of the sample companies. This case study method contributes to:

- develop a framework for measuring Intellectual capital and its productivity.
- ensure the objectivity of Intellectual Capital.
- gauge the relationship of Intellectual capital with the financial performance as well as return on investment of selected companies.
- evolving a commonly accepted, useful Intellectual Capital Value Model.

For the case study method all the companies registered and listed in National Stock Exchange of India are the sampling elements for the work. Considering the statistical tools, data has been collected and analysed.

Sampling Design for Case Study

For case study the research work has considered companies from manufacturing sector as well as service sector from 6,819 companies listed in National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) (“Number of companies listed in NSE and BSE across India FY 2008-2022,” n.d.) and remaining all companies are not listed on the same exchange Nifty 50 index is considered for drawing the samples. The non-probability sampling approach is used and based on purposive sampling method sampling units are drawn.

Nifty 50 Index is such a diversified index which comprises of 13 sectors of the economy. It represents about 62% of the free float market capitalization of the stock listed on NSE as on September 30, 2022. The selection criteria case study are, Economic Value Added is disclosed in the Annual Reports from 2010 to 2020 and the companies are listed in Nifty 50 in these 10 years will be considered for sample selection so that the impact of the value of Intellectual Capital and its effect on financial performance can be measured for the companies representing different market Capitalisation and different sectors. Required data has been extracted and applying statistical tool to analyse the data and will arrive at conclusion.

Methodology followed for case study

The methodology adopted is based on an analytic-descriptive study, from annual reports and financial statement of selected sampling companies.

The aim of the study is to measure the value of Intellectual capital in listed companies in India, as well as their impact on financial performance of the companies for the period 2012-13 to 2021-22. The sample size of the study consists of the 4 companies from diversified sectors, listed on the BSE and the NSE.

The value of Intellectual capital has been measured based on Value Added Intellectual Capital (VAIC™) model and with the new proposed model named Intellectual Capital Value (ICValue) model. This value is identified as independent variable representing the Intellectual Capital of the companies.

Market Capitalisation, Gross Value Added, Economic Value Added and Net Value Added are identified as indicators of financial performance of the companies and to gauge the relationship these variables are calculated for the period from 2012-13 to 2021-22 for the selected 4 companies. The calculated Market Capitalisation, Gross Value Added, Economic Value Added and Net Value Added are identified as 'dependent variable' representing the financial performance of the sample companies.

For the empirical examination Linear regression equations are developed for each hypothesis and applied on this data set to derive meaningful outcomes.

Techniques of Analysis

The case study analysis has been carried out to establish the relationship of Intellectual Capital Value with the variables listed above and the value is to be measured by considering the variables listed below.

The case study analysis has been carried out using the following basic statistical techniques:

- I. Growth Analysis
- II. Descriptive Statistics
- III. Multiple Data Analysis
 - a. Simple Correlation
 - b. Multiple and Simple Regression Analysis

Variables selected for the study:

To investigate the validity, objectivity and efficiency of the Intellectual capital measurement methods, the study is carried out by analysing the behaviours of all the important variables indicating the efficiency and profitability for the valuation of Intellectual Capital.

These variables are,

- i. Employee benefit expenses
- ii. Management remuneration
- iii. Net operating profit after taxes
- iv. Risk free interest
- v. Market Risk
- vi. Weighted Average Cost of Capital
- vii. Total Assets

- viii. Market Price Per Share
- ix. Other Income
- x. Market Capitalisation
- xi. Human Capital
- xii. Structural Capital
- xiii. Capital Employed
- xiv. Gross value Addition
- xv. Net Value Addition
- xvi. Firm Size
- xvii. Intellectual Capital Value
- xviii. Economic Value Added

Research Outline

The study spans over Five (05) Chapters as under:

Chapter One is the introductory part of the research work. This chapter deals with the rationale and the objectives of the study and the methodology used for the research. This chapter also spells out the plan of the study.

Chapter Two lays the theoretical foundation of Intellectual Capital and financial performance of companies in three parts. Part One discusses the conceptual paradigm and evolution of the concept of Intellectual Capital. Part Two narrates different models for measurement of Intellectual Capital, whereas, part Three summarizes the study carried out with respect to disclosure practices and impact in literature.

Chapter Three presents the overview of the disclosure practices adopted by listed companies in India by detailed content analysis. The researcher has sought to gain insight from the practicing accountants, research scholars, managers, financial analysts, professionals, academicians, brokers to present their opinion in relation to the factors considers for measuring value of Intellectual Capital by collecting and analysing opinions received from the respondents. The purpose of this chapter is to identify the factors to be considered for developing a model to measure Intellectual Capital.

Chapter Four presents common model adopted by many researchers in research study, developing new model for measurement, development of hypothesis, analysing the results and test the hypothesis regarding relationship between Intellectual Capital and financial performance of listed Indian Companies by using Simple and Multiple Linear Regressions. The purpose of this research is not only

to generate the relationship between Intellectual Capital and financial performance but also to contribute to model of measuring the Intellectual Capital in the society.

Chapter Five summarises the findings of this research study and suggests recommendations to management, the government, customers, researchers and practitioners for conceptualising the concept. At the end of the chapter, further research areas in the field of Intellectual Capital have also been highlighted with the implications of the study.

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